SEED HEALTH UNIT

GUIDELINES AND OPERATIONAL MANUAL

MEMBER LABORATORY

Dr. Gururaj Guddappa Kulkarni

IRRI
International Rice Research Institute

Seed Health Testing Guidelines and Operational Manual

Dr. Gururaj Guddappa Kulkarni

2019

The International Rice Research Institute (IRRI) was established in 1960 by the Ford and Rockefeller Foundations with the help and approval of the Government of the Philippines. Today, IRRI is one of 16 nonprofit international research centers supported by the Consultative Group on International Agricultural Research (CGIAR). The CGIAR membership comprises the Organisation for Economic Co-operation and Development (OECD) donors, international and regional organizations, and private foundations.

IRRI receives support from several CGIAR members, including the World Bank, European Union, Asian Development Bank, International Fund for Agricultural Development, Rockefeller Foundation, and the international aid agencies of the following governments: Australia, Belgium, Brazil, Canada, People's Republic of China, Denmark, France, Germany, India, Islamic Republic of Iran, Japan, Republic of Korea, The Netherlands, Norway, Philippines, Portugal, Spain, Sweden, Switzerland, Thailand, United Kingdom, and the United States.

The responsibility for this publication rests with the International Rice Research Institute.

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Foreword

It gives me great pleasure to write the foreword of the Seed Health Testing Guidelines and Operational Manual.

The authors have taken tremendous effort to prepare this manual that provides a guide for proper import and export procedures, international seed health protocols, and operational activities that will assure users send high quality seeds and receive healthy seeds from anywhere in the world.

For years, the International Rice Research Institute has taken careful steps to assure safe germplasm exchange between the institute and its partners. It has worked with many organizations and refined its guidelines through the years to meet global standards. It continues to do so, adopting new technologies and innovations that will make seed exchange safer, faster, and more efficient.

This manual contains the latest procedures that users will use and find helpful to acquire some of IRRI's 130,000 rice varieties. It includes the Department of Agriculture, Bureau of Plant Industry guidelines, Quality Manual, Operational Map, and the list of Standard Operating Procedures needed to proceed with the exchange.

We trust that our partners will find this guide a useful tool in their quest to improve the rice agri-food systems of their countries and communities.

Jacqueline Hughes
Deputy Director General - Research
International Rice Research Institute

Preface

Germplasm exchange is a regulated process governed by the phytosanitary policies and procedures of the International Plant Protection Convention (IPPC) and individual countries governing policies, laws and procedures. National Plant Protection Organizations (NPPOs). Seed health testing is a mandatory component of germplasm exchange between CGIAR international centers and national agricultural research and extension system (NARES) partner organizations. It ensures the movement of seed in a safe manner to prevent unintended transmission of pathogens, insect pests, and contaminants such as weed seeds.

Seed borne pathogens often are barriers to seed movement for research and for trade. Seed-importing countries need epidemiological data and biological of the host and the pathogen information to determine if the seed carries the targeted pathogens of "quarantine importance" which lead to crop losses in the recipient countries or introduce new species which may affect economically critical crops It should be noted that pathogens carried by a rice seed, need not be transmitted to other field grown rice plants when the seed is grown as tolerances or resistances among the varieties vary. The rate of transmission varies from one pathogen to another, as well as, when the seed is sown under different conditions for rice growth. These important subjects need further research for assessment of critical crop losses.

This handbook focuses on the import and export guidelines, international guidelines, seed health testing protocols, and operational activities including request forms and other annexures. Seed health testing also ensures quality control in the exchange of high-quality seed among scientists or research centers. For this reason, the Seed Health Unit (SHU) at International Rice Research Institute (IRRI) functions as the gatekeeper of safe germplasm movement from and within IRRI, to and from the Philippines and other countries.

IRRI prioritizes the safety of germplasm which is exchanged among partners and for recipients of the germplasm in general. To meet this objective, IRRI continues to collaborate and receive guidelines and compliance requirements from the Philippine Plant Quarantine Service. Bureau of Plant Industry (BPI) and IRRI established an on-site SHU with laboratory facilities and BPI has deputized IRRI to undertake major routine activities on rice seed health testing under their guidelines and phytosanitary certification process. IRRI also developed a policy framework for dispatch of any outgoing rice seed for any purpose from IRRI and receipt of any incoming seed. Under this policy all seed outgoing and incoming has to be channeled and cleared through SHU to ensure safe seed is received and dispatched. Besides its regular activities on seed health testing of rice germplasm, the unit also offers rice seed health training to national partners.

Since the early 1960s, IRRI has conducted rice seed health testing to accomplish seed certification. This book will help to understand the documentation requirements for the seed exchange. It will also guide the internal and external research teams to better understand the documentation process for a proper planning of a timely import and export of the germplasm / seeds.

Celebrating 2020 as the International Year of Plant Health (IYPH) called by United Nation's General Assembly, the publication of this manual is in line with the goal to raise global awareness on how protecting plant health can help end hunger, reduce poverty, protect the environment and boost economic development.

I acknowledge CG-GHU initiative of the CGIAR Genebank Platform and the IRRI Management for supporting SOP updates and publications of this manual.

Gururaj Guddappa Kulkarni, Ph.D., FESI, PGDIPR.
Head, Research & Regulatory Compliance and Seed Health Unit
Global HQ, IRRI, Los Banos, Philippines.

Introduction to SHU

Seed Health Unit

Single Gateway

FOR SAFE AND EFFICIENT GERMPLASM EXCHANGE

The Research and Regulatory Compliance (RRC) focuses mainly on the development of research infrastructure and operations standards for efficiency initiatives; ensuring strict compliance with regulatory and stewardship requirements in quarantine, materials transfer, genetically modified organisms (GMOs) and research quality management; regulatory compliance for the transboundary movement of the seed and non-seed materials for research, and operational safety standards across research operations and facilities are set and well-implemented.

Seed Health Unit (SHU) was established in December 1982 under a memorandum of agreement between IRRI and the Philippines' Bureau of Plant Industry (BPI). SHU is authorized to conduct major rice seed health testing for phytosanitary certification and post-entry clearance. Rice seeds for export and import are certified under the supervision of a plant quarantine officer.

Mandate

SHU is a single gateway (sole entry and exit point) for all seeds and non-seed biological materials coming in (post entry clearance) and going out (phytosanitary certification) of the International Rice Research Institute (IRRI) which aims to ensure that the seed health status of germplasms meet the plant quarantine regulations and standards of both the Philippines and recipient countries/agencies with an accompanying appropriate material transfer agreement in line with the established policies of IRRI and compliance with intellectual property right (IPR) protocols stipulated in the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA).

Seed Health Unit - ISTA laboratory member

SHU is a laboratory member of the International Seed Testing Association (ISTA) since 2008. Founded in 1942, ISTA is an internationally recognized authority in seed science and technology and its expertise is based on the nonprofit cooperation of an international community of approximately 400 experienced and competent seed scientists and analysts.

As a laboratory member, SHU is entitled to many benefits, foremost of which is the eligibility to participate in the ISTA Proficiency Test Programme that is very valuable for laboratories that aim to assess and improve technical performance by comparing their results with those obtained from worldwide ISTA membership.

Member laboratories can also become accredited by ISTA. Accredited laboratories have proven their technical competence in carrying out seed-testing in accordance with ISTA rules and operating an effective quality management system.

Working toward a more effective and efficient quality management system—one of the objectives of the Institute-wide RMQA (risk management quality assurance) activities—SHU has adopted ISTA's Guidelines for Developing Quality Documentation focusing on the needs of seed-testing laboratories. This document enabled SHU staff in the development, preparation, and control of quality manuals.
SHU is composed of seed pathologists, entomologists, seed and crop health inspectors, MTA (material transfer agreement) controllers, administrative support staff, data assistants, and research technicians.

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A. Operations/activities

Dry seed inspection

Seedlots are evaluated to ascertain that the physical quality of the seeds meets seed exchange standards. It entails visual examination of samples to ensure that seeds are clean and free of quarantine objects.

Routine seed health testing

Seed health testing determines microbial infection or contamination for quarantine purposes. It detects and identifies the cause of seed infection that affects the planting value of seedlots through: the blotter test for seedborne fungi; the sedimentation test for seedborne nematodes, and the macro test for Tilletia barclayana, the causal pathogen of kernel smut.




Seed treatment

Rice seeds are treated through physical and chemical processes, and with biological control agents to protect against damage caused by seedborne diseases and grain pests. No single treatment can eliminate all the important seedborne or seed-transmitted pests and pathogens. Standard treatments are: fumigation to control storage pests, hot-water treatment against nematodes, slurry treatment for seedborne fungi, and sodium hypochlorite seed washing to remove surface contamination by kernel smut.




Crop health inspection

A post-entry check or import control to ensure that seedborne pathogens not detected in laboratory tests will be detected, contained, and destroyed in the post-entry area. Inspection is conducted by experienced plant pathologists and field inspectors knowledgeable in crop diseases.

SHU maintains a 12-hectare post-entry quarantine area for the initial planting of imported rice seeds, the GRC (Genetic Resources Center) nursery area for wild rices, and the Phytotron for transgenic materials.

It oversees the movement, transfer, transplanting and disposal of incoming materials, GMOs, wild rices, NSBMs , and soil samples.

Quarantine clearance

SHU conducts phytosanitary certification and clearance of imported rice seeds following rules and requirements set by the Plant Quarantine Service.

A quarantine certificate and seal shall be issued for certified materials that fully comply with the import requirements of the destination country.

SMTA generation

To ensure compliance with IRRI intellectual property rights policies, SHU generates a Standard Material Transfer Agreement (SMTA) using the IRIS Workbook that is attached to every outgoing germplasm.

STANDARD MATERIAL TRANSFER AGREEMENT[1]

IRRI SMTA ID:	**SMTA2019-0001**
SHU request ID:	**ON19-001**

PREAMBLE

WHEREAS

The International Treaty on Plant Genetic Resources for Food and Agriculture (hereinafter referred to as "the **Treaty**") was adopted by the Thirty-first session of the FAO Conference on 3 November 2001 and entered into force on 29 June 2004;

The objectives of the **Treaty** are the conservation and sustainable use of **Plant Genetic Resources for Food and Agriculture** and the fair and equitable sharing of the benefits arising out of their use, in harmony with the Convention on Biological Diversity, for sustainable agriculture and food security;

The Contracting Parties to the **Treaty**, in the exercise of their sovereign rights over their **Plant Genetic Resources for Food and Agriculture**, have established a **Multilateral System** both to facilitate access to **Plant Genetic Resources for Food and Agriculture** and to share, in a fair and equitable way, the benefits arising from the utilization of these resources, on a complementary and mutually reinforcing basis;

Articles 4, 11, 12.4 and 12.5 of the **Treaty** are borne in mind;

The diversity of the legal systems of the Contracting Parties with respect to their national procedural rules governing access to courts and to arbitration, and the obligations arising from international and regional conventions applicable to these procedural rules, are recognized;

Article 12.4 of the **Treaty** provides that facilitated access under the **Multilateral System** shall be provided pursuant to a Standard Material Transfer Agreement, and the **Governing Body** of the **Treaty**, in its Resolution 1/2006 of 16 June 2006, adopted the Standard Material Transfer Agreement.

ARTICLE 1 — PARTIES TO THE AGREEMENT

1.1 The present Material Transfer Agreement (hereinafter referred to as "**this Agreement**") is the Standard Material Transfer Agreement referred to in Article 12.4 of the **Treaty**.

1.2 **This Agreement** is:

BETWEEN: the International Rice Research Institute, Los Baños, Laguna, Philippines (hereinafter referred to as "the **Provider**"),

AND: Texas A&M University, 370 Olsen Blvd, 2474 TAMU, 435 Heep Center, College Station, TX 77843-2474, United States (hereinafter referred to as "the **Recipient**").

1.3 The parties to **this Agreement** hereby agree as follows:

ARTICLE 2 — DEFINITIONS

In **this Agreement** the expressions set out below shall have the following meaning:

"***Available without restriction***": a **Product** is considered to be available without restriction to others for further research and breeding when it is available for research and breeding without any legal or contractual obligations, or technological restrictions, that would preclude using it in the manner specified in the **Treaty**.

"***Genetic material***" means any material of plant origin, including reproductive and vegetative propagating material, containing functional units of heredity.

"***Governing Body***" means the **Governing Body** of the **Treaty**.

"***Multilateral System***" means the **Multilateral System** established under Article 10.2 of the **Treaty**.

[1] In the event that the SMTA is used for the transfer of Plant Genetic Resources for Food and Agriculture other than those listed in Annex 1 of the Treaty:
The references in the SMTA to the "Multilateral System" shall not be interpreted as limiting the application of the SMTA to Annex 1 Plant Genetic Resources for Food and Agriculture, and in the case of Article 6.2 of the SMTA shall mean "under this Agreement";
The reference in Article 6.11 and Annex 3 of the SMTA to "Plant Genetic Resources for Food and Agriculture belonging to the same crop, as set out in Annex 1 to the Treaty" shall be taken to mean "Plant Genetic Resources for Food and Agriculture belonging to the same crop".

IRRI SMTA ID: SMTA2019-0001
SHU Request ID: ON19-001

Documentation

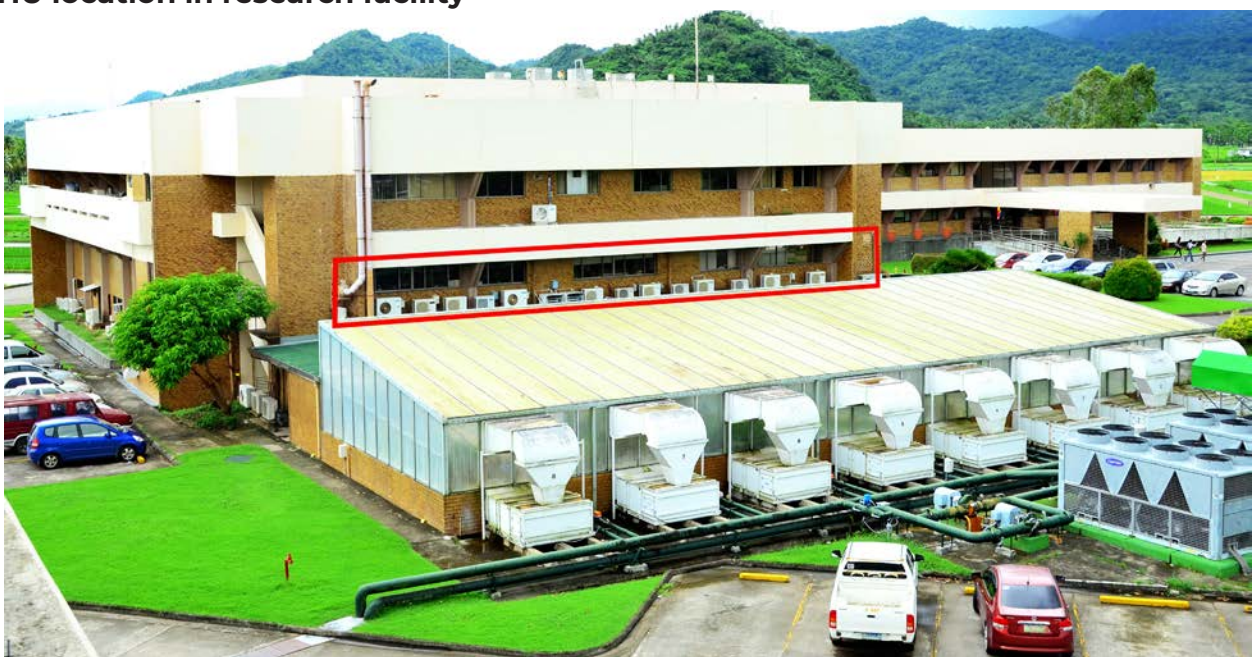
Hard copies of documents that accompany exported and imported rice, non-seed biological materials, and seeds other than rice are filed, digitized, and maintained in the SHU databases.

Packing and dispatch

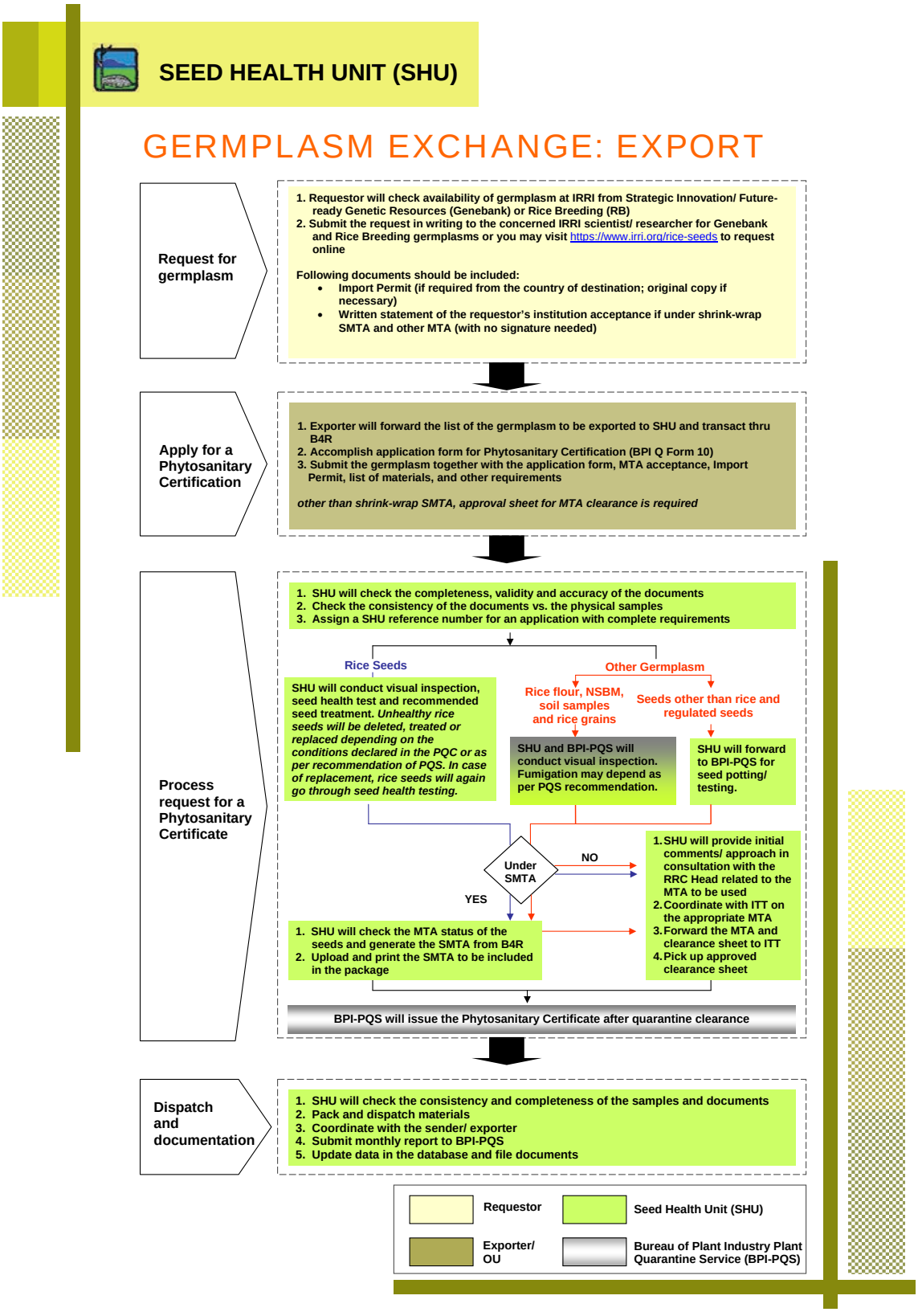
Packages are transported via post mail or shipping agencies. Recommended packing materials must be used and standard procedures followed to ensure that seeds reach intended clients in good condition, supported by complete transmittal documents.

SHU conducts training courses, workshops, and orientations for researchers, students, and farmers from other international and local institutions, agencies, and NGOs to properly inform clients on these.

SHU location in research facility

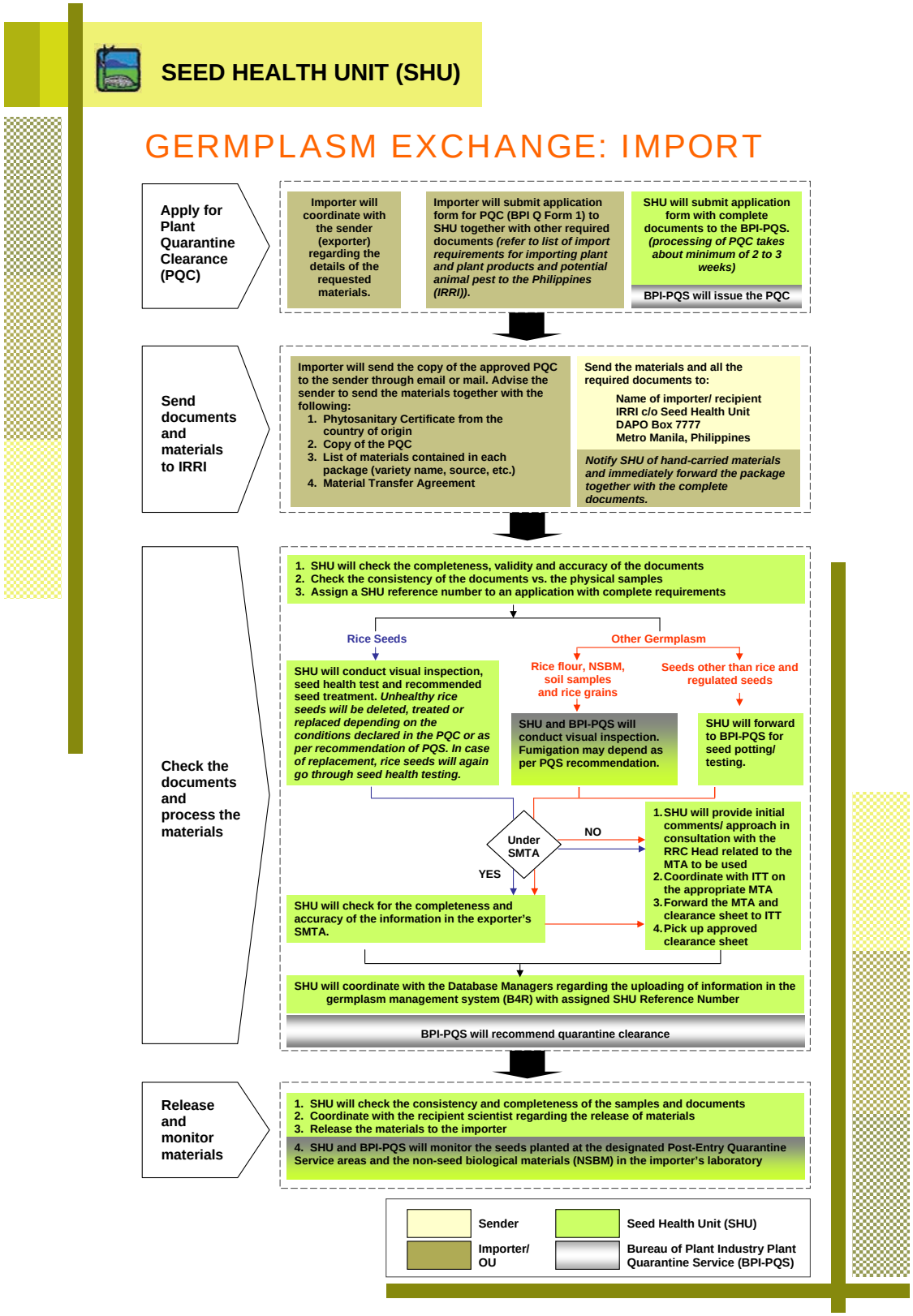


B. Flowchart for export



Approved by: Dr. Gururaj Guddappa Kulkarni, Head RRC & SHU, 15 April 2019

C. Flowchart for import



Approved by: Dr. Gururaj Guddappa Kulkarni, Head RRC & SHU, 15 April 2019

D. Export requirements for plant and plant products (seeds and NSBM) and potential animal pest from the Philippines (IRRI)

BPI-PQS	IRRI-SHU
1. Phytosanitary Certificate* • accomplished phytosanitary certification (BPI Q Form 10) application form 2. Copy of the Import Permit from country of destination (if required) * Domestic outgoing shipment does not need Phytosanitary Certificate	1. List of materials generated/ transacted via IRRI's germplasm management system (B4R) 2. Recipient/ authorized representative's (from the receiving institution) acceptance of the Standard Material Transfer Agreement (SMTA) by email if under shrink-wrap SMTA 3. Material Transfer Agreement or other appropriate MTA (materials for commercial/ laboratory analysis, under special/ collaborative project, and regulated material) 4. Approval sheet for MTA clearance signed by the platform and project leaders (for materials not covered by shrink-wrap SMTA) 5. Commercial invoice, materials safety data sheet, and certification (NSBM) 6. NFA Export Certification from the Philippine National Food Authority (for combined materials weighing more than 100kg total in a single shipment) 7. Approval from IRRI Transgenic Development Committee (TDC) (for regulated materials/ GMOs and potentially harmful exotic species)

E. Import requirements for plant and plant products (seeds and NSBM) and potential animal pest to the Philippines (IRRI)

BPI-PQS	IRRI-SHU
1. Plant Quarantine Clearance (PQC)/ Import Permit* • Accomplished PQC/ Import permit (BPI Q Form 1) application form • Letter of Intent addressed to OIC-Director (Dr. George Y. Culaste) of BPI-PQS with attention to Chief (Andres L. Alemania) of Plant Quarantine Service (PQS) • Brief outline of research experiment and methodology (purpose of importation, location of experiment/ activity**, method of experiment, start and end of experiment, and means of disposal) declaring that the materials are transgenic or non-transgenic • Location map of the final destination where the experiment of materials will be conducted • List of materials • Update on the status/ report of the previous importation (if applying for the same commodity from the same country of origin) 2. Phytosanitary Certificate from the country of origin (if applicable) 3. Copy of the approval letter from the National Committee on Biosafety of the Philippines (NCBP), Department of Science and Technology (DOST) for regulated materials (GMOs) and potentially harmful exotic species * local importation does not need PQC/ Import Permit ** if imported materials are to be planted outside the approved quarantine site, a request letter should be addressed to the BPI-PQS station manager for approval *IRRI processes Plant Quarantine Clearance (PQC)/ Import Permit internal application only*	1. List of materials 2. Material Transfer Agreement (SMTA or other appropriate MTA/s) from the provider 3. Approval sheet for MTA clearance signed by the platform and project leaders (for materials not covered by shrink-wrap SMTA) For regulated materials such as GMOs and potentially harmful exotic species (PHES)-transgenic materials, the following are required: • Endorsement from the Biosafety Officer on the approved NCBP-DOST letter • Approval from IRRI-Transgenic Development Committee (TDC)

BPI-DA Guidelines

Memorandum of Agreement between BPI and IRRI

MEMORANDUM OF AGREEMENT

between

The Bureau of Plant Industry

and

The International Rice Research Institute

KNOW ALL MEN BY THESE PRESENTS:

This Memorandum of Agreement (MOA) entered into by and between:

The BUREAU OF PLANT INDUSTRY, a government entity, with principal business address at San Andres St., Malate, Manila, represented in this MOA by its **Director, MR. JOEL S. RUDINAS**, hereinafter referred to as BPI;

-and-

The INTERNATIONAL RICE RESEARCH INSTITUTE, an international organization of a universal character under the Multilateral Executive Agreement dated 19 May 1995, with principal offices at Los Baños, Laguna, Philippines, represented in this MOA by its **Director General, DR. ROBERT S. ZEIGLER**, hereinafter referred to as IRRI.

W i t n e s s e t h :

WHEREAS, the BPI is the government entity authorized by law to establish seed health testing laboratories and post-entry quarantine sites for initial planting of imported rice grains, and to issue Plant Quarantine Clearance and Phytosanitary Certificates for rice seeds, non seed biological materials and soil samples, to meet the requirements of International Plant Protection Convention (IPPC) and scientific research programs;

WHEREAS, IRRI is an international non-profit and tax exempt organization engaged in research on rice and is in need of a seed health testing laboratory for incoming and outgoing rice seeds, non-seed biological materials, and soil samples as well as post-entry quarantine sites for initial planting of incoming rice seeds in its own area;

WHEREAS, the BPI has authorized IRRI under certain conditions to establish a seed health testing laboratory and post-entry quarantine sites in its own area and to conduct/undertake, under BPI's supervision, important quarantine services for incoming and outgoing seeds, non-seed biological materials, and soil samples;

NOW, THEREFORE, for and in consideration of the foregoing premises and upon mutual covenants herein provided, the parties have entered into this Memorandum of Agreement, the terms and conditions of which are as follows:

I. OBLIGATIONS OF IRRI

1.1 IRRI shall provide post-entry quarantine sites for initial planting of incoming rice seeds consisting of approximately FOUR (4) hectares for lowland and approximately TWO (2) hectares for upland and such additional areas as may be needed from time to time for this purpose subject to the approval of BPI.

1.2 IRRI shall surround the afore-mentioned sites with appropriate buffer vegetation consisting of trees and thick bushes and also plants which will serve as botanical pesticides.

1.3 IRRI shall observe quarantine requirements as follows:

a) For incoming seeds – ensure that the consignment has a Plant Quarantine Clearance & Phytosanitary Certificate from the country of origin, conduct inspection, seed pathological analyses, treatments, if applicable, post-entry monitoring/observation for quarantined pests/diseases, and conduct/supervise appropriate disposal measures;

b) For outgoing seeds – ensure that the sending party has an import permit of the country of destination whenever applicable and whenever necessary conduct inspection, seed pathological analyses, treatments, if applicable, crop monitoring and ensure compliance with other conditions and/or requirements specified in the import permit;

c) For exportation and importation of non seed biological materials including the soil samples -

c.1) IRRI shall secure all necessary documents and clearance from the IRRI Biosafety Committee, National Committee on Biosafety of the Philippines and other IRRI Offices when applicable;

c.2) IRRI shall ensure that all materials are accompanied by the necessary documents/permits and quarantine regulations are complied with in the distribution of non-seed biological materials and soil samples.

c.3) IRRI's Seed Health Unit together with a BPI-PEQS Officer, shall conduct inspection, monitor progress and movements of imported materials, as well as supervise disposal after the conduct of the experiment.

1.4 IRRI shall assign a utility vehicle of good running condition to BPI for the use of BPI-PEQS under this MOA. The cost of repairs and maintenance shall be borne by BPI.

1.5 For monitoring of incoming materials, IRRI guarantees access to the post-quarantine entry sites, the IRRI greenhouses and laboratories to BPI-PEQS Officers at any time.

1.6 IRRI shall submit Monthly Reports for incoming and outgoing rice seeds, non-seed biological materials, and soil samples to the BPI Plant Quarantine Service.

a) The Monthly Reports shall have a cut-off dates as of the 18th day of each month and shall include the variety and volume of seeds involved, seed health test data, pathogens, isolates, biological agents, and the countries of origin as well as Permit Number for imports and Phytosanitary Certificate for exports.

b) These Monthly Reports shall be submitted every 16th day of the month and shall include all the materials stated under Clause 1.3 and shall conform with the BPI report format.

1.7 Field release of rice pathogens isolates and biological control agents shall only be made upon the unanimous approval by the IRRI-BPI-UPLB Biosafety Committee members.

1.8 Field testing of wild rice and its progenies shall only be made upon the unanimous approval of IRRI and BPI.

1.9 Release of promising rice varieties shall not be made without the approval of the Chairman of the Philippines Seed Board.

1.10 IRRI shall not pay regulatory fees for incoming materials in as much as the facilities and manpower for processing are provided by IRRI.

II. OBLIGATIONS OF BPI

2.1 BPI shall assign one or more of its deputized Plant Quarantine Service Officers to exercise general supervision over the quarantine activities conducted at the Seed Health Unit laboratory and the post entry quarantine sites;

2.2 BPI shall deputize designated Seed Health Unit staff to conduct monitoring of non seed biological materials for domestic movements;

2.3 BPI shall provide the gasoline and oil and ensure proper maintenance of the utility vehicle assigned to BPI by IRRI.

III. EFFECTIVITY

This Agreement shall take effect immediately and may be terminated by either party upon written notice to the other party at least thirty (30) days prior to the effective date of such termination.

IN WITNESS WHEREOF, the parties through their authorized representatives have affixed their signatures, on the date and at the place indicated below:

BUREAU OF PLANT INDUSTRY (BPI)

JOEL S. RUDINAS
Director

Date: 18 March 2008

Place: Los Baños, Laguna

INTERNATIONAL RICE RESEARCH INSTITUTE (IRRI)

ROBERT S. ZEIGLER
Director General

Date: 18 March 2008

Place: Los Baños, Laguna

SIGNED IN THE PRESENCE OF:

ACKNOWLEDGMENT

REPUBLIC OF THE PHILIPPINES)
MUNICIPALITY OF LOS BAÑOS) S.S.
PROVINCE OF LAGUNA)

BEFORE ME, a Notary Public for and in the Province of Laguna, personally appeared Dr. Robert S. Zeigler, Director General of and representing the International Rice Research Institute (IRRI) with Passport No. 711462278 issued at US Embassy, Mexico City on 10 August 2004 and valid until 9 August 2014, and Mr. Joel S. Rudinas, Director of and representing the Bureau of Plant Industry, with Community Tax Certificate No. 20268453 issued at Manila on 18 January 2008, who are known to me and to me known to be the same persons who executed the foregoing instrument and they acknowledged to me that the same are their free voluntary act and deed and the free, voluntary act and deed of the entities they represent.

This instrument refers to the Memorandum of Agreement consisting of five (5) pages including this page where the Acknowledgement is written, signed by the parties and their instrumental witnesses on each and every page thereof.

WITNESS MY HAND AND SEAL this 18th day of March 2008 at Los Baños, Laguna, Philippines.

ILDEFONSO R. JIMENEZ
Notary Public
Until 31 December 2008
PTR No. 6473006
Issued at Sta. Cruz, Laguna
On 3 January 2008

Doc No. 89 ;
Page No. 75 ;
Book No. 2 ;
Series of 2008.

NFA Certification 2019

NATIONAL FOOD AUTHORITY
Quezon City

CERTIFICATION

This Certification is issued to the **International Rice Research Institute (IRRI)** for its importation and exportation of rice and/or rice seeds varieties for the Year 2019 subject to salient provisions of Memorandum of Agreement dated 14 December 2015 and rules and regulations of other concerned government agencies.

This Certification is issued on this 10th day of January 2019 and valid until December 31, 2019.

TOMAS R. ESCAREZ
Officer-In-Charge

Received by:
DR. Gururaj Kulkarni
Signature above printed name

IRRI COPY

Quality Manual

Seed Health Unit (SHU)
International Rice Research Institute

College, Los Baños, Laguna 4031 Philippines
Phone: + 63 (49) 536-2701 to 2705 local 2420 – Fax: +63 (49) 536-7995 – Web: http://www.irri.org

QUALITY MANUAL (QM)

This document is issued under the authority of

DR. GURURAJ GUDDAPPA KULKARNI
Senior Scientist, Head of Research & Regulatory Compliance
and Seed Health Unit

THIS IS A CONTROLLED DOCUMENT

Copy No. 1
Revision No. 2
Issued to: _____
Issued Date: _____

Reviewers	**Authorization/ Approval**
Name: Ma. Velinda H. Ilao, John Bethany M. Macasero, and Sheryl C. Catausan	Name: Dr. Gururaj Guddappa Kulkarni
Designation: Sub group leaders	Designation: Head of Research & Regulatory Compliance and Seed Health Unit
Date: May 20, 2019	Date: May 22, 2019

SIGNATURE PAGE

The signatures below document that signatories agree to concur with content of this Technical Procedures and are committed to provide the resources necessary to ensure proper quality operation of the SHU laboratory facility.

Dr. Gururaj Guddappa Kulkarni — May 22, 2019

Head of Research & Regulatory Compliance and Seed Health Unit — Date

Ma. Velinda H. Ilao — May 22, 2019

Risk Management and Quality Assurance Officer — Date

Reviewers	**Authorization/ Approval**
Name: Ma. Velinda H. Ilao, John Bethany M. Macasero, and Sheryl C. Catausan	Name: Dr. Gururaj Guddappa Kulkarni
Designation: Sub group leaders	Designation: Senior Scientist, Head of RRC and SHU
Date: May 20, 2019	Date: May 22, 2019

REVISION RECORD

Revision	Description of Change	Author/s	Effective Date
0	Initial release	Carlos C. Huelma	July 21, 2011
1	Revision	Patria G. Gonzales	August 1, 2017
2	Revision	Ma. Velinda H. Ilao John Bethany M. Macasero Sheryl C. Catausan	May 20, 2019
3			
4			
5			

Reviewers	Authorization/ Approval
Name: Ma. Velinda H. Ilao, John Bethany M. Macasero, and Sheryl C. Catausan	Name: Dr. Gururaj Guddappa Kulkarni
Designation: Sub group leaders	Designation: Head of Research & Regulatory Compliance and Seed Health Unit
Date: May 20, 2019	Date: May 22, 2019

A. FOREWORD

B. DOCUMENT AUTHORIZATION AND COPYRIGHT

B.1 Document authorization

B.2 Notice of Copyright

General Information

Seed Health Unit (SHU) was established by the International Rice Research Institute (IRRI) to ensure that exotic pests and diseases are not inadvertently introduced from one area to another in line with the institute's research activities wherein germplasm are sent/ received. Under a Memorandum of Agreement (MOA) with the Philippine Bureau of Plant Industry (BPI), SHU is authorized to conduct/ undertake important services for incoming and outgoing rice seeds, non-seed biological materials, water and soil samples in terms of post entry clearance and phytosanitary certification.

On January 7, 2002, SHU has been designated as the gatekeeper or sole entry and exit point for all rice seeds going to and from IRRI and on August 15, 2005, SHU has been designated also as the sole entry and exit point for all non-seed biological materials and soil samples. In line with this, all incoming and outgoing materials must pass through SHU for compliance to quarantine regulations and intellectual property rights policy. As the research of IRRI scientists evolved, the materials handled by SHU for processing also include seeds other than rice and water samples. On March 25, 2015, IRRI and the Department of Agriculture - Bureau of Animal Industry (DA-BAI) entered into an agreement wherein IRRI shall comply with all the sanitary, phytosanitary, and biosafety requirements, permits, and authorizations for the transboundary movement of animals and its derivatives.

To comply with quarantine regulations, SHU processes incoming/ outgoing rice seeds for post entry clearance and phytosanitary certification. The process includes 1) Dry Seed Inspection (DSI) to remove quarantine objects; 2) Routine Seed Health Testing (RSHT) which includes Blotter Test for the detection of seedborne fungi; Sedimentation Test (ST) or Modified Baermann Funnel Method (MBFM) for the detection of seedborne nematodes, Macro Test (MT) for the detection of *Tilletia barclayana,* and Seed Wash Assay Test Using Semi Selective Media (SWA) for the detection of seedborne bacteria; 3) Field/ Greenhouse/ Screenhouse inspection for newly introduced germplasm, wild rice varieties, and hybrid varieties conducted at three/four stages of crop growth per season; and 4) Seed treatment and packaging. Other activities include 1) Generation of appropriate Material Transfer Agreement (MTA) which includes acceptance, verification, and issuance; 2) Database Management which

includes encoding of test results generated from routine seed health testing, dry seed inspection, field inspection, and treatments conducted and documentation of accompanying papers (Import Permit, Phytosanitary Certificate, list of materials, MTA/s, acceptance letter, and approval sheet) and papers related to dispatch (airway bills, commercial invoice, cover letter, etc), and Assistance to Plant Quarantine Service Officer (PQSO) and Biosafety Officer (BO) during crop health inspection, movement, and disposals of Genetically Modified Organisms/Transgenic Materials (GMOs/ TMs). In addition, SHU facilitates and documents the processing of incoming and outgoing non-seed biological materials (NSBMs), soil/ water samples, seeds other than rice, small animals and its derivatives, and GMOs.

1. SCOPE AND DOCUMENTATION STRUCTURE

1.1 Scope

The scope of this manual is to outline the general policies and procedures for staff, customers, accreditation bodies and/ or legal bodies, and to provide an overview of the SHU laboratory's quality system as gatekeeper of the IRRI's rice germplasm exchange. The SHU aims to:

1. Assure that IRRI sends and receives quality rice seeds following quarantine regulations of the Philippines and other countries wherein rice seeds are exported.
2. Realize genetic potential in crop improvement and production.
3. Facilitate the processing of incoming and outgoing rice seeds and non-seed biological materials, soil/ water samples, seeds other than rice, and small animals and its derivatives for post entry clearance and phytosanitary certification.

1.2 Documentation structure

Documents which are part of the Laboratory's Management System have been documented on the basis of the complexity of the tasks described, the methods used and the skills and training required by staff involved in carrying out the activity. Documents will refer to additional documents that provide more detail about the activity where appropriate. The following documents represent the Laboratory's Management System:

Policy manual – provides an overview of the Laboratory's business. It defines its Policy, refers to the business objectives and states the laboratory's commitment to quality in respect of the International

Seed Testing Association (ISTA) and national standard. This document is used to introduce potential stakeholders (customers, staff- Internal and external, suppliers) to the Laboratory's work.

Non-technical procedures – are divided into two types:

- System non-technical procedures are those which describe activities common to all departments e.g. purchasing, document control, internal auditing.
- Department non-technical procedures describe activities specific to a department or where, due to geographical limitations, there are site-specific variations for activities described in System non-technical procedures.

Technical Procedures – describe testing activities conducted by the Analytical laboratories. The format for Technical Procedures is based on the National Standard: Test methods – Guide to the format, style, and content.

Standard Operating Procedures (SOPs) – documents activities such as steps, procedures, start-up, shutdown, calibration (as appropriate) and troubleshooting for specialized equipments.

References – include standards specifications and acceptance criteria that provide additional information to assist understanding and completion of activities described in non-technical, technical or standard operating procedures.

Forms – are used to record information as evidence that activities have been completed as described within procedures. Completed forms are retained as records.

2. REFERENCES

ISTA Laboratory Accreditation Standard
ISTA International Rules for Seed Testing (2005) with amendment 2007.
Acc-G-01-ISTA Accreditation Guidelines
Acc-G-03-Q-Documentation Guide-V1.1 inc. examples.doc: Guidelines for developing quality documentation.
PT-G-01-ISTA Proficiency Test Programme.
Philippine National Standard PNS ISO/IEC 17025: 2005; ICS 03.120.20: General requirements for the competence of testing and calibration laboratories.

Philippine National Standard PNS ISO 9004:2000 (ISO published 2000) ICS 03.120.10: Quality management systems – Guidelines for performance improvements.

Philippine National Standard PNS ISO 9000:2005 (ISO published 2005) ICS 03.120.10; 01.040.03: Quality management systems – Fundamentals and vocabulary.

Philippine National Standard PNS ISO 19011:2002 (ISO published 2002) ICS 03.120.10; 13.020.10: Guidelines for quality and /or environmental management systems auditing.

Philippine National Standard PNS ISO 9001:2000 (ISO published 2000) ICS 03.120.10: Quality management system – Requirements.

IRRI (International Rice Research Institute). 1994. A Manual of Rice Seed Health Testing ed. Mew TW and Misra JK.

Rao NK, Hanson J. Dulloo ME, Ghosh K, Nowell D and Larinde M. 2006. Manual of Seed Handling in Genebanks. Handbooks for Genebanks No. 8. Biodiversity International, Rome, Italy.

Current copies of these references are held by SHU Risk Management and Quality Assurance Officer.

3. DEFINITIONS

Accreditation: Formal recognition of technical competence to carry out specific tasks.

Accreditation body: Body that conducts and administers a laboratory accreditation system and grants accreditation (ISTA).

Auditors (Assessors): persons appointed by or recognized by the Association to carry out audits.

Audit: Systematic and documented process for obtaining audit evidence and evaluating it objectively to determine the extent to which audit criteria are fulfilled.

Certificate: Document that presents test results and other information relevant to a test.

Documents: Policy statements, procedures, specifications, calibration tables, charts, books, notices, memoranda, work instructions, drawings, plans, etc. Information may be on different media such as hard copy or electronic, digital, analogue, photographic or hand written.

ISTA Rules: International Rules for Seed Testing, published by the ISTA; includes standardized definitions, methods and principles to be used in evaluating seed for transactions in international trade.

Laboratory: entity performing seed sampling and/ or testing.

Method: Generic description of a logical sequence of operations used in a particular test, specifying the attribute to be examined, the species, the measuring principles used as well as the possible range, dimension and unit of results.

Proficiency testing: Methods of checking laboratory testing performance by means of inter-laboratory tests, i.e. the ISTA Proficiency Test Program

Quality manual: Collection of documents which describes quality policy, quality systems and quality practices in the laboratory.

Reference materials: materials which provide essential traceability and are used to demonstrate the accuracy of results, to calibrate equipment, to monitor laboratory performance, to validate methods, and to enable comparison of methods by use as transfer standards.

Sampler: a person trained and experienced in seed sampling who is authorized by a laboratory to obtain a sample of suitable size.

SI units of measurement: The SI is founded on seven SI base units for seven base quantities assumed to be mutually independent, e.g. length (m), mass (kg).

Validation: The confirmation of conformity with specified requirements for an intended use.

4. QUALITY ASSURANCE SYSTEM

4.1 Quality Policy

4.1.1 The seed health testing laboratory's standard of service will be in accordance with the requirements of the ISTA Accreditation Standard (based on ISO/IEC 17025) and the current version of the ISTA rules.

4.1.2 The intentions and objectives of SHU

SHU, as the Single Gateway (sole entry and exit points) for all incoming and outgoing seeds and non-seed biological materials to and from the IRRI, aims to do the following:

a. To ensure that the seed health status of seeds and non-seed biological materials coming into IRRI (IMPORTED) meets Philippine plant quarantine regulations and standards before releasing to IRRI scientists (POST ENTRY CLEARANCE);
b. To ensure that the seed health status of seeds and non-seed biological materials sent from IRRI (EXPORTED) meets plant quarantine standards and import regulations of recipient countries (PHYTOSANITARY CERTIFICATION); and
c. To ensure that the intellectual property rights established by IRRI in line with its agreement with the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) are complied with in all incoming and outgoing materials to and from IRRI.

4.1.3 The SHU Manager ensures Quality Assurance on all operations. In line with this, all staff especially newly hires are oriented regarding the Quality Policy to ensure awareness. Evaluation of staff performance includes compliance to set standards and parameters.

4.1.4 SHU aims to be at par with other seed health testing units both locally and internationally in terms of seed quality testing services provider for rice to the international rice seed germplasm exchange.

To be focused on our clients, understand their needs and desire and deliver services that:

- Meet or exceed their expectations
- Enhance their preferred future research activities

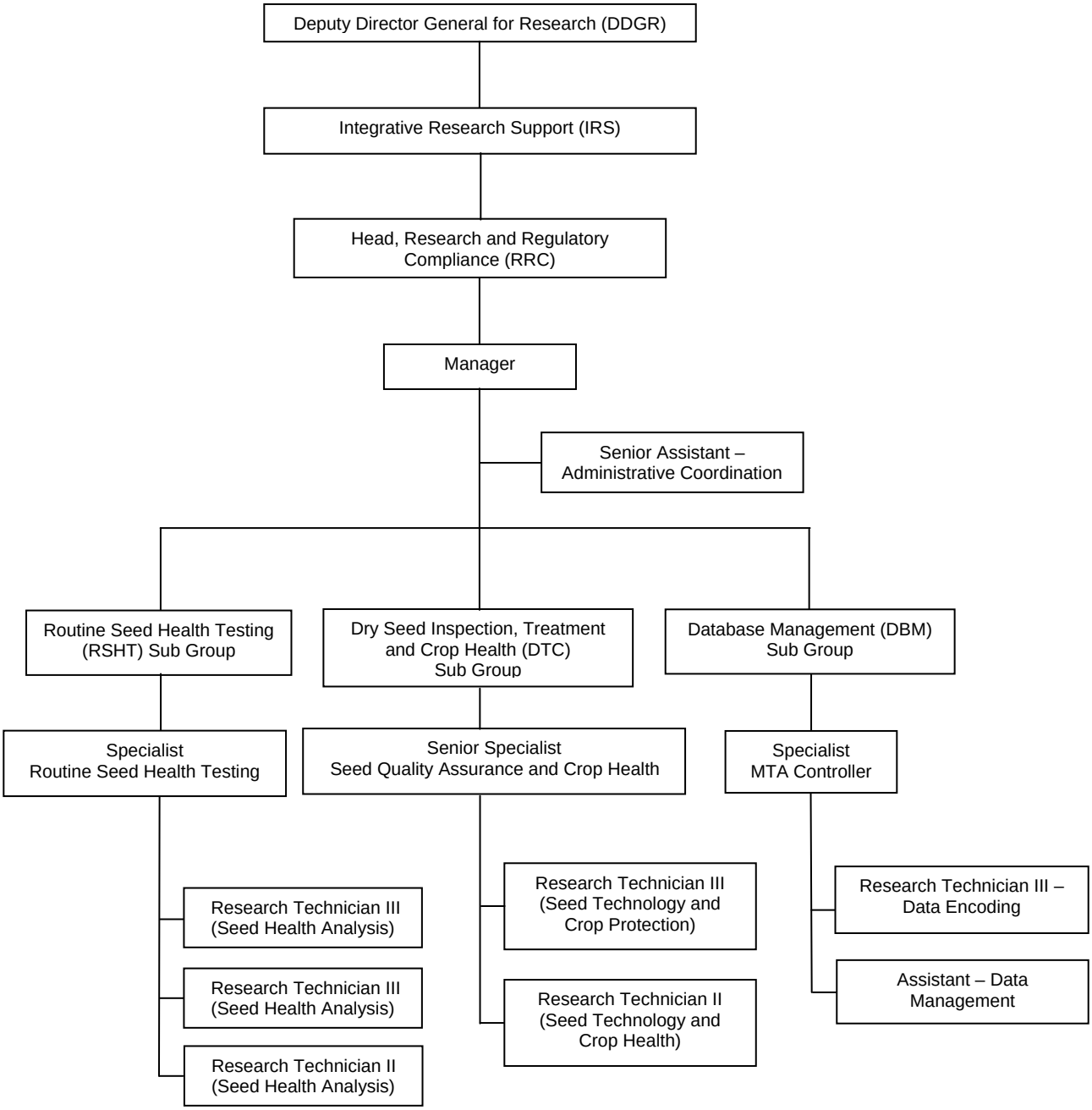
- Facilitate access and distribution of materials to their domestic and international counterparts and partners

To maintain high levels of integrity and independence

To strive for continuous quality improvement

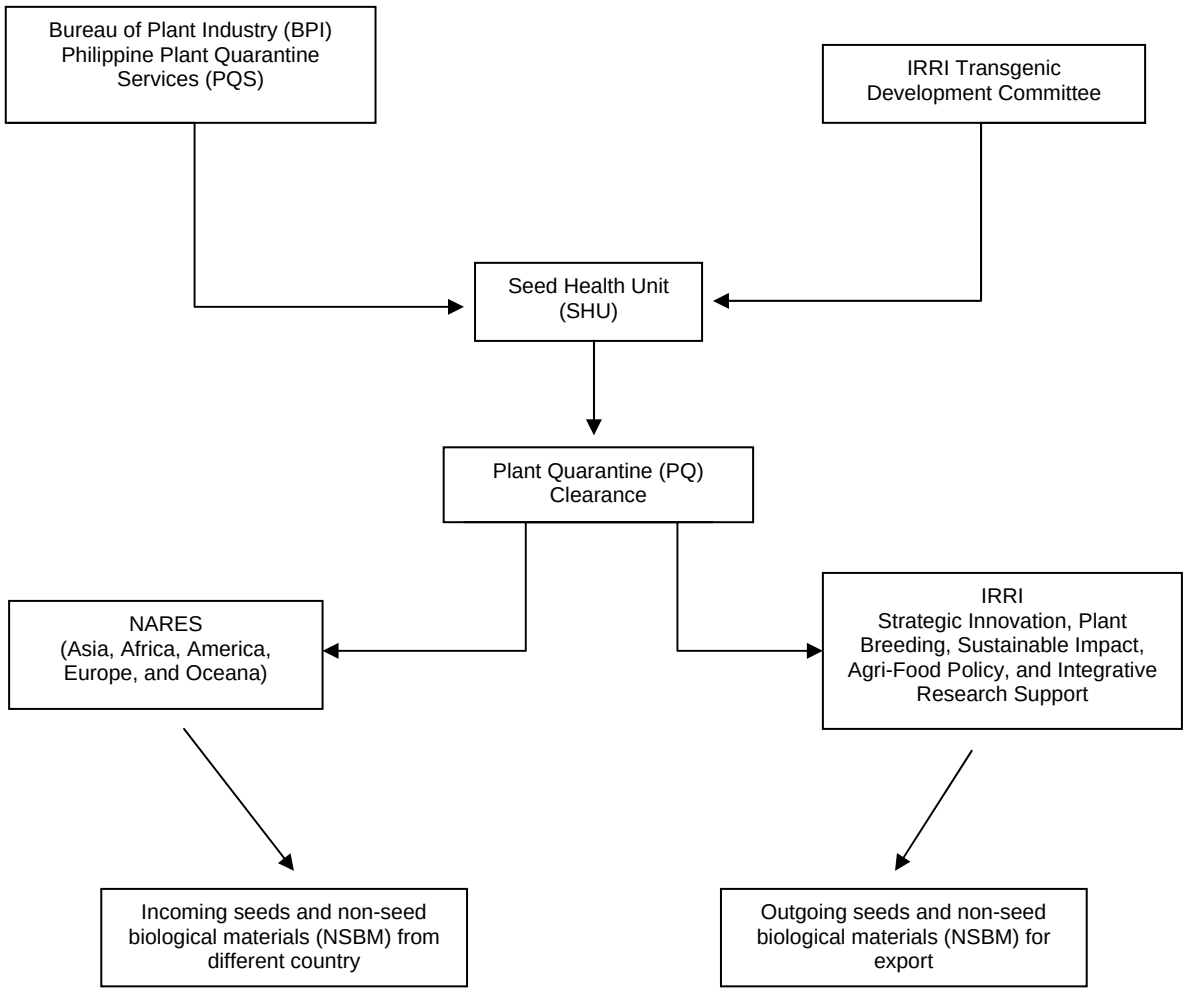
4.2 Organization

4.2.1 Structure and Organization of the SHU



4.2.2 Organization relationships with official and external agencies

SHU coordinates with the BPI-PQS of the Philippine Government regarding plant quarantine regulations. In addition, SHU assists BPI-PQS and the institute Biosafety Officer regarding GMO rules and regulations.



4.3 Approved signatories and persons registered by the Director of Bureau of Plant Industry as "Post-Entry Quarantine Officer."

NAME OF PQS OFFICER	DESIGNATION
Amor Dimayacyac	OIC-Station Manager
Geronima Eusebio	Supervising Agriculturist
Ferlavee Apacionado	Senior Agriculturist
Ray-an Cunanan	Senior Agriculturist
Arnel Banasihan	Senior Agriculturist
Gladys Escobar	Agriculturist II
Aldwin Mendoza	Agriculturist II

4.4 Technical Delivery Standards

4.5 Contracts with Clients and Service Delivery Standards

4.5.1 The Laboratory's clients are predominantly plant breeders, scientists, scholars, researchers, research institutions, farmers, and NARES involved in seed production and scientific endeavors. The Laboratory charges no fees for its services. It operates without any Government subsidies.

4.5.2 In accordance to MOA between IRRI and BPI, Post Entry Quarantine Station (PEQS) will send PQS Officers to do the Post-entry clearance and Phytosanitary Certification of seeds, non-seed biological materials, and other materials.

4.5.3 The standards of service aim to meet IRRI's Visions and Missions, the needs of clients, National Biosafety requirements, IRRIs Biosafety Standards and the applicable sections of the ISTA Rules and other seed schemes.

4.5.4 The Laboratory establishes and maintains procedures for the review of new testing work, client contracts and other requests for testing services, whether such contracts or requests originate from external clients or from other departments or divisions within the laboratory's own organization.

4.5.5 Each contract or request is previewed by the Laboratory to ensure that:
(a) The client's requirements are adequately defined, documented and understood.
(b) The laboratory has the capability to meet the client's requirements.
(c) The final testing contract or request accepted by the laboratory agrees with the original version that was reviewed as in a) and b) above.

4.5.6 Each contract is reviewed with each client at least annually.

4.5.7 Records of contract previews and reviews are maintained on file.

4.5.8 The laboratory ensures that the confidentiality of client information and results is protected, as appropriate. Policies are in place to control the release and/ or publication of information.

4.5.9 All contracts for seed testing and related services are signed by Manager.

4.6 Staff duties and responsibilities pertaining to quality

4.6.1 Manager (Dr. Gururaj Guddappa Kulkarni) - manage the day-to-day operation of SHU including supervision of all staff, quality assurance of routine seed health tests and perform management tasks; Acts as Liaison Officer between BPI Plant Quarantine Service regarding plant quarantine protocols and regulations.

4.6.2 Senior Specialist/ Seed Quality Assurance and Crop Health (John Bethany M. Macasero) - supervise, coordinate, and facilitate purity testing, dry seed inspection, seed treatment, packing, seed request releases, and delivery of seed packages to mailroom/shipping office; in charge of crop health monitoring of rice plants in breeder's multiplication plots; assists PQS Officer and BSO in monitoring of crop health, movements, and disposal of introduced materials, wild rice, and GMOs, ensures the prevention of spread of seedborne diseases, insect pests and regulated materials within and outside IRRI, and inspection of field/ screenhouse/ greenhouse before and after conduct of experiments for introduced materials, wild rice and GMOs.

4.6.3 Specialist/ MTA Controller (Ma. Velinda H. Ilao) – ensures that all incoming and outgoing germplasm are accompanied by the complete required documents which includes review, verification, and generation of appropriate Material Transfer Agreement (MTA); overall management of SHU databases, generation of reports, and provide assistance in processing of incoming and outgoing NSBM, SOR, and soil samples.

4.6.4 Specialist/ Routine Seed Health Testing (Sheryl C. Catausan) – lead/ supervise and coordinate the operational activities of the Routine Seed Health Testing sub-group's routine and advance seed health testing activities including seed health status assessment for all incoming and outgoing seeds (i.e. INGER Nursery seeds and GRC seeds), detection of different seed borne fungi, nematode, and bacterial testing ensuring compliance to national and international regulations, legal requirements, Memorandum of Agreement (MOA) and International Seed Testing Association (ISTA) standards.

4.6.5 Senior Assistant/ Administrative Coordination (Monina E. Magat) – liaise with both external and internal stakeholders and provide timely and smooth flow of information and appropriate communication within groups; facilitate and coordinate filing of application for Sanitary and Phytosanitary Clearance to the BPI-PEQS and preparation of Phytosanitary Certificate, commercial invoice, waybills, etc; update dispatch details of export requests in the database, inventory of office and laboratory supplies, and on line tracking of outgoing seed shipments.

4.6.6 Research Technician III/ Seed Health Analysis (Isabel L. Penales) - conduct routine seed health tests and other related activities for all incoming and outgoing rice seeds for phytosanitary certification/post entry clearance, conduct advance seed health testing for GRC accessions and genetic stocks, INGER Nursery sets, and rice seeds under MET and ERA projects ; lead person for blotter test evaluation, lead person for bacterial isolation and purification; in charge of evaluation, recording of results, and preparation of inoculum.

4.6.7 Research Technician III/ Seed Health Analysis (Florencio I. Lapiz) - conduct routine seed health tests and other related activities for all incoming and outgoing rice seeds for

phytosanitary certification/post entry clearance, conduct advance seed health testing for GRC accessions and genetic stocks, INGER Nursery sets, and rice seeds under MET and ERA projects; lead person for Macro Test and preparation of agar media, reagents, and materials (rice seeds for isolation and test plants for pathogenicity test) used for bacterial testing.

4.6.8 Research Technician III/ Seed Technology and Crop Protection (Aurelio A. Gamba) – receives and further records physical samples for phytosanitary certification/post entry clearance, conducts dry seed inspection, seed treatment, packaging of certified/cleared materials, and delivering packages for dispatch to the mailroom /shipping office.

4.6.9 Research Technician III/ Data Encoding (Salome P. Bulaquiña) - review, proofread and validate outgoing germplasm exchange documents ensuring compliance to appropriate import and export permits; proofread and check incoming germplasm exchange documents, ensuring list of materials are recorded in the database/ repository in preparation for the routine seed health testing and quarantine clearance; ensure complete and accurate data collection, compilation and encoding of the SHU's RSHT results on designated database; check and validate data/ files uploaded by OU key persons in the system, ensuring complete information are provided;

4.6.10 Research Technician II/ Seed Technology and Crop Health (Jay A. Angeles) – conducts crop health inspection, assists in seed treatment, maintains crop health inspection data, records of NSBM monitoring and seed treatment, and assists in delivering packages to the mailroom/shipping office.

4.6.11 Research Technician II/ Seed Health Analysis (Everlyn A. Amparado) – conduct of routine seed health test and other related activities for incoming and outgoing rice for phytosanitary certification/post entry clearance; conduct of advance seed health testing for GRC accessions and genetic stocks, INGER Nursery Sets, and rice seeds under MET and ERA projects; lead person for Blotter Test Seeding and Test for Nematodes (TFN), lead person for PCR-based bacterial testing; and in-charge of washing of materials used for routine seed health tests and bacterial testing.

4.6.12 Research Technician II/ Assistant - Data Management (Joel C. Dumlao) – ensure proper encoding and documentation of data related to the Seed Health Unit's incoming and outgoing seed requests, crop health monitoring and RSHT; encode and generate reports (monthly, quarterly and annual) using SHU specific databases (i.e. SHU Google Docs, workbooks, Access and Excel) ensuring completeness and accuracy for each component; assist in generation of monthly report and MTA; maintain all SHU data in soft and hard copies; maintain backups to the network drive and external drives; maintain database on inventory of supplies and equipment and photos.

4.7 Quality Control Procedures

Technical and non-technical procedures are documented and shared to clients. Hard copies are placed in folders and available to SHU staff for reference.

4.8 Participation in the ISTA Referee Testing Programs

4.9 Dealing with client feedback and complaints

Clients are requested to fill out a form regarding their feedback. Outgoing seed shipments are accompanied by a feedback form that should be returned to SHU for documentation. Feedbacks/complaints are immediately resolved and clients are informed as to the resolution of their feedback/complaints.

4.10 Fixing problems/systems improvement

4.10.1 The Manager is responsible for ensuring systems improvement procedures are operating.

4.10.2 When non-conforming services are identified, the cause of the discrepancy is investigated, corrective action taken and preventative measures initiated.

4.10.3 When corrective action is necessary, controls ensure that the specified corrective action has been undertaken and is effective.

4.10.4 A system is in place to ensure that any changes to existing procedures are recorded.

4.10.5 All testing activities and the associated objective evidence of service conformance are regularly analyzed to ensure that potential causes of non-conforming services are detected and eliminated.

4.10.6 In order to detect and eliminate potential causes of non-conforming services, a continual analysis of service reports and client complaints is undertaken.

4.10.7 Any suggestions formulated for quality improvement are received by the Manager, who acknowledge the receipt and provide feedback 4.11.6

4.11 Internal Review/Audit

Internal review is conducted annually to identify opportunities for improvement of systems and practices. The Quality Assurance Officer sets out the internal review program and ensures provision of adequate resources and trained personnel for the purpose. Such personnel are independent of those having responsibility for the work performed.
Refer to: Internal Review Procedures STSM18 or NTP/QS/004

4.12 Management Review

A Management Review of the quality system is undertaken by the laboratory executive management annually to ensure its continuing suitability and effectiveness of the laboratory quality management program. Furthermore, to introduce necessary changes or improvements in the laboratory's quality system and seed testing activities. A record of reviews is maintained for at least 5 years.
Refer to: Management Review Procedures STSM19

4.13 Security of Premises and Information

The premises and offices are protected by alarms and fire sprinkler systems. All areas are locked when staffs are not on duty. Visitors are notified and directed to the Administration Office for all enquiries.

5. DOCUMENT CONTROL

The following is the hierarchy of the Quality Assurance Documents established for Seed Health Unit:

- Quality Manual
- Procedures and work instructions
- Reference Manuals
- Data and Records

5.1 Document approval and issue

5.1.1 The Seed Health Unit acknowledges, as applicable, the acceptance of customer requirements and standards.

5.1.2 The issue, control and recall of all Quality System Procedures documents shall be under the overall control of the Quality Assurance Officer.

5.1.3 Delivery specifications and control documents are prepared and issued, as required by contract or as required to meet the clients' service schedule. All procedural and reference documents are reviewed for adequacy prior to use.

5.1.4 The Quality Assurance Officer establishes and maintains procedures for ensuring that the current approved issue of procedures reference manuals and work instructions are available to all locations where required for the effective functioning of the quality system.

5.1.5 All obsolete documents are destroyed except for any that are required for archives.

5.1.6 The Manager reviews documents and their issue to operating locations.

5.1.7 Where required by the contract, documents are made available for approval by the client.

5.2 Document Changes and Modifications

5.2.1 All changes to documents are implemented in writing and processed in a manner which ensures prompt action at the specified locations. Records are maintained of changes as they are made. Documents are revised and re-issued, as a new edition, after a practical number of changes have been issued.

5.2.2 Where practicable, the nature of any changes is identified in the document. A master list is established on File1/1/2 to identify the current revision of documents in order to preclude the use of non-applicable documents.

5.2.3 All obsolete documents are removed and recalled from all points of issue and activity locations.

5.2.4 Requests for changes to client controlled documents are prepared and submitted as prescribed by the client.

5.3 Retention of documentation

5.3.1 When required for traceability purposes a copy of each superseded document established in accordance with the requirements of the SHU quality system is retained.

6. STAFF

6.1 Conditions of employment

Please refer to HR Manual for recruitment/hiring

6.2 Staff training and competencies

Staffs are given appropriate induction and in-service training, either through standard in-house training programs or by training schemes operated by recognized outside organizations.

Documented records of staff competence are retained and at regular intervals through review, examination or other means, skills needs are assessed in relation to changing client requirements and new technology to determine additional training and development requirements.

7. HUMAN AND ENVIRONMENTAL SAFETY

7.1 Human Health and Safety

Refer to: Seed Testing Health and Safety procedures STSM9

7.2 Handling Chemically Treated Seed

Staffs use procedures which are designed to minimize human and environmental hazards.

7.3 Handling Chemicals and other Biohazards

Appropriate procedures are followed when handling chemicals and other human and environmentally hazardous substances.

8. SUPPLIER APPROVAL AND PURCHASING

8.1 Stores purchasing

The Seed Health Unit follows the current policies and procedures of IRRIs Procurement and Materials Management Services (PMMS).

8.2 Assessment of Suppliers

All sources of supply are evaluated and approved by the Manager and Technical Officer prior to placing them on an acceptable supplier's list of PMMS. The list is maintained by PMMS for reference by all staff.

Evaluation and approval of suppliers is determined by all or any of the following methods, depending on the nature and significance of the material or services to be supplied:

(a) Assessment of the supplier's presentation to verify quality, production, delivery and price.
(b) Use of third party approval services as recognized and accredited by Physical Plant Services (PPS).
(c) Continual verification by in process or incoming inspection.

8.3 Purchaser Supplied Services

9. SAMPLING, TESTING, AND MEASURING EQUIPMENT

9.1 Provision of equipment

9.2 Defective equipment

Defective equipment are referred to the IRRI Physical Plant Services (PPS) for assessment and repair (if applicable). Otherwise, equipment beyond repair (upon the recommendation of PPS) are disposed following IRRI's implementing rules and guidelines for disposal.

9.3 Monitoring and maintenance of equipment

Equipment are monitored and maintained in terms of cleanliness and workability by designated SHU staff. Defects are immediately reported to the Manager for appropriate action.

9.4 Equipment records

10. CALIBRATION OF EQUIPMENT AND TESTING MATERIALS

10.1 General Aspects

Procedures have been developed for calibrating, measuring and testing equipment and controls used in the delivery of the SHU Seed Health Testing service. A list of the equipment to be calibrated and the procedures is maintained by the Team Leader of the Section concerned.

10.2 Calibration Records

10.3 Calibration standard

All sampling, measuring and seed testing equipment is calibrated against a primary standard which is traceable to national and international standard of measurement before being placed into service and regularly afterwards. Calibration and servicing of equipment are performed according to an established program. A log book is kept to record the results of each calibration, service and repair.

10.4 Calibration frequency

10.5 Following Manufacturer's Instructions

10.6 Calibration of new equipment

Calibration of new equipment is done by the supplier as part of the contract with the supplier,

10.7 Current Status of Equipment

11. METHODS AND PROCEDURES

11.1 General

Methods and procedures for sampling and testing are in accordance with the International Rules for Seed Testing published by ISTA. These may be varied to meet the special needs of clients where ISTA certificate are not issued.

11.2 Seed Lot Identification and Sample Identification

11.2.1 Allocation of sample identification numbers

11.2.2 Identification of samples for test

11.3 Seed Sampling

11.3.1 Sampling of Officially Identified Seed lots

Sampling for Phytosanitary Certification is carried out by samplers accredited by the National Seed Testing Laboratory. Samplers operate according to the Seed Sampling procedures manual. Samples are required to show their sampler number on each officially drawn sample packet.

11.3.2 Training of samplers

11.3.3 Monitoring the Accuracy of Seed Sampling

Seed Processors and Licensed seed samplers are audited in store at least once per year (times per year).

11.4 Administration Section Procedures

11.5 Seed Testing Laboratory Procedures

11.5.1 General Aspects

Test methods and procedures are based on the current International Rules for Seed Testing. Additional methods and standards are based on the collective or specific needs of IRRIs clients and international markets and these are consolidated as Technical and Standard operating procedures. Other reference documents and manuals may be used as needs arise.

Indexing of Testing Reference documentation assessable by staff and held in the Seed Health Unit laboratory. These are as follows: Other Reference Texts

Reference Books – Seed identification Books

11.6 Quality Control Checks

11.6.1 Dividers

Gamet and Soil Dividers are checked once a year, using the ISTA suggested method.

11.6.2 Grinders

11.6.3 Purity – two half-working samples

11.6.4 Comparing analyses in the Laboratory

At a suitable (non busy) time each year, a number of completed samples are retrieved from storage, given a new identity and re-tested.

11.7 Paper substrates

11.7.1 Toxicity

11.7.2 PH value

11.8 Seed Pathology Laboratory Procedures

12. INFORMATION, TEST REPORTS AND CERTIFICATES

12.1 General Aspects

12.2 ISTA International Analysis Certificates

12.3 Expressions of professional opinion

12.4 Validity of Test Results

12.5 Computer System

Overall Computer System is managed and maintained by IRRI's Information Technology Services (ITS) following implementing rules and guidelines as to the use of computers

13. RECORDS

13.1 General Aspects

13.1.1 Legible records are generated and maintained (filed accordingly, scanned, uploaded to the designated database) to support and substantiate all quality-related activities in the Seed Health Unit laboratory. These records provide evidence of the quality of the item or service and testify directly or indirectly that the service is in compliance with contractual requirements

13.1.2 Records are maintained for all applicable activities such as:

Post Entry Clearance/ Phytosanitary Certification
Includes Import Permits, Phytosanitary Certificates, List of Materials

Routine Seed Health Data
Includes Blotter Test, Sedimentation Test, Macro Test, Dry Seed Inspection

Seed Treatment
Crop Health Inspection
MTA Generation
Dispatch

13.1.3 Accumulated records are reviewed and evaluated by the Manager for the purpose of improving system, records etc.

13.1.4 Quality records include analyses of data resulting from verification activities. Associated record demonstrates the use of these data for any corrective actions.

13.2 Retention and disposal of physical records

Since all documents related to import and export requests such as (Import Permits, Phytosanitary Certificates, MTAs) are being filed electronically and routine seed health testing results are encoded, physical records (bound) are to be retained within 10 years after which disposal shall follow.

IRRI SHU Operational Map

IRRI SHU OPERATIONAL MAP

Regulatory Compliance (Post Entry Clearance and Phytosanitary Certification)

- Import permit and pre-shipment requirements
- Phytosanitary certificate and additional declaration
- Biosafety proposal and approval
- Post Entry approval and monitoring

- Post Entry Clearance → TP-DBM-106, 109, 112
- Phytosanitary Certification → TP-DBM-104, 105, 107, 108, 110
- Biosafety approval → TP-DBM-110

Intellectual Property (IP) Compliance

- Material Transfer Agreement (MTA) (Treaty SMTA and other IRRI-developed MTAs)
- MTA generation
- Clearance and approval

- Clearance and Approval → TP-DBM-101,102,103, 107,108
- MTA Generation → TP-DBM-111
- MTA → TP-DBM-102, 103, 107, 108

Information Management System and Services

- Breeding 4 Rice (B4R) transaction
- Data documentation (electronic and hard copies)
- Shipment status/ updates
- Report generation
- RSHT results

- Report generation → TP-DBM-115
- B4R transaction → TP-DBM-114
- Documentation → TP-DBM-101,102,103,104, 105,106,107, 108,109,110,116

Germplasm Health Testing

- Routine Seed Health Testing/ Diagnostics
- Bacterial testing
- Proper waste management

- Routine Seed Health Testing → TP-RSHT-301, 302, 303, 304, 306, 307
- Bacterial Testing → TP-RSHT-305
- Disposal → TP-RSHT-308

Germplasm Treatment and Sanitation

- Crop health monitoring
- Seed treatments/ sanitation
- Visual inspection
- Sampling
- Packing and Dispatch
- Proper waste management

- Monitoring → TP-DTC-208, 209
- Treatment/ Sanitation → TP-DTC-204, 205, 206, 207
- Seed Reception → TP-DTC-201, 202
- Sampling → TP-DTC-203
- Disposal → TP-DTC-213
- Packing and Dispatch → TP-DTC-21, 212

Standard Operating Procedures (SOPs)

A. General SOPs

Business Continuity Plan of SHU

SHU – Control No.: IRRI-SHU-GSOP-001
Version 3

Author/Reviewed by: Dr. Gururaj Guddappa Kulkarni

Approved by:

Dr. Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

May 2019

Distribution list:

Copy 1 – SHU Site
Copy 2 – Secretary
Copy 3 – Laboratory

For Internal Use Only

Title: Business Continuity Plan of Seed Health Unit

A: RSHT Group (Lead Person – Sheryl C. Catausan)

Activity	Lead Person/1st layer	2nd Layer	3rd Layer
Blotter test a. Seeding non treated (includes prep'n of data sheets, updating of seed request status)	Everlyn A. Amparado	Florencio I. Lapiz	Isabel L. Penales
b. Evaluation (includes recording, computation of results, updating of seed request status)	Isabel L. Penales	Florencio I. Lapiz	Everlyn A. Amparado
Nematode Test (includes setting-up, transfer, evaluation computation of results, updating of seed request status)	Everlyn A. Amparado	Florencio I. Lapiz	Isabel L. Penales
Macro Test (includes recording of results and updating seed request status)	Florencio I. Lapiz	Isabel L. Penales	Everlyn A. Amparado

Bacterial Testing a. Over-all (includes evaluation and data recording)	Everlyn A. Amparado	Isabel L. Penales	Florencio I. Lapiz
b. PCR based bacterial testing	Sheryl C. Catausan	Everlyn A. Amparado	
c. Preparation of materials (media, glasswares, etc.)	Florencio I. Lapiz	Everlyn A. Amparado	Isabel L. Penales
d. Isolation (includes crushing, dilution-plating)	Florencio I. Lapiz	Isabel L. Penales	Everlyn A. Amparado
e. Pathogenicity Test i. Preparation/ Maintenance/ discard of test plants	Florencio I. Lapiz	Everlyn A. Amparado	Isabel L. Penales
ii. Inoculation (includes prep'n of inoculum)	Isabel L. Penales	Everlyn A. Amparado	Florencio I. Lapiz
Washing	Everlyn A. Amparado	Florencio I. Lapiz	Isabel L. Penales

B: DTC Group (Lead Person – John Bethany M. Macasero)

Activity	Lead Person/1st layer	2nd Layer	3rd Layer
Seed Reception	Aurelio A. Gamba	Jay A. Angeles	
Seed Cleaning	Jay A. Angeles	Aurelio A. Gamba	
Seed Treatment a. Fumigation b. Slurry c. Hot Water d. Chlorox	 Aurelio A. Gamba Aurelio A. Gamba Jay A. Angeles Jay A. Angeles	 Jay A. Angeles Jay A. Angeles Aurelio A. Gamba Aurelio A. Gamba	
Packing and Dispatch	Aurelio A. Gamba	Jay A. Angeles	
Field Inspection/ Monitoring and Disposal	Jay A. Angeles	John Bethany M. Macasero	

C: DBM Group (Lead Person – Ma. Velinda H. Ilao)

Activity	Lead Person/1st layer	2nd Layer	3rd Layer
SMTA Generation	Ma. Velinda H. Ilao	Salome P. Bulaquiña	Joel C. Dumlao
Processing of incoming and outgoing application a. Outgoing seed request b. Incoming seed request c. NSBM/SOR d. Purified substance	Joel C. Dumlao Ma. Velinda H. Ilao Salome P. Bulaquiña Salome P. Bulaquiña	Salome P. Bulaquiña Salome P. Bulaquiña Velinda H. Ilao Monina E. Magat	Ma. Velinda H. Ilao Joel C. Dumlao Joel C. Dumlao Joel C. Dumlao
Phytosanitary Certification and Dispatched	Monina E. Magat	Salome P. Bulaquiña	Joel C. Dumlao
Encoding RSHT results a. Outgoing seed request b. Incoming seed request c. NSBM/SOR	Joel C. Dumlao Salome P. Bulaquiña Ma. Velinda H. Ilao	Salome P. Bulaquiña Joel C. Dumlao Salome P. Bulaquiña	Joel C. Dumlao
Import Permit Application a. Review of documents b. Processing of application	Salome P. Bulaquiña Joel C. Dumlao	Ma. Velinda H. Ilao Salome P. Builaquiña	

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		15 May 2019
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		15 May 2019
Quality Assurance	Ma. Velinda H. Ilao, RMQA Officer		15 May 2019

REVISION HISTORY

Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)
1	Patria G. Gonzales	9 Nov. 2017	Version 2

Training New SHU Staff

SHU – Control No.: IRRI-SHU-GSOP-002
Version 2

Author/Reviewed by: Dr. Gururaj Guddappa Kulkarni

Approved by:

Dr. Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

May 2019

Distribution list:

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Title: Training new SHU staff

1. Object

This SOP describes procedure of orienting and training of new Seed Health Unit Staff

Related documents

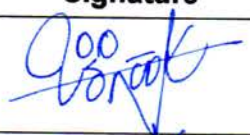
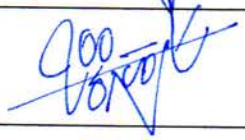
IRRI Policies and Guidelines
SHU RMQA
SHU Standard Operating Procedures
SHU Policies and Guidelines

2. Orienting /Training of new SHU staff (core or contractual)

As a general policy, a new SHU staff shall be required to present to the OU Head/Manager his/her appointment contract during the first reporting day after which he/she will be introduced to the staff, oriented to the mandate, facilities, and in house rules of SHU. The Manager and the lead person/immediate supervisor discuss with the new staff about his/her objectives or performance plan during the probationary period (if applicable). The following persons shall supervise/be in-charge in training (on-the-job) of the new SHU staff (depending upon his/her job responsibility). The person in charge will determine the manner and duration of on-the-job training.

Topic	Person in-charge
General Orientation/Introduction to SHU Staff	Dr. Gururaj Guddappa Kulkarni
Dry Seed Inspection, Seed Treatment, Crop Health Inspection, Packing	John Bethany M. Macasero/ DTC Sub group
Routine Seed Health Testing	Sheryl C. Catausan/ RSHT Sub group
Intellectual Property Rights	Ma. Velinda H. Ilao
Database Management	Salome P. Bulaquiña
Administrative Support	Monina E. Magat

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		21 May 2019
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		21 May 2019
Quality Assurance	Ma. Velinda H. Ilao, RMQA Officer		21 May 2019

REVISION HISTORY

Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)

SHU Standard for Cleanliness and Orderliness

SHU – Control No.: IRRI-SHU-GSOP-003
Version 2

Author/Reviewed by: Dr. Gururaj Guddappa Kulkarni

Approved by:

Dr. Gururaj Guddappa Kulkarni
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Compliance and Seed Health Unit

May 2019

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Title: SHU Standard for Cleanliness and Orderliness

Application:

Agreed/set parameter for Cleanliness

A. In the Office and laboratory areas,
    1. Dust/smear free surfaces (working tables, computers, laboratory equipments i.e. refrigerators, incubators, etc.), glass windows, window sills, walls
    2. Dust free equipments especially microscopes
    3. Litter/dust/smear free floors and carpets
    4. Contents of garbage cans are collected by the janitor every morning; no carry over during weekends

B. For laboratory materials (Petri dishes, test tubes, flasks, etc.)
    Free from water marks, unnecessary glass markings, smudges, residues of agar medium, fungal growth/ algae

Agreed/set parameter for Orderliness

1. Every Regular working stations/areas in the Routine Seed Health Testing Lab (RSHT) must have the following materials/equipments:
    1. Stereo binocular microscope
    2. Compound microscope
    3. Tally counters (9,5, and 2 digit)
    4. Glass slides and cover slips
    5. Glass jar with soap and water solution for used slides
    6. 1 small bottle of distilled water
    7. 1 small bottle of alcohol
    8. Alcohol lamp
    9. Small chicken feather (for “catching” nematodes)
    10. Daters and stamp pad
    11. Calculator
    12. Working box containing 2 dissecting needles, lead pencil, red ball pen, no ink blot pencil, glass marking pencil, pair of forceps, lens paper, camel’s hair brush, scalpel with scalpel blade, pair of scissors
2. Equipments have proper labels, covers, and are in their designated spaces
3. Supplies, materials, media, reagents are stored in designated shelves/ cabinets
4. Shelves and cabinets have proper labels/markings

5. Operating manuals/brochures of equipments are neatly filed/placed in designated drawers (usually near the equipment)
6. Forms are neatly filed in properly labeled shelves
7. RSHT data are filed in properly labeled folders; folders are placed in designated shelves (On-going; already certified-passed)
    - Incoming Materials (Imported)
    - Outgoing Materials (Exported)
    - INGER Nursery Sets
    - GRC Advanced Testing

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		21 May 2019
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		21 May 2019
Quality Assurance	Ma. Velinda H. Ilao, RMQA Officer		21 May 2019

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0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)

SHU Rules and Guidelines

SHU – Control No.: IRRI-SHU-GSOP-004
Version 2

Author/Reviewed by: Dr. Gururaj Guddappa Kulkarni

Approved by:

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May 2019

Distribution list:

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Title: SHU Rules and Guidelines

Application: To ensure that all required seed health testing operations are conducted on incoming and efficiently thus meeting SHU's goals/objectives.

In compliance to the Plant Quarantine Law of 1978 (Presidential Decree No. 1433 and BPI Administrative Order No. 1 Series of 1981) and as designated single gateway (DG Memo 2011-010), all outgoing and incoming rice seeds, rice grains (polished/ dehulled/powdered /ground) for destructive analysis/testing, non seed biological materials (NSBM, soil/ water samples, and seeds other than rice (SOR) must pass through SHU for phytosanitary certification or post entry clearance and must be accompanied by an appropriate Material Transfer Agreement (MTA).

A. General Guidelines

1. SHU adopts a "first come-first served" policy in responding to requests for services (Memo by WG Padolina dated Oct. 11, 2002).

2. Terms of reference for compliance to plant quarantine regulations and standards shall be the Import Permit (or equivalent document) of the country of destination. In the absence of such document, the Philippine Plant Quarantine Service (PQS) rules and standards shall prevail. (Plant Quarantine Law of 1978; BPI Quarantine Administrative Order No. 1, Series of 1981)

3. All requests for phytosanitary certification or post entry clearance must be accompanied by required accompanying documents. Otherwise, processing will not proceed. Processing will depend upon type of germplasm (Refer to SHU Workflows)

4. Incoming materials without Philippine Sanitary and Phytosanitary Clearance and Phytosanitary certificate shall be subject to outright destruction.

5. Incoming imported rice seeds must be planted at the post entry plant quarantine area. Planting outside of the post entry plant quarantine area is subject to PQS clearance/recommendation.

6. Outgoing and incoming NSBM, soil/water samples, SOR, and GMOs must pass through SHU for processing (in terms of documentation and dispatch). These materials will be sent to the Post entry Quarantine Station for appropriate seed health testing.

7. All imported and exported rice seeds will undergo routine seed health testing (RSHT) and fumigation. RSHT includes the following:
    a. Dry Seed Inspection (DSI) – for the detection of seed conditions and seed contaminants;
    b. Blotter Test (BT) – for the detection of seedborne fungi;
    c. Macro Test (MT) – for the detection of *Tilletia barclyana;*
    d. Sedimentation Test (ST) - for the detection and extraction of seedborne nematodes; and in the event that the country of destination requires an additional declaration against bacterial pathogens
    e. Seed Wash Assay Test (SWAT) - for the detection of seedborne bacteria

8. SHU designated staff will conduct appropriate seed treatment upon the recommendation of the Plant Quarantine Service Officer (PQSO). SHU adopts the following seed treatments:
    a. Fungicidal dusting – for seedborne fungi (SHU-TP-DTC-SLUR-306.00)
    b. Hot water – for seedborne nematodes (SHU-TP-DTC-HWT-305.00)
    c. Sodium hypochlorite - for seed washing to remove*Tilletia barclyana*
        i. Teliospores (SHU-TP-DTC-SHSW-307.00)

9. All incoming and outgoing rice seeds, rice grains (polished/ dehulled/powdered /ground) for destructive analysis/testing, non seed biological materials (NSBM, soil/ water samples, and seeds other than rice (SOR) must be accompanied by an appropriate MTA.

10. Processing of materials for Phytosanitary Certification or Post entry Clearance must be conducted according to plant quarantine regulations, biosafety standards, and set parameters/guidelines.

11. When RSHT activities are in progress, access to the laboratory by non SHU laboratory personnel/visitors is not allowed or restricted and must be at the discretion of the laboratory supervisor.

12. Seed Treatments involving the use of chemical pesticides and treated materials must be handled by a Trained Pesticide Applicator (TPA) only. (Safety Policy XXX).

13. TPAs shall wear prescribed Personal Protective Equipment (PPE) when conducting seed treatments involving pesticides.

B. Guidelines for Staff working in the SHU laboratory (RSHT, Seed Reception, and DSI)

1. Laboratory staff must wear prescribed laboratory gowns/uniforms and footwear upon entering the laboratory area to prevent possible introduction of unwanted microorganisms and/or soiling of street clothes. Laboratory gowns/uniforms and footwear should not be worn outside the laboratory area and shall be placed in designated areas/cabinets when not in use. Jackets, sweatshirts, etc. must not be placed in hangers designated for lab gowns.
    a. Designated staff doing blotter seeding must put on a hair net.
    b. Designated staff doing Macro Test must wear a particle face mask.

2. Laboratory personnel must wash their hands before and after conducting routine seed health testing activities.

3. Non laboratory personnel/visitors who shall enter the laboratory area must wear shoe covers to prevent bringing in of unwanted particles which may be present in the soles of their footwear.

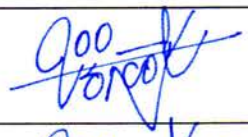
4. Bringing foods, eating, drinking, smoking, combing of hair, and applying cosmetics are strictly prohibited inside the laboratory.

5. Working tables shall be surface sterilized with 1% sodium hypochlorite before and after every seed health testing activity.

6. Person in charge of preparing media, must ensure that bottles, either glass or plastic containing chemicals/reagents/media are tightly covered and returned to their original storage shelves.

7. Chemical spillage shall be reported immediately to the Safety and Security Office in coordination with SHU RMQA Officer for proper cleaning and disposal.

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		21 May 2019
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		21 May 2019
Quality Assurance	Ma. Velinda H. Ilao, RMQA Officer		21 May 2019

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Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)

Training and Authorization of Samplers

SHU – Control No.: IRRI-SHU-GSOP-005
Version 2

Author/Reviewed by: Aurelio A. Gamba/ John Bethany M. Macasero

Approved by:

Dr. Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

May 2019

Distribution list:

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Title: Training and Authorization of Samplers

1. Object

This SOP describes procedure of training of new sampler for seed sampling according to ISTA Rules. It also describes formal authorization of the sampler for drawing samples for national Certificates and for ISTA Certificates, monitoring of sampler, as well as conditions for withdrawal of authorization

2. Training of new seed samplers

Basic principles of training of new seed samplers

Training of seed samplers is performed by the Official Sampler and the Head of the Seed Testing laboratory.

At the beginning of the training, a person who is trained in seed sampling has the status of 'sampler in training' or 'trainee'.

Training consists of theoretical and practical part. After training is concluded, the trainee has to pass the official exam.

Theoretical training

Theoretical part of training is conducted by the head of the Seed Testing Laboratory.

The Head of Laboratory introduces the trainee to the importance of sampling in the process of seed quality testing, and issues her/his own copy of the document "Sampling"

Theoretical part of training includes:

– introduction to ISTA Rules for seed sampling, as well as national rules (Rules for basic requirements for quality, packaging and certification of agricultural seed
– explanation of definitions of seed lot, primary, composite, submitted and working sample
– methods of packing, marking and sealing the seed lot
– procedure of applying the seed lot for sampling and testing
– filling in the Sampling report
– definition of homogeneity of the seed lot and methods for determination
– sizes of seed lots and submitted intensity
– determining sampling intensity

After completing theoretical training, the trainee can start with practical training.

Practical training

Practical training is performed by the Official Sampler of the Seed Testing Laboratory (trainer).

Trainee is first introduced to characteristics of Nobbe and stick triers, methods of their proper use and choosing appropriate trier according to the species of seed and type of containers.

Trainee becomes familiar with other tools used for sampling (sample bags, seals, sealing pincers, sample divider),

Trainee first practice taking primary samples in the Laboratory, using seed from the stocks, packed in paper or jute bags.

After the trainee has obtained basic skills, she/he starts accompanying the Official Sampler at official sampling. During sampling, the trainer shows and explains to the trainee all the elements of sampling procedure.

When the trainer concludes that the trainee is ready, trainee starts drawing the official samples, under trainer's supervision. The trainer has to monitor and check every step done by the trainee, and sign the Sampling Report together with her/him.

Estimation of competence of the trainee is performed on the basis of the 'rule of 10 samples' in the same way as in the training of analysts. Each seed lot sampled by the trainee is recorded on the Form.

After the trainee has successfully performed sampling of 10 seed lots, under trainer's supervision, she/he can take the official exam.

Exam

Exam of the sampler in training is performed by the Head of the Seed testing Laboratory.

The exam consists of theoretical and practical part. Theoretical part is conducted in the form of written exam, and practical part is sampling of the seed lot in the warehouse.

Data regarding exam of the sampler in training are recorded on the Form

3. Formal authorization of seed sampler

The head of the Seed Testing Laboratory informs the relevant office at the Ministry of Agriculture and Forestry that the trainee has successfully completed training and exam for seed sampling. The new sampler is registered into the Register of Authorized Seed Samplers, held by the Ministry.

The State Institute for Seed and Seedling, on behalf of the Ministry, issues the formal Certificate of proficiency in seed sampling to the new sampler. With this Certificate the new sampler is authorized to perform independently sampling of seed lots for national Certificates.

If the new sampler is a member of staff of the Seed Testing Laboratory, her/his authorization is also recorded on the Form. She/he is given the identification number (ID), which is recorded on the Form, and a pair of sealing pincers, with her/his ID and Institute logo engraved on it. The new sampler is personally responsible for the sealing pincers. A photo-copy of sampler's Certificate of proficiency is filed into her/his personal file.

Authorized sampler has to be subjected to monitoring and control, performed by the Seed Testing laboratory of the State Institute for Seed and Seedlings (see Point 4).

After the new sampler has successfully performed seed sampling for National Certificates for at least one year and providing that no major non-conformities have been recorded in her/his work, the sampler may be formally authorized to draw ISTA samples.

The decision to authorize the sampler for drawing ISTA samples is made by the Head of the Seed Testing laboratory of the State Institute for Seed and Seedlings. The head of the Laboratory formally recommends to the Ministry to authorize the sampler.

The Ministry of Agriculture and forestry records the authorization in sampler's file in the Register of Authorized Seed Samplers. The State Institute for Seed and Seedlings, on behalf of the Ministry, issues the formal Certificate of proficiency in seed sampling for ISTA Certificates.

4. Monitoring of seed sampler

Samplers authorized for sampling for both ISTA and national Certificates, as well as those authorized for sampling only for national Certificates, are subjected to regular monitoring.

Monitoring includes check sampling, internal audit, and control of the documents (Sampling Reports).

After obtaining the authorization, the new sampler has to be check sampled at least 4 times within next 12 months. If the results of check sampling are within tolerances, after this period check sampling is conducted at least twice a year.

Experienced samplers are subjected to check sampling at least twice a year. If results of check sampling are out of tolerance, frequency of check sampling is increased to 4 times within next 12 months.

Every year the sampler has to take part in regular training, according to Annual training plan. At least every five years the sampler has to participate in regular refresher training.

5. Conditions for suspension or withdrawal of authorization

In the following cases the State Institute for Seed and Seedling will formally warn the seed sampler:

- if the sampler does not participate in internal audit and / or check sampling for one year.
- if the results of two check samplings within one year are out of tolerance
- if the sampler makes repeated unintentional mistakes in marking the samples and filling the Sampling Report.
- if it is obvious that the sampler does not follow strictly the prescribed methods for seed sampling.

After receiving the formal warning, the sampler has to participate in additional training and frequency of check sampling is increased to four times a year.

If the results of check sampling do not improve within the next year or the problems mentioned in Point 5.1 are still present, sampler's authorization for sampling seed lots for both ISTA and National Certificates will be temporarily suspended.

Sampler's authorization may be reinstated if she/he passes again the complete initial training and participates successfully in four check samplings within the first year.

If the sampler's results do not improve even after repeated training or if the sampler refuses the repeated training, her/his authorization will be permanently withdrawn.

If there are evidences that the sampler has intentionally and deliberately forged numbers of seed lots or seed samples or any other relevant data in the Sampling Report, her/his authorization for sampling seed lots for both ISTA and National Certificates, will be immediately and permanently withdrawn.

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Aurelio A. Gamba, Technician III – Seed technology and seed treatment		21 May 2019
	John Bethany M. Macasero Senior Specialist		21 MAY 2019
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		21 May 2019
Quality Assurance	Ma. Velinda H. Ilao, RMQA Officer		21 May 2019

REVISION HISTORY

Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)

Training of SHU Analyst

SHU – Control No.: IRRI-SHU-GSOP-006
Version 2

Author/Reviewed by: Isabel L. Penales/ Sheryl C. Catausan

Approved by:

Dr. Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

May 2019

Distribution list:

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Title: Training of SHU Analyst

1. Object

This SOP describes procedure of training of new seed health analysts according to ISTA Rules. It also describes formal authorization of the seed health analyst to conduct the different seed health testing for incoming and outgoing rice seeds and rice grains.

2. Training of new seed health analysts

Basic principles of training of new seed health analysts

Training of seed health analyst is conducted by the Leader of the RSHT Group and Head of the Seed Health Unit.

Training consists of theoretical and practical part. After training is concluded, the trainee has to pass the official exam.

Theoretical training

Theoretical part of training is conducted by the Head of the Seed Health Unit.

The Head of Laboratory introduces the trainee to the importance of knowing the standards and protocols in seed health testing (includes accurate identification of the different seedborne organisms and different seed health testing methods adapted by SHU in processing rice seeds and grains for phytosanitary certification and post entry clearance)

Theoretical part of training includes:

- An introduction to pests and seed infestation and seed health testing
- General introduction on the seed health fungi, bacteria, nematode
- Good Laboratory practice in seed health laboratory
- Blotter test for detection of seedborne fungi
- Baermann funnel method for detection of nematode
- General introduction to molecular techniques in seed health testing
- Quality assurance and critical control points in seed health testing

Practical training

Practical training is performed by the official seed health analyst of the Seed Testing Laboratory (trainer).

After completing theoretical training, the trainee can start with practical training.

- Blotter test for detection of seedborne fungi: Plating of seeds, morphological identification of fungi (habit character, microscopic)
- Bacteria: dilution, plating, selection of suspect colonies and sub-culturing, PCR (molecular techniques)
- Nematode: Baermann funnel method set-up, identification of *Aphelenchoides besseyi* and saprophytic nematode on rice (low power stereo microscopic evaluation, high power microscopic evaluation)

Exam

Exam of the analyst in training is performed by the Head of the Seed testing Laboratory.

The exam consists of theoretical and practical part. Theoretical part is conducted in the form of written exam, and practical part is carried out at the end of the practical training.

Data regarding exam of the analyst in training are recorded on the Form.

3. Formal authorization of seed health analyst

A certificate of training completion signed by the Seed Health Unit head will be given to the analyst.

The head of the Seed Health Testing Laboratory informs the relevant office at the Ministry of Agriculture and Forestry that the trainee has successfully completed training and exam for seed health analyst. The new analyst is registered into the Register of Authorized Seed Health Analyst, held by the Ministry.

.Authorized analyst has to be subjected to monitoring and control, performed by the Seed Health Unit Head / Seed Health Testing Unit Head

4. Monitoring of seed health analyst

Monitoring includes internal audit and quarterly evaluation of the analyst by the Seed Health Testing Unit head.

Every year the analyst has to take part in regular training, according to Annual training plan. At least every five years the analyst has to participate in regular refresher training.

5. Conditions for suspension or withdrawal of authorization

In the following cases the Seed Health Unit Head will formally warn the seed analyst:

- if the analyst does not participate in internal audit for one year.
- if the results of two evaluation of the analyst within one year are out of tolerance
- if the analyst makes repeated unintentional mistakes in marking the samples and filling the evaluation report.
- if it is obvious that the analyst does not follow strictly the prescribed methods and SOPs for seed health evaluation.

After receiving the formal warning, the analyst has to participate in additional training and evaluation program

If the results of the evaluation do not improve within the next year or the problems mentioned are still present, analyst's authorization will be temporarily suspended.

Analyst's authorization may be reinstated if she/he passes again the complete initial training and evaluation

If there are evidences that the analyst has intentionally and deliberately forged numbers/data, his/her authorization as seed analyst for both ISTA and National Certificates, will be immediately and permanently withdrawn.

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Isabel L. Penales, Research Technician III		23 May 2019
	Sheryl C. Catausan Specialist		23 May 2019
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		23 May 2019
Quality Assurance	Ma. Velinda H. Ilao, RMQA Officer		23 May 2019

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0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)

Guidelines and Standards of RSHT

SHU – Control No.: IRRI-SHU-GSOP-007
Version 2

Author/Reviewed by: Isabel L. Penales/ Sheryl C. Catausan

Approved by:

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Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

May 2019

Distribution list:

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Title: Guidelines and standards of RSHT

Application: To ensure that routine seed health testing operations are conducted efficiently and according to standards and parameters.

A. General guidelines

1. During peak seasons (March-May; Oct-Dec), seed requests for phytosanitary certification or post entry clearance will be given priority in the conduct of Routine Seed Health Testing (RSHT). Other materials (i.e. GRC and INGER) for advanced testing) will be included depending on the availability of additional manpower.
2. Seed requests with seed contaminants and/or seed conditions will not be processed for RSHT and shall be returned to the DTC sub group.
3. For outgoing seed requests with more than 1000 seedlots, RSHT will be done on the 1st 100 seedlots + 20% of the remaining seedlots (random).

B. Schedule of Seed Health Testing

1. Blotter Test
   a. Seeding
      Monday to Thursday, 8:00 AM-12:00NN
   b. Number of seeds for seeding
      6 gms-50 gms – 25 seeds
      51 gms-100 gms – 50 seeds (25 seeds for BT; 25 seeds for ST)
      101 gms and above – 10 gms (200 seeds for BT); remaining seeds will be weighed and used for ST
   c. evaluation – 5-7 days after seeding

2. Sedimentation Test (Modified Baermann Funnel Method)
   a. For seed requests with 51 gms and above working samples
      - Weighing and pre germination of samples - Monday/Friday
      - transfer of samples -Thursday/Monday
      - extraction and evaluation- Friday/Tuesday

   b. For seed requests with 25 seeds as working sample
      - Seeds used for blotter test (after recording) are used for Sedimentation Test
      - Seeds that failed to germinate shall be manually dehulled before setting

3. Macro Test

- test will be conducted 1-10 days from day of receipt (depends upon number of seedlots)

C. Standards

ACTIVITY	STANDARD QUANTITY (qty/hr)	STANDARD QUALITY
1. Blotter Test a. Seeding	61-70 plates	according to the International Seed Testing Association (ISTA) rules & standards (25 seeds/plate; readable/ correct labels; w/ 2 layers of moist blotter paper; randomly picked; seeds are equidistant from one another & properly oriented (refer to IRRI-SHU-TP-RSHT-301)
b. Evaluation	Not Treated - 51-60 plates Treated - 61-70 plates	accurate identification of seedborne organisms - no missed/misidentified organism in 99% plates evaluated; timely evaluation – 5 to 7 days after incubation (refer to IRRI-SHU-TP-RSHT-301)
2. Sedimentation Test (Modified Baermann Funnel Method) a. Setting/Transfer	81-90 samples	Refer to IRRI-SHU-TP-RSHT-303 correct weight of samples, correct amount of water (seeds are completely immersed; germinated seeds are properly spread over the mesh wire, no seeds in the tygon tubing and/or pinchcock ; properly placed (no leakage, spillage of water/ seeds); labels are prominently placed
b. Evaluation	51-65 samples	accurate identification (+/-; saprophytic or parasitic) and actual count (if parasitic); extraction-8 hrs after transfer evaluation conducted as soon as extracts are gathered;
3. Macro Test/Tb cleaning	1.1-1.5 K	Refer to IRRI-SHU-TP-RSHT-304 correct evaluation (+/-)

		of *Tilletia barclayana*; (missed/misidentified)
4. Bacterial Test (Seed Wash Assay Test Using Semi-Selective Agar Media) a. Preparation of media/glasswares/ other materials	Materials to be prepared depends upon number of seedlots	Refer to IRRI-SHU-TP-RSHT-305
b. Isolation/Purification	25 seedlots/day	Media, glasswares and other required materials sterilize according to standards; media, buffer solutions prepared 1-2 days before scheduled activity Sampling-refer to IRRI-SHU-TP-DTC-203 procedure conducted in isolation room
c. Evaluation (includes recording of data/ observation		Refer to Refer to IRRI-SHU-TP-RSHT-305 on observation regarding colony description/morphology
d. Pathogenecity Test (includes preparation of inoculum, preparation and maintenance of test plants, inoculation)	total number of test plants will depend upon number of pure cultures isolated (3 seedlings per isolate, 3 seedlings per positive check, 3 seedlings per negative check or control)	Data entry: use forms for Seed Wash Assay Test. Refer to Training Handouts authored b MH Nguyen and JJ Padilla, Plant Pathology Cluster, PBGB, IRRI given during the Training Workshop on Harmonizing Detection of *Xanthomonas oryzae* pathovars
5. Germination Test (Between Paper/Top of the Paper/In Sand/Soil) a. Seeding	41-45 seedlots	Refer to IRRI-SHU-TP-RSHT-307
b. Evaluation		Refer to ISTA Handbook for Seedling Evaluation, Section 13 Data entry: Use evaluation form for Germination Test
6. Washing	241-260 plates; 76-85 funnels; 101-120 wire mesh	Refer to SHU rules and Guidelines and SHU Standard for Cleanliness and Orderliness
7. Documentation	data of 181-200 samples	Seed Health Analyst

		conducting the seed health testing will collate and compute (if applicable) data/ results in appropriate data sheets and encode using format provided by Database Management sub group.
8. Assigned task		met expectations; with very minimal supervision; output with minor correction; task done/output delivered on agreed schedule, consistent most of the time; very positive attitude

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Isabel L. Penales, Research Technician III		21 May 2019
	Sheryl C. Catausan Specialist		21 MAY 2019
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		21 May 2019
Quality Assurance	Ma. Velinda H. Ilao, RMQA Officer		21 May 2019

REVISION HISTORY

Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)

RSHT Guidelines for Cleanliness

SHU – Control No.: IRRI-SHU-GSOP-008
Version 2

Author/Reviewed by: Isabel L. Penales/ Sheryl C. Catausan

Approved by:

Dr. Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

May 2019

Distribution list:

Copy 1 – SHU Site
Copy 2 – Secretary
Copy 3 – Laboratory

For Internal Use Only

Title: RSHT Guidelines for Cleanliness

Application: To ensure that the routine seed health testing laboratory is clean and orderly at all times

A. Guidelines for maintaining cleanliness/orderliness of floor, walls, table surfaces, shelves

1. In addition to everyday sweeping, floors inside the laboratory shall be mopped (dipped in water + 1% Chlorox) at least once a week -preferably every Monday or start of working week (thru janitorial services)

2. Dirt accidentally/not purposely introduced in the laboratory shall be swept immediately by assigned SHU staff (depending upon the location).

3. Walls shall be wiped (with water + 1% Chlorox) once a month (thru janitorial services)

4. Surfaces of working tables and shelves shall be wiped with Shine-up (or equivalent) every Monday or start of working week.

5. Water spillage on the floor and/or on surfaces of shelves shall be immediately wiped off.

6. Chemical spillage shall be reported immediately to the Safety and Security Office in coordination with SHU RMQA Officer for proper cleaning and disposal.

B. Guidelines for maintaining cleanliness/orderliness of laboratory equipment

1. Weigh balances, hot plates, and similar equipments shall be regularly cleaned from dusts and immediately cleaned after each use especially when spillage occurs.

2. Designated microscopes shall be regularly cleaned by the concerned Seed Health Unit (SHU) staff. Other microscopes shall be cleaned at least once a month (pooled activity by RSHT sub group)

3. Calibration and general cleaning of all microscopes shall be done (by a contracted Agency) once a year.

4. Glass/plastic wares (Petri dishes, test tubes, flasks, etc)

5. Wares should be immediately returned to their designated places after they have been washed and dried.

6. Used slides must be placed in a glass container with liquid soap/detergent and water solution.

C. Guidelines for maintaining cleanliness/orderliness of laboratory wares

1. Laboratory wares must be thoroughly cleaned with diluted liquid soap (approximately 2-3 drops of liquid soap per liter of water) followed by two washings with tap water and final washing with demineralized water.

2. Non-permanent marking pens which can be easily wiped off must be used for labeling.

3. Markings/labels must be thoroughly wiped off preferably with acetone for glasswares but NOT for plastic wares

4. Never use cleaning pads that will result to scouring or scratches.

5. Appropriate cleaning brush must be used for test tubes, flasks, etc.

6. Washed laboratory wares must be immediately wiped dry with lint-free cloth to prevent water marks and properly returned to designated cabinets/shelves.

7. Plastic petri dishes used for blotter test and nematode extraction should be used for a maximum of three months (3) only.

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Isabel L. Penales, Research Technician III		21 May 2019
	Sheryl C. Catausan Specialist		21 May 2019
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		21 May 2019
Quality Assurance	Ma. Velinda H. Ilao, RMQA Officer		21 May 2019

REVISION HISTORY

Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)

NUV - Plates

SHU – Control No.: IRRI-SHU-GSOP-009
Version 2

Author/Reviewed by: Isabel L. Penales/ Sheryl C. Catausan

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May 2019

Distribution list:

Copy 1 – SHU Site
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For Internal Use Only

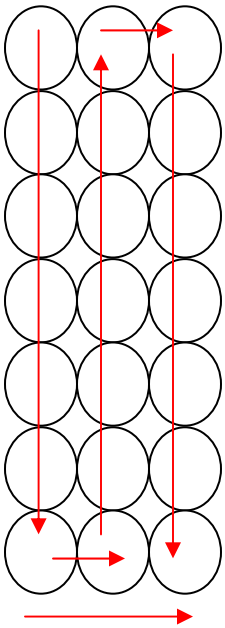
Title: NUV - Plates

Application: Guidelines for setting and retrieving of seeded plates on shelves inside Near Ultra Violet (NUV) light incubation room.

For safety purposes, the general switch for the NUV lights should be switched off before entering the incubation room (then switched on after putting the seeded plates and the main door has been closed).

1. As a general policy,
   a) care should be observed when "transporting" seeded plates from the seeding room to the incubation room and when arranging the seeded plates on the shelves so as to maintain the quality of seeding and
   b) seeded plates should be placed in the designated space/shelf inside the incubation room

2. The seed plates should be arranged following this pattern.



3. Seeded samples with the same reference number should be placed in the same shelf if possible.

4. The reference number and date of evaluation of the seed batch should be indicated in the shelf.

5. In retrieving, care should be observed so as not to disturb the seeds and plates with the same reference number should be stacked altogether, in groups of eights (8) or tens (10).

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Isabel L. Penales, Research Technician III		21 May 2019
	Sheryl C. Catausan Specialist		21 May 2019
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		21 May 2019
Quality Assurance	Ma. Velinda H. Ilao, RMQA Officer		21 May 2019

REVISION HISTORY

Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)

Calibrating of Microscopes

SHU – Control No.: IRRI-SHU-GSOP-010
Version 2

Author/Reviewed by: Isabel L. Penales/ Sheryl C. Catausan

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May 2019

Distribution list:

Copy 1 – SHU Site
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Title: **Calibration of Microscopes**

Application: For evaluation/examination of seeds or other plant parts suspected to be infected with microorganisms or for identification of microorganisms and/or insect pests.

Parts Microscope

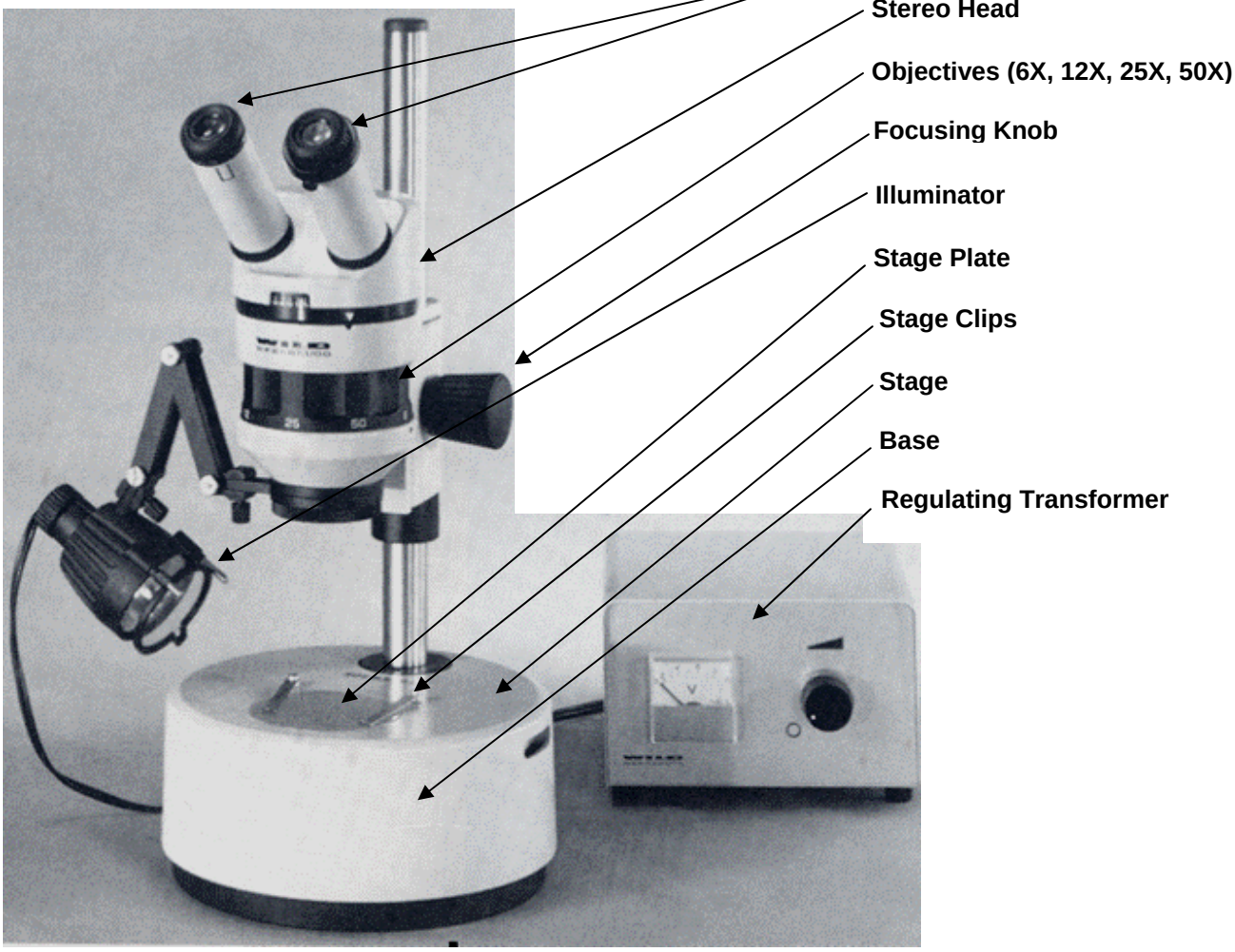


Fig. 1. PARTS OF A STEREO MICROSCOPE

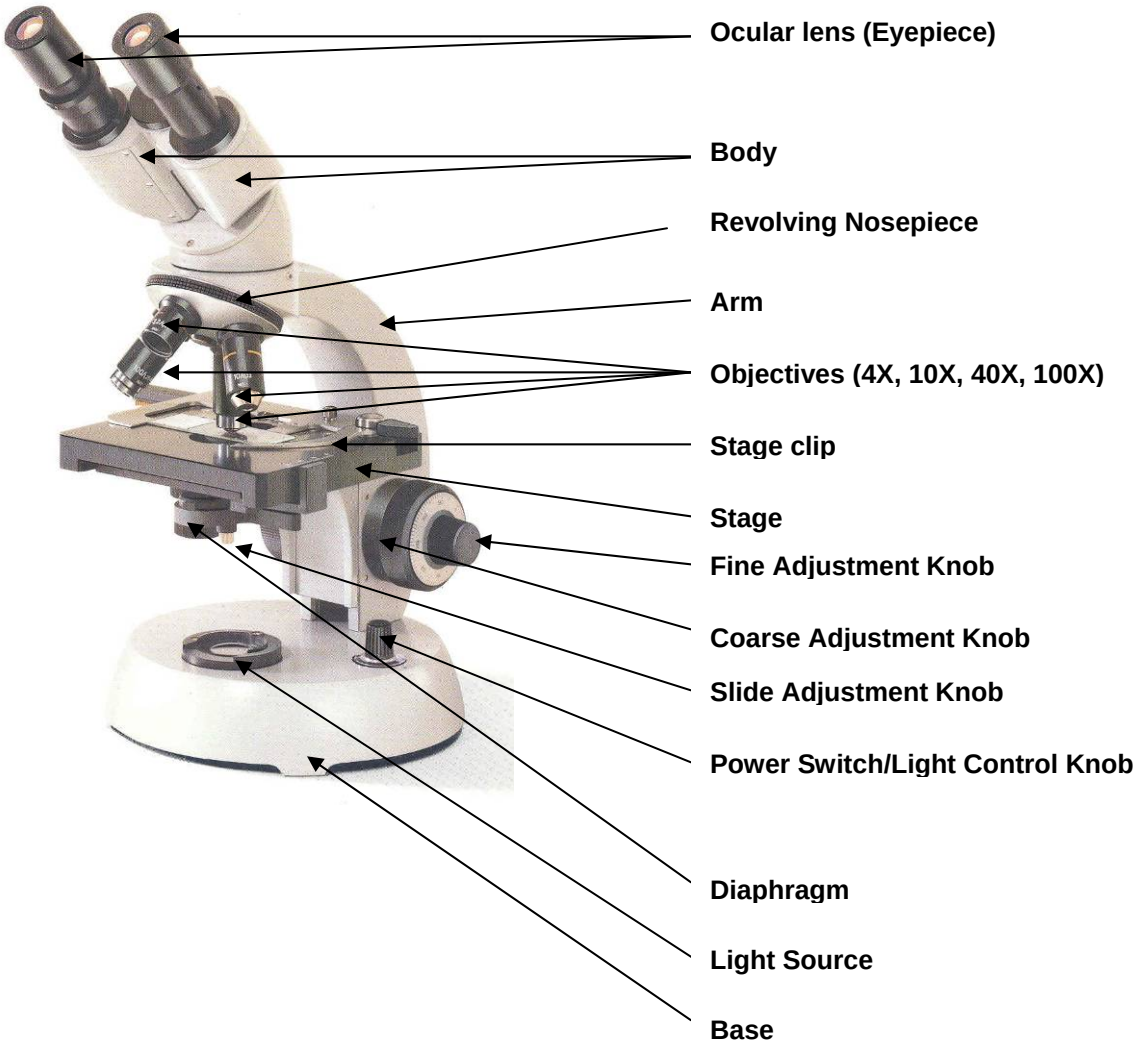


Fig. 2. PARTS OF A COMPOUND MICROSCOPE

General Guidelines:

- Set the microscope on a flat sturdy surface and plug the microscope's power cord into an outlet, making sure that the excess cord is out of the way so no one can trip over it or pull it off of the table.
- When moving a microscope from one place to another, always carry it with both hands. Grasp the arm with one hand and place the other hand under the base for support.

Maintenance/Cleaning

- When cleaning the exterior side of lenses, use only special lens paper and a non-solvent solution designed for cleaning optics or eyeglases. Do not touch lenses with fingers. (With a moist lens paper, clean the lenses in a circular motion. Repeat procedure with a dry lens paper until the lens is clean and dry.)
- When cleaning interior side of lenses, use a bulb-type duster or a compressed gas canister designed for cameral and other optical instruments)
- When cleaning the body of the microscope, use a soft dry or damp cloth.
- When not in use, always keep the microscope covered.

Procedure:

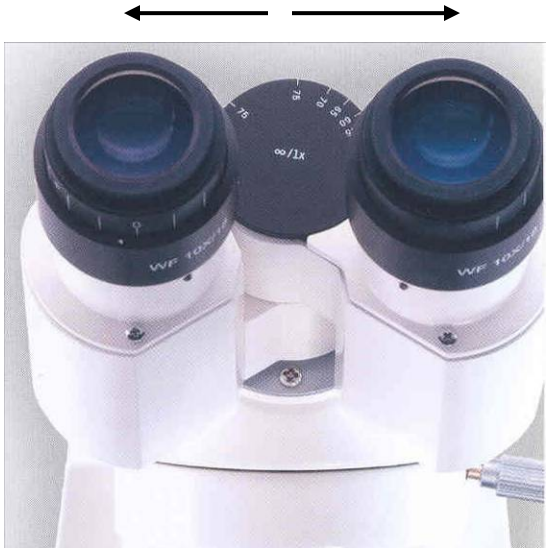
1. Ensure that the lowest power objective is into position.

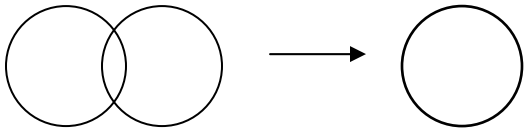
2. Turn on light source with the power switch (light control knob).
   If you will be looking at a microscope slide or other transparent object, bottom lighting will work best. If the specimen you are viewing is opaque or solid (light cannot pass through it from below), use top lighting so that the light can reflect off the specimen's surface.

3. Put the prepared slide mount/specimen on the stage and fasten it with the stage clips (if needed).
   If your specimen is thin and flat, or if its edges curl up easily, try using the stage clips to hold it in place. To do this, pull up the pointed end of one stage clip and slide it over one end of the specimen, then do the same with the stage clip on the other side. If your specimen is larger than the stage plate, you might need to turn the stage clips out so that they are hanging off the stage or removing them completely so that there is more room to work.

4. Look through the ocular lenses (eyepiece) and adjust the interpupillary distance* of the eyepieces. While doing the adjustments, the eyes should focus on the specimen, and only use the peripheral vision as one proceeds. Then, pull the eyes back from the eyepieces at about 1". You will see two field views overlapping each other. Open or close the distance between the eyepieces by pulling them apart or pushing them together until the two circles merge together and appear as one circle. The interpupillary distance is set correctly when you see just one field view circle.

Photo of eyepieces





*Refers to the distance between the pupils of your eyes and varies from person to person. Thus, each observer should make this adjustment before using a binocular or stereo head microscope for the greatest viewing comfort and best image quality.

5. Adjust the diopter* by rotating the diopter ring and aligning its edge with the reference groove. Cover your left eye with your hand, and with the right eye look into the right eyepiece and adjust the right diopter ring until the specimen comes into focus. After this, cover the right eye with your hand, and with the left eye look into the left eyepiece and adjust the left diopter adjustment ring until the specimen comes into focus.

*This is used to make up for focusing differences between your eyes. This adjustment will also vary from person to person, thus, should be done by every observer/user for clearer image.

6. Set the desired magnification level by rotating the objective turret (a “clicking” sound is heard when the magnification is in its proper setting).

   To determine the magnification of your microscope, multiply the magnification level of the eyepiece lens by that of the objective lens. For example, on the microscope in the diagram above, the total magnification at the 2x objective is 20x (2 x 10 = 20).

7. Adjust the distance between the objective and the specimen (up/down movement) by rotating the coarse adjustment knob until the specimen you are looking at comes in clearly.

   While looking through the eyepiece(s), slowly turn the focus knob until the specimen comes into view. Once you can see the outline of the specimen, turn even more slowly to focus as sharply as possible. If you aren't able to see anything, try moving the specimen around slightly on the stage plate to make sure it is directly below the objective lens and then try focusing again. Once you have focused on the specimen, you can move it around to see its other parts. You may have to refocus slightly on each new area.

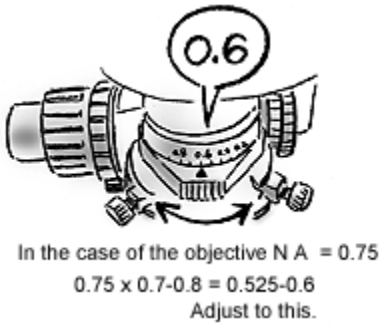
   Take note that with a stereo microscope you will often be viewing three-dimensional specimens that have many different levels. You will not be able to focus every feature clearly at the same time.

8. Then, adjust the fine adjustment knob for clearer image of the specimen.

   Note: You will know that your specimen is focused correctly when you can look through them without straining your eyes. (or feeling dizzy after one or 2 seconds)

9. Adjust the aperture diaphragm

   Normally, if the aperture diaphragm is closed to 70-80% of the numerical aperture of the objective, then a clear image with reasonable contrast will be obtained. The scale on the condenser aperture diaphragm ring shows numerical aperture (N.A.), so adjust the condenser aperture diaphragm ring in accordance with the scale.



40X/0.65X magnification 40X, numerical aperture 0.65

The numerical aperture of every objective is indicated on the side of the objective.

10. Adjusting the field diaphragm

The field diaphragm restricts the illumination light to the observation area of the specimen. If it is opened more than necessary it will result in reduced contrast due to stray light.
Whenever the objective is changed, rotate the field diaphragm ring and adjust the field diaphragm image so that it is circumscribed by the surrounding field of view

11. Adjusting the illumination

If the magnification of the objective is increased then the field of view becomes darker. Adjust the illumination with the brightness adjuster as necessary. Note that when the illumination changes the color tone also changes at the same time. If the voltage is turned down, the illumination darkened red tones increase. If the voltage is turned up and illumination increased, then blue tones increase. In order to maintain a specific tone an ND filter is used to adjust the illumination.

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Isabel L. Penales, Research Technician III		21 May 2019
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Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		21 May 2019
Quality Assurance	Ma. Velinda H. Ilao, RMQA Officer		21 May 2019

REVISION HISTORY

Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)

Temperature at Laboratory

SHU – Control No.: IRRI-SHU-GSOP-011
Version 2

Author/Reviewed by: Isabel L. Penales/ Florencio I. Lapiz

Approved by:

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Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

May 2019

Distribution list:

Copy 1 – SHU Site
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Title: Temperature at Laboratory

PROCEDURE FOR TEMPERATURE MEASUREMENT AND CONTROL IN ISTA LABORATORIES (THERMOMETER CALIBRATION GUIDE)

Calibration is the process of standardizing a temperature monitoring instrument to ensure that it will measure within a specific temperature range in which the instrument is designed to operate. A reference thermometer is used in the calibration of laboratory's thermometer. The reference thermometer is a temperature monitoring device such as a mercury-in-glass thermometer or a thermistor used as a reference thermometer. The device is NIST certified thermometer. The annual calibration and certification is maintained through an NIST laboratory.

A bi-metal coil thermometer is a common type of thermometer used in the laboratory. The example of a bi-metal coil thermometers are dial and instant read digital thermometers. Contained within the stem of the thermometer is a coil made of two different metals bonded together to a temperature indicator. This type of thermometers detects temperature from the tip of the stem to a point 2 to 21/2 inches (5.1 to 6.4 cm) above the tip. An indication in the stem indicates the area of the stem that is the temperature sensing region. The temperature indicated on the dial is an average or temperature along this region.

Calibration of thermometers by the International Ice Point Method.

1. Place crushed ice in a beaker or container, add just enough distilled water to make a uniform slush ice medium to facilitate even contact between thermometers and the slush ice bath. The ice point may be realized in an insulated flask or vessel containing an ice-water melting mixture. The ice particles should be no more than a few millimeters in diameter and the water and ice should be pure or prepared from de-ionised water, which is air saturated.
2. Place NIST reference thermometer in the ice water bath. It is important to keep the tip of the thermometer immersed a minimum of 21/2 inches (6.4 cm) without touching the bottom of the container.
3. The NIST reference thermometer should read 32 °F (0 °C) when placed in the slush ice bath. If the temperature is above 32 °F (0 °C) slush ice and distilled water. If this is still not working, check with the manufacturer or the NIST reference thermometer.
4. Place the bi-metals coil thermometer in the ice water bath for at least one minute by immersing to a minimum depth of 21/2 inches (6.4 cm). Be sure the tip does not touch the bottom of the container. Compare the reading of

the bi-metal coil thermometer to the NIST reference thermometer. Adjust and recheck the bi-metal coil thermometer as described for the boiling point method. If the thermometer cannot be physically calibrated and the accuracy of the unit is more than +/- 2 °F (+/- 0.5 °C), then the thermometer should not be used. Contact the thermometer manufacturer for further instructions. Note calibration adjustment in the thermometer calibration log and label the thermometer for use in low temperatures ranges. This can be done by electroplating or etching the thermometer on the back of the indicating the temperature range of the intended use. For high precision, the thermometer should be maintained in the mixture for 10 minutes prior to reading. In theory accuracies of +/- 0,001 °C may be achieved but in practice +/- 0.005 °C is more likely.

Recommendations

1. International methodology should be followed.
2. Calibration should take place at lest every year.
3. Any probe whose temperature reading differs from the ice point by more or less than +/- 0.5 °C should be removed from service.

Reference

1. Technical Committees on Temperature Measurement and Control in ISTA laboratories.
2. Flores, N. C. and Boyle, E.A.E. 2000. Thermometer Calibration Guide. Kansas State University. http:/www/oznet.ksu.edu.

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Isabel L. Penales, Research Technician III		21 May 2019
	Florencio I. Lapiz, Research Technician III		21 May 2019
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		21 May 2019
Quality Assurance	Ma. Velinda H. Ilao, RMQA Officer		21 May 2019

REVISION HISTORY

Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)

B. Database Management (DBM)

Steps in Processing the Material Transfer Agreement (MTA) Clearance (Import/ Export) to IRRI Tech Transfer (ITT) for approval

SHU – Control No.: IRRI-SHU-TP-DBM-101
Version 3

Author/Reviewed by: Salome P. Bulaquiña/ Ma. Velinda H. Ilao

Approved by:

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Compliance and Seed Health Unit

July 2018

Distribution list:

Copy 1 – SHU Site
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Title: Steps in Processing the Material Transfer Agreement (MTA) Clearance (Import/ Export) to IRRI Tech Transfer (ITT) for approval

Definitions:

MTA	Material Transfer Agreement
ITT	IRRI Tech Transfer
SHU	Seed Health Unit
IRRI	International Rice Research Institute
Program keyperson	Contact person from each group for germplasm exchange

Procedure:

1. Check for the following documents submitted by the Program keyperson/ initiating staff:
    a. List of materials
    b. One (1) copy of MTA and MTA current acceptance
    c. One (1) copy of applicable approval sheet signed by the Platform and Project Leaders

2. Register the information in the GoogleDrive “ITT Clearance form tracking sheet” and put the dates received by SHU and submitted to ITT for tracking purposes.

3. Submit the documents to ITT using the “SHU plastic folder” as a sign that this has passed SHU for documentation.

4. Once approved and received from ITT, check if all authorized signatories have signed and MTA control number has been assigned.

5. Go back to “ITT Clearance form tracking sheet” in the GoogleDrive and record the date when the approved documents have been received by SHU from ITT.

6. Notify the Program keyperson and initiating staff that MTA has been approved and proceed with the next step (importation/ exportation of materials).

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Salome P. Bulaquiña, Technician III-Data Encoding		30 July 2018
	Ma. Velinda H. Ilao, Specialist-MTA Controller		30 July 2018
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		30 July 2018
Quality Assurance	Carlos C. Huelma, RMQA Officer		30 July 2018

REVISION HISTORY

Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)
1	Patria G. Gonzales	7 Nov. 2017	Version 2

Steps in Processing Documents of Seed Request Application (Seed Export under SMTA)

SHU – Control No.: IRRI-SHU-TP-DBM-102
Version 3

Author/Reviewed by: Salome P. Bulaquiña/ Ma. Velinda H. Ilao

Approved by:

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Compliance and Seed Health Unit

August 2018

Distribution list:

Copy 1 – SHU Site
Copy 2 – Secretary
Copy 3 – Laboratory

For Internal Use Only

Title: Steps in Processing Documents of Seed Request Application (Seed Export under SMTA)

Definitions:

SMTA	Standard Material Transfer Agreement
Program keyperson	Contact person from each group for germplasm exchange
MTA	Material Transfer Agreement
SHU	Seed Health Unit
GID	Germplasm Identification
MLS	Multi-Lateral System
SMTA – UD	Standard Material Transfer Under Development
SMTA – MLS	Standard Material Transfer in Multi-Lateral System
DBM group	Database Management group
DTC group	Dry seeds inspection, Treatment and Crop health group
RSHT	Routine Seed Health Testing

Procedure:

1. Check the completeness of the documents submitted by Program keypersons
    a. Two (2) copies of application form (BPI Q Form 10)
    b. Valid import permit (if required)
    c. Three (3) copies of seed list
    d. One (1) copy of MTA current acceptance

2. Check if the workbook is uploaded in the SHU Google drive with the file format: “PROGRAM_SENDER_COUNTRY_Request-number_MTAstatus” providing the required fields for SMTA generation with four (4) sheets to be checked:

    a. Description Sheet
        i. “STUDY” must contain the SHU Request Number and IRRI MTA ID
        ii. “TITLE” must contain nature of materials, sender, recipient and country
        iii. “START DATE” should be the date when it was processed at SHU
        iv. “END DATE” should be the date when SHU finalizes the workbook and generates the SMTA

v. "RECIPIENT" format should be "LAST NAME, First name, Initial"
vi. "RECIPIENT INSTITUTION" is the name of the institute or university
vii. "RECIPIENT ADDRESS" complete address of the institution
viii. "RECIPIENT COUNTRY" is the country of destination. Ensure that this is separated from "RECIPIENT ADDRESS"
ix. "PROGRAM Request Number", "RECIPIENT TYPE" and "PROGRAM" should be provided by the OU keyperson

b. Observation Sheet
   i. GIDs should all be positive
   ii. IRIS UNIQUE ID, SOURCE, GROUP NAME, UNIQUE SAMPLE ID, DESIGNATION, SPECIES and ORIGIN should also be provided by the uploader
   iii. MTA STATUS should be "SMTA – MLS" or "SMTA – UD" else, highlight the entries and take note on the SHU-DBM-Form 1 v3 – Remarks
   iv. SEED_PACKET should be equal to the total number of seed packets applied by the Program keyperson

c. MLS Ancestors-Description Sheet (skip from checking but should be present on the 3rd sheet of the workbook

d. MLS Ancestors Sheet
   i. All entries found on the "Observation Sheet" with the MTA status "SMTA-UD" should automatically generate the ancestrals from entrycodes to pedigrees. In cases wherein seeds are infected or to be deleted from the shipment, corresponding entrycodes/ designations should be removed from both the Observation and MLS Ancestors Sheets

3. If all the requirements are complete, attach the document checklist for outgoing of rice seeds form with assigned (stamped) SHU reference number.

4. Put the assigned SHU reference number in the application forms using the numbering machine.

    a. Fill up all information in the form

    b. From the Description sheet of the workbook, replace the “STUDY” name with the assigned SHU reference number

    c. “SHU Request Number” should be the same as what is provided in the “STUDY”

    d. Save the workbook

    e. Copy the following fields from the Observation sheet to SHU Google drive “Export(YEAR).xls and fill-in all entries with the SHU reference number:
        i. FSRNO
        ii. ENTRYCODE
        iii. GID
        iv. SOURCE
        v. GROUP NAME
        vi. UNIQUE SAMPLE ID
        vii. DESIGNATION
        viii. ORIGIN
        ix. FIELD LOCATION
        x. CATEGORY
        xi. MTA STATUS

    f. Close the workbook and change/ rename the file from “PROGRAM_SENDER_COUNTRY_Request-number_MTAStatus” by providing the SHU Reference Number as the prefix (e.g. SHU18-001_ PROGRAM_SENDER_COUNTRY_Request-number_MTAstatus)

    g. Record the processed seed request application in the SHU Google drive "Records for Outgoing Rice Seeds.xls" and “2018 Status of Seed Export.xls”

h. Stamp “Entered” with the date and time + your initial at the bottom of the application form

i. Submit to DTC group for processing

Note:

➢ If the seed request application has an import permit, DTC supervisor will review the pre-shipment requirements (crop health, treatments, etc.)

➢ If the seed request application requires signed SMTA, put a sticky note “Return to DBM group for SMTA generation”. DTC group will return the documents to DBM group after recording to generate the SMTA.

➢ Domestic seed transfer (within the local community) and seeds for destructive purposes will not undergo with routine seed health testing.

Other documents to be attached in processing the seed request application

a. Attach a copy of “Suggestions on Growing Wild Taxa of Oryza” if the seed request application contains wild rice for planting.

b. Attach a copy of RSHT results printed in IRRI letterhead before phytosanitary certification for the seed request application going to Pakistan, Tanzania and other countries that may require. Template to be used has a filename “Template for requesting countries.xls”.

c. If signed SMTA was requested by the receiving institution, Program keyperson need to provide the following:

- One (1) copy of application for approval of Approval Sheet for MTA Clearance for outgoing seeds approved and signed by the Platform and Project Leaders

- Name and designation of the authorized signatory from the receiving institution

d. If materials were identified “sensitive” or active breeding materials, a Customized MTA with signed SMTA will be requested to be approved and signed by the recipient, ITT and IRRI management. This requires the following:

   - One (1) copy of application for approval of Approval Sheet for MTA Clearance for outgoing seeds approved and signed by the Platform and Project Leaders

   - Name and designation of the authorized signatory and recipient from the receiving institution

   - Email communications regarding the purpose of request for CMTA

e. Inform and forward the documents to the SHU-MTA Controller after recording from DTC group.

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Salome P. Bulaquiña, Technician III-Data Encoding		2August 2018
	Ma. Velinda H. Ilao, Specialist-MTA Controller		2 August 2018
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		02 Aug 2018
Quality Assurance	Carlos C. Huelma, RMQA Officer		02 Aug 2018

REVISION HISTORY

Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)
1	Patria G. Gonzales	7 Nov. 2017	Version 2

Steps in Processing Documents of Seed Request Application (Seed Export using other MTA)

SHU – Control No.: IRRI-SHU-TP-DBM-103
Version 3

Author/Reviewed by: Salome P. Bulaquiña/ Ma. Velinda H. Ilao

Approved by:

Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

August 2018

Distribution list:

Copy 1 – SHU Site
Copy 2 – Secretary
Copy 3 – Laboratory

For Internal Use Only

Title: Steps in Processing Documents of Seed Request Application (Seed Export using other MTA)

Definitions:

IRRI	International Rice Research Institute
ITT	IRRI Tech Transfer
SMTA	Standard Material Transfer Agreement
Program keyperson	contact person from each group for germplasm exchange
MTA	Material Transfer Agreement
SHU	Seed Health Unit
GID	Germplasm Identification
DBM group	Database Management group
DTC group	Dry seed, Treatment and Crop health group
RSHT	Routine Seed Health Testing

Procedure:

1. Check the completeness of the documents
    a. Two (2) copies of application form (BPI Q Form 10)
    b. Three (3) copies of seed list
    c. Valid import permit (if required)
    d. One (1) copy of application for approval of Approval Sheet for MTA Clearance for outgoing seeds approved and signed by the Platform and Project Leaders

2. Check if the workbook is uploaded in the SHU Google drive with the file format: “PROGRAM_SENDER_COUNTRY_Request-number” providing the required fields

    a. Description Sheet
        i. “STUDY” must contain the SHU Request Number and IRRI MTA ID
        ii. “TITLE” must contain nature of materials, sender, recipient and country
        iii. “START DATE” should be the date when it was processed at SHU
        iv. “END DATE” should be the date when SHU finalizes the workbook and generates the SMTA

v. "RECIPIENT" format should be "LAST NAME, First name, Initial"
vi. "RECIPIENT INSTITUTION" is the name of the institute or university
vii. "RECIPIENT ADDRESS" complete address of the institution
viii. "RECIPIENT COUNTRY" is the country of destination. Ensure that this is separated from "RECIPIENT ADDRESS"
ix. "OU Request Number", "RECIPIENT TYPE" and "OU" should be provided by the OU keyperson

b. Observation Sheet
   i. GIDs should all be positive
   ii. IRIS UNIQUE ID, SOURCE, GROUP NAME, UNIQUE SAMPLE ID, DESIGNATION, SPECIES and ORIGIN should also be provided by the uploader
   iii. SEED_PACKET should be equal to the total number of seed packets applied by the Program keyperson

3. If all the requirements are complete, attach the document checklist for outgoing of rice seeds form with assigned (stamped) SHU reference number.

4. Put the assigned SHU reference number to the application form using the numbering machine.

   a. Fill up all the information in the form

   b. From the Description sheet of the workbook, replace the "STUDY" name with the assigned SHU reference number

   c. "SHU Request Number" should be the same as what is provided in the "STUDY"

   d. Change the "START DATE" with the current date when documents have been completed.

   e. Save the workbook

f. Copy the following fields from the Observation sheet to SHU Google drive “Export(YEAR).xls and fill-in all entries with the SHU reference number:
   i. FSRNO
   ii. ENTRYCODE
   iii. GID
   iv. SOURCE
   v. GROUP NAME
   vi. UNIQUE SAMPLE ID
   vii. DESIGNATION
   viii. ORIGIN
   ix. FIELD LOCATION
   x. CATEGORY
   xi. MTA STATUS

g. Close the workbook and change/ rename the file from “PROGRAM_SENDER_COUNTRY_Request-number_MTAStatus” by providing the SHU Reference Number as the prefix (e.g. SHU18-001_ PROGRAM_SENDER_COUNTRY_Request-number_MTAstatus)

h. Record the processed seed request application to the SHU Google drive "Records for Outgoing Rice Seeds.xls" and “2018 Status of Seed Export.xls”

i. Stamp “Entered” with the date and time + your initial at the bottom of the application form and put notes to the application form “wait for approved MTA from ITT before phytosanitary certification”.

j. Submit to DTC group for processing

Note:

➢ If the seed request application has an import permit DTC supervisor will review the pre-shipment requirements (crop health, treatments, etc.)

➢ Put a sticky note “Return to DBM group for SMTA generation”. DTC group will return the documents to DBM group after recording to generate the SMTA.

- ➢ Domestic seed transfer (within the local community) and seeds for destructive purposes will not undergo with routine seed health testing.

Other documents to be attached in processing the seed request application

a. Attach a copy of "Suggestions on Growing Wild Taxa of Oryza" if the seed request application contains wild rice for planting.

b. Attach a copy of RSHT results printed in IRRI letterhead before phytosanitary certification for the seed request application going to Pakistan and Tanzania and other countries that may require. Template to be used has a filename "Template for requesting countries.xls".

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Salome P. Bulaquiña, Technician III-Data Encoding		6 August 2018
	Ma. Velinda H. Ilao, Specialist-MTA Controller		6 August 2018
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		06 Aug 2018
Quality Assurance	Carlos C. Huelma, RMQA Officer		06 Aug 2018

REVISION HISTORY

Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)
1	Patria G. Gonzales	9 Nov. 2017	Version 2

Steps in Processing Documents for Genebank Seed Request Application with Advance Testing Results

SHU – Control No.: IRRI-SHU-TP-DBM-104
Version 3

Author/Reviewed by: Salome P. Bulaquiña/ Ma. Velinda H. Ilao

Approved by:

Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

August 2018

Distribution list:

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Title: Steps in Processing Documents for Genebank Seed Request Application with Advance Testing Results

Definitions:

SMTA	Standard Material Transfer Agreement
Program keyperson	contact person from each group for germplasm exchange
SHU	Seed Health Unit
DBM group	Database Management group
DTC group	Dry seed, Treatment and Crop health group
RSHT	Routine Seed Health Testing

Procedure:

1. Follow the procedures from “Steps in processing Documents of Seed Request Application (Seed Export under SMTA) steps 1 to 4”

2. Check the workbook from the SHU Google drive > IRIS Workbooks . Look for an additional sheet after MLS Ancestors sheet labeled “RSHT_ADVANCED_SHU” that contains the following fields:

Field title	
"Blank column A"	Label this as “Seedlot”
MGID	
UNIQUEID	Remove the field
SOURCE	
GROUPNAME	Remove the field
UNIQUESAMPLEID	
DESIGNATION	
SPECIES	Remove the field
ORIGIN	
FIELDLOCATION	
CATEGORY	
MTASTATUS	
MTA_ID	Remove the field
SEED_STATUS	Remove the field
SEED_PACKET	Remove the field
RSHT_NO	Rename as “SHUNo”
ACCNO	

*These field format will be used to search/ extract the advance testing results from SHU database in MS Access.

3. Make sure that the field titles placed are in ROW1:COLUMN A of the sheet “RSHT_ADVANCED_SHU”

4. Save and close the workbook and open the SHU Database for the RSHT results from MTACheck > Incoming Outgoing folder with filename: “(YEAR) GRC Advance Testing Compilation.mdb”

5. Import the workbook (sheet “RSHT_ADVANCED_SHU”) from SHU Google drive and create a table name as SHU Reference number (i.e. SHU18-xxx)

6. Copy the field formats from the existing tables, (copying only the pathogens field names) then create a query with the imported table (SHU Reference Number) linked to table “RSHT Results” using SHUNo as the primary key and run the following fields from your query:
    a. Seedlot (taken from imported table) should be in ascending order
    b. Acc no, Plot no, Temp_ID, Crop Yr, Location, Country, Designation, Batch ID (taken from RSHT Results table)
    c. SHUNo (taken from imported table)
    d. All pathogens field names (taken from RSHT Results table)
    e. Run the query

7. Check the source/ crop year of data generated from the advance testing and take note of the entries with Ab+ (found positive from *Aphelenchodies besseyi*). Save the query table as “SHU Reference number + RSHT” (i.e. SHU18-xxxRSHT)

8. Create another query to update the RSHT results in the imported table from the created query by using the “Query Update” in the menu. (see example on Figure 1)

9. Create a report from REPORT Module >“Print out report” by editing the properties in the design view.

10. Go to Data tab, change the “Record source” as “SHU Reference number + RSHT” (i.e. SHU18-xxxRSHT), Order by >“Seedlot” and Order by on load >”Yes”

11. View the report by providing the FSRNO (Type in the SHU Reference number) then print in a legal size paper.

12. To get the entries without advance testing results, go to TABLES module, open the table and filter all entries with zero value from SHUNo field.

13. Copy the filtered entries to MS Excel file, print and attach to the documents. This will be the reference of the RSHT group for entries that need to be set for routine seed health testing.

14. Submit the generated reports (advance testing results and list of entries for RSHT) to DTC group for processing.

Note:

- Notify and request for replacement/s from the Program keyperson from the genebank if there are entries found Ab+ from the advance testing.

- Seed request application with import permit must be forwarded to DTC supervisor to review the pre-shipment requirements (crop health, treatments, etc.).

- If the seed request application requires signed SMTA, put a sticky note “Return to DBM group for SMTA generation”. DTC group will return the documents to DBM group after recording to generate the SMTA.

- Domestic seed transfer (within the local community), seeds for destructive purposes and wild rice seeds with limited quantity will not undergo with routine seed health testing and no advance testing results to be printed.

Other documents to be attached in processing the seed request application

a. Attach a copy of "Suggestions on Growing Wild Taxa of Oryza" if the seed request application contains wild rice for planting.

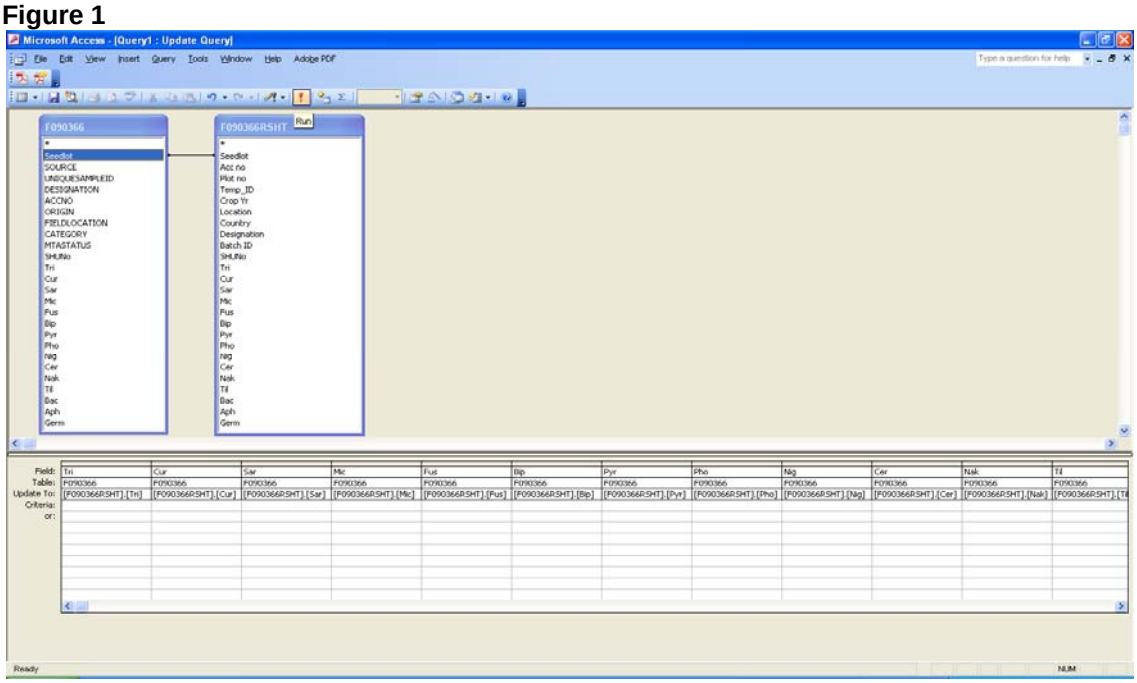
b. Attach a copy of RSHT results printed in IRRI letterhead before phytosanitary certification for the seed request application going to Pakistan and Tanzania and other countries that may require. Template to be used has a filename "Template for requesting countries.xls".

c. If signed SMTA was requested by the receiving institution, Program keyperson need to provide the following:

- One (1) copy of application for approval of Approval Sheet for MTA Clearance for outgoing seeds approved and signed by the Platform and Project Leaders

- Name and designation of the authorized signatory from the receiving institution

Figure 1



AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Salome P. Bulaquiña, Technician III-Data Encoding		8 August 2018
	Ma. Velinda H. Ilao, Specialist-MTA Controller		8 August 2018
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		08 Aug 2018
Quality Assurance	Carlos C. Huelma, RMQA Officer		8 August 2018

REVISION HISTORY

Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)
1	Patria G. Gonzales	9 Nov. 2017	Version 2

Steps in Processing Documents of Nursery Seed Request Application (INGER-Nursery seeds for Export)

SHU – Control No.: IRRI-SHU-TP-DBM-105
Version 3

Author/Reviewed by: Salome P. Bulaquiña/ Ma. Velinda H. Ilao

Approved by:

Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

August 2018

Distribution list:

Copy 1 – SHU Site
Copy 2 – Secretary
Copy 3 – Laboratory

Title: Steps in Processing Documents of Nursery Seed Request Application (INGER-Nursery seeds for Export)

Definitions:

SMTA	Standard Material Transfer Agreement
Program keyperson	contact person from each group for germplasm exchange
MTA	Material Transfer Agreement
SHU	Seed Health Unit
GID	Germplasm Identification
MLS	Multi-Lateral System
SMTA – UD	Standard Material Transfer Under Development
SMTA – MLS	Standard Material Transfer in Multi-Lateral System
DBM group	Database Management group
DTC group	Dry seed, Treatment and Crop health group
RSHT	Routine Seed Health Testing

Procedure:

1. Check the completeness of the documents
    a. Two (2) copies of application form (BPI Q Form 10)
    b. Valid import permit (if required)
    c. Two (2) copies of seed list
    d. One (1) copy of MTA current acceptance

2. Check if the workbook is uploaded in the SHU Google Drive > IRRI Workbooks > INGER with the file format: "PROGRAM_RECIPIENT_COUNTRY_Request-number" providing the required fields for SMTA generation with four (4) sheets to be checked:

    a. Description Sheet
        i. "START DATE" should be the date when it was processed at SHU
        ii. "RECIPIENT" format should be "LAST NAME, Firstname, Initial"
        iii. If the "RECIPIENT INSTITUTION" is blank, fill this up with "RECIPIENT"
        iv. Ensure that "RECIPIENT COUNTRY" is separated from "RECIPIENT ADDRESS"
        v. "OU Request Number" and the "RECIPIENT TYPE" should be provided by the keyperson

b. Observation Sheet
   i. GIDs should all be positive
   ii. IRIS UNIQUE ID, SOURCE, GROUP NAME, UNIQUE SAMPLE ID, DESIGNATION, SPECIES and ORIGIN should also be provided by the uploader
   iii. MTA STATUS should be "SMTA-MLS or SMTA-UD" else, highlight the entries and take note on the SHU-DBM-Form 1 v3 – Remaks
   iv. SEED_PACKET should be equal to the total number of samples applied by the keyperson

c. MLS Ancestors-Description Sheet (Skip from checking but should be present on the 3rd sheet of the workbook

d. MLS Ancestors Sheet
   i. All entries found on the "Observation Sheet" with the MTA status 'SMTA-UD" should automatically create the ancestrals from entrycodes to pedigrees.

3. If all the requirements are complete, attach the document checklist for outgoing of rice seeds form with assigned (stamped) SHU reference number.

4. Put the assigned SHU reference number to the application forms using the numbering machine.

   a. Stamp "Completed" with the date and time to start the process on the top of document checklist for outgoing of rice seeds form

   b. Fill up all the required information in the form

   c. From the Description sheet of the workbook, replace the "STUDY" name with SHU reference number assigned

   d. "SHU Request Number" should be the same as what is provided from "STUDY" – the SHU reference number

   e. Save the workbook on the same location in the SHU portal.

   f. Close the workbook and change/ rename the "Properties" of the file from "PROGRAM_SENDER_COUNTRY_Request-number" by providing the SHU Reference Number as the prefix (e.g. N18-0001_ PROGRAM_SENDER_COUNTRY_Request-number)

g. RSHT results of INGER Nursery samples can be accessed at SHU Google Drive/ MTACheck (Back-up Files\NURSERY & INGER Folder). Check the current year in the filename of the nursery dispatched folder to open the MS access database and print the nursery sets with advance testing results included in the seed request application.

h. Submit the seed request application form to DTC supervisor if there is an import permit to review the pre-shipment requirements. If none, forward the seed request application to PQS desk for phytosanitary certification.

Note:

➢ If the seed request application requires signed SMTA, put a sticky note “Return to DBM group for SMTA generation”. DTC group will return the documents to DBM group after recording to generate the SMTA.

➢ Domestic seed transfer (within the local community) will not undergo with printing of advance testing results

Other documents to be attached in processing the INGER seed request application

a. Attach a copy of RSHT results printed in IRRI letterhead before phytosanitary certification for the seed request application going to Pakistan, Tanzania and other countries that may require. Template to be used has a filename “Template for requesting countries.xls”.

b. If signed SMTA was requested by the receiving institution, Program keyperson need to provide the following:

- One (1) copy of application for approval of Approval Sheet for MTA Clearance for outgoing seeds approved and signed by the Platform and Project Leaders

- Name and designation of the authorized signatory from the receiving institution

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Salome P. Bulaquiña, Technician III-Data Encoding		10 August 2018
	Ma. Velinda H. Ilao, Specialist-MTA Controller		10 August 2018
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		10 Aug 2018
Quality Assurance	Carlos C. Huelma, RMQA Officer		10 August 2018

REVISION HISTORY

Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)
1	Patria G. Gonzales	9 Nov. 2017	Version 2

Steps in Processing Documents of Incoming Rice Seeds for Plant Quarantine Service (PQS) Clearance

SHU – Control No.: IRRI-SHU-TP-DBM-106
Version 3

Author/Reviewed by: Salome P. Bulaquiña/ Ma. Velinda H. Ilao

Approved by:

Dr. Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

February 2019

Distribution list:

Copy 1 – SHU Site
Copy 2 – Secretary
Copy 3 – Laboratory

For Internal Use Only

Title: Steps in Processing Documents of Incoming Rice Seeds for PQS Clearance

Definitions:

SMTA	Standard Material Transfer Agreement
Program keyperson	contact person from each group for germplasm exchange
MTA	Material Transfer Agreement
SHU	Seed Health Unit
GID	Germplasm Identification
MLS	Multi-Lateral System
SMTA – UD	Standard Material Transfer Under Development
SMTA – MLS	Standard Material Transfer in Multi-Lateral System
DBM group	Database Management group
DTC group	Dry seed, Treatment and Crop health group
OU	Organizational Unit
PQS	Plant Quarantine Service
ITT	IRRI Tech Transfer

Procedures:

The MTA Controller will receive the documents from DTC group.

1. Check the completeness of the following documents:
    a. Philippine import permit (commodity, quantity, weight vs. actual samples received, validity and pre-shipment conditions)
    b. Phytosanitary certificate from the country of origin (pre-shipment conditions from Philippine import permit must be stipulated)
    c. List of the materials (printed and e-copy)
    d. Material Transfer Agreement (MTA or any applicable agreement)
    e. Approval sheet for MTA clearance signed by the Platform and Project Leaders (if signed SMTA is requested or other MTA)

Receipt of the materials, its condition and documents will be acknowledged by email. If any of the above requirements was not complied, notify the concerned scientist and Program keyperson that shipment will only proceed once completed.

Note:

- *If the materials arrived from foreign origin with expired or no import permit, this is subject for PQS recommendation (destroy/ return to sender).*

- *Domestic permit may be needed on materials from local origin depending on the means of transportation*
- *If material is intended for destructive/ commercial analysis, no MTA needed. MTA may vary depending on the nature of importation. This should be closely coordinated with ITT*

2. If the required documents and information are complete, MTA Controller will forward the documents to DTC group with mark for processing".

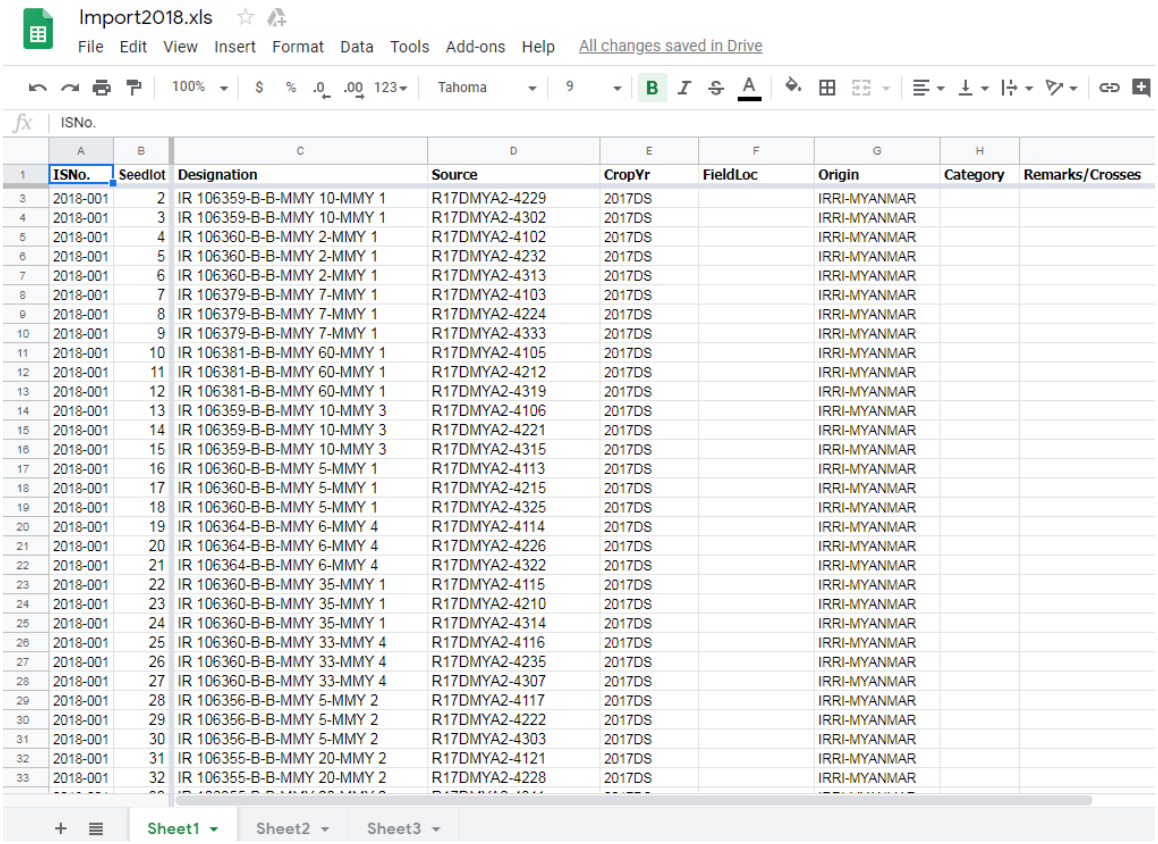
The DTC group will revert the documents to the DBM group with SHU Reference Number assigned and will proceed with the following procedures:

3. Encoder will get the e-copy of the list of materials from the email and save to the in "GoogleDrive\MTACheck\Incoming and Outgoing\Seedlist\List of materials provided by OUs" and rename the file as "SHU Reference number_RECIPIENT_COUNTRY" (i.e. IS2019-001_JAli_INDIA)

Copy to Google drive\importYYYY.xls" the following fields available from the provided seedlist:

a. Seedlot - packet number
b. Designation - variety name
c. Source
d. Crop Year
e. Field Location
f. Origin of the materials
g. Category
h. Parent/ Crosses

4. Fill-in all entries with the SHU Reference number then save and close the file.



Import2018.xls

File Edit View Insert Format Data Tools Add-ons Help All changes saved in Drive

ISNo.

	A	B	C	D	E	F	G	H	
1	ISNo.	Seedlot	Designation	Source	CropYr	FieldLoc	Origin	Category	Remarks/Crosses
3	2018-001	2	IR 106359-B-B-MMY 10-MMY 1	R17DMYA2-4229	2017DS		IRRI-MYANMAR		
4	2018-001	3	IR 106359-B-B-MMY 10-MMY 1	R17DMYA2-4302	2017DS		IRRI-MYANMAR		
5	2018-001	4	IR 106360-B-B-MMY 2-MMY 1	R17DMYA2-4102	2017DS		IRRI-MYANMAR		
6	2018-001	5	IR 106360-B-B-MMY 2-MMY 1	R17DMYA2-4232	2017DS		IRRI-MYANMAR		
7	2018-001	6	IR 106360-B-B-MMY 2-MMY 1	R17DMYA2-4313	2017DS		IRRI-MYANMAR		
8	2018-001	7	IR 106379-B-B-MMY 7-MMY 1	R17DMYA2-4103	2017DS		IRRI-MYANMAR		
9	2018-001	8	IR 106379-B-B-MMY 7-MMY 1	R17DMYA2-4224	2017DS		IRRI-MYANMAR		
10	2018-001	9	IR 106379-B-B-MMY 7-MMY 1	R17DMYA2-4333	2017DS		IRRI-MYANMAR		
11	2018-001	10	IR 106381-B-B-MMY 60-MMY 1	R17DMYA2-4105	2017DS		IRRI-MYANMAR		
12	2018-001	11	IR 106381-B-B-MMY 60-MMY 1	R17DMYA2-4212	2017DS		IRRI-MYANMAR		
13	2018-001	12	IR 106381-B-B-MMY 60-MMY 1	R17DMYA2-4319	2017DS		IRRI-MYANMAR		
14	2018-001	13	IR 106359-B-B-MMY 10-MMY 3	R17DMYA2-4106	2017DS		IRRI-MYANMAR		
15	2018-001	14	IR 106359-B-B-MMY 10-MMY 3	R17DMYA2-4221	2017DS		IRRI-MYANMAR		
16	2018-001	15	IR 106359-B-B-MMY 10-MMY 3	R17DMYA2-4315	2017DS		IRRI-MYANMAR		
17	2018-001	16	IR 106360-B-B-MMY 5-MMY 1	R17DMYA2-4113	2017DS		IRRI-MYANMAR		
18	2018-001	17	IR 106360-B-B-MMY 5-MMY 1	R17DMYA2-4215	2017DS		IRRI-MYANMAR		
19	2018-001	18	IR 106360-B-B-MMY 5-MMY 1	R17DMYA2-4325	2017DS		IRRI-MYANMAR		
20	2018-001	19	IR 106364-B-B-MMY 6-MMY 4	R17DMYA2-4114	2017DS		IRRI-MYANMAR		
21	2018-001	20	IR 106364-B-B-MMY 6-MMY 4	R17DMYA2-4226	2017DS		IRRI-MYANMAR		
22	2018-001	21	IR 106364-B-B-MMY 6-MMY 4	R17DMYA2-4322	2017DS		IRRI-MYANMAR		
23	2018-001	22	IR 106360-B-B-MMY 35-MMY 1	R17DMYA2-4115	2017DS		IRRI-MYANMAR		
24	2018-001	23	IR 106360-B-B-MMY 35-MMY 1	R17DMYA2-4210	2017DS		IRRI-MYANMAR		
25	2018-001	24	IR 106360-B-B-MMY 35-MMY 1	R17DMYA2-4314	2017DS		IRRI-MYANMAR		
26	2018-001	25	IR 106360-B-B-MMY 33-MMY 4	R17DMYA2-4116	2017DS		IRRI-MYANMAR		
27	2018-001	26	IR 106360-B-B-MMY 33-MMY 4	R17DMYA2-4235	2017DS		IRRI-MYANMAR		
28	2018-001	27	IR 106360-B-B-MMY 33-MMY 4	R17DMYA2-4307	2017DS		IRRI-MYANMAR		
29	2018-001	28	IR 106356-B-B-MMY 5-MMY 2	R17DMYA2-4117	2017DS		IRRI-MYANMAR		
30	2018-001	29	IR 106356-B-B-MMY 5-MMY 2	R17DMYA2-4222	2017DS		IRRI-MYANMAR		
31	2018-001	30	IR 106356-B-B-MMY 5-MMY 2	R17DMYA2-4303	2017DS		IRRI-MYANMAR		
32	2018-001	31	IR 106355-B-B-MMY 20-MMY 2	R17DMYA2-4121	2017DS		IRRI-MYANMAR		
33	2018-001	32	IR 106355-B-B-MMY 20-MMY 2	R17DMYA2-4228	2017DS		IRRI-MYANMAR		

Sheet1 Sheet2 Sheet3

5. Record the processed incoming documents to the Google drive “Records of Incoming Rice Seeds.xls".

6. Mark “Entered” with the date and time + initial at the bottom of the ply sheet.

7. Use the template from the “Request for upload” folder on the same folder in MTACheck.

8. From the seedlist provided by the Program keyperson/ recipient, copy the designations, source/ crop year, and other available information to the template.

9. Save the file as “SHU Reference Number_Recipient name_Country” to folder “Request for upload”

Forward the documents to the MTA controller to request for GID assignment and uploading of the MTA status

10. Fill-up the information needed by the database administrator in assigning positive GIDs:
    a. MLS Date (223) – date when the material/s were received if the incoming materials shared to IRRI under SMTA with no additional conditions or with confirmation that materials are free for distribution
    b. MTA Number (1130) - SHU Reference Number + accompanying MTA
    c. IP Stat (1131) and AVAL Stat (1350) - status/ condition of the materials based on the MTA
    d. Aval Stat - see Annex 1
    e. Setgen List Name - SHU Reference Number

11. Send the file for upload to the OU database administrator
    a. Concepcion Lotho – Rice Breeding, IMPACT, POLICY, IRS
    b. Grace Capilit – STRAT-FGR
    c. Marnol Santos – IRS-ISL

    thru email with the following information:
    i. SHU Reference Number
    ii. Date received
    iii. Recipient name and Program
    iv. Sender's name, Institution and country
    v. Put additional notes as necessary

12. Stamp the yellow plysheet with "IP status" + date and forward to DTC group to proceed with the seed processing.

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Salome P. Bulaquiña, Technician III-Data Encoding		14Feb 2019
	Ma. Velinda H. Ilao, Specialist-MTA Controller		14 Feb 2019
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		14 Feb 2019
Quality Assurance	Ma. Velinda H. Ilao, RMQA Officer		14 Feb 2019

REVISION HISTORY

Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)
1	Patria G. Gonzales	9 Nov. 2017	Version 2

Steps in Processing Documents of Outgoing Non Seed Biological Material (NSBM) Application (using SMTA) for Phytosanitary Certification

SHU – Control No.: IRRI-SHU-TP-DBM-107
Version 3

Author/Reviewed by: Salome P. Bulaquiña/ Ma. Velinda H. Ilao

Approved by:

Dr. Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

February 2019

Distribution list:

Copy 1 – SHU Site
Copy 2 – Secretary
Copy 3 – Laboratory

For Internal Use Only

Title: Steps in Processing Documents of Outgoing Non Seed Biological Material (NSBM) Application (using SMTA) for Phytosanitary Certification

Definitions:

SMTA	Standard Material Transfer Agreement
MTA	Material Transfer Agreement
Program keyperson	contact person from each group for germplasm exchange
SHU	Seed Health Unit
GID	Germplasm Identification
MLS	Multi-Lateral System
SMTA – UD	Standard Material Transfer Under Development
SMTA – MLS	Standard Material Transfer in Multi-Lateral System
DBM group	Database Management group
DTC group	Dry seed, Treatment and Crop health group
OU	Organizational Unit
PQS	Plant Quarantine Service
ITT	IRRI Tech Transfer

Procedure:

1. Check the completeness of the following documents submitted by Program keyperson
    a. Two (2) copies of application form (BPI Q Form 10)
    b. Three (3) copies of seed list; request for e-copy
    c. One (1) copy of SMTA current acceptance
    d. Valid import permit (if required)
    e. One (1) copy of approval sheet for MTA clearance signed by Program head and Project leader

2. Check if the workbook is uploaded in the SHU Google drive (https://drive.google.com/drive/folders/0B6Z0rFMsxIFaWUV6MkFZNEsyX1E) with the file format: "PROGRAM_SENDER_COUNTRY_Request-number_MTAstatus" providing the required fields for SMTA generation with four (4) sheets to be checked:

    a. Description Sheet
        i. "TITLE" must contain nature of materials, sender, recipient and country

ii. "START DATE" should be the date when it was processed at SHU
iii. "RECIPIENT" format should be "LAST NAME, First name, Initial"
iv. "RECIPIENT INSTITUTION" is the name of the institute or university
v. "RECIPIENT ADDRESS" complete address of the institution
vi. If the "RECIPIENT INSTITUTION" is blank, fill this up with "RECIPIENT"
vii. "RECIPIENT COUNTRY" is the country of destination. Ensure that this is separated from "RECIPIENT ADDRESS"
viii. "PROGRAM Request Number" and the "RECIPIENT TYPE" and "PROGRAM" should be provided by the keyperson

b. Observation Sheet
   i. GIDs should all be positive
   ii. IRIS UNIQUE ID, SOURCE, GROUP NAME, UNIQUE SAMPLE ID, DESIGNATION, SPECIES and ORIGIN should also be provided by the uploader
   iii. MTA STATUS should be "SMTA-MLS or SMTA-UD" else, highlight the entries and take note on the SHU-DBM-Form 1 v3 – Remarks
   iv. UNIT should be equal to the total number of samples applied by the keyperson
   v. CONTAINER and MATERIAL TYPE should also be filled-up by the uploader

c. MLS Ancestors-Description Sheet (Skip from checking but should be present on the 3rd sheet of the workbook)

d. MLS Ancestors Sheet
   i. All entries found on the "Observation Sheet" with the MTA status 'SMTA-UD" should automatically generate the ancestrals from entrycodes to pedigrees.

3. If all the requirements are complete, attach the SHU Checklist form (SHU-DBM-NSBMO-Form 02 V4) located at the wooden shelf of the data encoder labeled "NSBM FORMS" with assigned (stamped) SHU reference number.

   a. Fill up all the information in the form

b. From the Description sheet of the workbook, replace the “STUDY” name with SHU reference number assigned

c. “SHU Request Number” should be the same as what is provided from “STUDY” to the SHU reference number under “RECIPEINT COUNTRY”

d. Proceed with the SMTA generation (*see IRRI-SHU-TP-DBM-111-Steps in Generating SMTA Documents*)

e. Record the processed NSBM application, SMTA and approval sheet to the Google drive “ITT Clearance form tracking sheet” and put the date submitted for approval for tracking purposes.

f. Submit the generated SMTA, approval sheet for MTA clearance, list of materials and SMTA current acceptance to ITT for approval/ signature.

Note: Phytosanitary certification and quarantine inspection will only be done once the approval sheet for MTA clearance has been approved/ signed.

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Salome P. Bulaquiña, Technician III-Data Encoding		7 Feb 2019
	Ma. Velinda H. Ilao, Specialist-MTA Controller		7 Feb 2019
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		7 Feb 2019
Quality Assurance	Ma. Velinda H. Ilao, RMQA Officer		7 Feb 2019

REVISION HISTORY

Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)
1	Patria G. Gonzales	9 Nov. 2017	Version 2

Steps in Processing Application of Outgoing Seeds Other than Rice (SOR) and Non Seed Biological Material (NSBM) for Phytosanitary Certification (using other MTA)

SHU – Control No.: IRRI-SHU-TP-DBM-108
Version 3

Author/Reviewed by: Salome P. Bulaquiña/ Ma. Velinda H. Ilao

Approved by:

Dr. Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

January 2019

Distribution list:

Copy 1 – SHU Site
Copy 2 – Secretary
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For Internal Use Only

Title: Steps in Processing Application of Outgoing Seeds Other than Rice (SOR) and Non Seed Biological Material (NSBM) for Phytosanitary Certification (using other MTA)

Definitions:

SMTA	Standard Material Transfer Agreement
MTA	Material Transfer Agreement
Program keyperson	contact person from each group for germplasm exchange
PEQS	Post-Entry Quarantine Service
ITT	IRRI Tech Transfer
NSBM	Non Seed Biological Material
SOR	Seeds Other than Rice

Procedure:

1. Check the completeness of the following documents submitted by Program keyperson:
    - Two (2) copies of application form (BPI Q Form 10)
    - Three (3) copies of list of materials; request for e-copy
    - One (1) copy of MTA current acceptance
    - signed Material Transfer Agreement *(IRRI NSBM MTA, Non-IRRI NSBM MTA, IRRI Developed Seed, Non-IRRI Seed, Collaborative MTA, RefLab MTA, Reflab SPA, etc)*
    - Valid import permit (if required)
    - One (1) copy of Approval sheet for MTA clearance signed by the Platform and Project leaders

2. If all the requirements are complete, attach the appropriate SHU checklist form located at the wooden shelf of the data encoder with assigned (stamped) SHU reference number

    - (SHU-DBM-SORO-Form 03 V1)
    - (SHU-DBM-NSBMO-Form 02 V4)

3. Record the processed NSBM application, MTA and approval sheet to the Google drive “ITT Clearance form tracking sheet” and put the date submitted for approval for tracking purposes.

4. Submit the MTA, approval sheet for MTA clearance, list of materials and MTA acceptance/ signed MTA to ITT for approval/ signature.

Note:

- *Phytosanitary certification and quarantine inspection will only be done once the approval sheet for MTA clearance has been approved/ signed.*
- *For SOR, seeds must be submitted to SHU together with the documents and forwarded to PEQS office for seed-potting/ testing*

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Salome P. Bulaquiña, Technician III-Data Encoding		24 Jan. 2019
	Ma. Velinda H. Ilao, Specialist-MTA Controller		24 Jan 2019
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		24 Jan 2019
Quality Assurance	Ma. Velinda H. Ilao, RMQA Officer		24 Jan 2019

REVISION HISTORY

Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)
1	Patria G. Gonzales	9 Nov. 2017	Version 2

Steps in Processing Documents of Incoming Seeds other than Rice (SOR) and Non Seed Biological Material (NSBM) for Plant Quarantine Service (PQS) Clearance

SHU – Control No.: IRRI-SHU-TP-DBM-109
Version 3

Author/Reviewed by: Salome P. Bulaquiña/ Ma. Velinda H. Ilao

Approved by:

Dr. Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

January 2019

Distribution list:

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For Internal Use Only

Title: Steps in Processing Documents of Incoming Seeds other than Rice (SOR) and Non Seed Biological Material (NSBM) for Plant Quarantine Service (PQS) Clearance

Definitions:

MTA	Material Transfer Agreement
Program keyperson	contact person from each group for germplasm exchange
SHU	Seed Health Unit
GID	Germplasm Identification
MLS	Multi-Lateral System
DTC group	Dry seed, Treatment and Crop health group
OU	Organizational Unit
BPI	Bureau of Plant Industry
PQS	Plant Quarantine Service
ITT	IRRI Tech Transfer
SHU	Seed Health Unit
SOR	Seeds Other than Rice
NSBM	Non Seed Biological Materials

Procedure:

The MTA Controller will receive the documents from DTC group.

1. Check the completeness of the following documents forwarded by DTC group with SHU shipment number
    - Valid Philippine import permit
    - Phytosanitary Certificate (for plant/ plant products)
    - List of materials (printed and e-copy)
    - Material Transfer Agreement (MTA) (or any applicable agreement)
    - Approval sheet for MTA clearance signed by the Platform and Project Leaders

2. Receipt of the materials, its condition and documents will be acknowledged by email. If any of the information above requirements was not complied, notify the concerned scientist and Program keyperson that shipment will only proceed once completed.

3. Forward the documents to DTC group with mark “for processing”.

4. The DTC group will revert the documents to the MTA Controller with SHU Reference Number assigned and will proceed with documentation process

5. MTA Controller will fill-up the appropriate SHU check list form

    - SHU-DTC-SORI-Form 10 V1
    - SHU-DTC-NSBMI-Form 09 V1

6. Record the processed incoming SOR/ NSBM documents, MTA and approval sheet to the Google drive “ITT Clearance form tracking sheet” and put the date submitted for approval for tracking purposes.

7. Forward the MTA, approval sheet and list of materials to ITT office for clearance (approval/ signature) and place the documents at the PQS desk for quarantine clearance and inspection.

8. Send the file for upload to the database administrator
    a. Concepcion Lotho – Rice Breeding, IMPACT, POLICY, IRS
    b. Grace Capilit – STRAT-FGR
    c. Marnol Santos – IRS-ISL

    thru email with the following information:
    i. SHU Reference Number
    ii. Date received
    iii. Recipient name and OU
    iv. Sender’s name, Institution and country
    v. Put additional notes as necessary

Note:

- *Wait for the approved MTA clearance from ITT before the release of materials to IRRI scientist.*
- *If incoming material is intended for commercial/ destructive analysis (as per Letter of Intent), no MTA needed.*
- *MTA may vary depending on the nature of importation. This should be closely coordinated with ITT*
- *Domestic permit may be needed on materials from local origin depending on the means of transportation*
- *For SOR, seeds must be submitted to SHU together with the documents and forwarded to PEQS office for seed-potting/ testing*
- *For non-plant material (soil, DNA/ plasmids, insects, etc), no phytosanitary certificate required by BPI-PQS*

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Salome P. Bulaquiña, Technician III-Data Encoding		24 Jan. 2019
	Ma. Velinda H. Ilao, Specialist-MTA Controller		24 Jan 2019
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		24 Jan 2019
Quality Assurance	Ma. Velinda H. Ilao, RMQA Officer		24 Jan 2019

REVISION HISTORY

Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)
1	Patria G. Gonzales	9 Nov. 2017	Version 2

Steps in Processing Documents of Transgenic Seed Application for Phytosanitary Certification

SHU – Control No.: IRRI-SHU-TP-DBM-110
Version 3

Author/Reviewed by: Salome P. Bulaquiña/ Ma. Velinda H. Ilao

Approved by:

Dr. Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

January 2019

Distribution list:

Copy 1 – SHU Site
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For Internal Use Only

Title: Steps in Processing Documents of Transgenic Seed Application for Phytosanitary Certification

Definitions:

SMTA	Standard Material Transfer Agreement
MTA	Material Transfer Agreement
Program keyperson	contact person from each group for germplasm exchange
SHU	Seed Health Unit
GID	Germplasm Identification
MLS	Multi-Lateral System
SMTA – UD	Standard Material Transfer Under Development
SMTA – MLS	Standard Material Transfer in Multi-Lateral System
DBM group	Database Management group
DTC group	Dry seed, Treatment and Crop health group
OU	Organizational Unit
BPI	Bureau of Plant Industry
PEQS	Post-Entry Quarantine Service
PQS	Plant Quarantine Service
ITT	IRRI Tech Transfer
BSO	Biosafety Officer
RSHT	Routine Seed Health Testing

Procedure:

1. Check the completeness of the documents submitted by Program keyperson
    a. Two (2) copies of application form (BPI Q Form 10)
    b. Three (3) copies of list of materials; request for e-copy
    c. Valid import permit (if required)
    d. One (1) copy of approval sheet for MTA clearance signed by the Platform and Project Leaders
    e. One (1) copy of Transgenic MTA and/ or Other MTA signed by the recipient institution's authorized signatory
    f. TDC approval

2. Check if the workbook is uploaded in the SHU Google drive (https://drive.google.com/drive/folders/0B6Z0rFMsxIFaWUV6MkFZNEsyX1E) with the file format: "PROGRAM_SENDER_COUNTRY_Request-

number_MTAstatus" providing the required fields for SMTA generation with four (4) sheets to be checked:

a. Description Sheet
   - "TITLE" must contain nature of materials, sender, recipient and country
   - "START DATE" should be the date when it was processed at SHU
   - "RECIPIENT" format should be "LAST NAME, First name, Initial"
   - "RECIPIENT INSTITUTION" is the name of the institute or university
   - "RECIPIENT ADDRESS" complete address of the institution
   - If the "RECIPIENT INSTITUTION" is blank, fill this up with "RECIPIENT"
   - "RECIPIENT COUNTRY" is the country of destination. Ensure that this is separated from "RECIPIENT ADDRESS"
   - "PROGRAM Request Number" and the "RECIPIENT TYPE" and "PROGRAM" should be provided by the keyperson

b. Observation Sheet
   - GIDs should all be positive
   - IRIS UNIQUE ID, SOURCE, GROUP NAME, UNIQUE SAMPLE ID, DESIGNATION, SPECIES and ORIGIN should also be provided by the uploader
   - MTA STATUS should be "SMTA-MLS or SMTA-UD" else, highlight the entries and take note on the SHU-DBM-Form 1 v3 – Remaks
   - SEED_PACKET should be equal to the total number of samples applied by the keyperson

c. MLS Ancestors-Description Sheet (Skip from checking but should be present on the 3rd sheet of the workbook

d. MLS Ancestors Sheet
   - All entries found on the "Observation Sheet" with the MTA status 'SMTA-UD" should automatically generate the ancestrals from entrycodes to pedigrees.

3. If all the requirements are complete, attach the SHU Checklist form (SHU-DBM-TRAN-Form 01 V0) located at the wooden shelf labeled “REGULAR SEED REQUEST” with assigned (stamped) SHU reference number.

4. Put the assigned SHU reference number to the application forms using the numbering machine.

    a. Fill up all the information in the form
    b. From the Description sheet of the workbook, replace the “STUDY” name with SHU reference number assigned
    c. “SHU Request Number” should be the same as what is provided from “STUDY” to the SHU reference number under “RECIPEINT COUNTRY”
    d. Save the workbook on the same location in the SHU Google drive.
    e. Copy the following fields from the Observation sheet to SHU Google drive “Exportxxxx.xls and fill-in all entries with the SHU reference number:
        - SHUNo
        - ENTRYCODE
        - GID
        - SOURCE
        - GROUP NAME
        - UNIQUE SAMPLE ID
        - DESIGNATION
        - ORIGIN
        - FIELD LOCATION
        - CATEGORY
        - MTA STATUS

    f. Close the workbook and change/ rename the file from “PROGRAM_SENDER_COUNTRY_Request-number_MTAStatus” by providing the SHU Reference Number as the prefix (e.g. SHU<year>-<###>_ PROGRAM_SENDER_COUNTRY_Request-number_MTAstatus)
    g. Record the processed seed request application to the SHU Google drive "Records for Outgoing Rice Seeds.xls"
    h. Stamp “Entered” with the date and time + your initial at the bottom of the application form
    i. Forward the documents to the MTA Controller for SMTA generation and ITT clearance process

j. Upon receipt of the approved MTA/s from ITT, advise the sender/ Program keyperson to arrange the seed transfer from Transgenic laboratory to SHU for BPI for recommendation for necessary routine seed health testing (RSHT) to be conducted by PEQS officer. Transfer should be accompanied by the Biosafety Officer (BSO)

k. If materials are to be brought to the PQS, advise the sender/ Program keyperson to arrange the pick-up of the seeds at PEQS or may ask the PEQS officer to bring the samples back to IRRI on their scheduled time for phytosanitary certification (every Tuesdays).

Note:

- If the transgenic seed request application has an import permit, DTC supervisor will review the pre-shipment requirements (crop health, treatments, etc.)
- For transgenic seed request application going to Pakistan and Tanzania, attach a copy of RSHT results printed in IRRI letterhead before phytosanitary certification. Template to be used for the document can be found at “GoogleDrive\ MTACheck\ Incoming Outgoing\ Seedlist\ RSHT Template for requesting countries.xls”.
- If materials are IRRI-derived, Transgenic MTA+SMTA will be used.

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Salome P. Bulaquiña, Technician III-Data Encoding		24 Jan. 2019
	Ma. Velinda H. Ilao, Specialist-MTA Controller		24 Jan 2019
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		24 Jan 2019
Quality Assurance	Ma. Velinda H. Ilao, RMQA Officer		24 Jan 2019

REVISION HISTORY

Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)
1	Patria G. Gonzales	9 Nov. 2017	Version 2

Steps in Generating SMTA Documents

SHU – Control No.: IRRI-SHU-TP-DBM-111
Version 3

Author/Reviewed by: Salome P. Bulaquiña/ Ma. Velinda H. Ilao

Approved by:

Dr. Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

January 2019

Distribution list:

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Title: Steps in Generating SMTA Documents

Definitions:

SMTA	Standard Material Transfer Agreement
MTA	Material Transfer Agreement
MLS	Multi-Lateral System
SMTA – UD	Standard Material Transfer Under Development
SMTA – MLS	Standard Material Transfer in Multi-Lateral System
SHU	Seed Health Unit

Procedure:

Application for phytosanitary certification must be the reference material in generating the SMTA document.

1. Open the Standalone SMTA generator in the SHU Google drive folder SMTA generator.xls and SMTA checker.xls

2. Check for the last SMTA-ID number generated in the SMTA generator

3. Get the application/ documents and assign the next SMTA-ID number to be generated.

4. Look for the workbook uploaded in the GoogleDrive\ IRIS Workbooks\ <year>\ Outgoing\ referring to the SHU Reference Number.

5. Open the workbook and check for the following information in the Description sheet:
    a. “STUDY” – add the SMTA-ID number as suffix to SHU Reference Number (e.g. SHU<year>-<###>SMTA<year>-####)
    b. “TITLE” – must contain the nature of materials, sender’s name and destination
    c. “END DATE” – write the date when the SMTA was generated (format: yyyymmdd)
    d. Check the “RECIPIENT NAME”, “RECIPIENT INSTITUTION”, “ADDRESS”, “COUNTRY” and “SHU NUMBER”
    e. Write the SMTA-ID number on “IRRI MTA ID” field (G15)

6. Go to “OBSERVATION SHEET” and check all the fields - refer to “Steps in Processing Documents of Seed Request Application for Phytosanitary Certification (Seed Export under SMTA)

7. In the “MTA-ID” field, write the assigned SMTA-ID number and put “passed” in the “SEED STATUS” field (if and only the seeds have been passed from quarantine/ MTA restrictions). If entries/ seedlots were deleted due to quarantine/ MTA restrictions, these entries must be highlighted with MTA Status “Deleted”

8. Save the file on the same directory. Then save as/ rename the file in SHU Google drive under Standalone SMTA Generator\ Workbooks folder with the SMTA-ID number after the SHU Reference Number (e.g. SHU19-001SMTA2019-0001_GRC_NRSHAMILTON_BURUNDI_SR18-001_MLS). If entries/ seedlots were deleted due to quarantine/ MTA restrictions, these entries must be removed from the observation and ancestral worksheets file saved in the workbook folder under “Standalone SMTA Generator”

9. Copy the filename of the workbook saved in the Standalone SMTA generator and paste in the ”workbook filename-type” field (B15), then click “click here to generate the SMTA” (B19) to generate the SMTA document.

10. The generator will create the PDF file saved under the folder generated SMTAs\ <year>.

11. Check the generated SMTA if all pages has the “page number” as header and “SMTA-ID number” + “SHU Reference Number” as footnote.

12. Check the contents of the Annex 1 (list of materials). This should contain all the Unique IRIS number and the rice designations.

13. Print the SMTA document (2-sided) in a special paper assigned for SMTA.

If the materials are under development (SMTA-UD), IRRI-OMTA must be generated. Get the IRRI-OMTA template in the OMTA Released folder under Standalone SMTA generator folder.

14. Write the assigned SMTA-ID number and SHU reference no. same with the generated SMTA for UD materials (SMTA-UD).

15. Change the “Recipient” (institution name) same as with the generated SMTA for UD materials.

16. Save as/ rename the file as “IRRI-OMTA_SMTA2019-0001”.

Note:

- *If the MTA STATUS is equal to "SMTA-UD", MLS Ancestral sheet must have the ancestors referring to the entries generated from "OBSERVATION SHEET". To check, press Alt+F8 (SMTA checker.xls must be open). Error message will be displayed if there are missing lines in the observation and/ or ancestral sheets*

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Salome P. Bulaquiña, Technician III-Data Encoding		24 Jan. 2019
	Ma. Velinda H. Ilao, Specialist-MTA Controller		24 Jan 2019
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		24 Jan 2019
Quality Assurance	Ma. Velinda H. Ilao, RMQA Officer		24 Jan 2019

REVISION HISTORY

Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)
1	Patria G. Gonzales	9 Nov. 2017	Version 2

Processing of Plant Quarantine Clearance (PQC) Application (BPI Q Form 1)

SHU – Control No.: IRRI-SHU-TP-DBM-112
Version 2

Author/Reviewed by: Salome P. Bulaquiña/ Ma. Velinda H. Ilao

Approved by:

Dr. Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

January 2019

Distribution list:

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Title: Processing of Plant Quarantine Clearance (PQC) Application (BPI Q Form 1)

Definitions:

DA	Department of Agriculture
BPI	Bureau of Plant Industry
PQS	Plant Quarantine Service
SHU	Seed Health Unit
OU	Organizational Unit

Procedure:

1. Check the completeness of the following documents submitted by the applicant/ Program importer together with the application:

    a. Two (2) copies of signed application form (BPI Q Form 1)
    b. A copy of list of materials; request for e-copy
    c. Two (2) copies of signed brief methodology and research outline (printed in IRRI letterhead)
    d. Letter of Intent addressed to the Director of DA-BPI
    e. Location Map of the Final Destination
    f. Update/ report on the status of the previous importation addressed to the Director*
    g. Budget code for processing fee of P300.00 per application request

**If applying for the same commodity from the same country of origin, status/ update conducted on the commodities of the previous importation must be submitted*

2. Record the application in the excel file "Import Permit Application" in the Google drive. The following information to be entered (columns 1-6, 8-13) are as follows:

Column#	Column Fields
1	Record number
2	Category
3	Date recd by SHU

4	Submitted by
5	Date sent to IRRI Makati Office
6	Date Applied to BPI Manila
7	Name of Importer
8	OU
9	Source of origin
10	Name of Exporter
11	Address
12	Commodity
13	No of samples
14	Unit Weight
15	Total wt (kg)
16	Permit No.
17	Date issued
18	Expiry Date
19	OR No
20	Approved IP fwded thru email
21	Agreement ID
22	BUS Code
23	Payment (Pesos)
24	Remarks
25	Description
26	DATE CHARGED

3. Save the file after recording and get a copy of the list of material and signed research outline for SHU file and put the record number (column 1) on the upper left side of the document.

4. Arrange in sending to BPI-PQS Manila to send the completed documents (step 1 [a-e]) addressed to the IRRI Makati Office c/o Angie Valintos/Felix Estipona thru the IRRI Mailroom.

5. Inform IRRI Makati Office of the date that you sent the application to the IRRI Mailroom.

6. IRRI Makati Office will then deliver the documents to the BPI Plant Quarantine Service, Manila for processing.

7. IRRI Makati Office will send back to SHU a copy of BPI Q Form 1 with BPI stamp of date of receipt and official receipt (OR). This will serve as receiving copy from BPI.

8. Record the OR number to the "Import Permit Application" file in the Google drive, column 7 (refer to step 2) and attach to the copy of the list of materials (refer to step 3).

9. Follow-up the PQC application after 3-5 days in the permit processing section at the following contact information numbers:
   Bureau of Plant Industry Plant Quarantine Service (BPI PQS) Permit Section, 692 San Andres St, Malate, Manila
   Tel. No. (63 2) 244-2950

As soon as the PQC is approved, request IRRI Makati Office to pick up the approved permit at BPI Manila.

10. IRRI Makati Office will forward to SHU thru IRRI Mailroom the approved copy of PQC.

11. Get the approved PQC from the IRRI Mailroom. Record the date when the approved PQC was received by SHU to the "Import Permit Application" file in the Google drive.

12. Keep one (1) photocopy of the approved PQC for SHU file and mark the copy with SHU received date.

13. Notify/ release the original copy of the approved PQC to the applicant/ Program importer.

Note:

- *Upon notification/ release, importer must be reminded of the pre-shipment requirements stated in the approved PQC*

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Salome P. Bulaquiña, Technician III-Data Encoding		24 Jan. 2019
	Ma. Velinda H. Ilao, Specialist-MTA Controller		24 Jan 2019
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		24 Jan 2019
Quality Assurance	Ma. Velinda H. Ilao, RMQA Officer		24 Jan 2019

REVISION HISTORY

Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)

Steps in Uploading Seeds and Non-seed Biological Material (NSBM) list of imported materials for GID

SHU – Control No.: IRRI-SHU-TP-DBM-113
Version 2

Author/Reviewed by: Salome P. Bulaquiña/ Ma. Velinda H. Ilao

Approved by:

Dr. Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

January 2019

Distribution list:

Copy 1 – SHU Site
Copy 2 – Secretary
Copy 3 – Laboratory

For Internal Use Only

Title: Steps in Uploading Seeds and Non-seed Biological Material (NSBM) list of imported materials for GID

Definitions:

SHU	Seed Health Unit
OU	Organizational Unit
NSBM	Non Seed Biological Materials
MTA	Material Transfer Agreement
MLS	Multi-Lateral System
GID	Germplasm Identification

Procedure:

1. Data encoder will save the file received from the importer via email in the Googledrive\ MTACheck\ Incoming Outgoing\ Seedlist\ <year>\ List provided by OUs (Incoming)2019\ <.xls file>

2. Create a file for uploading with additional headers:
   a) NSBM – SOURCE, METHOD
   b) Seeds – MLS Date (223), MTA Number (1130), IP STAT (1131), AVAL STAT (PUD, SMTA, Rest or Prohib 1350), SET GEN List Name

   Then saved under Googledrive\ MTACheck\ Incoming Outgoing\ Seedlist\ <year>\ For upload\ <.xls file>

3. MTA Controller will open the saved list and complete the necessary information
   a) NSBM
      1. SOURCE – country of origin
      2. METHOD – refer to this link
   b) Seeds:
      1. MLS Date (223)
      2. MTA Number (1130) – follow the following prefixes:
         - “IS<year>-#-SMTA” if under SMTA
         - “IS<year>-#-HRDC” if under HRDC
         - “IS<year>-#-MTA” if under Provider’s MTA
         - “IS<year>-#-NONE” if no MTA provided

- "IS<year>-#-Letter" if with Letter of Intent

3. IP STAT (1131) - remarks
4. AVAL STAT (PUD, SMTA, Rest or Prohib 1350) – refer to these links:
   - Attributes
   - PUD Cases lookup
   - Availstat
5. SET GEN List Name – "IS<year>-#"

4. Send the updated file to the database administrators
   a) Concepcion Lotho – Rice Breeding, IMPACT, POLICY, IRS
   b) Grace Capilit – STRAT-FGR
   c) Marnol Santos – IRS-ISL

   thru email with the following information:
   1. SHU Reference Number
   2. Date received
   3. Recipient name and Program
   4. Sender's name, Institution and country
   5. Put additional notes as necessary

5. Database administrators will then send back a list with GID. Saved it under GoogleDrive\ IRIS Workbooks\ Incoming\ <year>

6. Update the plysheets:
   a) NSBM – tick "uploaded to IRIS" and indicate the date
   b) Seeds – stamp "IP Status" and indicate the date

Note:

- *If there are deleted entry/ ies due to quarantine recommendation and/ or missing entry/ ies, still include by highlighting them in the list and put remarks*

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Salome P. Bulaquiña, Technician III-Data Encoding		24 Jan 2019
	Ma. Velinda H. Ilao, Specialist-MTA Controller		24 Jan 2019
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		24 Jan 2019
Quality Assurance	Ma. Velinda H. Ilao, RMQA Officer		24 Jan 2019

REVISION HISTORY

Revision History	Issued by	Date	Remarks
0	Salome P. Bulaquina	18 Oct. 2010	Original (Version 1)

Steps in Processing Outgoing Shipments of Rice Seeds and NSBMs in B4R

SHU – Control No.: IRRI-SHU-TP-DBM-114
Version 1

Author/Reviewed by: Salome P. Bulaquiña/ Ma. Velinda H. Ilao

Approved by:

Dr. GururajGuddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

May 2019

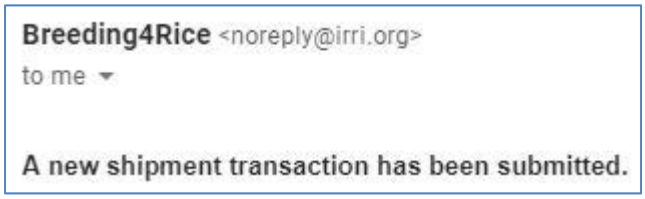
Distribution list:

Copy 1 – SHU Site
Copy 2 – Secretary
Copy 3 – Laboratory

For Internal Use Only

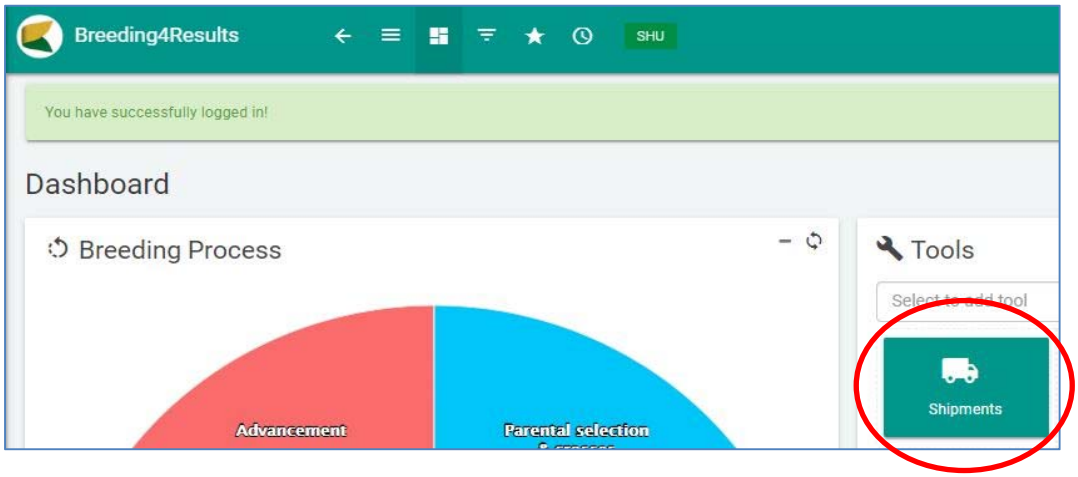
Title: Steps in Processing Outgoing Shipments of Rice Seeds and NSBMs in B4R

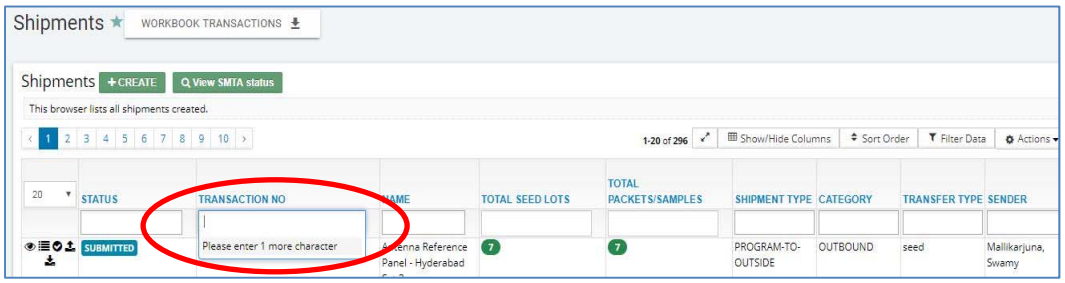
1. DBM group will receive an email notification on submitted B4R transaction for processing



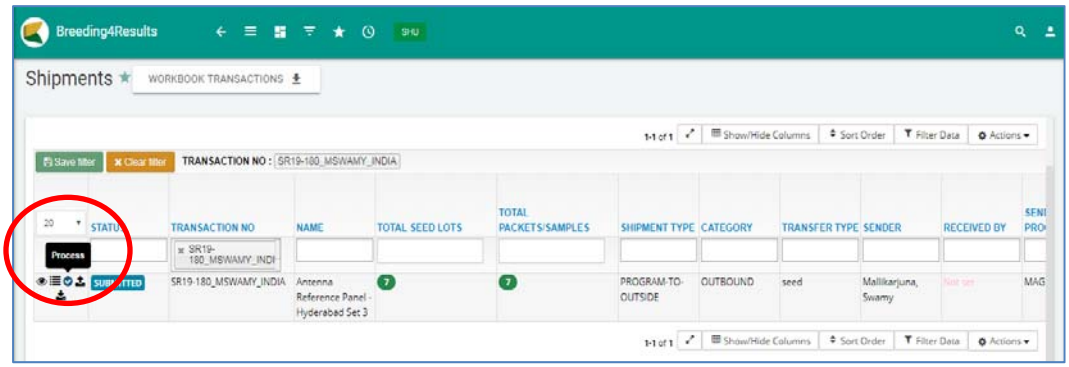
Note: SHU will only proceed in processing the corresponding B4R transaction once all export documents are complete

2. To start processing, reviewer needs to login to B4R, go to Shipments, and access the submitted transaction by entering the Transaction No in the field

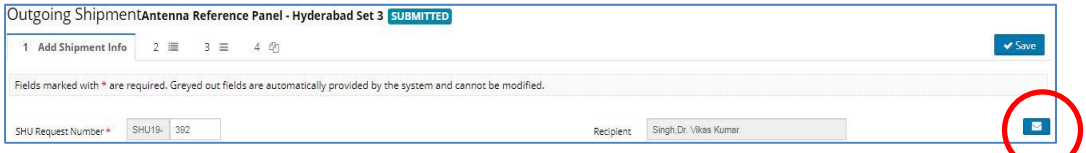


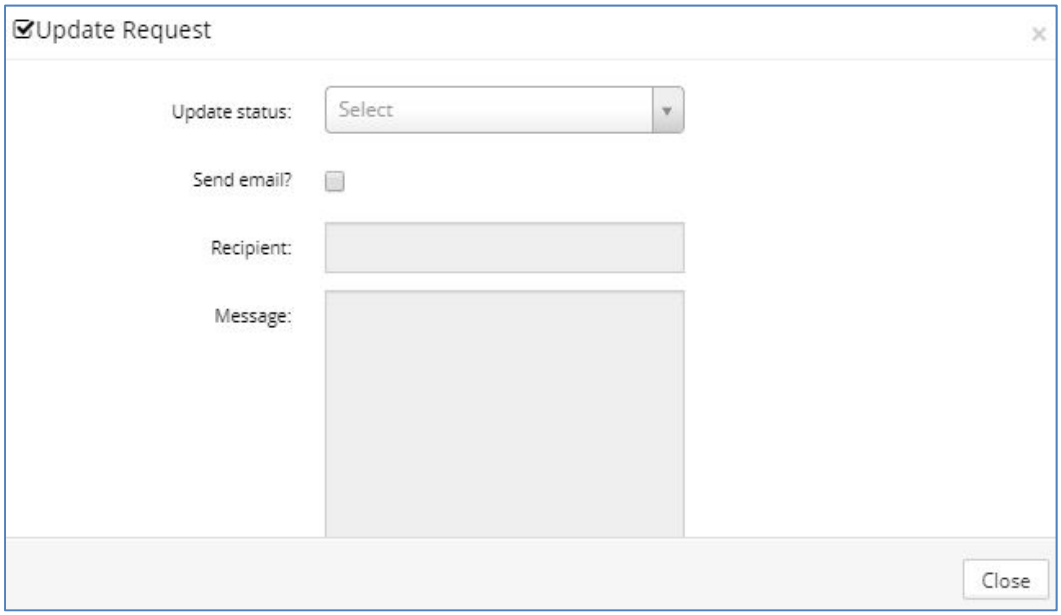


3. On the submitted transaction, click the Process button

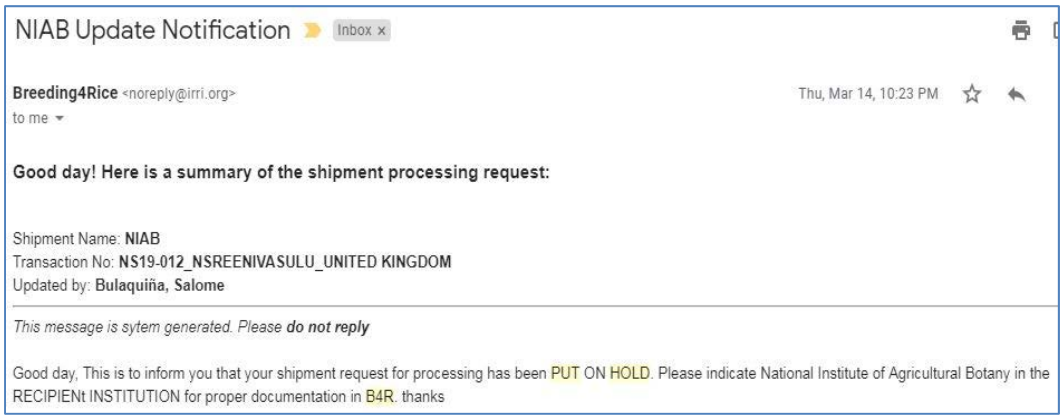


4. Under Tab 1 – Add Shipment Info, SHU reference no should be automatically assigned. Check all the information against the submitted printed application. In case of inconsistencies or missing information, reviewer will notify the sender of the requested change/s or clarification through the following. Click on Save.





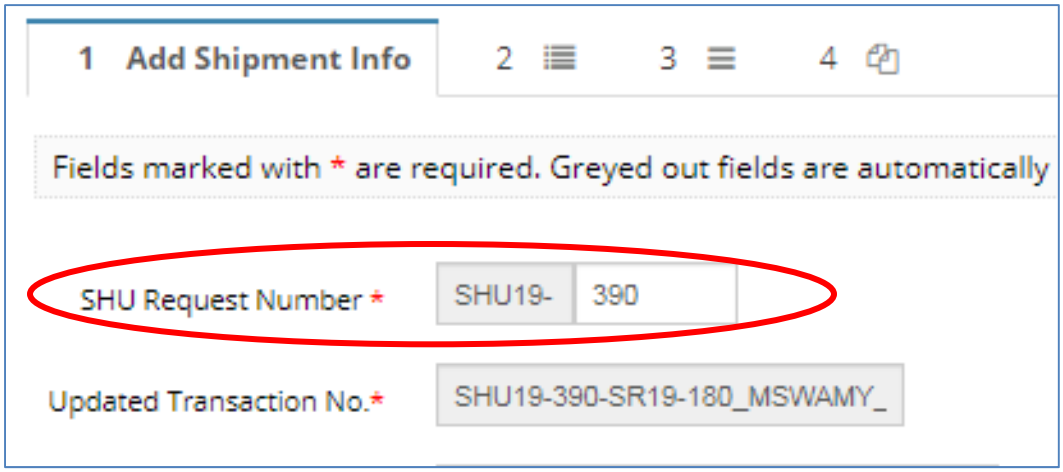
5. A Put On Hold email notification will be sent to the client



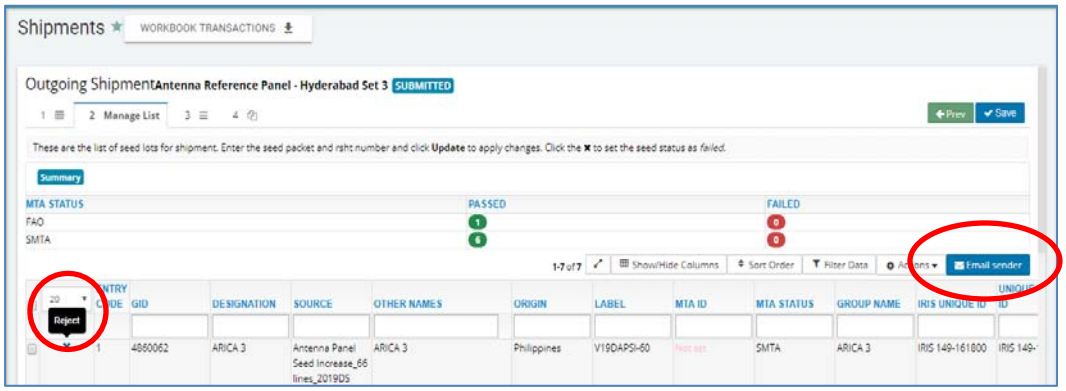
Status should be PUT ON HOLD

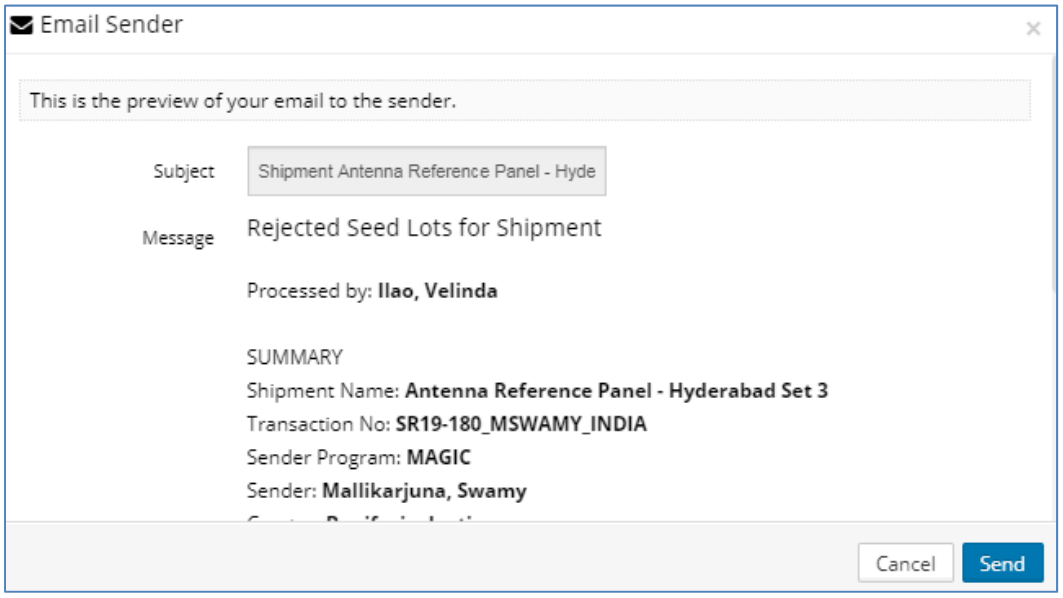
Client will then update the transaction and another "SUBMITTED" notification will be received by SHU

6. Once requested changes/ clarifications have been reflected, reviewer will check the SHU Request Number assigned and to confirm, click on Save.

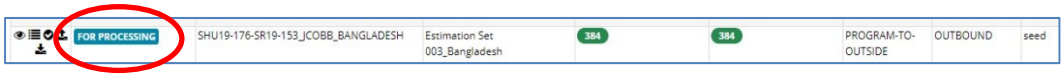


7. Wait until the system generates to proceed in Tab 2 – Manage List. Necessary rejection (for replacement of deletion) will be done for infected entry/ies. Again, a notification will be sent to the client. Click on Save.





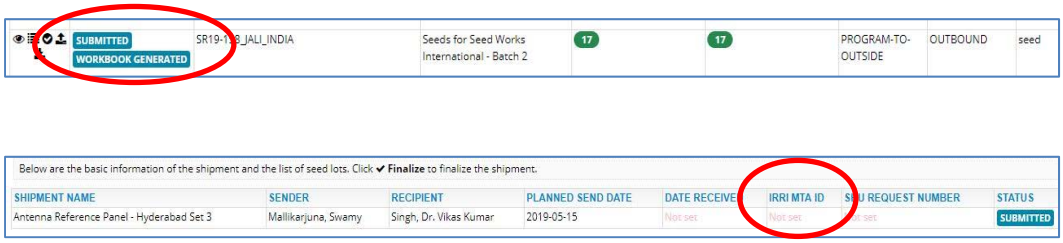
Status should be FOR PROCESSING



Client will then update the transaction and another "SUBMITTED" notification will be received by SHU

8. Once settled and routine seed health testing is done reviewer will forward all export documents to the MTA for the generation of MTAs.

Status should be SUBMITTED WORKBOOK GENERATED

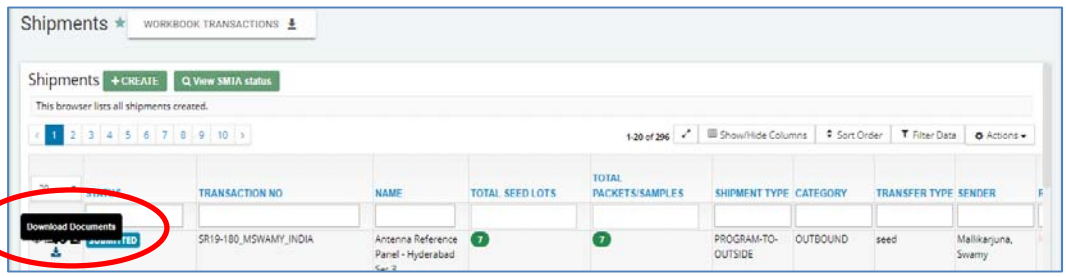


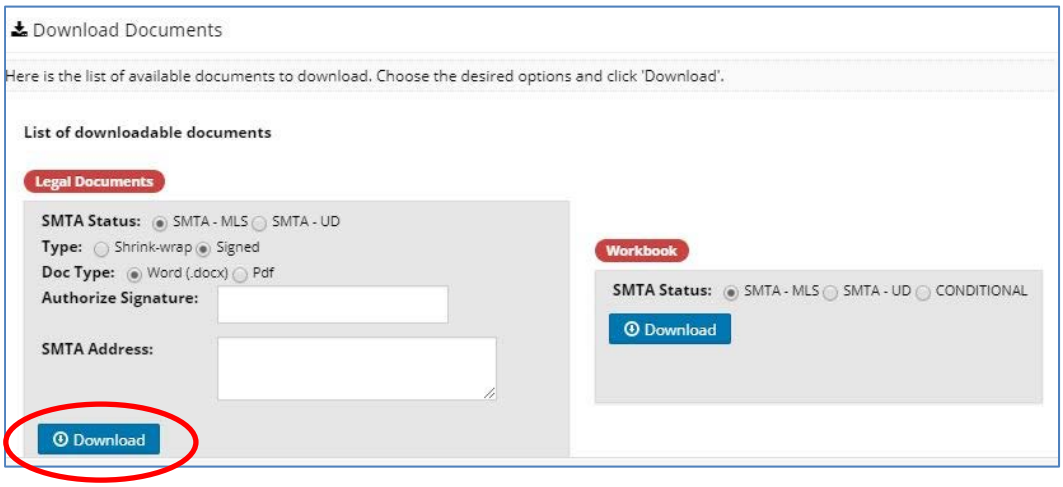
Note: Not all submitted transactions have corresponding MTAs (IRRI Hub transfers) or MTAs to be generated via B4R (Other MTAs).

9. MTA Controller to generate the appropriate MTAs as well as review the accompanying documents. MTA ID/s should be automatically generated on Tab 3 – Add IRRI MTA ID depending on the MTA status. Click on Save.

10. If verified correct, proceed to Tab 4 – Preview. Materials should be properly grouped again according to their status. DO NOT CLICK ON FINALIZE until shipment has been shipped

11. Return to Shipments module and click the download button to download the Legal documents (SMTA).

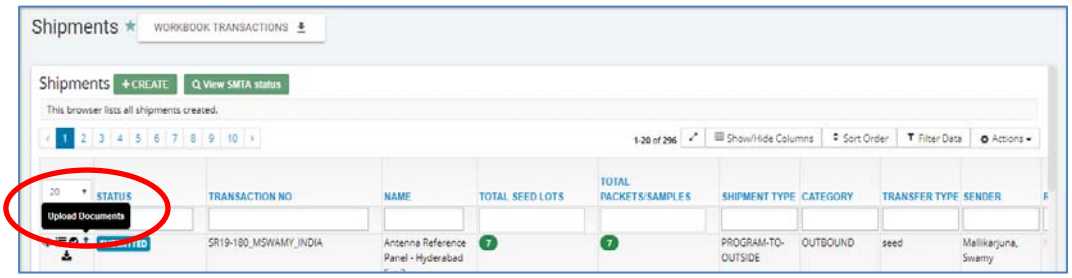


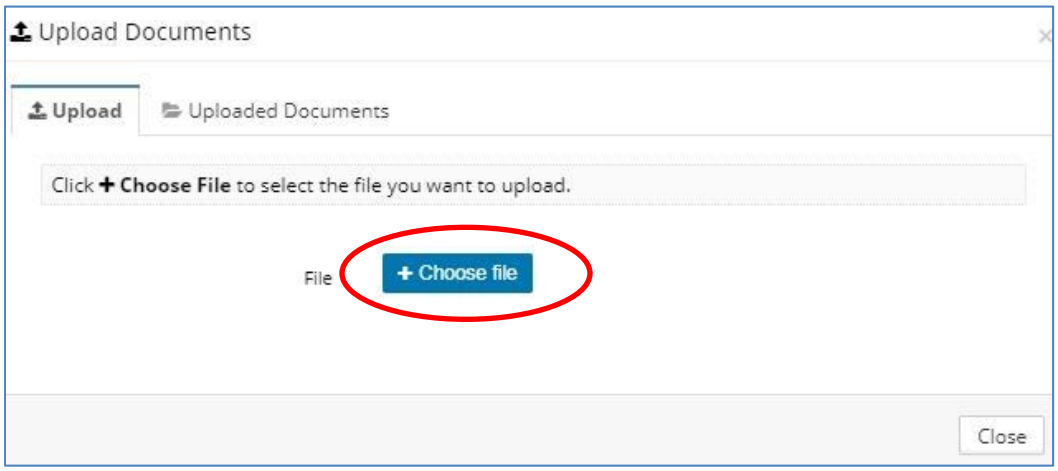


Note:

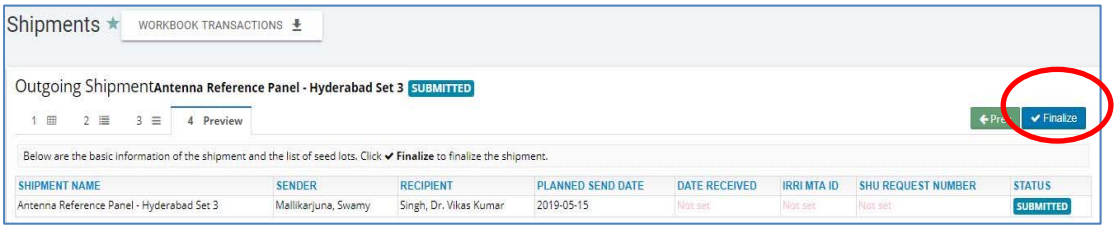
- *Generate documents one at a time (MLS first then UD/s)*
- *If requested by the recipient or under CMTA, 'signed' type must be ticked and 'Authorized Signatory' should be indicated*
- *SMTA address may be different from the shipping address, hence available field*
- *Downloading of workbook is not necessary unless requested or for recording purposes*

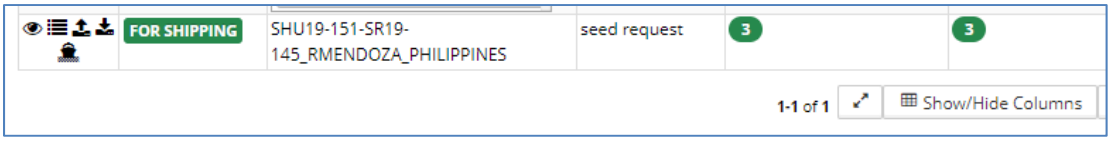
12. Once MTA/s have been generated, upload them in transaction including all available documents



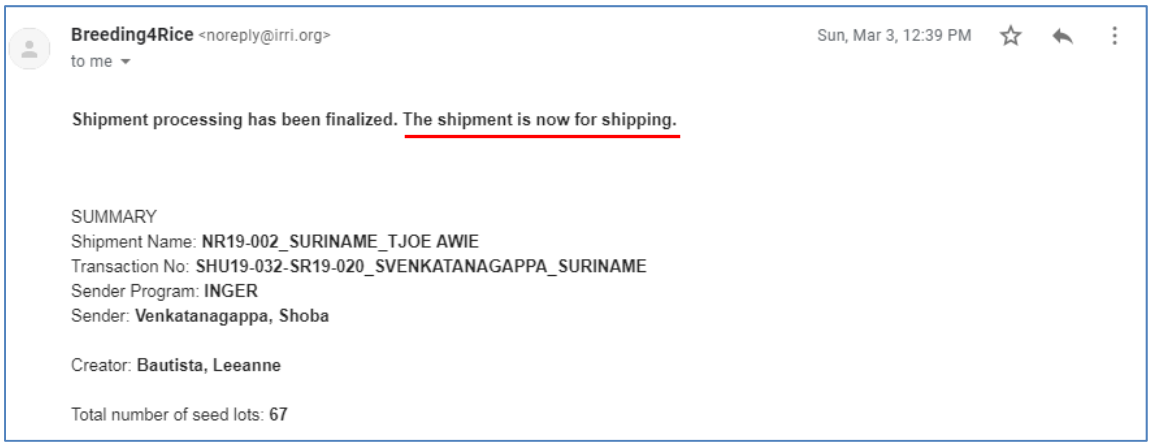


13. Phytosanitary Certification, final review of export documents and packing shall proceed. Go to shipment transaction-Tab4 and click on FINALIZE to change the status to FOR SHIPPING

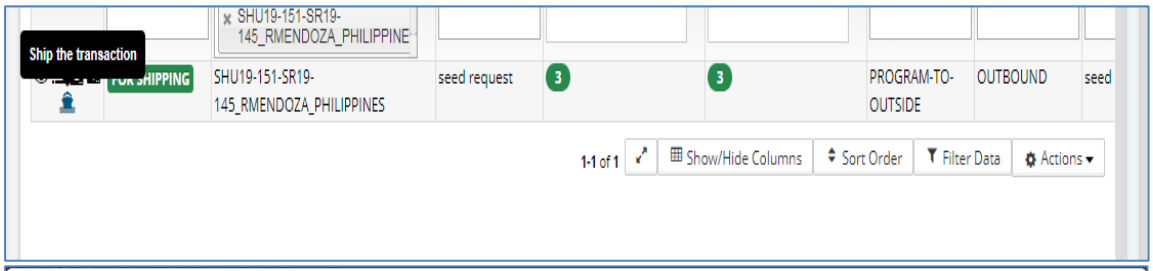


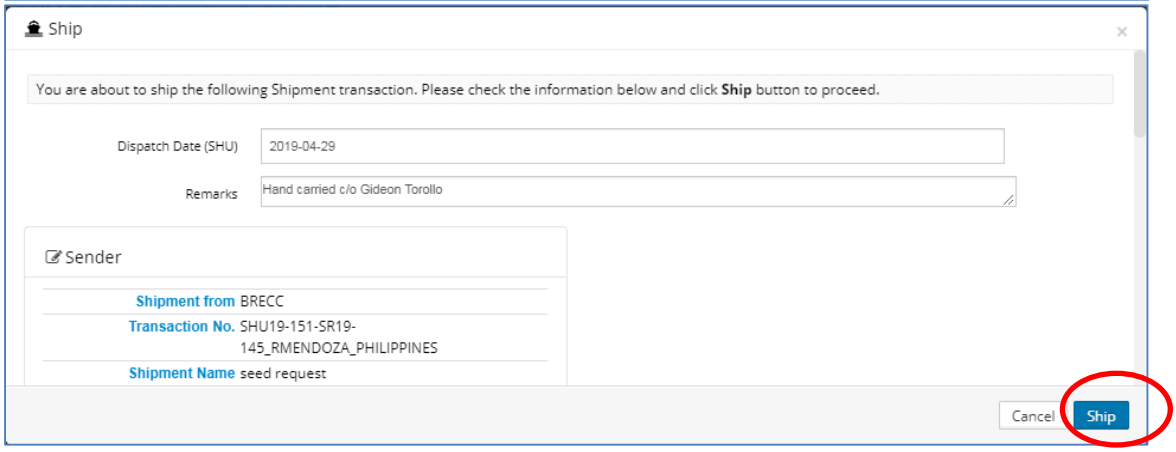


14. An email notification will be received by the client

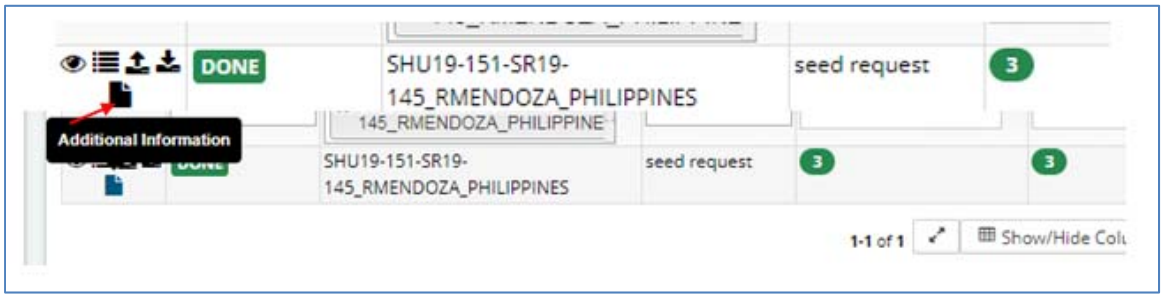


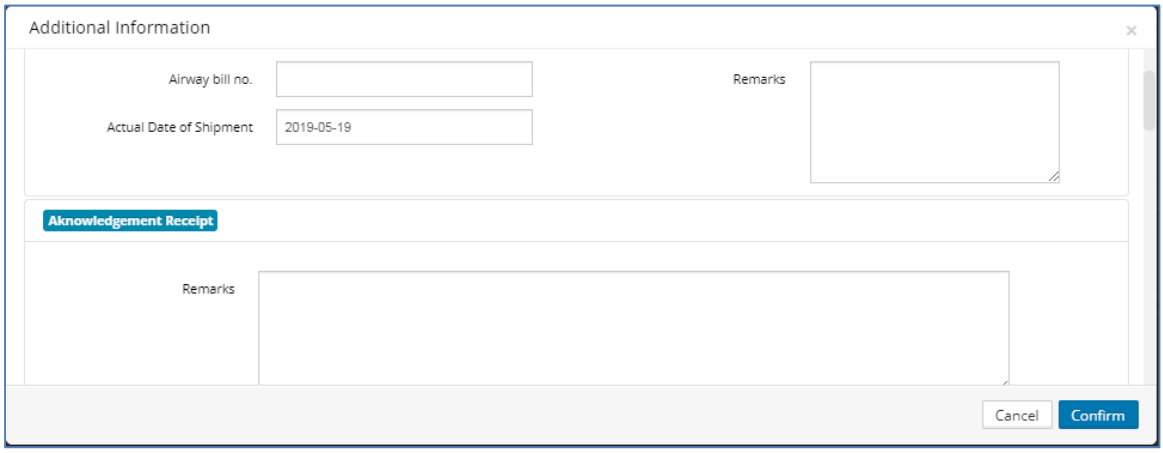
15. Upon dispatched of the materials, Admin Staff will update all shipping-related information





16. Once shipment has been acknowledge by recipient (either via the courier's online tracking facility or by email), Admin Staff will update all shipping-related information





Note: not all correspondences are communicated via the system; offline communication is still necessary

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Salome P. Bulaquiña, Technician III-Data Encoding		20 May 2019
	Ma. Velinda H. Ilao, Specialist-MTA Controller		20 May 2019
Authorizer	GururajGuddappa Kulkarni, Senior Scientist, Head of RRC and SHU		20 May 2019
Quality Assurance	Ma. Velinda H. Ilao, RMQA Officer		20 May 2019

REVISION HISTORY

Revision History	Issued by	Date	Remarks

Steps in Preparing and Printing of Monthly reports for Import and Export (Seeds and Non-seed Biological Materials/ Seeds Other than Rice)

SHU – Control No.: IRRI-SHU-TP-DBM-115
Version 1

Author/Reviewed by: Salome P. Bulaquiña/ Ma. Velinda H. Ilao

Approved by:

Dr. Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

May 2019

Distribution list:

Copy 1 – SHU Site
Copy 2 – Secretary
Copy 3 – Laboratory

For Internal Use Only

Title: Steps in Preparing and Printing of Monthly reports for Import and Export (Seeds and Non-seed Biological Materials/ Seeds Other than Rice)

Seed Export

1. Collate all dispatched export documents and the corresponding RSHT data sheets.
2. Open the seed export database from the Google Drive (E:\Google Drive\BPI Report_Import_Export_IMPORT EXPORT DB\2019\Export2019.mdb)
3. Open the PSC table and fill-in the information below.

SHUNo	*SHU Reference Number*
Application Date	*Date received by SHU*
Exporter	*Name of the IRRI Initiating Staff*
Total seeedlots received	*No. of accessions/ lines received*
Common Name	*Type of commodity*
Scientific Name	*Botanical name of material*
Consignee	*Name of the recipient*
Address	*Complete address of the recipient including institution*
Country	*Country of destination*
Import Permit	*IP number*
Port of Entry	*Customs port of entry*
Total seedlots dispatched	*No. of accessions/ lines dispatched*
Total No of packets	*No. of seed packets dispatched*
Date dispatched	*Mailing date/ released from SHU*
Means	*Mode of shipment*
Phyto Cert No	*Phytosanitary certificate no. (PC)*
PE No	*Post-Entry no.*
Report date	*Date to be reported*
Total weight	*Total seed weight*
Date signed/ inspected	*Date when the PC signed by the officer*
PQ Officer	*Name of the Officer in charge*
Trtcode1	*1st treatment conducted*
Date-treated1	*Date when the 1st treatment was conducted*
Trtcode2	*2nd treatment conducted*
Date-treated2	*Date when the 2nd treatment was conducted*
Trtcode3	*3rd treatment conducted*
Date-treated3	*Date when the 3rd treatment was conducted*
Trtcode4	*4th treatment conducted*
Date-treated4	*Date when the 4th treatment was conducted*

Trtcode5	*5th treatment conducted*
Date-treated5	*Date when the 5th treatment was conducted*
Dispatched (Y/N)	*Mark if dispatched or not*
Remarks	*Other information*

**PSC table contains all the information from the phytosanitary documents*

4. Save and close the table.
5. Open the MTA table and fill-in the information below.

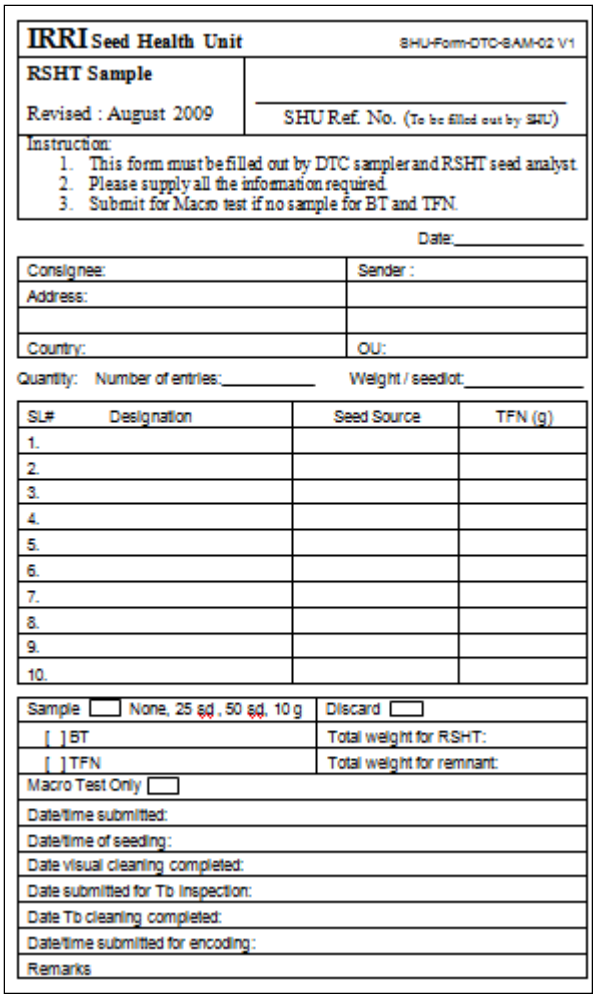
SHUNo	*SHU Reference Number*
MTA Type	*MTA used for the transfer*
MTA ID No#	*No. of MTA assigned*
MTA Issued	*No. of MTAs issued*
Total Seedlots	*Total no. of accessions/ lines dispatched*
Remarks	*Other information*

**MTA table contains all the information about Material Transfer Agreement*

6. Save and close the table
7. Open RSHTEDAT table and fill-in the information below.

SHUNo	*SHU Reference Number*
Date submitted	*Date submitted and processed by SHU*
Date seeded	*Date start the seeding*
Date Tb	*Date seeds tested with Tb*
Amount for RSHT	*Amount of seeds provided for RSHT*
Notes	*Other information*
Pathdesc01	*Pathogen detected*
Pathdesc02	*Pathogen detected*
Pathdesc03	*Pathogen detected*
Pathdesc04	*Pathogen detected*
Pathdesc05	*Pathogen detected*
Pathdesc06	*Pathogen detected*
Pathdesc07	*Pathogen detected*
Pathdesc08	*Pathogen detected*
Pathdesc09	*Pathogen detected*
Pathdesc10	*Pathogen detected*
Pathdesc11	*Pathogen detected*
Pathdesc12	*Pathogen detected*
Pathdesc13	*Pathogen detected*
Pathdesc14	*Pathogen detected*

**RSHTEDAT table contains all the information from SHU ply sheet (figure below)*



IRRI Seed Health Unit SHU-Form-DTC-BAM-02 V1

RSHT Sample

Revised : August 2009

SHU Ref. No. (To be filled out by SHU)

Instruction:
1. This form must be filled out by DTC sampler and RSHT seed analyst.
2. Please supply all the information required.
3. Submit for Macro test if no sample for BT and TFN.

Date:_____

Consignee:	Sender :
Address:	
Country:	OU:

Quantity: Number of entries:_____ Weight / seedlot:_____

SL# Designation	Seed Source	TFN (g)
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

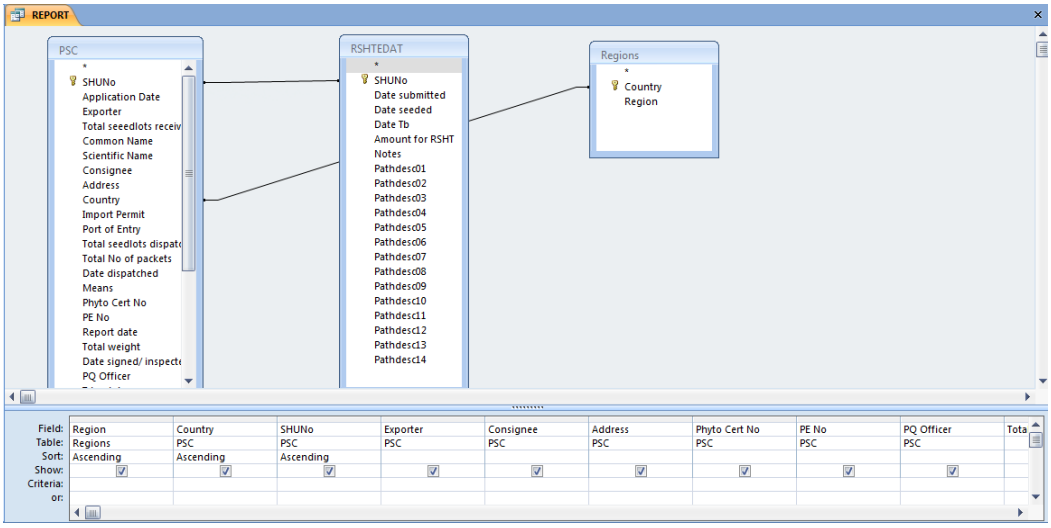
Sample ☐ None, 25 sd , 50 sd, 10 g	Discard ☐
[ ] BT	Total weight for RSHT:
[ ] TFN	Total weight for remnant:
Macro Test Only ☐	
Date/time submitted:	
Date/time of seeding:	
Date visual cleaning completed:	
Date submitted for Tb inspection:	
Date Tb cleaning completed:	
Date/time submitted for encoding:	
Remarks	

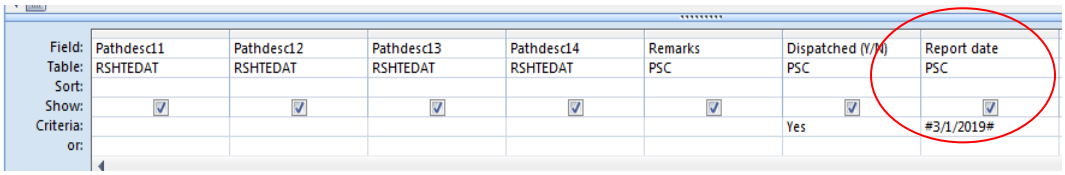
8. Save and close the table.
9. Extract the seedlist with RSHT results from Export2019.xls in the Google Drive with fields as shown below:

SHUNo	*SHU Reference Number*
Seedlot	*Seed packet number*
Designation	*Variety name/ accession*
Source	*Seed source*
Tri	*Pathogen detected*
Cur	*Pathogen detected*
Sar	*Pathogen detected*
Mic	*Pathogen detected*
Fus	*Pathogen detected*

Cer	*Pathogen detected*
Bip	*Pathogen detected*
Pyr	*Pathogen detected*
Pho	*Pathogen detected*
Nak	*Pathogen detected*
Nig	*Pathogen detected*
Til	*Pathogen detected*
Bac	*Pathogen detected*
Aph	*Nematode result*
Germ	*Germination thru blotters*
Macro	*Tb result*
Total seeds	*No. of seeds used for RSHT*
Seed Packet	*No. of packets per accession/ variety*
Notes	*Other information (for entries "no seeds", "deleted", "hot-water/ retested", "chlorox/ retested" etc.)*

10. Import/ add the extracted data to RSHTERES table.
11. Save and close the table.
12. Go to Queries and open the [REPORT] query on design view.
13. Tables and query fields are provided by default. At the end of the query field, "Report Date" has to be updated by putting the date of reporting (MMM[ ]yyyy).





14. Run your query, copy, paste to MS Excel and save in the Google Drive as: E:\Google Drive\BPI Report_Import_Export\JOEL's\2019\Mmmyyyy_EXPORT_RICE.xls.

Seed Import

1. Collate all released import documents and the corresponding RSHT data sheets.
2. Open the seed import database from the Google Drive (E:\Google Drive\BPI Report_Import_Export_IMPORT EXPORT DB\2019\Import2019.mdb)
3. Open tables IS INFO, MTA, RSHT INFO and VISUAL and fill-in the information below:

IS INFO

Isno
Date received
IRRI Recipient
Name of Provider
Address
Country of Origin
Commodity Name
Total Seedlots Received
PQC No
Phyto Cert No
Fumigation
Declared treatment
Undeclared treatment
Report Date
Release to
Date released
Total Seedlots Released
Total No of Packets
Trtcode1
Date_treated1
Trtcode2
Date_treated2

Trtcode3
Date_treated3
Trtcode4
Date_treated4
Trtcode5
Date_treated5
PQS Officer
Date Cleared
Remarks

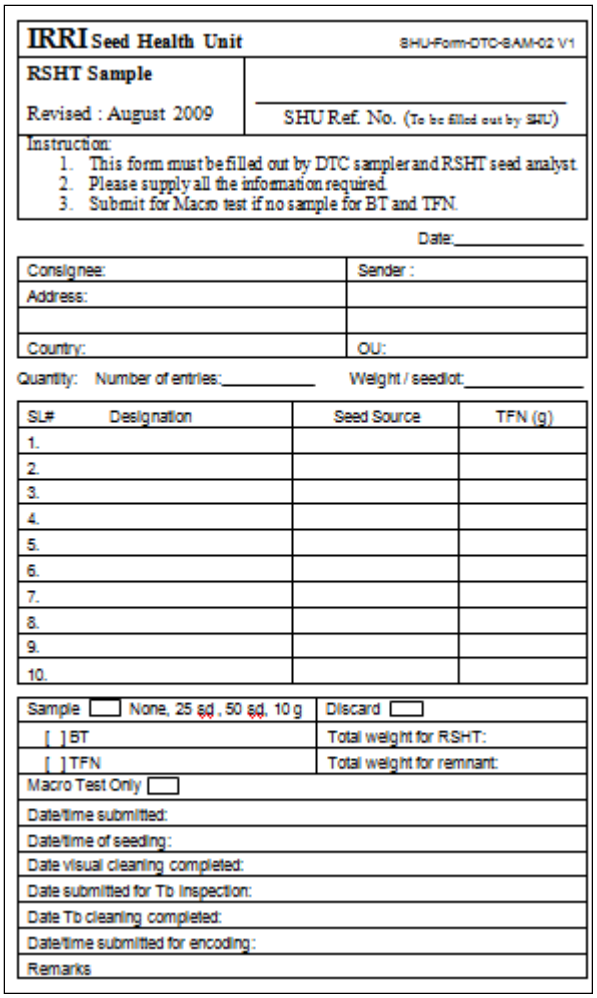
MTA

Isno	*SHU Reference Number*
MTA Provided	*Material Transfer Agreement from the provider*
MTA No	*Material Transfer Agreement number*
ITT Clearance No	*IRRI Tech Transfer Reference Number*
Remarks	*Other information*

RSHT INFO

SHUNo	*SHU Reference Number*
Date submitted	*Date submitted and processed by SHU*
Date seeded	*Date start the seeding*
Date Tb	*Date seeds tested with Tb*
Amount for RSHT	*Amount of seeds provided for RSHT*
Notes	*Other information*
Pathdesc01	*Pathogen detected*
Pathdesc02	*Pathogen detected*
Pathdesc03	*Pathogen detected*
Pathdesc04	*Pathogen detected*
Pathdesc05	*Pathogen detected*
Pathdesc06	*Pathogen detected*
Pathdesc07	*Pathogen detected*
Pathdesc08	*Pathogen detected*
Pathdesc09	*Pathogen detected*
Pathdesc10	*Pathogen detected*
Pathdesc11	*Pathogen detected*
Pathdesc12	*Pathogen detected*
Pathdesc13	*Pathogen detected*
Pathdesc14	*Pathogen detected*

**RSHT INFO table contains all the information from SHU ply sheet (figure below)*



IRRI Seed Health Unit SHU-Form-DTC-BAM-02 V1

RSHT Sample

Revised : August 2009

SHU Ref. No. (To be filled out by SHU)

Instruction:
1. This form must be filled out by DTC sampler and RSHT seed analyst.
2. Please supply all the information required.
3. Submit for Macro test if no sample for BT and TFN.

Date:_____

Consignee:	Sender :
Address:	
Country:	OU:

Quantity: Number of entries:_____ Weight / seedlot:_____

SL# Designation	Seed Source	TFN (g)
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Sample ☐ None, 25 gd , 50 gd, 10 g	Discard ☐
[ ] BT	Total weight for RSHT:
[ ] TFN	Total weight for remnant:
Macro Test Only ☐	
Date/time submitted:	
Date/time of seeding:	
Date visual cleaning completed:	
Date submitted for Tb inspection:	
Date Tb cleaning completed:	
Date/time submitted for encoding:	
Remarks	

VISUAL:

Isno	*SHU Reference Number*
Date Inspected	*Date of visual inspection conducted*
Total Weight	*Total weight of seeds received*
Total Discard	*Weight of seeds discarded from inspection*
Total Seed packets	*Number of seed packets received*
No of Varietal lines	*Total number of varietal lines received*
No of Naked seeds	*Total number of lines received naked*
No of Wild sp	*Total number of lines received wild*
QObject1	*Object/ seed contaminant observed*
QObject2	*Object/ seed contaminant observed*

QObject3	*Object/ seed contaminant observed*
QObject4	*Object/ seed contaminant observed*
QObject5	*Object/ seed contaminant observed*
QObject6	*Object/ seed contaminant observed*
QObject7	*Object/ seed contaminant observed*
QObject8	*Object/ seed contaminant observed*
QObject9	*Object/ seed contaminant observed*
QObject10	*Object/ seed contaminant observed*
Soil	*Presence of soil*
Insect	*Presence of insects*
Sito	*presence of Sitophilus oryzae*
Sitz	*presence of Sitophilus zeamais*
Sitg	*presence of Sitophilus granarius*
Sitt	*presence of Sitotroga cerealella*
Tria	*presence of Tribolium castaneum*
Trio	*presence of Tribolium confusum*
Rhiz	*presence of Rhizopertha dominica*
Oryz	*presence of Oryzaephilus surinamensis*
Plod	*presence of Plodia interpunctella*
Cryp	*presence of Cryptolestes pussillus*
Corc	*presence of Corcyra cephalonica*
Psoc	*presence of Presence of psocids (booklice)*
Unkp	*presence of Unknown insect pest*
Smut	*presence of Presence of smutted seeds (Kernel smut, False smut)*
Weed	*presence of Presence of weed seeds*
Cyp	*presence of Cyperus difformis/iria/rotundus*
Ech	*presence of Echinochloa colona/crus-galli/glabrescens*
Fim	*presence of Fimbristylis miliacea*
Isch	*presence of Ischaemum rugosum*
Pani	*presence of Panicum repens*
Pas	*presence of Paspalum indicum*
Rott	*presence of Rottboellia cochinchinensis*
Scir	*presence of Scirpus juncoides/maritimus*
Unkw	*presence of Unknown object*
Disc	*presence of Germinated seeds*
Germ	*presence of Unfilled grains*

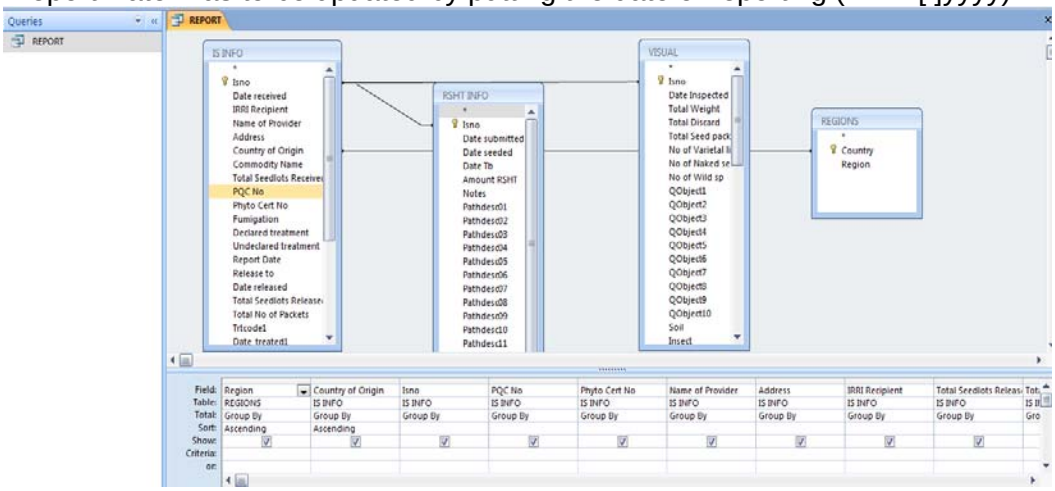
Unfi	*presence of Other plant parts*
Opp	*presence of Broken grains*
Brok	*presence of Shriveled grains*
Shri	*presence of Varietal mixture*
Mix	
Trace	*presence of Unblemished, bold, no physical deformity, uniform and pure*
Cate1	*presence of May contain few seeds with 1% surface discoloration, no seed contaminants, pure, no physical deformity*
Cate2	*presence of Up to 10% seed surface discoloration, few physical deformity, no seed contaminants, pure*
Cate3	*presence of Higher than 10% seed surface discoloration, contains seed contaminants like weed seeds, germinated seeds, smutted seeds and sclerotial bodies*
Cate4	*presence of Sitophilus oryzae*
Remarks	*Other information*

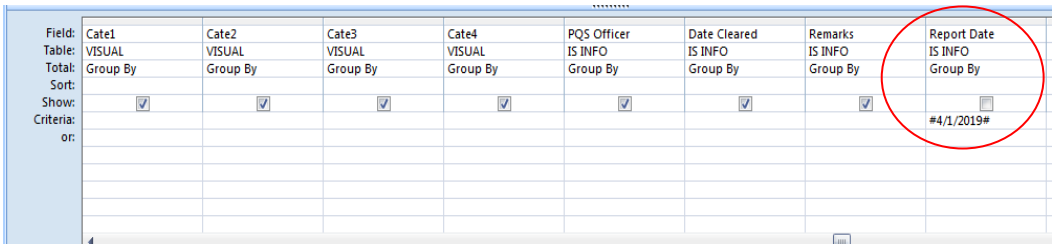
4. Save and close the tables.
5. Extract the seedlist with RSHT results from Import2019.xls in the Google Drive with fields as shown below:

SHUNo	*SHU Reference Number*
Seedlot	*Seed packet number*
Designation	*Variety name/ accession*
Tri	*Pathogen detected*
Cur	*Pathogen detected*
Sar	*Pathogen detected*
Mic	*Pathogen detected*
Fus	*Pathogen detected*
Cer	*Pathogen detected*
Bip	*Pathogen detected*
Pyr	*Pathogen detected*
Pho	*Pathogen detected*
Nak	*Pathogen detected*
Nig	*Pathogen detected*
Til	*Pathogen detected*
Bac	*Pathogen detected*
Aph	*Nematode result*
Germ	*Germination thru blotters*

Macro	*Tb result*
Total seeds	*No. of seeds used for RSHT*
Seed Packet	*No. of packets per accession/ variety*
Notes	*Other information (for entries "no seeds", "deleted", "treated" "hot-water/ retested", "chlorox/ retested" etc.)*

6. Import/ add the extracted data to RSHT RESULTS table.
7. Save and close the table.
8. Go to Queries and open the [REPORT] query on design view.
9. Tables and query fields are provided by default. At the end of the query field, "Report Date" has to be updated by putting the date of reporting (MMM[ ]yyyy).





10. Run your query, copy, paste to MS Excel and save in the Google Drive as: E:\Google Drive\BPI Report_Import_Export\FOR BPI\2019\Mmmyyyy_IMPORT_RICE.xls.

Export Non-seed Biological Materials/ Seeds Other than Rice (NSBM/ SOR)

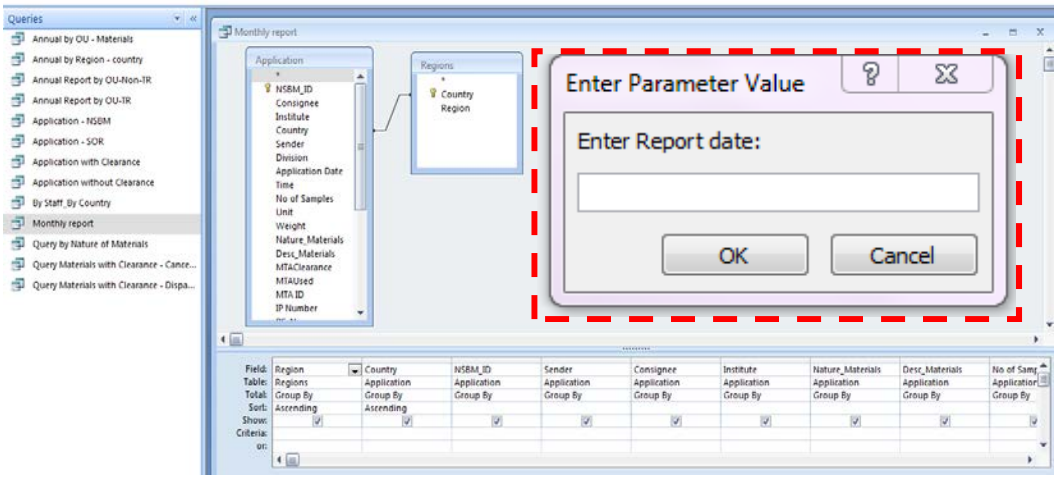
1. Collate all dispatched export NSBM/ SOR documents.
2. Open the database from the Google Drive (E:\Google Drive\BPI Report_Import_Export_IMPORT EXPORT DB\2019\ NSBM2019 Outgoing.mdb): click [Options]>> [Shift]: Enable content to open in table form.

3. In the Google Drive, open the NSBM status spreadsheet, [NSBM/ SOR-Outgoing] sheet and check the completeness of the information recorded with the corresponding documents referring to SHU Reference Number.
4. Complete data will be copied to MS Access database (NSBM2019 Outgoing.mdb) in the [Application] table with the fields as shown below:

NSBM-ID	*SHU Reference Number*
Consignee	*Name of the recipient*
Institution	*Name of the receiving institution*
COUNTTRY	*Country of destination*
Sender	*Name of IRRI initiating staff*
OU/Division	*Cluster name*
Date Processed	*Date received and process by SHU*
Time	*Time received*
Total samples	*Total number of samples*
Unit of Measure	*Type of container*
Weight (Kgs)	*Weight of samples (if applicable)*
Nature of Materials	*Nature of materials*
Description of Materials	*Description (frozen, dried, lyophilized, etc.)*
MTA clearance #	*IRRI Tech Transfer Reference Number*
MTA Used	*MTA used in sharing the materials*
MTA ID	*MTA number assigned*
Import permit#	*Import permit number*
Phyto #	*Phytosanitary Certificate Number*
Date Signed by PQS	*Date signed by the Quarantine officer*
PQ Officer	*Name of the quarantine officer on duty*
Date dispatched	*Shipping date*
Mode of shipment	*Mode of shipment 9DHL, FEDEX, etc.)*
Port of Entry	*Customs port of entry*
Air Waybill No.	*Qaybill Tracking number*
Remarks	*Other information*
Ack receipt (mm/dd/yy)	*Acknowledgement receipt from the recipeint/ by online tracking*
Comments	*Feedback received from the recipient on the receipt of samples*
Budget Code / Requisition #	*Shipping charge code from the sender and PR number thru OCS*

5. Put in the report date (MMM[ ]yyyy), click on dispatched and select if the samples are NSBM or SOR.
6. Save and close the table

7. Go to Queries and open the [Monthly Report] query on design view.
8. Tables and query fields are provided by default. Run your query; enter the report date in the dialogue box.



9. Enter the report date as [Mmm YYYY]
10. Copy, paste to MS Excel and save in the Google Drive as: E:\Google Drive\BPI Report_Import_Export\FOR BPI\2019\ MMM_EXPORT_NSBM.xls

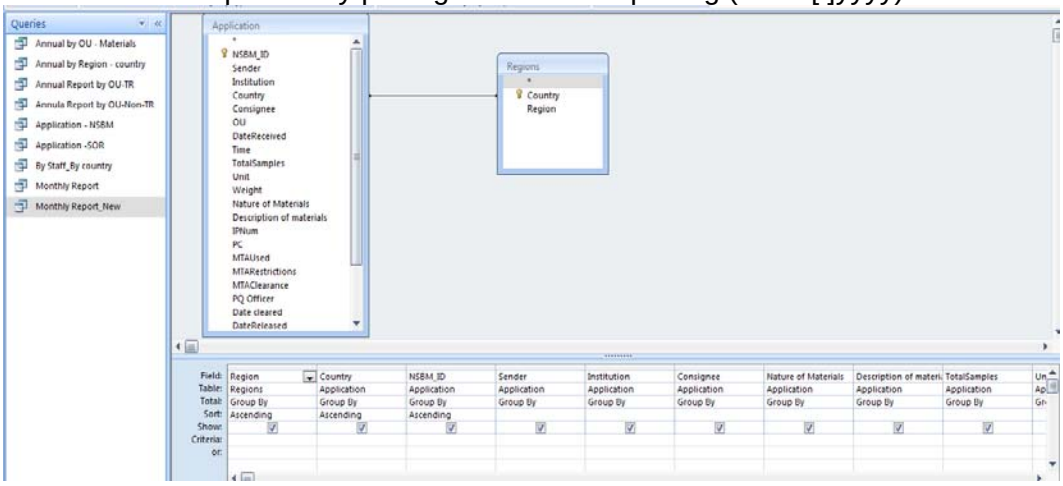
Import Non-seed Biological Materials/ Seeds Other than Rice (NSBM/ SOR)

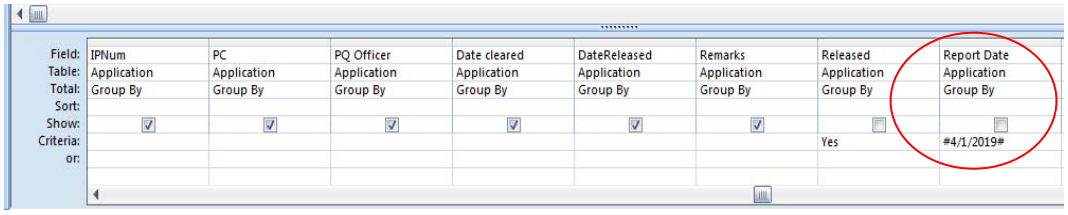
1. Collate all released import NSBM/ SOR documents.
2. Open the database from the Google Drive (E:\Google Drive\BPI Report_Import_Export_IMPORT EXPORT DB\2019\ NSBM2019 Incoming.mdb
3. In the Google Drive, open the NSBM status spreadsheet, [NSBM/ SOR-Incoming] sheet and check the completeness of the information recorded with the corresponding documents referring to SHU Reference Number.
4. Complete data will be copied to MS Access database (NSBM2019 Incoming.mdb) in the [Application] table with the fields as shown below:

NSBM-ID	*SHU Reference Number*
Sender	*Name of the provider*
Institution	*Sending institution*
Country	*Country of origin*
Consignee	*Name of IRRI initiating staff*
IRRI OU/Division	*Cluster name*
Date Received	*Date received by SHU*
Time	*Time received*
Total samples	*Total number of samples received*
Unit of measure	*Type of container*

Weight	*Total weight of the samples (if applicable)*
Nature of Materials	*Nature of material (died, frozen, lyophilized, etc.)*
Description	*Type of material*
IP#	*Import permit/ PQC number*
Phyto Cert #	*Phytosanitary certificate number from the country of origin*
MTA used	*Material Transfer Agreement used*
MTA-Restrictions	*Restriction of the material*
MTA Clearance No.	*IRRI Tech Transfer Reference number*
PQ Officer	*Name of Plant Quarantine Officer*
Date cleared	*Date cleared by PQS*
Date released	*Released date from SHU*
Released to	*Date when the material released to the recipient*
Remarks	*Other information*

5. Tick on [Released] if the material was released to the recipient, put in the report date (Mmm yyyy) and select if the samples are NSBM or SOR.
6. Save and close the table
7. Go to Queries and open the [Monthly Report_New] query on design view.
8. Tables and query fields provided by default. At the end of the query field, "Report Date" has to be updated by putting the date of reporting (MMM[ ]yyyy).





9. Run your query, copy, paste to MS Excel and save in the Google Drive as: E:\Google Drive\BPI Report_Import_Export\FOR BPI\2019\MMM_IMPORT_NSBM.xls.

Note:
RSHT - Routine Seed Health Testing
Check and update Commodity, Staff and Regions table as needed

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Salome P. Bulaquiña, Technician III-Data Encoding		20 May 2019
	Ma. Velinda H. Ilao, Specialist-MTA Controller		20 May 2019
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		20 May 2019
Quality Assurance	Ma. Velinda H. Ilao, RMQA Officer		20 May 2019

REVISION HISTORY

Revision History	Issued by	Date	Remarks

Steps in Receiving GRC and INGER Materials for Advance Testing

SHU – Control No.: IRRI-SHU-TP-DBM-116
Version 1

Author/Reviewed by: Salome P. Bulaquiña/ Ma. Velinda H. Ilao

Approved by:

Dr. Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

May 2019

Distribution list:

Copy 1 – SHU Site
Copy 2 – Secretary
Copy 3 – Laboratory

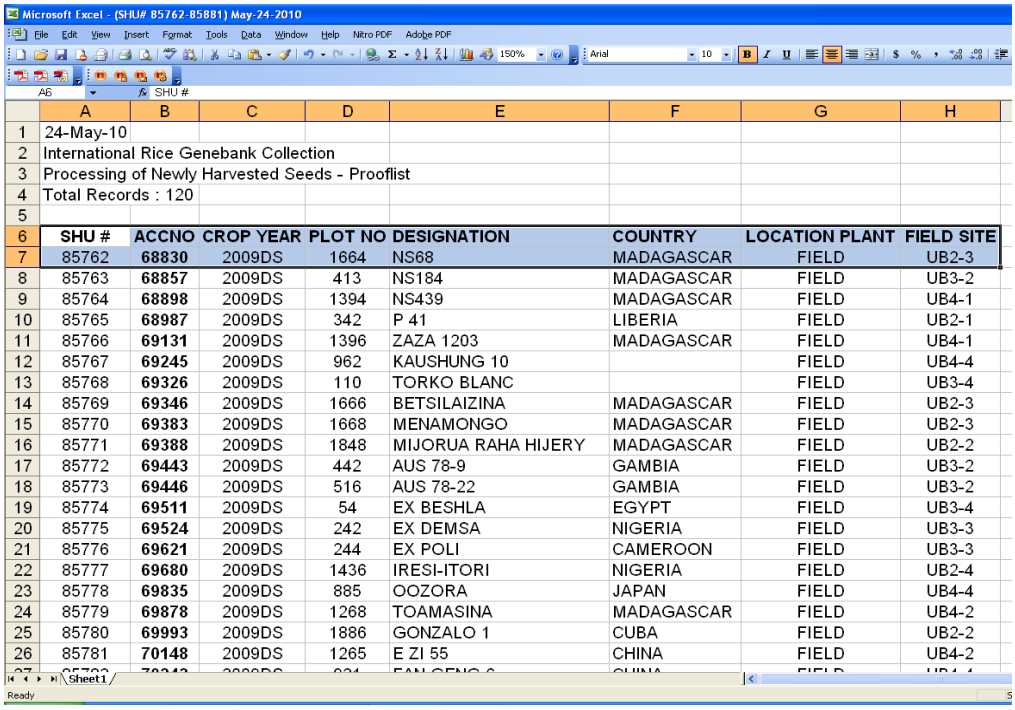
For Internal Use Only

Title: Steps in Receiving GRC and INGER Materials for Advance Testing

1. GRC staff will send via email the list of materials for advance testing in excel file format upon submission of the testing materials (seed).

2. DBM group will format the file according to the standard format

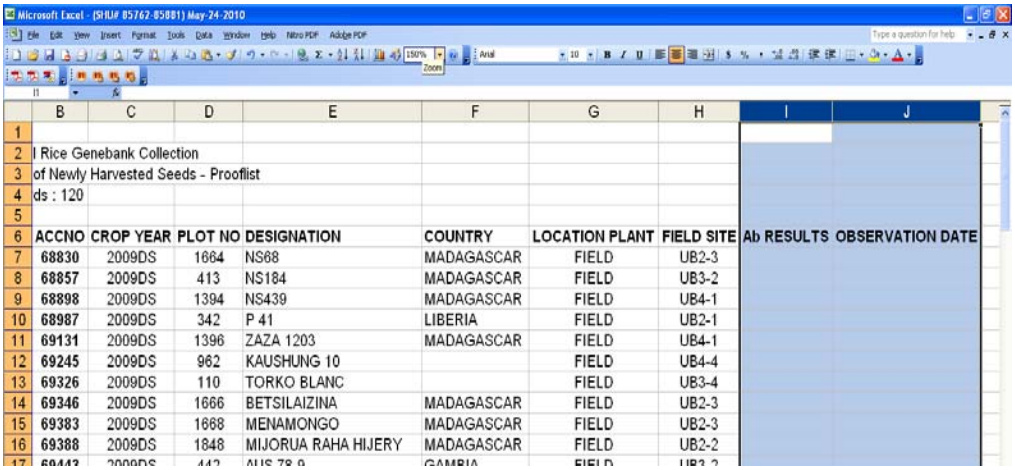
   For GRC, field format must follow the figure below:



Microsoft Excel - (SHU# 85762-85881) May-24-2010

	A	B	C	D	E	F	G	H
1	24-May-10							
2	International Rice Genebank Collection							
3	Processing of Newly Harvested Seeds - Prooflist							
4	Total Records : 120							
5								
6	SHU #	ACCNO	CROP YEAR	PLOT NO	DESIGNATION	COUNTRY	LOCATION PLANT	FIELD SITE
7	85762	**68830**	2009DS	1664	NS68	MADAGASCAR	FIELD	UB2-3
8	85763	**68857**	2009DS	413	NS184	MADAGASCAR	FIELD	UB3-2
9	85764	**68898**	2009DS	1394	NS439	MADAGASCAR	FIELD	UB4-1
10	85765	**68987**	2009DS	342	P 41	LIBERIA	FIELD	UB2-1
11	85766	**69131**	2009DS	1396	ZAZA 1203	MADAGASCAR	FIELD	UB4-1
12	85767	**69245**	2009DS	962	KAUSHUNG 10		FIELD	UB4-4
13	85768	**69326**	2009DS	110	TORKO BLANC		FIELD	UB3-4
14	85769	**69346**	2009DS	1666	BETSILAIZINA	MADAGASCAR	FIELD	UB2-3
15	85770	**69383**	2009DS	1668	MENAMONGO	MADAGASCAR	FIELD	UB2-3
16	85771	**69388**	2009DS	1848	MIJORUA RAHA HIJERY	MADAGASCAR	FIELD	UB2-2
17	85772	**69443**	2009DS	442	AUS 78-9	GAMBIA	FIELD	UB3-2
18	85773	**69446**	2009DS	516	AUS 78-22	GAMBIA	FIELD	UB3-2
19	85774	**69511**	2009DS	54	EX BESHLA	EGYPT	FIELD	UB3-4
20	85775	**69524**	2009DS	242	EX DEMSA	NIGERIA	FIELD	UB3-3
21	85776	**69621**	2009DS	244	EX POLI	CAMEROON	FIELD	UB3-3
22	85777	**69680**	2009DS	1436	IRESI-ITORI	NIGERIA	FIELD	UB2-4
23	85778	**69835**	2009DS	885	OOZORA	JAPAN	FIELD	UB4-4
24	85779	**69878**	2009DS	1268	TOAMASINA	MADAGASCAR	FIELD	UB4-2
25	85780	**69993**	2009DS	1886	GONZALO 1	CUBA	FIELD	UB2-2
26	85781	**70148**	2009DS	1265	E ZI 55	CHINA	FIELD	UB4-2

Add fields on the last two columns for nematode results (Ab RESULTS) and date observed (OBSERVATION DATE)



	B	C	D	E	F	G	H	I	J
1									
2	l Rice Genebank Collection								
3	of Newly Harvested Seeds - Prooflist								
4	ds : 120								
5									
6	ACCNO	CROP YEAR	PLOT NO	DESIGNATION	COUNTRY	LOCATION PLANT	FIELD SITE	Ab RESULTS	OBSERVATION DATE
7	68830	2009DS	1664	NS68	MADAGASCAR	FIELD	UB2-3		
8	68857	2009DS	413	NS184	MADAGASCAR	FIELD	UB3-2		
9	68898	2009DS	1394	NS439	MADAGASCAR	FIELD	UB4-1		
10	68987	2009DS	342	P 41	LIBERIA	FIELD	UB2-1		
11	69131	2009DS	1396	ZAZA 1203	MADAGASCAR	FIELD	UB4-1		
12	69245	2009DS	962	KAUSHUNG 10		FIELD	UB4-4		
13	69326	2009DS	110	TORKO BLANC		FIELD	UB3-4		
14	69346	2009DS	1666	BETSILAIZINA	MADAGASCAR	FIELD	UB2-3		
15	69383	2009DS	1668	MENAMONGO	MADAGASCAR	FIELD	UB2-3		
16	69388	2009DS	1848	MIJORUA RAHA HIJERY	MADAGASCAR	FIELD	UB2-2		

Format the “OBSERVATION DATE” as dd-mmm-yyyy

Get the first and last entry numbers received to create a filename “**(SHU# [first]-[last]) MMM-DD-YYYY.xls**” and save the file in Google Drive (MTACheck\BACK-UP FILES\IRGC & OTHERS\IRGC Matters\IRGC BATCH SEEDLIST\YYYY).

For INGER, following fields should be present:

Prelim no./ INGER code
Designation
Source

Add column fields for Tb, nematode and major pathogens results and save the file in Google Drive (MTACheck\BACK-UP FILES\NURSERY & INGER), YYYY Dispatched\INGER YYYY\PRELIM folder with a filename format: “**Nursery nameYYYY (batch number)**” i.e. IIRON 2011 (1st batch).

3. The RSHT group will access the file from the Google Drive and record the nematode results. They will notify the DBM group to check and highlight all entries found positive.

4. Send the file to GRC/ INGER data managers in preparation for future seed request application.

5. DBM group will create a separate table only for GRC blotter results with additional fields for batch number, date sent to SHU, seeding date, recording date, list of major pathogens and minor pathogens and will save in the google drive (MTACheck\BACK-UP FILES\IRGC & OTHERS\IRGC Matters\ IRGC Advance testing (RSHT)\YYYY)

6. After the blotter test evaluation, RSHT group will record the results.

At time of seed export, compiled/ consolidated test results will be imported from MS Excel to MS Access

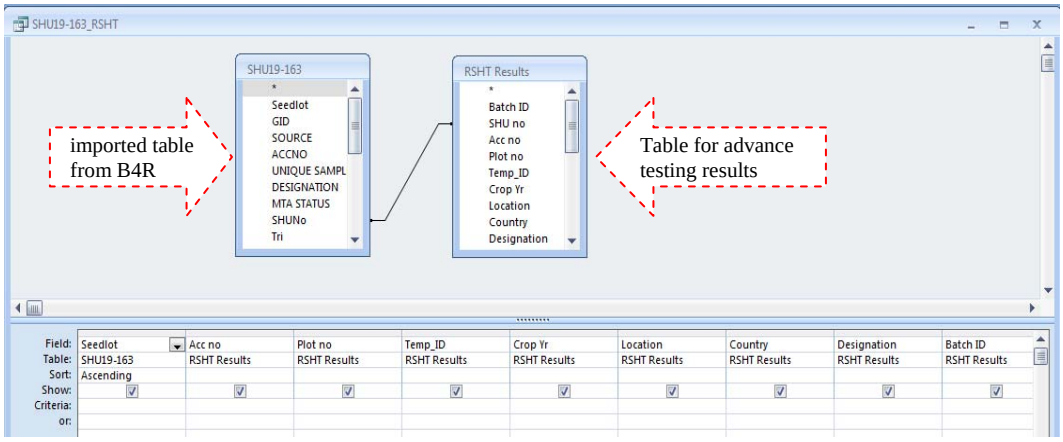
7. Get the list of materials for export thru B4R by exporting to MS excel file and save as SHU Ref. No._County.xls.

8. Open the SHU database for advance testing in the Google Drive and import the excel file into table.
   - **GRC:** \\\Google Drive\MTACheck\Incoming Outgoing\2019 GRC Advance Testing Compilation.mdb
   - **INGER:** \\Google Drive\MTACheck\BACK-UP FILES\NURSERY & INGER\2019 Dispatched\INGER2019.mdb

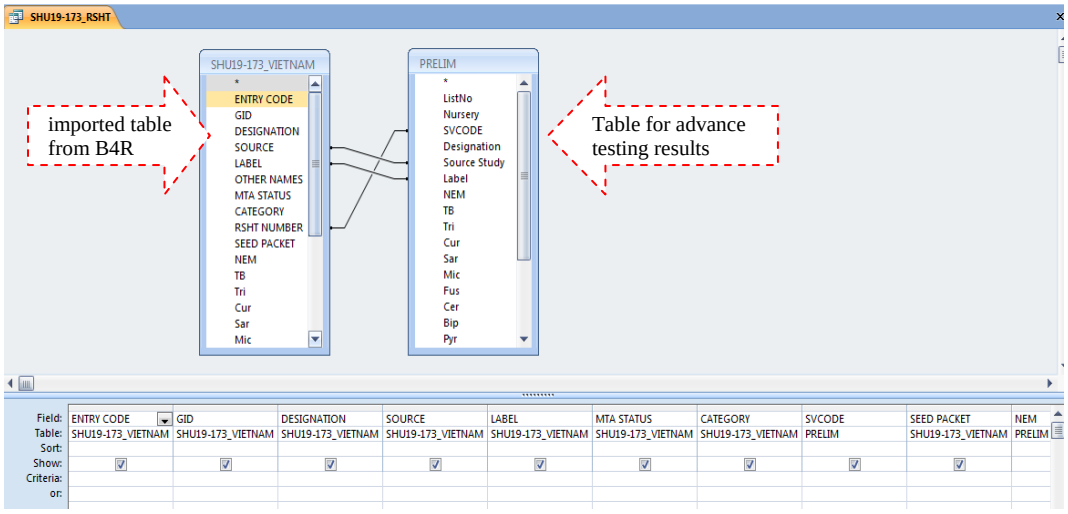
9. Add the same fields (table for advance testing) for blotter, nematode, germination and macro test results in the imported table

10. Create a query as shown below:

GRC:



INGER:



11. Update the table by getting the results from query table in preparation for encoding of RSHT results in monthly report.

12. Generate a printed list of materials with RSHT results for RSHT group and Plant Quarantine Service (PQS) officer's reference.

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Salome P. Bulaquiña, Technician III-Data Encoding		20 May 2019
	Ma. Velinda H. Ilao, Specialist-MTA Controller		20 May 2019
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		20 May 2019
Quality Assurance	Ma. Velinda H. Ilao, RMQA Officer		20 May 2019

REVISION HISTORY

Revision History	Issued by	Date	Remarks

C. Dry Seeds Inspection, Treatment, and Crop Health Monitoring (DTC)

Receiving of Requests for Phytosanitary Certification and Post-entry Clearance

SHU–Control No.: IRRI-SHU-TP-DTC-201
Version 3

Author/Reviewed by: Carlos Correos Huelma

Approved by:

Dr. Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

August 2018

Distribution list:

Copy 1 – SHU Site
Copy 2 – Secretary
Copy 3 – Laboratory

For Internal Use Only

Title: Receiving of Requests for Phytosanitary Certification and Post-entry Clearance

Purpose/Application: SHU has established a numbering system to identify individual requests for quarantine processing and thereby secure a phytosanitary certification and post-entry clearance. The unique code ensures the safety of the data and gives easy access to records for future applications. Retrieving seed health testing data, records of seed treatment, and other passport information requires a single code number specifically assigned to a particular request.

Materials:

1. Logbook
2. Markers
3. Forms

Procedure:

1. Pre-acceptance evaluation of documents by Database Management (DBM). Submit to DBM sub-group documents such as application form for phytosanitary certification, SMTA acceptance letter, import permit (if required by country of destination), tags/labels, seedlists, shipping instructions, and other requirements related to the requested materials for evaluation and verification of additional declarations. DBM will provide shipment number for the batch of request. If actual seeds are available, random checking for physical quality conditions in front of the bearer will be conducted by Dry Seed Inspection, Seed Treatment, and Crop Health Inspection (DTC) group. Seedlots that do not comply to “clean” seed standard will be given instruction for additional cleaning procedure to improve seed quality. No actual seeds are accepted with incomplete legal requirements to prevent the idea that seeds are already with SHU.
2. Submission and checking of completed documents and actual seeds. Sender will submit completed documents after assessment from DBM subgroup with the actual seeds. Actual seedlots will be check with the submitted list. Requests will be accepted for processing.
3. Issuance of processing number. SHU will Issue a unique processing number. The request will be recorded accordingly in record book and SHU database files. SHU will accept follow-up and request status/inquiries using the issued processing number. Naming or code

identification of request should follow the official SHU number-coding standard based on the materials to be processed.

4. Forward seeds for complete visual inspection, withdrawal of sample, and Macro-examination.

Quality Assurance:

1. Check the reliability of the software for the filing system.
2. Check the completeness of the documents submitted before accepting the requests.

Data Entry:

1. Keep the logbook entry clean.
2. Fill out immediately the application form and put in all the data after each test.

Safety:

1. Use proper equipment in opening the incoming packages.
2. Handle the seedlot carefully to prevent spillage, contamination, mixing of entries, and storage insect infestation.
3. Wear proper personal protective equipment (PPE) in handling materials that were declared to have undergone seed treatment.
4. Immediately bring the seeds found infested with live storage insects to the fumigation chamber to prevent the spread of infestation. Conduct the fumigation at the soonest possible time.
5. Write the chronological sub-number legibly on the top right portion of the envelope or bag. See to it that there is no other entry that will confuse the one receiving the materials.
6. For requests composed of materials from different requestor and program but should be sent out as a combined package, a separate code number is provided for each requestor/program based on the date and time of submission.

Attachment(s)/List of forms:

1. BPI application form
2. Request form

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Carlos C. Huelma, Senior Specialist		24 Aug 2018
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		24 Aug 2018
Quality Assurance	Carlos C. Huelma, RMQA Officer		24 August 2018

REVISION HISTORY

Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)
1	Patria G. Gonzales	7 Nov. 2017	Version 2

Dry Seed Inspection

SHU–Control No.: IRRI-SHU-TP-DTC-202
Version 3

Author/Reviewed by: Carlos Correos Huelma

Approved by:

Dr. Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

August 2018

Distribution list:

Copy 1 – SHU Site
Copy 2 – Secretary
Copy 3 – Laboratory

For Internal Use Only

Title: Dry Seed Inspection

Purpose/Application: Dry seed inspection is a means of evaluating seedlots to ascertain that the physical quality of seeds passes the standards in seed exchange. In applying for quarantine clearance and phytosanitary certificate, the interception of visually detectable quarantine objects protects the environment or territory from untoward introduction and outbreak of seedborne pests and diseases. Although not all good-looking seeds are healthy seeds, it is advantageous to grow plants from high-quality seeds.

Definitions: Dry seed inspection is the visual examination of samples with or without the aid of magnifiers to detect smut balls (false smut), smutted seeds (kernel smut), diseased, discolored, or deformed seeds, germinated seeds, insect-damaged seeds, weed contaminants, stored seed pests, other seeds, and other inert matter.

Materials:

1. Sampling pan – assorted sizes
2. Diaphanoscope/working table
3. Spatula – plastic, stainless
4. Forceps
5. Magnifying glass – with or without light
6. Sieve – assorted sizes
7. Weighing balance
8. Fume hood
9. Specimen bottles – glass
10. Paper envelopes/bags

Procedure: Dry seed inspection of rice seeds involves checking of seedlots, assessing their physical quality, separating quarantine objects, and recording of data.

1. **Checking of seedlots** – All requests for phytosanitary certification and post-entry clearance are given SHU reference numbers or locator codes. The reference number is used to check the status of a particular request and to retrieve records in the database. Incoming (imported) seed shipments bear the year of the code number according to the date of arrival of the shipment (IS18-001); foreign (exported SHU18-001) and domestic (local/national distribution LS) seed requests carry the year in the processing number. Seedlots are arranged according to the order of appearance in the accompanying

lists. A chronological sub-number is given to the individual seedlot to facilitate inspection and recording of visual data.

2. **Visual examination** – The examination ascertains that only pure and healthy seeds are certified and cleared for planting. Seedlots are assessed visually for the presence of quarantine objects, which include soils, storage insects, abnormalities due to infection, fruiting bodies or fungi, weed seeds, and other plant parts. The seeds are spread on a seed pan under artificial or direct natural light or on a clean working table. The examination can be done with or without a magnifying glass. The preliminary examination of samples may give information on the presence of underdeveloped, shrunken, diseased seeds that should be removed by efficient grading of the seedlot. The pre-evaluation of a seedlot is a step in seed quality control, in compliance with international standards for germplasm exchange.

   The Seed Health Unit (SHU) has established four categories of seed quality standards. The following are the descriptions of the different categories:

   Category 1 very good-quality seeds – unblemished, bold, no physical deformity, uniform and pure

   Category 2 good-quality seeds – may contain few seeds with 1% surface discoloration, no seed contaminants, pure, no physical deformity

   Category 3 poor-quality seeds – contains seeds with 10% seed surface discoloration or spotting, few physical deformity, no seed contaminants, and pure

   Category 4 the very poor quality seeds – contains seeds with higher seed surface discoloration, weed seeds, soil, germinated seeds, smutted seeds, sclerotial bodies of pathogens, and other objects of quarantine importance. The result of the examination of the general seed condition of seedlots can be used as basis for direct rejection of seedlots or for estimating the time needed to further improve physical quality. Seedlots found with live storage insects are automatically transferred to a chamber for immediate fumigation. At SHU, seedlots under Categories 2, 3, and 4 need improvement of physical quality; this is done by

manual or machine cleaning or use of other practices to remove unwanted objects.

Seed lots under Category 4 are returned to the sender for cleaning.

Seed categorization determines whether seeds are accepted or returned to the sender for further improvement to attain acceptable quality.

3. **Cleaning to separate quarantine objects** – Cleaning of seedlots can be done manually or by using machines. Manual cleaning is done by spreading the seeds on a working table in a single layer. By manual manipulation, pure good-looking seeds are separated from the rest of the materials. The best seeds are sorted based on the amount of discoloration, degree of deformation, and observable quarantine matters. In most cases, seeds are blown to remove unwanted objects by air-current separation or passing them through a metal sieve prior to sorting. Storage insects, weed seeds, soil particles, and other objects can be removed during manual operation of a small quantity of seedlots (maximum of 1 kg each lot). Manual sorting is done by removing quarantine objects directly by using spatulas, forceps, or bare fingers. A magnifying glass may also be used in manual sorting.

   Cleaning of seeds is also facilitated by the use of an electric sorting machine (ESM), especially for seedlots exceeding 5 kilos. ESM separates seeds according to color. Electronic seed sorting-machines remove mainly the discolored seeds. There are (3) units of ESM at the International Network for Germplasm Exchange of Rice (INGER) Seed Processing Laboratory located at the Plant Growth Facility (PGF).

   The different seed contaminants and seeds with certain conditions are collected, placed in an envelope, and labeled. The total weight of the discarded materials is recorded.

4. **Identification of quarantine objects** – The seed contaminants and seeds with certain conditions are sorted and identified. For storage insects and weed seeds, identification at the species level is conducted with or without the aid of a microscope or a magnifying glass. Actual specimens or photographs are available in manuals for referral.

5. **Recording of data** – SHU has a record sheet used for visual inspection. Contaminants and conditions are recorded as either present or absent. For storage insects and weeds, the total number (or weight) of a particular species is recorded. The amount of discarded seeds must be included in the record to satisfy future inquiries about total losses attained due to separation of unwanted objects.

6. **Calculation and reporting of results** – Data are calculated on a percentage basis. The number of seedlots affected compared with the total number of seedlots in the requests is evaluated. Only percentages are reported.

Quality Assurance:

1. Check the chronological listing of samples submitted for testing.
2. Check the sampler.
3. Check that samples are withdrawn correctly.
4. Check that varieties in seed mixtures are properly labeled – as a landrace or as early progenies/generations/lines (highly segregating materials).

Calculation: The number of seedlots affected compared with the total number of seedlots is determined and the percentage taken. The percentage of each object observed is recorded.

Solution: Percent infected/infested seedlots is calculated by dividing the number of seedlots infested/affected by the total number of seedlots in the requests evaluated and multiplying the quotient by 100. Only the percentages are reported.

Data Entry: For storage insects and weeds, the total number or weight of a particular species is entered in the form. Other seed contaminants and seed conditions are recorded (presence or absence only) using the form for visual inspection.

Safety:

1. Use laboratory gown, goggles and particle mask when working with very dusty seeds.
2. Open one seedlot at a time.
3. Clean the working table before starting the dry seed inspection.
4. See to it that the floor area is also free from dust and contaminants.

5. Check the record book entry for requests (dates, analyst-in-charge, and other pertinent information).
6. Use proper personal protective equipment and work under a fume hood when handling chemically treated seeds.

References:

International Rice Research Institute (IRRI). 1988. Rice seed health. Los Baños, Laguna, (Philippines): IRRI. 362 p.

International Rice Research Institute (IRRI). 1994. A manual of rice seed health testing. Mew TW and Misra JK eds. Los Baños, Laguna, (Philippines): IRRI. 113 p.

The International Seed Testing Association (ISTA). 2005. International rules for seed testing. Switzerland: ISTA.

Lists of forms: Visual inspection form

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Carlos C. Huelma, Senior Specialist		24 Aug 2018
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		27 Aug 2018
Quality Assurance	Carlos C. Huelma, RMQA Officer		27 Aug 2018

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0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)
1	Patria G. Gonzales	7 Nov. 2017	Version 2

Sampling

SHU–Control No.: IRRI-SHU-TP-DTC-203
Version 3

Author/Reviewed by: Carlos Correos Huelma

Approved by:

Dr. Gururaj Guddappa Kulkarni
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Compliance and Seed Health Unit

August 2018

Distribution list:

Copy 1 – SHU Site
Copy 2 – Secretary
Copy 3 – Laboratory

For Internal Use Only

Title: Sampling

Purpose/Application: Proper sampling in seed health testing is very vital to make an unbiased assessment of seed quality in terms of seed health and planting value.

Definitions:

1. *Sampling* – a procedure of selecting a fraction of the total population, about which information is needed, to represent that population. It is a sub collection of objects (or organisms) selected from a population of interest, usually chosen so as to make inferences about one or more attributes of the population based on observations made on the sample.

2. *Lot* – a specified quantity of seeds, physically identifiable, with respect to which an international analysis certificate may be issued.

3. *Primary sample* – a small portion taken from one point in the lot.

4. *Composite sample* – formed by combining and mixing all the primary samples taken from the lot.

5. *Submitted sample* – a sample submitted to the testing station. It must be of at least the size specified in Rule 2.6.3 and may comprise either the whole or a sub-sample of the composite sample.

6. *Working sample* – a sub sample taken from the submitted sample in the laboratory on which one of the quality tests in these rules is made.

7. *Sub sample* – the portion of a sample obtained by reducing the sample using one of the sampling methods prescribed in Rules 2.6.6 and 2.7.2

Material:

1. Sleeve-type trier (grain probe)
2. Stick trier (Nobbe trier)
3. Soil divider (Riffle type)
4. Sampling pan
5. Sampling bag
6. Tags/labels
7. Markers
8. Weighing balance

9. Metal or plastic trays

Procedure:

A. Procedure for sampling the lot (Rule 2.6)

Sampling shall be carried out only by persons trained and experienced in seed sampling (Rule 2.6.1).

1. Sample intensity (Rule 2.6.2)

a) For seed lots in bags (or other containers of similar capacity that are uniform in size), the following sampling intensity shall be regarded as the minimum requirement:

Up to 5 containers: Sample each container and always take at least five primary samples.

6-30 containers: Sample five containers or at least one in every three containers, whichever is greater.

31-400 containers: Sample 10 containers or at a one in every five containers, whichever is greater.

401 or more containers: Sample 80 containers or at least one in every seven containers, whichever is greater.

b) Sampling intensity for small containers (Rule 2.6.2.a)

If the seed is in small containers such as tins, cartons, or packets as used in the retail trade, the following procedure is recommended:

A 100-kg weight of seed is taken as the basic unit and the small containers are combined to form sampling units not exceeding this weight - e.g., 20 containers of 5 kg, 33 containers of 3 kg, or 100 containers of 1 kg. For sampling purposes, each unit is regarded as one “container” and the sampling intensity above is applied.

2. Instruments and methods (Rule 2.6.4.a)

a) The sleeve-type trier (grain probe) is the instrument most commonly employed for sampling large lots. It consists of a hollow brass tube inside a closely fitting outer shell or sleeves with a solid pointed end. The tube and sleeve have open slots in their walls. When the slots re aligned, seeds drop into the cavity of the tube. To close the slots, turn the tube. Tube length and diameter depend on the size of the container and the kind of seed to be sampled.

   The trier can be used horizontally or vertically. A vertical trier should be partitioned to ensure even sampling through the layers.

   Insert the closed trier diagonally into the bag or container. After insertion, agitate it gently, and open and close it several times to ensure filling. Finally, close carefully before drawing out the sample.

b) The Nobbe trier is suitable for sampling seed in bags but not in bulk. It is constructed in varying dimensions, depending on the kind of seed to be sampled. The Nobbe trier is a pointed tube, long enough to reach the center of the bag, with oval hole near the pointed end. The instrument should be approximately 500 mm long, including the handle (about 100 mm long) and point (about 60 mm), leaving about 340 mm to penetrate the bag. This should reach the center of all types of bags. For cereals, the internal diameter of the tube should be about 14 mm. For clovers and similar seeds, 10 mm is sufficient.

   Insert the trier gently into the bag pointing upward at an angle of about 30° to the horizontal, with the hole facing downward, until it reaches the center of the bag. Rotate the trier 180°, bringing the hole on top. Withdraw the trier with decreasing speed so the quantity or seed obtained from successive locations increases progressively from the center to the side of the bag. If, however, the trier is long enough to penetrate to the opposite side of the bag, withdraw it at a relatively constant speed. During withdrawal, the trier should be gently agitated to maintain an even flow of seed. The more polished the inner surface of the trier, the more freely the seed will flow.

   To sample the bottoms of standing bags, raise them off the floor and place them on top of other bags. The holes that the trier made in the bags may be closed by pushing the weave back together.

c) Sampling by hand is difficult and should not be used for chaffy seeds like rice.

3. Taking primary samples (Rule 2.6.4)

Primary samples of approximately equal size shall be taken from each container sampled. When the lot is in containers (including bags), the containers to be sampled are selected at random throughout the lot and primary samples drawn from top, middle, or bottom portions of the container but not necessarily from more than one position in any container. When the seed is in bulk or in large containers, the primary samples shall be drawn from random positions or depths.

4. Obtaining the composite sample (Rule 2.6.5)

If the primary samples appear uniform, they shall be combined to form the composite sample.

5. Obtaining the submitted sample (Rule 2.6.6)

The submitted sample shall be obtained by reducing the composite to an appropriate size by one of the methods referred to in Rule 2.7.2., using larger equipment if necessary.

If it is difficult to mix and reduce the sample properly under warehouse conditions, the entire composite sample shall be forwarded to the seed testing station for reduction.

Additional samples requested not later than at the time of sampling by the owner of the lot, if granted, shall be prepared in the same way as the submitted sample and marked “Duplicate.”

6. Weight of submitted sample (Rule 2.6.3)

For rice, the submitted sample should be 700 g. If it less, it should be indicated that “The sample submitted weighs only …. g and is not in accordance with the International Rules for Seed Testing.”

B. Procedure in the laboratory

1. Obtaining the working sample (Rule 2.7.2)

The submitted sample received by the seed testing station generally needs to be reduced to a working sample equal to or greater than the size prescribed for each test.

The submitted sample shall first be thoroughly mixed. The working sample shall then be obtained either by repeated halving or by abstracting and subsequently combining small random portions.

For routine seed health testing, 400 seeds are taken as a working sample (Rule 7.4.3.a.3).

2. Instruments and methods (Rule 2.7.2.a)

a) The mechanical divider method is suitable for all kinds of seed except extremely chaffy types. The apparatus, a conical, soil, or centrifugal divider, splits samples into two approximately equal parts. The submitted sample can be mixed by passing it through the divider, recombining the two parts and passing the whole sample through it a second time, and, if necessary, a third time. The sample is reduced by assign the seed through repeatedly removing one half on each occasion. This process of successive halving is continued until a sample of approximately, but not less than, the required size is obtained.

b) The modified halving method. The apparatus comprises a tray into which fits a grid of equal-sized cubical cells, open at the top and every alternate one having no bottom. After preliminary mixing, the seed is poured evenly over the grid. When the grid is lifted approximately half the sample remains on the tray. The submitted sample is successively halved until a working sample of approximately, but not less than, the required size is obtained.

c) The random cup method, the spoon method, and the hand halving method are not applicable to rice (ISTA, 1985).

C. Internal procedure at SHU, IRRI

In IRRI, only small amount (5 - 30 g per lot) is generally provided to clients. Seed samples are drawn after seed cleaning and the sampling scheme depends on the amount of seeds in a seedlot submitted for phytosanitary certification and post entry clearance:

1. Blotter test and test for nematode

Amount of seeds submitted	Sample
Few seeds – 5 g	None
6 g – 50 g	25 seeds
51g – 100g	50 seeds
101 g and above	10 g

2. Test for bacteria

Amount of seeds submitted	Sample
< 15 g	None
16 g – 50 g	25 seeds
51 g – 99 g	50 seeds
100 g – 500 g	5 g
501 g – 1000 g	25 g
1001 g and above	50 g

3. Other tests

Follow ISTA Rules

Reminders:

1. Seed requests with seedlots weighing below 5 g should be submitted directly for macro examination.

2. For seed request containing seeds below 5 g per seedlot and is found to be a duplicate/replicate of another seed request, the sender is required to submit 25 seeds as sample for blotter and nematode test.

Quality Assurance:

1. Check for homogeneity and amount of sample withdrawn.
2. Check for cleanliness of equipment and sampling paraphernalia.
3. Check for cross-contamination of samples.
4. Check for correct identification (e.g. labeling) of materials and samples.
5. Check the ISTA Rules.

Calculation: See sampling procedures.

Solution: See sampling procedures.

Data Entry: Fill out the form for submission of sample for testing.

Safety:

1. Wear particle masks and goggles while drawing seeds from bags.
2. Use gloves while using the trier.

References:

International Rice Research Institute (IRRI). 1988. Rice seed health. Los Baños, Laguna, (Philippines): IRRI. 362 p.

International Rice Research Institute (IRRI) 1994. A manual of rice seed health testing. Mew TW and Misra JK eds. Los, Laguna, (Philippines): IRRI. 113 p.

The International Seed Testing Association. (ISTA). 2005. International rules for seed testing. Switzerland: ISTA.

Attachment(s)/List of forms:

1. Form for submission of seed health testing samples

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Carlos C. Huelma, Senior Specialist		28 Aug 2018
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		28 Aug 2018
Quality Assurance	Carlos C. Huelma, RMQA Officer		28 Aug 2018

REVISION HISTORY

Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)
1	Patria G. Gonzales	7 Nov. 2017	Version 2

Seed Treatment: Fumigation with Phosphine

SHU–Control No.: IRRI-SHU-TP-DTC-204
Version 3

Author/Reviewed by: Carlos Correos Huelma

Approved by:

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Compliance and Seed Health Unit

August 2018

Distribution list:

Copy 1 – SHU Site
Copy 2 – Secretary
Copy 3 – Laboratory

For Internal Use Only

Title: Seed Treatment: Fumigation with Phosphine

Purpose: Phosphine fumigation is used to control the infestation of storage insects in seeds submitted for phytosanitary certification.

Definitions:

1. *Fumigant*- a chemical which, at a required temperature and relative humidity, can exist in the gaseous state in sufficient concentration to be lethal to a given pest organism.
2. *Fumigation*- the act of introducing a toxic chemical in an enclosed space in such a manner that it disperses quickly and acts in the gaseous or vapor state on the target organisms.

Material:

1. Source of phosphine gas (phostoxin tablets)
2. Atmospheric chamber
3. Equipment for trained pesticide applicator (personal protective gear, full face gas mask, and gloves)
4. Open mouth plastic container, paper bags/envelopes and seed boxes

Procedure:

Starting 21 July 2017, SHU conduct fumigation under a fumigation service provider. All fumigation activity will be handled by the fumigation service provider at the fumigation area located at the end side of the first-floor of the NCBL-Annex building. As a standard protocol all seed requests for phytosanitary certification and post-entry clearance should undergo fumigation with phosphine.

1. Prepare list of materials for fumigation. All incoming (imported) and outgoing (exported) materials submitted for phytosanitary certification and post-entry clearance will be included in the list for any fumigation schedule.
2. Inform the sender regarding the inclusion of their materials for any scheduled fumigation for full-cost billing. Sender should indicate the budget code number during submission of application. The cost of the fumigation will be equally divided to the owners based on the volume of materials for fumigation.
3. Place materials to the fumigation chambers. Seeds for fumigation should be placed in porous box or container. Seed placed in closed aluminum foil, plastic envelope and any other air resistant containers should be opened to allow phosphine gas penetration.

4. Put in place in container the number of tablet required for the volume of chamber used. Close the chamber door and check for tightness of the rubberized door. The seeds should be exposed to phosphine for not less done 72 hours. For example, if introduction of tablets start at 1:00 in the afternoon of Friday then degassing should start at 1:00 in the afternoon on the following Monday of the week.
5. Degassing of seeds should follow the correct exposure time to phosphine. Start degassing at the exact time when tablet were introduced to the chamber. Degassing is done by opening the knob of the inlet and outlet valve of the chamber.

Quality Assurance:

1. Check the stock of phostoxin tablets and look at the expiration date.
2. Check the fitness of the inlet and outlet valves of the chambers.
3. Check the performance of the exhaust fan of the fumigation room.
4. Check the performance of the full-face gas mask.
5. Check the piling of bags of seeds in the chamber.
6. Check the volume of the chamber and the computed phosphine tablets that need to be used.
7. Check that the rubber strips of the door of the chamber is fit and gas-tight.
8. Check the sanitation of the fumigation area and storage area of fumigated seeds (i.e., no live crawling storage insects.)

Calculation:

1. Given: Dosage used is 2 g/m^3
2. Problem: Solve for the number of pellets of phostoxin needed to fumigate the seeds.

Solution:

1. Measure the volume of the chamber. Volume is equal to length x width x height (in m).
2. Multiply the volume obtained with the recommended dosage (2 g/m^3). One pellet produces 1 g of phosphine gas.

Data entry:

1. Fill out the warning sign board.
2. Fill out the date of fumigation in the SHU processing label on the container.

3. Fill out the date of fumigation in the fumigation record book.
4. Update the data entry in the computer.
5. Fill out the date of fumigation in the application form.

Safety:

1. Wear complete personal protective gears like gloves, mask, and uniform during set up and degassing.
2. Always conduct the fumigation with an observer or in pairs.
3. Do not inhale the oxidized pellets; residues may contain a considerable amount of phosphine gas.
4. Always wash your hands with soap after fumigating the seeds.
5. Post warning signs on the outside door of the chamber and on the door of the fumigation room. Put in these information: date of fumigation, time of fumigation, date of de-gassing, date of re-entry, number of chambers, name of program, name of fumigator(s), emergency call number.
6. The signs “DANGER, DO NOT OPEN” “WARNING, DO NOT ENTER” and “FUMIGATION GOING ON” should be posted on the designated doors.
7. TCPA should review regularly the Material Safety Data Sheet (MSDS) of the chemical used.
8. In any confirmed accident at the fumigation risk area, the Supervisor or TCPA on-site shall immediately notify the Safety and Security Services Officer by sending an alarm using the Emergency Alarm System at the area. In addition, please call Emergency Services Hotlines # 2222 or 09189234798. Provide information to emergency personnel on the phone and follow first aid instructions . Hand-over the patient and give additional information to Emergency Services upon arrival.
9. Furthermore, the NSTF Coordinator should be immediately informed about the incident. Corrective action should be captured in accordance with the Corrective/Preventive Action Process

References:

International Rice Research Institute (IRRI). 1988. Rice seed health. Los Baños, Laguna, (Philippines): IRRI. 362 p.

International Rice Research Institute (IRRI). 1994. A manual of rice seed health testing. Mew TW and Misra JK eds. Los Baños, Laguna, (Philippines): IRRI. 113 p.

The International Seed Testing Association (ISTA). 2005. International rules for seed testing. Switzerland: ISTA.

Lists of forms:

1. Warning sign sheet
2. Safety and Health Office request for disposal
3. Fumigation record

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Carlos C. Huelma, Senior Specialist		30 Aug 2018
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		30 Aug 2018
Quality Assurance	Carlos C. Huelma, RMQA Officer		30 Aug 2018

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0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)
1	Patria G. Gonzales	8 Nov. 2017	Version 2

Seed Treatment: Hot Water

SHU–Control No.: IRRI-SHU-TP-DTC-205
Version 3

Author/Reviewed by: Carlos Correos Huelma

Approved by:

Dr. Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

August 2018

Distribution list:

Copy 1 – SHU Site
Copy 2 – Secretary
Copy 3 – Laboratory

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Title: Seed Treatment: Hot Water

Purpose: Hot water treatment (HWT) for rice seeds is a recommended quarantine treatment against white tip nematode (*Aphelenchoides besseyi*).

Material:

1. Dial thermometer
2. Water bath
3. Water heater-circulators
4. Nylon mesh
5. Plastic ties
6. Pentel pens/markers
7. Plastic sheets/labels
8. Rice seeds
9. Washing machine with spinner
10. Convection oven drier
11. Water source
12. Push cart
13. Working table

Procedure:

1. Put seeds loosely in a nylon mesh with the proper label. Use 50% of the nylon mesh volume.
2. Pre-soak the seeds in cold water for 1 - 3 hours.
3. Heat water to 57 ^{o}C using a heater-circulator.
4. Remove the seeds from tap water and drain excess water.
5. Dip the seeds in the hot-water bath. Do not allow the temperature to drop below 52 ^{o}C.
6. After 15 min, remove the seeds from the bath and spin them using the spin cycle of a washing machine to remove water from the seed surface.
7. Fungicide slurry application (if recommended) should be done before re-drying the seeds.
8. Re-dry seeds by sun-drying for 4 hours or in an oven (40 ^{o}C) for 18 hours. Do not allow seeds to touch the ground when sun-drying as they may gather micro organisms from the ground.
9. Return the dried seeds (14% Moisture Content) to proper envelopes with corresponding label.

Quality Assurance:

1. Check for left over seeds on the nylon mesh. Use only the nylon mesh without any remnant seeds.
2. Check the accuracy of the numbers on the seedlot and compare with those indicated in the plastic labels.
3. Check the temperature of the water bath at most 57 ^{o}C before dipping the seeds. Seeds soaked in tap water may decrease the water temperature (minimum level is 52 ^{o}C) upon transfer to the hot water bath.
4. Withdraw 25 seeds as sample for re-testing for nematodes.
5. Check the temperature of the oven drier – it should be maintained at 40 ^{o}C.
6. Check the moisture content of seeds (should be < 14%) after oven drying.

Data Entry:

1. Indicate the date of the hot-water treatment on the hot water treatment (HWT) logbook.
2. Fill out the date of the treatment in the SHU processing label attached to the container of the seeds.
3. Write the date of the hot-water treatment on the application form.
4. For requests with re-testing, fill out the HWT book and application form.
5. Update the data entry in the computer.

Safety:

1. When working with seeds with trace or residual pesticide, use appropriate personal protective equipment during the treatment. Avoid directly inhaling the vapor of the hot water bath. Use an exhaust fan in the treatment area.
2. A large amount of seeds (500 entries) with pesticide residue should undergo hot water treatment at the new consolidated seed treatment facility. Only trained crop protection applicators (TCPA) should conduct the seed treatment.

References:

International Rice Research Institute (IRRI). 1988. Rice seed health. Los Baños, Laguna, (Philippines): IRRI. 362 p.

International Rice Research Institute (IRRI). 1994. A manual of rice seed health testing. Mew TW and Misra JK eds. Los Baños, Laguna, (Philippines): IRRI. 113 p.

The International Seed Testing Association (ISTA). 2005. International rules for seed testing. Switzerland: ISTA.

AUTHENTICATION RECORD

APPROVALS		Signature	Date
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Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		31 Aug 2018
Quality Assurance	Carlos C. Huelma, RMQA Officer		31 Aug 2018

REVISION HISTORY

Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)
1	Patria G. Gonzales	8 Nov. 2017	Version 2

Seed Treatment: Fungicides

SHU–Control No.: IRRI-SHU-TP-DTC-206
Version 3

Author/Prepared by: Aurelio A. Gamba

Approved by:

Dr. Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

January 2019

Distribution list:

Copy 1 – SHU Site
Copy 2 – Secretary
Copy 3 – Laboratory

For Internal Use Only

Title: Seed Treatment: Fungicides

Purpose: Benomyl and mancozeb slurry treatment is recommended to sanitize seeds infected with seedborne and seed-transmitted fungal diseases. Slurry treatment allows the complete covering of the seed surface with the fungicide used. In effect, the fungicide treatment controls the fungal pathogen detected in the seeds and also provides protection from soil-borne fungal pathogens during seed sowing.

Material:

1. Rice seeds
2. Benomyl (e.g., Benlate)
3. Mancozeb (e.g., Dithane M45)
4. Clear plastic container
5. Roll mill
6. A source of water
7. Convection oven drier
8. Weighing scale
9. Metal spatula
10. Graduated cylinder (25 ml)

Procedure:

Steps followed in slurry treatment of 1 kg of rice seeds using benomyl and mancozeb, both at 0.3% by seed weight:

1. Place 3 g each of benomyl and mancozeb inside a wide-mouthed transparent plastic jar (19.5 cm high, 15.5 cm in diameter).
2. Add 15 ml water to make a thick solution or slurry. Coat evenly the inner surface of the jar by manual rotation.
3. Put 1 kg of seed in the jar. Cover the jar tightly and shake it for 5 s.
4. Rotate the jar for 15 min by using a roll mill.
5. Remove the treated seeds from the jar and re-dry to 14% moisture content.
6. Return the treated seeds in the properly labeled bags or containers.

Quality Assurance:

1. Check the accuracy of the weighing scale.
2. Check the stock of the fungicide.
3. Check the distribution of the fungicide on the seed surface.
4. Check the moisture content of the seeds after the slurry treatment.
5. Check the performance of the convection oven drier.

Calculation:

1. Given: The recommended dosage of both benomyl and mancozeb for seed treatment is 0.3% by seed weight.
2. Problem: Solve the amount of each fungicide to be used for 1 kg of rice seeds.

Solution:

Amount of fungicide = 0.3% benomyl/ mancozeb (1000 g seeds)
= 0.003 (1000 g)
= 3.00 g

Therefore, we need 3 g of benomyl and mancozeb for every kilo of rice seeds.

Data Entry:

1. Fill out the Pesticide Applicator Monitoring Program to record the length of time or exposure activity in conducting the slurry treatment for the day. Submit the record to the Safety Health Office (SHO) for the calculation of the TPA Honoraria.
2. Indicate the date of slurry treatment on the SHU processing label attached to the container.
3. Write the date of slurry treatment on the SHU foreign/local seed request record book or incoming seed request record book.
4. Fill out the date of slurry treatment in the application form
5. Update the data entry in the computer.

Safety:

1. The slurry treatment should be conducted only inside the designated chemical seed treatment area (behind PGF Building).
2. Only a TPA shall conduct the slurry treatment of rice seeds.
3. The complete personal protective gear must be worn for slurry treatment.
4. Hand-washing with water and soap must be done at the decontamination room after every slurry treatment activity.

References:

International Rice Research Institute (IRRI). 1988. Rice seed health. Los Baños, Laguna, (Philippines): IRRI. 362 p.

International Rice Research Institute (IRRI). 1994. A manual of rice seed health testing. Mew TW and Misra JK eds. Los Baños, Laguna, (Philippines): IRRI. 113 p.

The International Seed Testing Association (ISTA). 2005. International rules for seed testing. Switzerland: ISTA.

AUTHENTICATION RECORD

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Prepared by	Aurelio A. Gamba, Technician III – Seed technology and seed treatment		23 Jan. 2019
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Seed Treatment: Seed Washing with Sodium Hypochlorite

SHU–Control No.: IRRI-SHU-TP-DTC-207
Version 3

Author/Prepared by: Jay A. Angeles

Approved by:

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January 2019

Distribution list:

Copy 1 – SHU Site
Copy 2 – Secretary
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For Internal Use Only

Title: Seed Treatment: Seed Washing with Sodium Hypochlorite

Purpose: Seed washing treatment with sodium hypochlorite (NaOCl) is used to remove the teliospores of *Tilletia barclayana* or to sanitize seeds against rice kernel smut. This is to prevent the adverse effects on the germination of some varieties.

Material:

1. Plastic container with sufficient space to submerge the seeds
2. Stocks of 1 % NaOCl
3. Source of air bubbles for aeration and wooden sticks for stirring seedlots
4. Nylon mesh (The amount of seeds should not exceed half the container for ease in seed movement during the conduct of the treatment and re-drying. The most ideal is ¼ of the space is filled with the seeds).
5. Spinner (washing machine), to remove excess water before re-drying to 14% or lower moisture content (MC).
6. Continuous source of tap water for washing after NaOCl treatment. (Without a free flowing water source, rinse the seeds in contained water for (4) times or until the chlorine smell is removed.)
7. Drying oven (40 ^{o}C temperature) or drying bin and trays. Overnight drying using bin or oven. Check recommended MC at 14% before packing or storage.

Procedure:

1. Soak the seeds in tap water for 5 min.
2. Submerge the seeds at 1% NaOCl for washing. Suspend the seeds for 30 min with constant stirring and aeration.
3. Wash the seeds in running water until the smell of NaOCl is minimum or change the water (4) times.
4. Spin-dry using the spinner of washing machine for 7 min.
5. Place in an oven drier or sun-dry until the MC of the seed is 14 % or below.

Quality Assurance:

1. Check the stock of 1% NaOCl; it should be freshly prepared.
2. Check the source of aeration.
3. Check the performance of the exhaust fan or fume hood.
4. Check the performance of the convection oven drier.
5. After drying, check that the MC is 14% MC after drying before returning the seeds to their original bags.

Calculation:

1. Given: Common household bleach containing 5.25% NaOCl by weight.
2. Problem: Solve for 1% concentration of NaOCl

Solution:

Formula: $C_1V_1 = C_2V_2$

$(X) = 1\ (1000\ ml)$

$X = \frac{1\ (1000\ ml)}{5.25}$

$X = 190.48$ ml of the original concentration

To obtain a 1% NaOCl solution, use this proportion:
Amount of ordinary house bleach = 190.48 ml
Amount of tap water = 809.52 ml

Data Entry:

1. Indicate the date of fumigation in the SHU processing label on the container.
2. Write the date of fumigation on the fumigation record book.
3. Update the data entry in the computer.
4. Fill out the date of fumigation on the application form.

Safety:

Work under a fume hood or in an open space to prevent inhalation of NaOCl.
Wear complete personal protective gear (gloves, mask, and uniform).

References:

International Rice Research Institute (IRRI). 1988. Rice seed health. Los Baños, Laguna, (Philippines): IRRI. 362 p.

International Rice Research Institute (IRRI). 1994. A manual of rice seed health testing. Mew TW and Misra JK eds. Los Baños, Laguna, (Philippines): IRRI. 113 p.

The International Seed Testing Association (ISTA). 2005. International rules for seed testing. Switzerland: ISTA.

AUTHENTICATION RECORD

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Prepared by	Jay A. Angeles, Technician II – Seed technology and seed treatment		23 Jan 2019
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Crop Health Inspection and Monitoring

SHU–Control No.: IRRI-SHU-TP-DTC-208
Version 3

Author/Prepared by: Jay A. Angeles

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January 2019

Distribution list:

Copy 1 – SHU Site
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Title: Crop health inspection and monitoring

Purpose/Application: Crop health inspection ensures that no new pathogen is introduced and that the incidence and severity of existing diseases are estimated.

Definitions:

1. *Crop health inspection* – a term in plant quarantine that deals with observations of standing crops
2. *Incidence* – the number of plant units such as hills, tillers, or spikelets that are affected by a stress, usually relative to the total number of units assessed.
3. *Severity* – the area or volume of plant tissue that is damaged, usually relative to the total area or volume

Material:

1. Field book
2. Field layout
3. Pen/marker
4. Disease collector's kit
5. Personal protective equipment

Procedure:

Conduct a direct visual estimation of the disease. Generally speaking, since the number of plants to be observed is small, every plant should be checked. This is especially needed in germplasm exchange because a small number of seeds are multiplied in glasshouses or in open quarantined fields; all should be examined very carefully. Field inspection is conducted in seed production areas, designated post-entry quarantine fields, nursery areas and screen houses; it is done (3) to (4) times during the active growth stages of the rice crop: seedling stage at seedbed 2 to 3 days before pulling or transplanting, at maximum tillering stage, at booting/flowering, and at near-harvesting stage.

- <u>At seedling stage at seedbed (2-3 d before transplanting)</u>

  Walk into the field/seedbeds. If the direction of the plant rows permit, the inspector moves in the seedbed in such a manner that the sun is either toward his/her side or back. Give special attention to the planting density and soil condition as these will play a big role in the development of the disease. A submerged field condition affects sclerotial growth. Wet soil and cool conditions favor disease development. Beginning with the first row, check the standing seedlings by using a stick to bend the seedlings and

create an open space between rows, observe carefully the top of the soil at the base of the seedlings. Check both sides of the row for presence of bakanae, leaf blast, sclerotium seedling blight, or bacterial stripe, the most common diseases observed in the seedbed. Insects and weeds are usually not a problem in the early growth stage.

- At maximum tillering

Before going to the field, check the field map, field lay out, pattern of planting and field book. Try to check if requirement with respect to proper isolation, planting method, number of rows and number of hills per row are met. Upon entering the field, make a quick visual examination. Look for areas where the stand looks thin, where weeds or clumps of grass are present, where there is variation in crop height, or there are variety differences, waterways, and other abnormal condition. After visually assessing the general condition, lay out an efficient sampling path for the field in your mind. The appropriate sampling method is recommended based on the size of the seed production field.

a.) In a square field, a “W”-shaped sampling path should give a representative sample of the field.
b.) In a long narrow field, a “zigzag” sampling path should work. Along the sampling path, stop at 10 locations and make observations of the plants in a 1.0 m^2 area at each location.
c.) In a seed production area where plots and number of plants to be observed are small, it is recommended that every plant should be checked. Count the number of plants injured by insects or disease per row. For the whole plot, walk through it and account for the infected hills. Record the amount of injury and pest species responsible for the injury. For seedborne diseases, use the formula for assessing severity and incidence. Count the number of weeds per plot.

Reminders:

Ensure that re-planting is done within 5 days after transplanting so that missing hills are replaced on time.
Take note if the proper agronomic practices were followed: isolation problems, general crop health, pests and diseases, deficiencies, and flowering synchronization.
Roguing activities (removal of off-types) should be implemented at this stage to prevent problems with mixture during flowering stage.

- At booting/flowering

  Check for synchronization of booting and flowering as soon as the crop enters the reproductive stage. Check the overall condition of the field/plot and take remedial measures if necessary. After visually assessing the general condition, lay out an appropriate and efficient sampling path for the field;

  a.) In a square field, a "W"-shaped sampling path should give a representative sample of the field.
  b.) In a long narrow field, a "zigzag" sampling path should work. Along the sampling path, stop at 10 locations and make observations of the plants in a 1.0 m^2 area at each location.
  c.) In a seed production area where plots and number of plants to be observed are small, it is recommended that every plant should be assessed. Count the number of plants injured by insects or disease per row.

  However, in cases when a whole plot has to be assessed (plot area greater than 2 m x 5 m), make a general assessment of the field, disease and insect injury, and account for the infected hills. Record the amount of injury and pest species responsible for the injury. For seedborne diseases, use the formula for assessing severity and incidence. Count the number of weeds per plot.

- Near harvest

  Ensure that proper roguing and cutting of mixtures in the field to be harvested are done. Implement final roguing at this stage.
  Visually assess the general condition of the field. Lay out an efficient sampling path for the field based on the size of the seed production field

  a.) In a square field, a "W"- shaped sampling path should give a representative sample of the field.
  b.) In a long narrow field, a "zigzag" sampling path should work. Along the sampling path, stop at 10 locations and make observations of the plants in a 1.0 m^2 area at each location.
  c.) In a seed production area where plots and number of plants to be observed are small, it is recommended that every plant should be checked. Count the number of plants injured by insects or disease per row.

d.) For a plot area greater than 2 m x 5 m, visually assess the plot and account for the infected hills. Record the amount of injury and pest species responsible for the injury. For seedborne diseases, use the formula for assessing severity and incidence. Count the number of weeds per plot.

Reminders:

Prior to harvesting, check the fields for traces of mixtures as well as weeds. It is necessary that all possible sources of contaminants are removed before the harvesting operations.

Quality Assurance:

1. Check with published disease references for identification.
2. Use the Standard evaluation system for rice (1996, IRRI) for accuracy and precision of disease assessment.
3. Check that abbreviations conform with acceptable standards.

Calculation:

Disease level on plants. For the quantitative measurement of diseases, two ways of disease determination are used-incidence and severity. Incidence is the number of plant units infected, expressed as a percentage of the total number of units assessed. The severity of a disease refers to the area of the plant tissue affected by the disease, expressed as a percentage of the total area. The mathematical sentences are as follows:

$$\text{Incidence} = \frac{\text{No. of plants unit infected}}{\text{Total number of units assessed}} \times 100$$

$$\text{Severity} = \frac{\text{Area of tissue damaged}}{\text{Total area of tissue assessed}} \times 100$$

Solution:

Given: 5 hills showing symptoms of bakanae in a m^2 at a planting distance of 20 cm x 20 cm.

Problem: Solve for incidence

Answer:

$$\text{Incidence} = \frac{\text{No. of hills infected}}{\text{Total number of hills assessed}} \text{ X } 100$$

$$= \frac{5 \text{ hills}}{36 \text{ hills}} \text{ X } 100$$

$$= 14\%$$

Data Entry:

1. Put the date of field inspection in the SHU crop monitoring book.
2. Based on the disease assessment, enter the incidence and severity of disease observed in the data sheet (soft and hard copy) provided by the researcher/scientist concerned on a per variety/per line basis.
3. Update the data entry in the computer.
4. Identify the disease observed in the seedlist accompanying the application form.

Safety:

1. Field safety. Carry sticks and always wear boots to protect yourself from snake bites.
2. Double-check the plot number with the field book number before entering the assessment data.
3. Inspect in such a way that observations can be made from the top of the plants.
4. Have the sun at your back or side. Do not face the sun as this decreases visibility.
5. Inspect the field so as to cover the maximum possible area. (See to Svensson et al [1975] for prescribed schematic patterns of walking that will be useful for inspecting large fields).
6. Crop health inspections must be timed with specific plant growth stages.

References:

International Rice Research Institute (IRRI). 1988. Rice seed health. Los Baños, Laguna, (Philippines): IRRI. 362 p.

International Rice Research Institute (IRRI). 1994. A manual of rice seed health testing. Mew TW and Misra JK eds. Los Baños, Laguna, (Philippines): IRRI. 113 p.

Attachment(s)/List of forms:

1. Field inspection record sheet

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Jay A. Angeles, Technician II – Seed technology and seed treatment		23 Jan 2019
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		23 Jan 2019
Quality Assurance	Ma. Velinda H. Ilao, RMQA Officer		23 Jan 2019

REVISION HISTORY

Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)
1	Patria G. Gonzales	8 Nov. 2017	Version 2

Inspection and Monitoring of Non-Seed Biological Materials and Seeds Other than Rice

SHU–Control No.: IRRI-SHU-TP-DTC-209
Version 3

Author/Prepared by: Jay A. Angeles

Approved by:

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February 2019

Distribution list:

Copy 1 – SHU Site
Copy 2 – Secretary
Copy 3 – Laboratory

For Internal Use Only

Title: Inspection and Monitoring of Non-Seed Biological Materials and Seeds Other than Rice

Purpose/Application: A post-entry requirement for imported research materials is to have it subjected to regular monitoring and observation without prior notice. Monitoring will assure the Philippine government that the materials do not carry or transfer injurious pests and diseases.

Definition:

1. Non seed biological materials – imported materials other than rice seeds intended for laboratory analysis (e.g. soil, water, DNA, RNA, or any plant and plant products)
2. Seed other than rice – imported materials which is also seed of crops other than rice intended for research purposes and can be used as barrier or checks.

Material:

1. List of materials for inspection
2. Information where materials are stored and processed/analyzed
3. Contact person and number

Procedure:

A. Non-seed biological materials

1. Upon release of the materials, the consignee is advised of the basic quarantine post-entry requirements of regular inspection and monitoring of the imported materials.
2. The concerned scientists are informed by the SHU secretary that a quarantine officer will conduct a visit in the laboratory to monitor and make observations of the imported materials, even without prior notice.
3. The PQS Officer, with or without the assistance and presence of an SHU staff, can conduct the inspection in laboratory.
4. The PQS officer will check the processing status of the imported materials based on the research plan submitted during the application for plant quarantine clearance, equivalent to an import permit).
5. Discard and excess materials are collected for proper disposal.

B. Seeds of crops other than rice for field planting

1. Plant the seeds in a designated or a plant quarantine approved experimental area.
2. Do the monitoring at the seedling stage, tillering stage, booting stage, and maturity.

3. Prepare a field book of the materials.
4. Before entering the experimental area, get an overview of the field for observable differences in growth pattern of plants and look for signs and symptoms of pests and diseases.
5. Walk through the field and scout for pests and diseases. Make a mental map to cover at least 10 representative plants in a row or cross the field diagonally and make a stop at randomly selected plants and assess the incidence and severity of insects and diseases.

Quality Assurance:

A. Non-seed biological materials
   1. Waste products obtained during the chemical analysis should pass through a neutralization process before these are dumped to the proper system. Analytical waste should be disposed, following the protocol set by the Safety and Health Office (SHO) on the disposal of analytical waste products. Collect all waste products in a container, label these properly, and coordinate with SHO for the schedule of collection.
   2. Packaging materials and other materials that can be disposed of by incineration should be submitted to SHU for proper disposal.

B. Seeds of crops other than rice for field planting
   1. Refer to published materials regarding the identification of the disease.
   2. Seek help from outside experts about diseases other than rice.

Data Entry:

A. Non-seed biological materials
   1. Fill out the SHO disposal form (on line) and submit it together with the collected waste products to the SHO officer-in-charge or call the attention of the safety officer so he/she can collect the materials for disposal.

Safety:

A. Non-seed biological materials
   1. Always wear proper personal protective equipment in handling chemical wastes for disposal.
   2. Follow the guidelines posted in “Safe Laboratory Practices.”

References

A. Non-seed biological materials
   1. SHO protocols in the disposal of laboratory waste

B. Seed of crops other than rice for field planting
   1. Compendium of rice diseases
   2. Compendium of corn diseases
   3. Compendium of sorghum diseases

Attachment(s)/Lists of forms

A. Non-seed biological materials
   1. SHO disposal form

B. Seeds of crops other than rice for field planting
   1. Field inspection data sheets

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Jay A. Angeles, Technician II – Seed technology and seed treatment		23 Jan 2019
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		23Jan 2019
Quality Assurance	Ma. Velinda H. Ilao, RMQA Officer		23 Jan 2019

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Export and Import of Regulated Materials

SHU–Control No.: IRRI-SHU-TP-DTC-210
Version 1

Author/Prepared by: Carlos C. Huelma

Approved by:

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Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

September 2018

Distribution list:

Copy 1 – SHU Site
Copy 2 – Secretary
Copy 3 – Laboratory

For Internal Use Only

Title: Export and Import of Regulated Materials

1. PURPOSE

The purposes of this Procedure document are:

1.1 To describe the general standard of activities to be followed for/during the export, import, and subsequent transport of regulated transgenic materials.

1.2 To ensure that the genetic integrity, containment, and traceability of all transgenic materials are maintained as required by the institute directive (DDGR- TRD-02).

1.3 To ensure that the instructions, recommendations, and policies from the Philippine government agencies (i.e. DOST-BC and NPQSD) and the institute's designated functions (i.e. IBC, BSO, Stewardship, and SHU) are complied.

1.4 To comply with the requirements of the country of destination and the country of origin with their laws on genetically-modified organisms and plant quarantine.

1.5 To implement IRRI management frameworks in handling transgenic materials.

2. SCOPE

2.1 This Procedure covers all regulated transgenic rice seeds and other regulated materials produced from contained and confined facilities.

2.2 Operational activities must be in compliance with existing internal and external regulatory guidelines in handling transgenic materials.

3. ROLES AND RESPONSIBILITIES

3.1 All IRRI employees working on transgenic materials and those under their supervision have the responsibility to comply with this Procedure.

3.2 Supervisors with the support from RMQA Officer, Stewardship Officer, as well as the Biosafety Office and/or Stewardship Office will make this document available to all staff to whom it applies.

3.3 The Seed Health Unit with support from Biosafety/Transgenic Stewardship Office ensures that the provisions of this procedure are implemented and complied with.

3.4 Partners/collaborators must be well informed and must follow the procedure described in this document.

3.5 The Biosafety Office ensures the compliance of internal material transfer in coordination with the SHU and BPI-NPQSD.

3.6 For international or collaborator material transfer, should comply with the IRRI policy on material transfer agreement in coordination with the SHU.

3.7 The Document Owner shall be responsible for the review and updating of this document as needed no less than two (2) years. The updated version shall be posted promptly into the designated folder in the QMS-SOP documentation site manage by RMQA. Any significant changes/updates in this protocol shall be communicated to the concerned internal offices thru email/meeting/training.

4. DEFINITIONS

4.1 BPI-PEQS – Bureau of Plant Industry-Post Entry Quarantine Station (Los Baños)

4.2 BPI-NPQSD – Bureau of Plant Industry-National Plant Quarantine Services Division (Manila)

4.3 BSO – Biosafety Officer

4.4 DBM – Data Base Management

4.5 DGO- Director General Office

4.6 DOST-BC–Department of Science and Technology-Biosafety Committee

4.7 IBC - Institutional Biosafety Committee

4.8 IP – Import Permit

4.9 MTA – Material Transfer Agreement

4.10 NSBM – Non-Seed Biological Materials

4.11 OU – Organizational Unit

4.12 RMQA – Risk Management Quality Assurance

4.13 SHU – Seed Health Unit

4.14 SMTA – Standard Material Transfer Agreement

4.15 SRA – Seed Request Application

4.16 TDC – Transgenic Development Committee

4.17 TP – Technical Procedure

4.18 TR - Transgenic

5. GENERAL REQUIREMENT(S)

5.1 No transgenic seeds transfer shall commence without the proper approval by appropriate internal and government regulatory bodies.

5.2 Regulatory compliance and stewardship briefing/training must be completed by all personnel and staff working on transgenic Phytosanitary Certification prior to handling transgenic materials.

5.3 Movement of seeds outside any regulated facility shall be directly coordinated with BSO and supervised by PEQS officer or/and designated SHU staff.

5.4 Movement of transgenic materials outside the IRRI Headquarters regulated facility to any point in the Philippines shall be coordinated with the BSO and directly supervised by the PEQS officer.

6. MAIN ELEMENTS OF THE PROCEDURE

6.1 EXPORTATION

6.1.1 Transgenic Development Committee's (TDC) approval must first be secured and submitted to Seed Health Unit (SHU).

6.1.2 Generate list to B4R to check the Material Transfer Agreement (MTA) status of the materials.

6.1.3 Submit application for Phytosanitary Certification (BPI Q Form 10) and other supporting documents (e.g. import permit (IP) of country of origin, MTA, list, approval sheet, and other required documents).

6.1.4 Obtain IRRI Tech Transfer (ITT) clearance prior to processing of MTA thru SHU.

6.1.5 Notify researcher/scientist to arrange the transfer of materials for Plant Quarantine (PQ) inspection and seed treatment recommendation at PEQS-Los Baños station thru the Institute Biosafety Committee (IBC) and Biosafety Officer (BSO). Transfer is done under the direct supervision of PEQS officer and BSO.

6.1.6 Routine Seed Health Testing (RSHT) of transgenic materials will be done at the PEQS station at Los Baños. The material owner shall be responsible in arranging with the BSO the schedule of transfer. The PEQS officer shall likewise supervise the transfer of the materials. The PEQS officer shall dispose infected seeds at the designated/approved area at the PEQS station and maintain the record/s of RSHT as well as disposal. Request without RSHT

requirement, the PEQS officer and the BSO should visit the scientist's laboratory to inspect the materials. SHU is not a designated transgenic material holding area.

6.1.7 After RSHT from PEQS station, materials shall be brought back to SHU under the direct supervision of the PEQS and BSO for Phytosanitary Certificate preparation.

6.1.8 Recommended seed treatment/s should be done first to the seed lots as per recommendation by the PEQS before typing of Phytosanitary Certificate.

6.1.9 Signing of Phytosanitary Certificate is done after RSHT or seed treatment (if required) is completed at SHU or PEQS. Final counter checking of other documents follows.

6.1.10 Follow packaging requirement for shipping regulated materials as stated in the IP and letter of instruction from the collaborator. Place materials inside recommended container, close carefully, and properly. Attach on the outside of the package all original documents (e.g. PC, import permit (IP), PQS sticker, and other important documents) as an indication that the materials are cleared for transport. Material list, MTA, and duplicate copies of the original documents attached outside should be placed inside the box/container.

6.1.11 Dispatch the package to the Mail Room or Shipping Office.

6.1.12 Follow-up/track the package's shipment through the internet.

6.1.13 Record the receipt of materials by the country of destination.

6.2 **IMPORTATION**

6.2.1 Submit to SHU the following;

6.2.1.1 TDC approval of research

6.2.1.2 Letter of intent addressed to BPI Director and Chief National Plant Quarantine Services Division (NPQSD)

6.2.1.3 Application to import (BPI Q Form 1)

6.2.1.4 Location map of final destination

6.2.1.5 Brief methodology and research outline,

6.2.1.6 List of materials,

6.2.1.7 Department of Science and Technology (DOST) approval letter, and

6.2.1.8 Other required documents.

6.2.2 SHU to apply for import permit (IP)/plant quarantine clearance (PQC).

6.2.3 Submit MTA approval sheet and MTA for ITT clearance.

6.2.4 Approval and release of IP.

6.2.5 Send the PQC/IP to seed provider or institute/country of origin of transgenic materials.

6.2.6 Upon arrival at IRRI, do not open the package and do not remove documents/attachments. Notify SHU of the arrival of the materials immediately.

6.2.7 Coordinate with PEQS and BSO for the schedule of inspection of materials.

6.2.8 PEQS shall conduct the opening of package and inspection of documents and items at the researcher's/scientist's laboratory.

6.2.9 Submit all documents to SHU for documentation with PEQS recommendation for RSHT and seed treatment (if required).

6.2.10 Conduct the seed treatment at SHU seed treatment facility. The seed treatment area should be cleared first of non-transgenic materials.

6.2.11 RSHT (if required) should be conducted at the PEQS station. The BSO shall arrange the transfer of materials to PEQS station.

6.2.12 If RSHT is not required, completion of required documents at SHU should be done prior to the release of materials.

6.2.13 Release of transgenic material with complete documents.

6.2.14 Monitoring of the released materials shall be conducted. PEQS should be provided with schedule of activities for quarantine post-entry monitoring at seedbed, tillering, and maturity as well as the schedule of laboratory analysis/ses.

6.2.15 Notice of termination of experiment must be submitted to BSO and SHU.

6.2.16 Coordinate with BSO for the transfer and disposal of transgenic waste materials. Provide the BSO with a distribution list indicating the amount of seeds used per activity, as well as the person responsible per activity.

6.2.17 Material owner should provide the SHU and BSO inventory of remnant seeds and update of record.

7. REFERENCES AND RELATED DOCUMENTS

7.1 IRRI Transgenic Stewardship Policy, DG Memo 2017-01

7.2 Memorandum of Agreement between the International Rice Research Institute (IRRI) and Bureau of Plant Industry (BPI), 2015.

7.3 BPI Director Memo on 6 June 2018

8. FORMS AND RECORDS

8.1 BPI Q Form 10 – Application for Phytosanitary Certification

8.2 BPI Q Form 1 – Application to import

9. DEVIATIONS AND CORRECTIVE ACTION

9.1 Any deviation from this Procedure must be filed through the *Deviation Request Process and Form* and must be approved first before the deviation is implemented.

9.2 Any observed action that maybe considered non-conformance to this process must be communicated and documented through the *Corrective/Preventive Action Process and Form*.

9.3 For any confirmed accidental release at any test site, the Supervisor on-site shall immediately notify the Biosafety Officer for proper guidance on quarantine and disposal. Corrective action, if necessary, should be captured in accordance with the Corrective/Preventive Action Process.

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Carlos C. Huelma, Senior Specialist – Seed Quality Assurance and Crop Health		20 Sept 2018
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		20 Sept 2018
Quality Assurance	Carlos C. Huelma, RMQA Officer		20 Sept 2018

REVISION HISTORY

Revision History	Issued by	Date	Remarks

Packing of seeds and non seed biological materials for shipment

SHU–Control No.: IRRI-SHU-TP-DTC-211
Version 3

Author/Prepared by: Aurelio A. Gamba

Approved by:

Dr. Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

February 2019

Distribution list:

Copy 1 – SHU Site
Copy 2 – Secretary
Copy 3 – Laboratory

For Internal Use Only

Title: Packing of seeds and non seed biological materials for shipment

Purpose/Application: Packages are intended to be transported by post mail or by shipping agencies and these may be done under adverse conditions. The integrity of the seeds depends on the quality of the materials used for packing. Proper packing or the use of recommended packing materials will ensure that the seeds reach the intended clients in good condition, supported by complete transmittal documents.

Definition:

S*eedlot* – a specified quantity of seeds, physically identifiable, with respect to which an international analysis certificate may be issued.

Material:

1. Seed box
2. Cardboard paper file
3. Masking tape
4. Glue
5. Plastic strap
6. Transparent window envelope
7. Plastic strap guard
8. Polyethylene bags
9. Adhesive tape
10. Documents
11. Labels
12. Seedlots

Procedure:

1. Review the field inspection results based on additional Import Permit (IP) declarations.
2. Check and make sure that the plant quarantine officer recommended seed treatment and re-testing were conducted.
3. Make sure that the phytosanitary certificate (PC) is issued by PQS officer on duty. Give the total weight of seeds.
4. Issue the SMTA from the Database group.
5. Review the IP (if required) to see if it complied with additional declaration and instructions for packing.
6. Check and photocopy the PC, commercial invoice, SMTA, import permit (if a requirement), shipping labels, seedlist, and tags/labels.
7. Paste or staple seedlots to close the envelopes or plastic bags. Seeds in paper envelopes or bags are placed in plastic to prevent seed spillage during transport.

8. Check the seedlist for seedlots to be deleted and arrange the materials according to the order it appeared in the seedlist. Properly mark the deleted entries in the seedlist.
9. Fill out the document checklist.
10. Enclose with the seedlots the copy/photocopy of the PC, seedlist, invoice, IP (if required), SMTA, suggestions in growing wild taxa of *Oryza*, acknowledgement of receipt of rice seeds and documents, document checklist, and routine seed health testing results.
11. Close the box or envelope with masking tapes.
12. Put a plastic strap for heavy packages.
13. Attach to the package the original copy of the PC, commercial invoice, IP, PQS sticker, and SMTA sticker. If import tags/labels are available, paste these on top at the center and do not post any other documents. If there are no import tags/labels, paste prominently at the center of the top portion of the box or envelope the mailing address label. Cover the documents with label guard tapes.
14. Submit the documents for final checking and enter the information in the logbook. Stamp the box or envelope with the SHU stamp.
15. Send the package, the application record, and a photocopy of the official documents that accompany the seeds to the SHU secretary for preparation of dispatch papers.

Quality Assurance

1. Always ask for the original copy of the IP, tags, labels and English translation of the IP.
2. Check the condition of the IP.

Data Entry:

1. Fill out the logbook
2. Fill out the document checklist

Safety:

1. Use proper personal protective equipment when handling treated seeds.
2. Check the strength of the envelopes used to protect seed spillage.

Attachment(s)/Lists of forms:

Document checklist

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Aurelio A. Gamba, Technician III – Seed technology and seed treatment		8 Feb. 2019
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		8 Feb 2019
Quality Assurance	Ma. Velinda H. Ilao, RMQA Officer		8 Feb 2019

REVISION HISTORY

Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)
1	Patria G. Gonzales	8 Nov. 2017	Version 2

Delivery and Dispatch

SHU–Control No.: IRRI-SHU-TP-DTC-212
Version 2

Author/Prepared by: Aurelio A. Gamba / Jay A. Angeles

Approved by:

Dr. Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

February 2019

Distribution list:

Copy 1 – SHU Site
Copy 2 – Secretary
Copy 3 – Laboratory

For Internal Use Only

Title: Delivery and Dispatch

Purpose/Application: Prompt arrival of seed request is of utmost importance in germplasm exchange to meet the target date and season of planting at the cooperator's institution. Thus, every seed request is brought immediately to the IRRI Mailroom and Inbound/Outbound Shipping Office after proper documentation is done.

Procedure:

1. Get the mailing slip from the SHU secretary.
2. Deliver the package to the Mailing Room or Shipping Office.
3. Ask the staff-in-charge of the Mailroom or Shipping Office to sign the SHU copy of the mailing slip.

Quality Assurance:

1. Check the completeness of the documents before leaving to deliver the package.

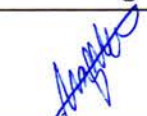
Safety:

1. Use a push cart for heavy packages.
2. Always wear the proper uniform for the work.
3. Follow the safety precautions as per the need.

Attachment(s)/Lists of forms:

Delivery slip

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Aurelio A. Gamba, Technician III – Seed technology and seed treatment		12 Feb. 2019
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		12 Feb 2019
Quality Assurance	Ma. Velinda H. Ilao, RMQA Officer		12 Feb 2019

REVISION HISTORY

Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)

Guidelines in Proper Disposal of Waste Material

SHU–Control No.: IRRI-SHU-TP-DTC-213
Version 1

Author/Reviewed by: Jay A. Angeles

Approved by:

Dr. Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

March 2019

Distribution list:

Copy 1 – SHU Site
Copy 2 – Secretary
Copy 3 – Laboratory

For Internal Use Only

Title: Guidelines in proper disposal of waste material

Purpose: Guidelines to follow when handling proper disposal of waste material such as soil, vegetative waste, wild rice and rice seeds, and other waste materials generated from SHU laboratory. Proper method for waste disposal should meet IRRI regulations and standard in proper disposal.

Scope: The guidelines cover the transfer and handling of materials to be disposed from one physical location to proper disposal area designated by the institute.

Definitions:

1. BPI-PEQS – Bureau of Plant Industry - Post Entry Quarantine Station
2. SHU – Seed Health Unit
3. ZES – Zeigler Experiment Station
4. US / GRC Disposal pit – Designated area for disposal located in upland. This area is an open pit previously approved by the Plant Quarantine Service

Materials:

1. Camera for documentation
2. SHU Logbook
3. Plastic bag
4. Clear plastic storage bin
5. IRRI Vehicle

General Requirement(s):

1. As mandated, upon termination of the experiment, all vegetative parts, other plant debris, and/ or all materials used in the study should be destroyed and disposed properly under the supervision of a Seed Health Unit staff with or without the presence of BPI-PEQS officer.
2. The designated responsible SHU staff shall assist the representative of the proponent in monitoring of disposal activity.
3. The activity should be properly documented by SHU staff. Pictures taken will be saved in the folder of SHU drive (SHU_Pictures\yyyy Files).
4. The activity should be properly coordinated with ZES for the disposal of waste materials and get waste disposal request form from them.
5. The filled-up application form must be submitted 2 days before the date of disposal.
6. List of materials to be disposed should be attached to the request form.

7. Separate above-ground parts of the plant, seeds, and soil and must be placed in secured containers prior to transport.
8. In case of accidental release of materials during transport, work closely with the SHU and ZES staff for the recovery of materials and disposed properly.
9. The waste disposal request form must be accomplished in 3 copies (original copy for SHU, ZES and for the proponent)
10. SHU shall accompanied the proponent in disposing of the materials at the designated/approved area and maintain record/s for the event.
11. Discarded seeds from laboratory should be properly collected and autoclaved and include in the disposal schedule for wild rice.

Procedure:

A. Soil

1. Proponent should call SHU staff to inspect the soil
2. SHU will give recommendation based on the condition of soil
   a. Soil should go through sun-drying
   b. Spraying herbicide to destroy unwanted vegetation
3. SHU will inspect the materials if it is ready for disposal
4. Fill out waste disposal request form
5. Inform ZES for the disposal schedule to get the key of the disposal pit
6. Proponent should provide transport vehicle
7. Dispose the soil in the proper disposal pit (US area / GRC disposal pit)

B. Vegetative waste

1. Proponent should call SHU staff to inspect the material
2. Vegetative waste should go through sun-drying
3. Put the waste material in the plastic bag and close it tightly
4. Fill out waste disposal request form
5. Inform ZES for the disposal schedule to get the key of the disposal pit
6. Proponent should provide transport vehicle
7. Dispose the vegetative waste in the proper disposal pit (US area / GRC disposal pit)

C. Wild rice seeds

1. Proponent should call SHU staff to inspect the material
2. Put the materials in the autoclaving bag.
3. Transferring of seeds to Autoclaving room should be accompanied by SHU staff.

4. The proponent shall autoclave the seeds to be disposed
5. Put the seeds in the plastic bag and close it tightly
6. Fill out waste disposal request form
7. Call SHU and arrange schedule of disposal with the responsible SHU staff
8. Inform ZES for the disposal schedule to get the key of the disposal pit
9. Proponent should provide transport vehicle with cover
10. Dispose the seeds in the proper disposal pit (US area)

D. Incoming seeds and deleted seedlots

1. Discarded incoming seeds and hulls should be collected and put in a plastic bag and close it tightly
2. Secure clearance from BPI for the seeds to be disposed
3. Put all waste materials in an autoclavable container and should be autoclaved
4. Include the waste materials in the disposal of wild rice and disposed properly in designated area

E. Other seeds

1. Discarded seed from RSHT should be given to DTC group for proper disposal
2. Generated waste must be properly collected and stored properly in a well-ventilated location. This should be well labeled.
3. Put all waste materials in an autoclavable container and should be autoclaved
4. Include the waste materials in the disposal of wild rice and disposed properly in the designated area.

Quality Assurance:

1. Trained laboratory technician who are most familiar with the waste generated should be responsible in ensuring proper waste disposal.
2. Discarded seeds for disposal should have a proper waste bin and must be separated from a regular trash can collected by janitorial services.
3. Waste containers must be emptied regularly and never allowed to overflow.

Data entry:

1. Fill out SHU logbook for the transfer and disposal activity to be signed by responsible SHU staff, proponent, and people who are involved in the activity.
2. Update the data entry in the computer.

Lists of forms:

1. Wild Rice and Insects/Diseases Screen Trials Waste Disposal Request Form (c/o ZES)
2. Waste disposal record
3. Hard copy of materials to be transferred and disposed
4. Log book for transfer and disposal

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Jay A. Angeles, Technician II – Seed technology and seed treatment		5 March 2019
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		5March2019
Quality Assurance	Ma. Velinda H. Ilao, RMQA Officer		5 Mar 2019

REVISION HISTORY

Revision History	Issued by	Date	Remarks

Use of Micro Cam

SHU–Control No.: IRRI-SHU-TP-DTC-214
Version 3

Author/Prepared by: Jay A. Angeles

Approved by:

Dr. Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

February 2019

Distribution list:

Copy 1 – SHU Site
Copy 2 – Secretary
Copy 3 – Laboratory

For Internal Use Only

Title: Use of Micro Cam

Purpose: Micro photography of fungi, insects and weed seed

Definition: Micro Cam – a camera ready to capture objects using a compound microscope or a stereo microscope link to a computer system.

Material:

1. Micro Cam lens
2. Stereo microscope
3. Compound microscope
4. Glass slides
5. Cover slip
6. Lighting mechanism
7. Actual specimen to photo shoot
8. Dissecting needle
9. Water dropper
10. Alcohol wash bottle
11. Forceps
12. Color paper for background

Procedure:

1. Set up the MicroCAM objective. Replace the microscope eyepiece with the MicroCAM lens. Mount the Micro Cam lens to a stereo microscope (for insects and weed seeds samples) or compound microscope (for fungi habit character on seeds and organisms mounted on glass slide) link to a personal computer with the MicroCam software. (Note: This step is done only ones during the set up of the software).
2. Switch on the main switch to turn on the supply of the current. Turn on the computer and the lighting effects.
3. Double click CapTV for digital icon to select between a stereo microscope or a compound microscope in capturing the picture. Right click the window. Click Device properties then Source. The video source dialogue box will appear. For stereo click Conexant capture, for compound microscope click USB PC Camera 301P.
4. Set up the specimen that was prepared in advance under the microscope.
5. Adjust the knob and the lighting to have a good view and a clear picture of the desired object.
6. Capture the picture of the specimen. Bring the cursor to the object to be taken. Left click the mouse and click the F2 key afterwards.

7. To view the picture, right click Start, click explore, click captv, search the image captured. After observing the picture taken, click minimize.
8. To take another picture, repeat step #5 to #7.
9. To close the computer after the picture taking activity, put the cursor to the image, then right click mouse. Click exit.
10. Left click start. Click turn off computer
11. Left click Turn off.
12. Switch off the main switch.

Quality Assurance Check:

1. Prepare specimen in a recommended medium.
2. Clear the working table from clutters and other materials. Regularly check and clean all equipments.
3. Calibrate measuring device as needed.

Calculation: Use measuring device for the picture.

Solution: As per recommendation for the equipment.

Data Entry: Provide code for the picture file ownership. Specify file name and date of activity.

Safety:

1. Always use tray to keep your samples/specimen in place.
2. Chronologically label your samples as you want it filed.
3. Never bring food near the equipment.

Lists of forms: Record book of users.

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Jay A. Angeles, Technician II – Seed technology and seed treatment		14 Feb 2019
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		14feb 2019
Quality Assurance	Ma. Velinda H. Ilao, RMQA Officer		14 Feb 2019

REVISION HISTORY

Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)
1	Patria G. Gonzales	8 Nov. 2017	Version 2

D. Routine Seed Health Testing (RSHT)

Blotter Test

SHU – Control No.: IRRI-SHU-TP-RSHT-301
Version 3

Author/Reviewed by: Isabel L. Penales

Approved by:

Dr. Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

September 2018

Distribution list:

Copy 1 – SHU Site
Copy 2 – Secretary
Copy 3 – Laboratory

For Internal Use Only

Title: **Blotter Test**

Application: Blotter Test is used for the detection of seedborne fungi that responds to sporulation

Background: The Blotter Method appears in Annexe 7.4.3.a.7 of the ISTA Rules (2009)

Material(s):

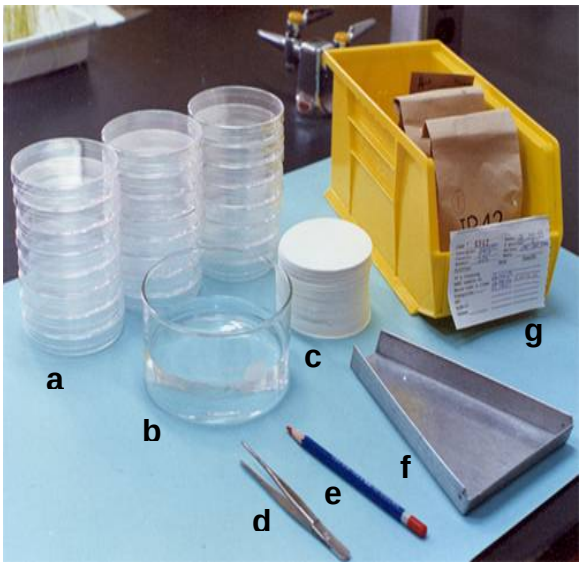


Fig.1. Materials used in the Blotter Test seeding.

Legend:

a. Plastic Petri Dish, 9.0 cm
b. Distilled water (placed in wide-mouthed glass container)
c. Round blotters (EDB No. 127.085, FRISENETTE ApS)
d. Pair of forceps
e. Marking pencil – water resistant but can be easily wiped off
f. Sampling pan
g. Seed samples

Not shown: Incubator

Capable of operating in the range of 21ºC ± 1ºC. To stimulate sporulation, alternating 12-hours of light and 12-hours of darkness at near-ultraviolet light (NUV) during incubation are recommended.

The recommended source is the black light fluorescent lamp (320-400 nm, peak at 360 nm) but daylight fluorescent tubes (Philips TLD 36W/08) are satisfactory.

Fig.2. Materials used for blotter test evaluation

Legend:

a. Tally counter
b. No ink blot marking pencil
c. Dissecting needles (2 pcs)
d. Glass slides
e. Cover slips
f. Nail polish, clear (optional, for sealing semi permanent mounts)
g/i. Mounting Medium (distilled water, lactophenol-plain, with cotton blue)
h. Alcohol – for cleaning dissecting needles

Not shown:

Stereo microscope – for evaluation/identification (examination of habit character of seedborne fungi)

Compound microscope) – for confirmation of identification of seedborne fungi (examination of microscopic character)

Quality Assurance Check:

The designated lead person for blotter seeding shall:

1. Check the incubation room regularly (everyday, early in the morning and before 5:00 PM) and ensure that the air-conditioning unit and thermostat are set accordingly to meet required/standard incubation temperature (21 ºC $\pm$ 1) and lighting requirement (alternating cycles 12 hours NUV and 12 hours darkness)
2. Check/ensure that all materials to be used in this test are clean according to IRRI-SHU set standards.

3. The designated lead person shall ensure that the seeded plates are set properly (SHU18-005-1, SHU18-005-2, SHU18-005-3, and so on) on the assigned shelves inside the incubation room.

The person conducting the test is knowledgeable with accurate identification of the different seedborne fungi and shall:

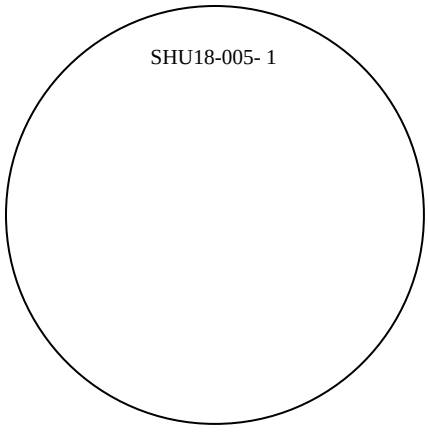
1. counter check that the labels of the seedlots are consistent with the information in the seedlist
2. ensure that the number of plates and blotters set on the working table corresponds to the number of seedlots and recommended working sample to be seeded
3. ensure that the plates are labeled accurately/accordingly
4. ensure that the samples are seeded on the corresponding plates
5. ensure that the blotter papers are not over soaked to eliminate the “wet blotter effect” which prevents the growth of seedborne fungi
6. ensure that the corresponding data sheets have been prepared
7. ensure that the corresponding data are recorded and computed accurately/accordingly

Procedure:

A. Seeding

1. Labelling

   Label using a marking pencil. The label (which includes the assigned SHU Reference Number-Seedlot Number) must be placed at one side of the plastic petri dish cover.



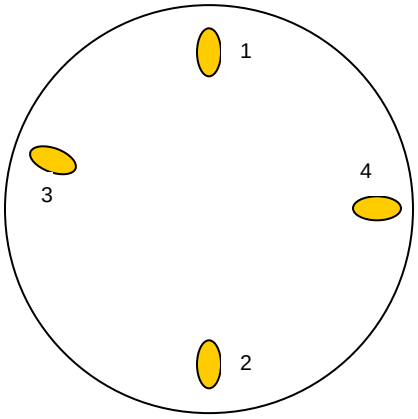
2. Place 2 pieces of moistened round blotter paper in the labeled petri dishes.

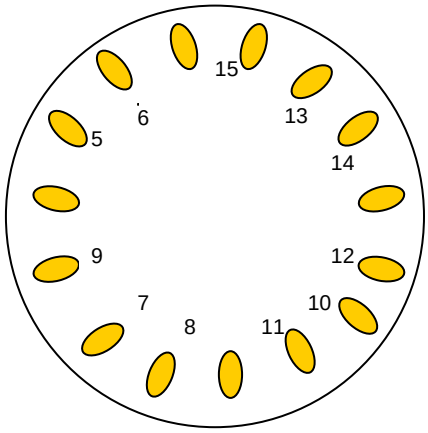
3. Place 25 seeds equidistantly in each petri dish following recommended pattern

Aspects to observe when doing blotter seeding

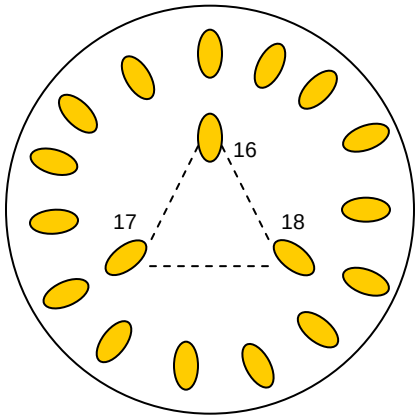
1. Seeds should be randomly chosen, regardless of quality.
2. Seeds must be placed equidistantly from each other and not too near the edge of the plate.
3. Suggested manner of seeding:

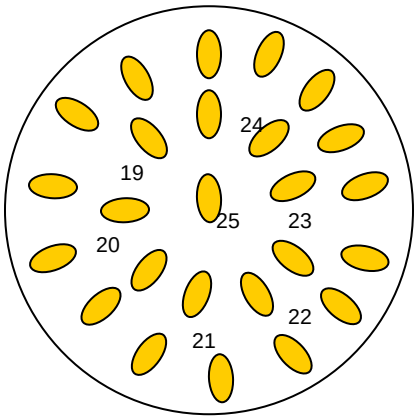
    a. For the "outer circle", put the 1st four (4) seeds in an imaginary quadrangle; on the upper left space, put two (2) seeds; then on the three (3) spaces, put three seeds each.





4. For the inner circle, put three (3) seeds in an imaginary triangle; then put two (2) seeds between each space





5. Put the 25th seed at the middle

B. Incubation

1. Bring seeded plates inside incubation room. Arrange plates properly in the shelves provided in the Near Ultraviolet Light (NUV) room.
2. Incubate seeded plates for 5-7 days under alternating cycles 12 hours NUV and 12 hours darkness at ±1 21°C

C. Evaluation

1. After the required incubation period, retrieve the plates from the incubation room.
2. Examine each seed under a binocular stereo microscope at 12-50X magnification for the different seedborne fungi.
3. Identify and quantify the different seedborne fungi accordingly.

In seed health testing, identification of seedborne fungi is based on their:

A. Habit character - refers to their morphological character on natural substrate (i.e. rice seed) as observed under the stereo microscope. The morphological character includes presence or absence of aerial mycelia, presence of special structures like pycnidia, conidia appear as irregular mass known as pionnotes, and other features like presence of conidial appendage, and/or false heads.

B. Microscopic character - refers to the microscopic features which include the size, shape, and color of mycelia, conidiophore, and conidia as observed under the compound microscope. Conidiophores may be present or absent. If present, they are either distinct or reduced, occur singly, in loose clusters or form a sporodochium or cushion-like structures. They also vary in length and amount of branching. Conidia of fungi come in various sizes, shapes, and color.

Other features such as presence or absence of septations and/or reticulations, manner in which conidia are borne or attached to the conidiophores, and presence of appendages are also included. Septations can be oblique, transverse, or both. Cell walls are either smooth or rough. Conidia are either borne singly or in groups; or they are contained in special structures called pycnidia or ascus. If borne in groups, they are catenulate (in chains) or acropleurogenous (in whorls). Some conidia have sterile appendages, while others do not have.

Each fungi, displays a unique set of habit and morphological characters, thereby distinguishing it from other fungi. In seed health testing, a seed health analyst must acquire this skill-identification of the different fungi based on habit and microscopic characters. Accurate identification relies on the ability/skill of the seed health analyst. However, the success of seed health testing is also influenced by other factors such as detection methods and tools/instruments used.

4. Collate/record data
   Note: Germination of seeds is also taken into account/recorded.
5. Compute for % detection level and % Germination.

Data entry:

1. All relevant information regarding the batch of seeds must be provided/recorded (reference/batch number, seedlot number, date of seeding, date of evaluation number of seeds used, type of seeds – treated or non treated, discard or sample)
2. Total quantity of each seedborne fungi (or total number of seeds with x fungi) per plate is recorded in the data sheet. In the data sheet, one column represents one plate (with 25 seeds)
3. Final data (% detection) is calculated following this formula:

$$\text{\% Detection} = \frac{\text{Total number of seeds with X Fungi}}{\text{Total number of seeds}} \times 100$$

4. In addition, germination of seeds are also included and calculated following this formula:

$$\% \text{ Germination} = \frac{\text{Total number of seeds that germinated}}{\text{Total number of seeds}} \times 100$$

(Refer to Chapter 5.1 of ISTA Rules for Seed testing on Germination and ISTA Handbook on Germination)

Safety:

This procedure shall be conducted in the seed health testing laboratory by persons with working knowledge of this method and familiar with the principles of Good Laboratory Practice.
Seeds and blotters after evaluation shall be disposed following Disposal Protocol.

Reference(s):

ISTA. 2009. International Rules for Seed Testing. CH-Switzerland

ISTA. 2009. International Rules for Seed Testing. Annexe to Chapter 7 Seed Health Testing. Seed Health Testing Methods. CH-Switzerland

MEW, T. W. and P.G. GONZALES. 2002. A Handbook of Rice Seedborne Fungi. Los Baños (Philippines): International Rice Research Institute, and Enfield, N.H. (USA): Science Publishers, Inc. 83 p.

MEW, T.W. and J.K. MISRA. 1994. A Manual of Rice Seed Health Testing. . Los Baños (Philippines): International Rice Research Institute. 113 p.

NEERGARD, P. and A. SAAD. 1962. Seed Health Testing of Rice. A contribution to development of laboratory routine test methods. Indian Phytopathology. 15:85-111.

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Isabel L. Penales, Research Technician III		12 Sept. 18
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		12 Sept 2018
Quality Assurance	Carlos C. Huelma, RMQA Officer		12 Sept 2018

REVISION HISTORY

Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)
1	Patria G. Gonzales	9 Nov. 2017	Version 2

Guide in preparing good slide mounts of seedborne fungi

SHU – Control No.: IRRI-SHU-TP-RSHT-302
Version 3

Author/Reviewed by: Isabel L. Penales

Approved by:

Dr. Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

September 2018

Distribution list:

Copy 1 – SHU Site
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For Internal Use Only

Title: How to prepare a good slide mount of fungi

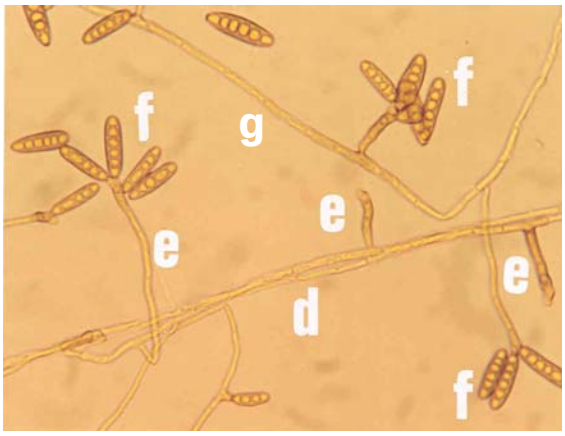
Application: Slide mounts are necessary for the examination of microscopic characteristics of fungi. These characteristics aide in identification, thus a good slide mount shall enable the analyst to make accurate identification.

Materials:

1. Dissecting needle (2 pcs)
2. Glass slides and cover slips
3. Mounting medium and stains (plain lactophenol; lactophenol with cotton blue)
4. Alcohol
5. Nail polish (colorless)
6. Paper towel
7. Stereo Microscope, binocular
8. Compound Microscope, binocular

Procedure:

1. Put a small drop of mounting medium on the (center of) glass slide.
2. Focus on the specimen under the binocular stereo microscope.
3. With the aid of a dissecting needle “hold the seed”; then, with the other dissecting needle, get a small portion of the fungal growth from the specimen.
4. While holding the dissecting needle with the fungal growth on one hand, carefully remove the specimen under the microscope and replace it with the glass slide with a mounting medium. Focus on the drop of mounting medium; then carefully dislodge/transfer the fungal growth on the mounting medium.
   Note: Steps 3 and 4 should be done under the stereo binocular microscope preferably at 6X or 12X.
5. Remove the glass slide under the stereo microscope.
6. Put the cover slip on the mounting medium with the fungal growth.
   Note: this step should be done carefully/slowly (setting down) so as to avoid bubbles in the mount.
7. Examine under the prepared slide mount under the compound microscope.



A good slide mount shows clearly the details of the e) conidiophore, f) conidia, and g) mycelia of the fungi. In this slide mount the manner of attachment of the conidia to the conidiophore is clearly seen.

8. Seal the sides of the cover slip with a clear nail polish.
9. Put appropriate labels: name of the fungi, date of slide preparation.
   Note: labels should be clearly written, correct spelling, etc.
10. Put/store prepared slides in designated slide folders.

Quality Assurance Checks:

The person preparing the slide mount should ensure that:
1. Cover glass and cover slips are clean (free from smudges/water marks).
2. The appropriate mounting medium is used in the preparation.
3. Mounting medium is freshly prepared.
4. Dissecting needles are clean; otherwise, dip the tips in alcohol to ensure that tips are free from any mycelial growth.

When preparing slide mounts, consider the following aspects:

1. Age of the specimen
   Choose fungal growths which are not more than 7 days. Conidia, conidiophores, and mycelia from "fresh" specimens will provide clear microscopic details.

2. Abundance/density of the fungal growth
   Choose fungal growths which are not overcrowded

3. Number of fungi present in the seed
   If possible, choose seeds with one genus of fungi only.

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Isabel L. Penales, Research Technician III		13 Sept. 18
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Quality Assurance	Carlos C. Huelma, RMQA Officer		13 Sept 2018

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0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)
1	Patria G. Gonzales	9 Nov. 2017	Version 2

Modified Baermann Funnel Method (Sedimentation Test)

SHU – Control No.: IRRI-SHU-TP-RSHT-303
Version 3

Author/Reviewed by: Everlyn A. Amparado

Approved by:

Dr. Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

September 2018

Distribution list:

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Title: **Modified Baermann Funnel Method /Sedimentation Test**

Application: This method is used for the detection and extraction of seedborne nematodes in rice seeds

Material(s):

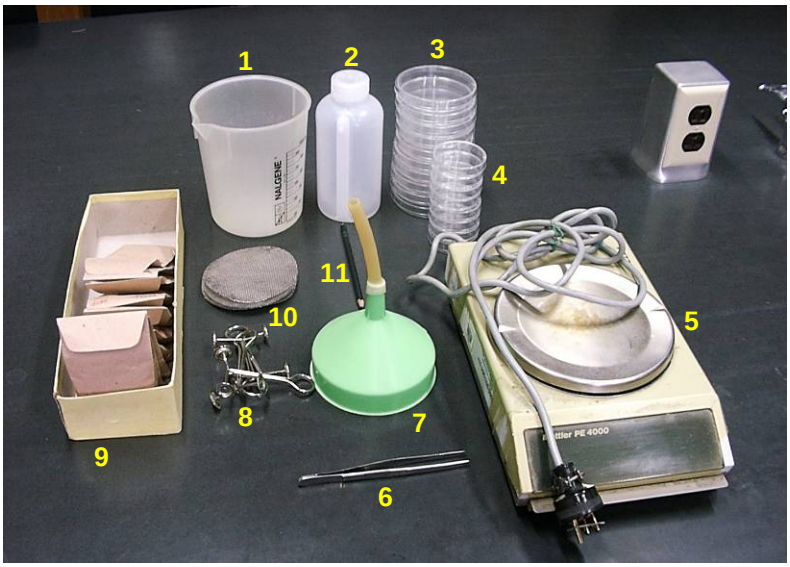

Fig. 1. Materials used in Modified Baermann Funnel Method

Legend:

1	plastic beaker	7	Funnel, plastic with tygon tubing
2	Wash bottle	8	Pinchcock
3	Petri dish, plastic (60X15mm)	9	Seed samples
4	Petri dish, plastic (94X16mm)	10	Wire mesh (round)
5	Weighing balance	11	Marking Pencil
6	Forceps		

Procedure:

A. Pre-germination of samples

1. Label plates using a marking pencil. The label (which includes the assigned SHU Reference Number-Seedlot Number) must be placed at one side of the plastic petri dish cover
2. Weigh the samples (standard weight is 10 grams/200 seeds)
3. Arrange the plates in the germination shelves accordingly
4. Add enough tap water to cover the seeds

5. Pre-germinate the seeds for 2-3 days at 28ºC and alternating cycles of 12 hours fluorescent light and 12 hours darkness

B. Setting-up of funnels/transferring of samples

In setting up of funnels and transferring of samples, start at the top/uppermost level of the shelf, one level at a time until reaching the lowest shelf. For each level, it would be best if the setting up at each level is done in one direction (i.e. right to left)

1. Put the wire mesh in the funnels.
2. Attach the pinchcock to the tygon tubing.
3. Put enough amount of water into the funnel (using the "neck: of the funnel as guide).
   Note: Leakage at this point is indicative that the pinchcock is loose and should be immediately addressed (change the pinchcock).
4. Plates with pre germinated seeds are placed near the funnels.
5. Transfer all of the contents of the plate into the funnel (1 plate = 1 funnel)
   Note: Extra precaution should be observed so as to avoid spillage. Spread the seeds making sure that the seeds do not go beyond the sphere of the wire mesh; otherwise the seeds shall go down the tygon tubing which is not acceptable.
6. Make sure that the seeds are covered with water/seeds are submerged
   Note: Add some more water if there is a need to i.e. the seeds are not covered with water.
7. Put the cover of the plate to the funnel – to serve as label.
8. "Incubate"/set aside overnight.
9. Extract the following day.

C. Extraction

In extraction, start at the lowest shelf, working one level at a time until reaching the top/uppermost shelf

1. Extract at least 10 ml.
2. The plate cover should be used to cover the extract.
   Note: In the event that the amount of extract exceeded the required amount, return the extract; then set aside overnight. Do not extract immediately.

D. Evaluation

Examine the extract under the stereo microscope for the presence/absence of seedborne nematodes. In the event that nematodes are observed in the extract, a sample of the nematode shall be mounted so that details of the mouthparts can be examined to determine whether the nematode is

saprophytic or parasitic. Refer to existing literatures for confirmation/ validation.

(In rice, there is only one (1) seedborne nematode, *Aphelenchoides besseyi.)*

Do actual count, if the nematodes present in the extract are *Aphelenchoides besseyi.*

If the nematodes present in the extract are saprophytes, there is no need to do actual count and identify the genus and species.

Quality Assurance Check:

The designated lead person for Nematode Test shall:

1. check the germination room regularly (everyday, at 8:00 AM and before 5:00 PM) and ensure that the airconditioning unit and thermostat are set accordingly to meet the required/standard incubation temperature (28 ºC) and lighting requirement of the germination shelves (alternating cycles 12 hours fluorescent light and 12 hours darkness)
2. check/ensure that all materials to be used in this test are clean according to IRRI-SHU set standards
3. ensure that non-SHU staff who shall conduct the test are properly oriented with regards to the procedure, rules, and standards.

The person conducting the test shall:

1. ensure that the number of plates set on the working table corresponds to the number of seedlots and recommended working sample to be seeded.
2. ensure that the plates are labeled accurately/accordingly
3. ensure that the required amount of sample are accurately weighed and samples placed in the corresponding plates.
4. ensure that the required volume of water is added to the seed samples.
5. ensure that the samples are properly set on the pre-germination shelves.
6. ensure that the test and evaluation are conducted according to set standards.
7. ensure that the results are recorded accurately and accordingly.

Data entry:

Results are recorded in the Data sheet for Blotter Test (specifically at the space for *Aphelenchoides besseyi*) as follows:

1. If extract is negative for the presence of nematodes, data is reflected as zero (0).
2. If extract is positive for the presence of *Aphelenchoides besseyi (Ab)*, result is reflected as actual count.
3. If extract is positive but the nematode is saprophytic, the result is reflected as zero (0) indicating the absence of *Ab* and to indicate the presence of saprophytic nematodes, a letter S is written.

4. If the extract is positive for both *Ab* and saprophytic nematode, result is reflected as actual count of *Ab* and S.

Safety: This procedure shall be conducted in the seed health testing laboratory by persons with working knowledge of this method and familiar with the principles of Good Laboratory Practice

Seeds and blotters after evaluation shall be disposed following Disposal Protocol

Plant Quarantine Standard/Protocol:

Tolerance level: 0 infection

Seedlots infected with *Aphelenchoides* besseyi shall be subjected to Hot water treatment if the country of destination allows seed treatment. Otherwise, the seedlots are subject to deletion or replacement.

Reference(s):

MEW, T.W. and J.K. MISRA. 1994. A Manual of Rice Seed Health Testing. . Los Baños (Philippines): International Rice Research Institute. 113 p.

AUTHENTICATION RECORD

APPROVALS		Signature	Date
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Quality Assurance	Carlos C. Huelma, RMQA Officer		14 Sept 2018

REVISION HISTORY

Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)
1	Patria G. Gonzales	9 Nov. 2017	Version 2

Macro Test for *Tilletia barclayana*

SHU – Control No.: IRRI-SHU-TP-RSHT-304
Version 5

Author/Reviewed by: Florencio I. Lapiz

Approved by:

Dr. Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

September 2018

Distribution list:

Copy 1 – SHU Site
Copy 2 – Secretary
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Title: Macro Test for *Tilletia barclayana*

Purpose: Macro Test is done to detect the teliospores of *Tilletia barclayana* contamination on rice seeds using a stereo microscope.

Definitions:

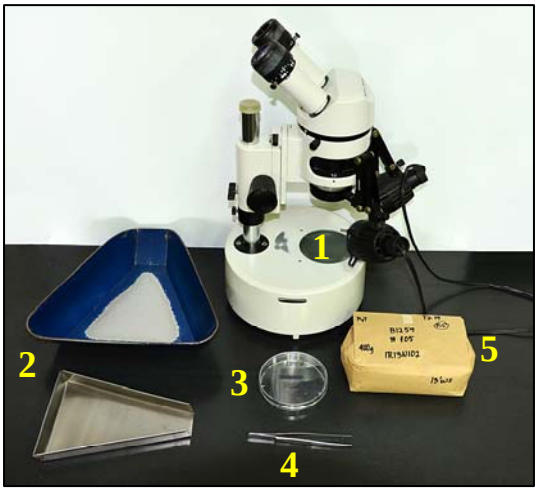
teliospore – (Gr. *teleuté*, completion, finishing, end; or *télos, téleos*, end + spora, spore): a thick-walled, unicellular or multicellular resting spore with binucleate (dikaryotic) cells that is produced in a telium; characteristic of the rusts and smuts (Uredinales and Ustilaginales). The teliospore , also called telutospore, is the site of karyogamy and meiosis, after which the nasidial apparatus forms by germination.

telium – pl. telia – (NL.*télium*< Gr *télos, téleos*, end + L. dim.suf, *-ium)*the group of binucleate cells in a sorus that produce teliospores, which are resistant spores in the parasitic fungi of plants called rusts and smuts (Uredinales and Ustilaginales).
In *Ustilago* and *Sphacelotheca* (Ustilaginales), the sori of teliospores are produced mainly in the inflorescences of the host plants, mainly Gramineae.

sorus – pl. sori (Gr. *sóros,* pile, heap): a spore mass formed in certain fungi, such as rusts (Uredinales) and smuts (Ustilaginales).

Materials:

1. Stereo Microscope
2. Sampling pan (big & small)
3. Petri dish, plastic, 10mm
4. Pair of forceps
5. Seed sample



Procedure:

a) Put seed sample on a petri dish (at least one layer only).
b) Examine the seeds under the stereo microscope for the presence (+) or absence (-) of *Tilletia barclayana (Tb)* teliospores.
c) If teliospores of *Tb* are not present, indicate (-) in the seed list.
    i) For seedlots weighing 500 gms or less, ensure that all seeds have been examined before declaring a negative (-) observation.
    ii) For seedlots weighing more that 500 gms, ensure that 50% of the total volume have been examined before declaring a negative (-) observation.
d) If teliospores of *Tb* are present, get 400 seeds at random and separate seeds with and without *Tb*. Calculate the detection percentage (%).
    i) If the detection percentage is </=20%, indicate a positive (+) sign and the word “cleaned” beside the SHU seedlot number. Examine all seeds and remove all seeds with *Tb.* The word “cleaned” indicates that all seeds with *Tb* have been removed.
    ii) If the detection percentage is 21% and above, do not proceed with the examination. Indicate a positive (+) sign beside the SHU seedlot number and the detection percentage.

Plant Quarantine Standard

Seedlots with 21% or above infection are subject to Plant Quarantine Service (PQS) Officer for recommendation: either for deletion, replacement or treatment depending upon the pre shipment conditions of the country of destination.

Quality Assurance Check:

The lead person shall ensure that:

a. the labels in the physical samples are consistent with the list of seeds provided.
b. the SHU staff conducting the test is wearing a particle mask to avoid inhaling dust from the rice seeds
c. the SHU staff conducting the test has a working knowledge of the procedure, standards in terms of quality and quantity, and has the skill to identify the teliospores of *Tilletia barclayana*

Calculation:

The % detection is calculated as follows:

$$\% \text{ detection} = \frac{\text{Total number of seeds with } \textit{Tilletia barclayana}}{\text{Total number of seeds used as a sample}} \times 100$$

Data Entry:

ENTRYCODE	GID	IRIS UNIQUE ID	SOURCE	UNIQUE SAMPLE ID
1	2489277	IRIS 211-1297627	L11WS-27#49	IRIS 211-1297627
2	2663546	IRIS 211-1328304	L10DS-16#20	IRIS 211-1328304
3	2652563	IRIS 211-1328536	L13WS-08A#6	IRIS 211-1328536
4	2652472	IRIS 211-1328627	L13WS-08A#1	IRIS 211-1328627
5	2652409	IRIS 211-1328690	L10DS-16#7	IRIS 211-1328690
6	2652396	IRIS 211-1328703	L09DS-11#138	IRIS 211-1328703
7	2723548	IRIS 211-1349065	L11WS-10#47	IRIS 211-1349065
8	2723508	IRIS 211-1349105	L11WS-12#225	IRIS 211-1349105
9	2723286	IRIS 211-1349327	L12DS-12#72	IRIS 211-1349327
10	2723133	IRIS 211-1349480	L11WS-12#209	IRIS 211-1349480
11	3311763	IRIS 311-1413813	L12WS-16#32	IRIS 311-1413813
12	3311841	IRIS 311-1413891	L13WS-13#77	IRIS 311-1413891
13	3311851	IRIS 311-1413901	L12WS-16#75	IRIS 311-1413901
14	3312023	IRIS 311-1414073	L13WS-15#25	IRIS 311-1414073
15	3508571	IRIS 311-1449266	L12WS-12#48	IRIS 311-1449266
16	3516692	IRIS 311-1449271	L12WS-12#37	IRIS 311-1449271
17	3516698	IRIS 311-1449277	L12WS-12#31	IRIS 311-1449277
18	3516699	IRIS 311-1449278	L12WS-12#2	IRIS 311-1449278
19	3516702	IRIS 311-1449281	L13DS-15#27	IRIS 311-1449281
20	3517410	IRIS 311-1449992	L13DS-13#28	IRIS 311-1449992
21	3517451	IRIS 311-1450033	L12WS-16#40	IRIS 311-1450033
22	3509521	IRIS 311-1450217	L13DS-13#35	IRIS 311-1450217

Safety: Staff doing the test must wear a particle mask to avoid possible inhalation of dust particles brought about by the transferring of rice seeds from bags to the sampling pans.

References:

CHEREWICK, W.J. 1944 . An improved method of determining the smut spore load on cereal seed. Can. Journal of Res. Section C, 22: 120-126.

GERGON, E.B., S. MERCA, and T.W. MEW. Quarantine aspects of rice seed health. Paper presented during IRRI Saturday Seminar, 06 September 1986.

MATSUMOTO, T., D. SHOWERS, R. LUSCHER, D. HIGUERA, and C. KRASS Kernel smut in rice. In California Plant Disease Report .3 (2):23-44. March 27, 1984

MEW, T. W. and P.G. GONZALES. 2002. A Handbook of Rice Seedborne Fungi. Los Baños (Philippines): International Rice Research Institute, and Enfield, N.H. (USA): Science Publishers, Inc. 83 p.

MEW, T.W. and J.K. MISRA. 1994. A Manual of Rice Seed Health Testing. Los Baños (Philippines): International Rice Research Institute. 113 p.

PIRSON, H. 1978. A simple method for the detection of bunt and covered smut spores as contaminants on cereal seeds. Working group on temperate climate cereals. In the Report on the 16th International Workshop on Seed Pathology. ISTA-PDC, pp.54-57. Mimeograph, Karlsruhe.

TRIONE, E.J. and B.B. KRYGIER. 1977. New tests to distinguish teliospores of *Tilletia controversa*, the dwarf bunt fungus, from spores of other *Tilletia* species. Phytopathology. 67:1166-1172

ULLOA, M. and R.T. HANLIN. 1999. Illustrated Dictionary of Mycology. St. Paul, MN. APS Press

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Florencio I. Lapiz, Research Technician III	F. Lapiz	Sept. 17, 2018
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Quality Assurance	Carlos C. Huelma, RMQA Officer		17 Sept 2018

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0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)
1	Patria G. Gonzales	21 Jun. 2010	Version 2
2	Patria G. Gonzales	10 Jun. 2014	Version 3
3	Patria G. Gonzales	9 Nov. 2017	Version 4

Seed Wash Assay Test (using Semi selective medium)

SHU – Control No.: IRRI-SHU-TP-RSHT-305
Version 3

Author/Reviewed by: Isabel L. Penales

Approved by:

Dr. Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

September 2018

Distribution list:

Copy 1 – SHU Site
Copy 2 – Secretary
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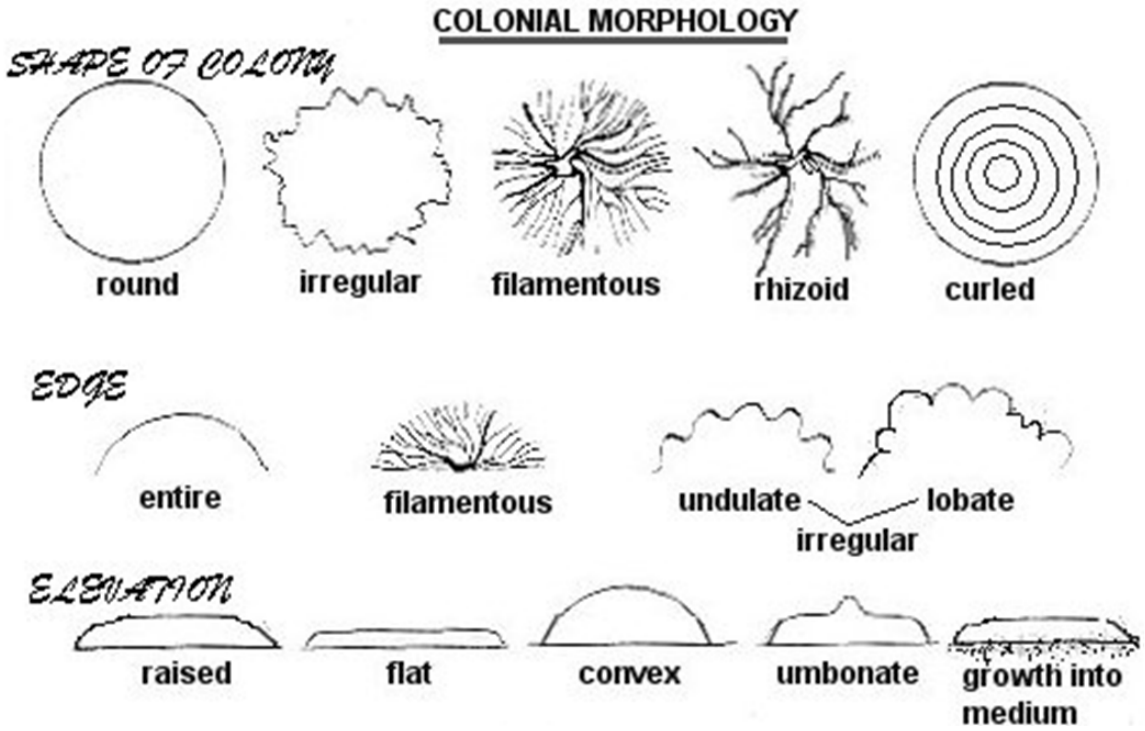
Title: Seed Wash Assay Test using Semi selective medium

Application: To extract, isolate, and purify the following bacteria in rice seeds:

a. *Acidovorax avenae* subsp*. Avenae*
b. *Burkholderia glumae*
c. *Pseudomonas fuscovaginae*
d. *Xanthomonas oryzae* pv*. oryzae*
e. *Xanthomonas oryzae* pv*. oryzicola*

Definitions:

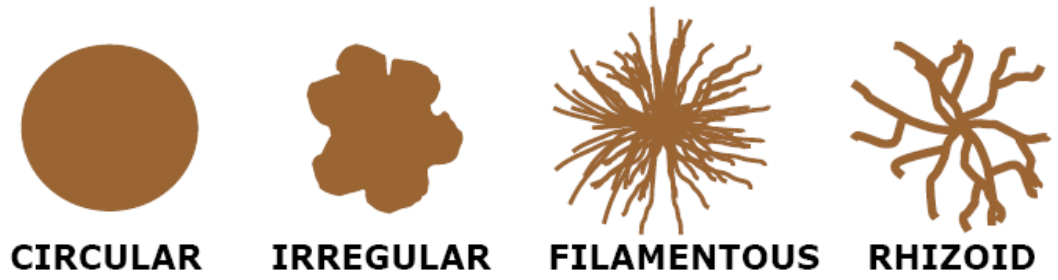
A. Reference for Colony Morphology



Colony Morphology: Describing Bacterial Colonies

Frequently during the semester you will need to describe bacterial (or fungal) growth observed on slants or Petri plates. It will be useful to learn the terminology used for describing common colony types. The following outline will be helpful for verbally communicating the appearance of observed colonial growth.

1. **Form –** The form refers to the shape of the colony. These forms represent the most common colony shapes you are likely to encounter.



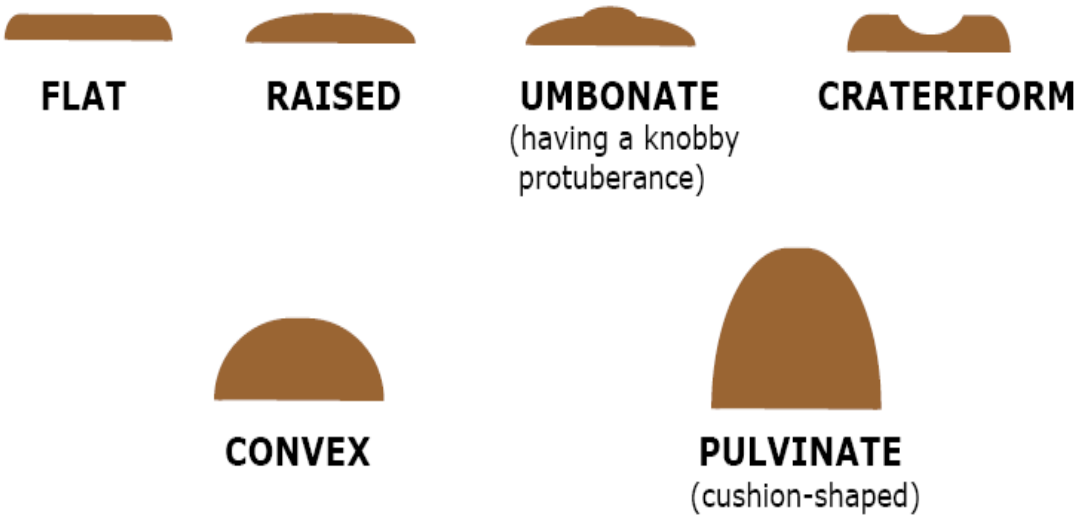
1a. Size – The size of the colony can be a useful characteristic for identification. The diameter of a representative colony may be measured. Tiny colonies are referred to as **punctiform**.

1b. Surface – Bacterial colonies are frequently shiny and smooth in appearance. Other surface descriptions might be: **veined, rough, dull, wrinkled (or shriveled), glistening.**

1c. Texture – Several terms that may be appropriate for describing the texture or consistency of bacterial growth are: **dry, moist, mucoid, brittle, viscous, butyrous (buttery).**

1d. Color – It is important to describe the color or pigment of the colony. Also include descriptive terms for any other relevant optical characteristics such as: **opaque, cloudy, translucent, iridescent.**

2. Elevation – This describes the "side view" of a colony. These are the most common.



3. Margin – The margin or edge of a colony (or any growth) may be an important characteristic in identifying organisms. Several examples are shown below.

Material(s):

a. Mortar and pestle
b. L-shaped glass rods
c. Pipettor and pipette tips (10 ml, 1 ml, .01 ml)
d. Burners/alcohol lamp
e. Igniter/Lighter/match
f. Petri Dish, glass, 9mm
g. Test tubes and test tube racks
h. Erlenmeyer flasks
i. Nylon mesh
j. Green ties
k. Beaker, plastic/equivalent plastic container
l. Spatula (plastic/metal)
m. Paper towel
n. Wireloops/inoculating sticks
o. Vortex mixer
p. Laminar flow with Ultraviolet (UV) light
q. Orbital shaker – capable of holding at least 15 Erlenmeyer flasks and run 100 rpm
r. Incubator –capable of operating under varying ranges in temperature (28-30°C)
s. Laminar flow hood
t. Solutions/culture medium
    i. Sterile distilled water , 9 ml in test tubes
    ii. Cycloheximide (0.01%) - antifungal
    iii. Phosphate buffer saline (PBS) with 0.25% Tween
    iv. King's Medium B (KMB) for fluorescent *Pseudomonas*
    v. Tryptic Soy Agar (TSA) for non fluorescent *Pseudomonas*
    vi. Suwa's Medium/ Wakimoto's Medium (WF-P) for *Xanthomonas* spp.

B. Reference for Colony Morphology

General colony appearance of the described *Pseudomonas* species and *Xanthomonas oryzae* pathovars on nutrient agar.

Bacteria	Colony appearance
Pseudomonas fuscovaginae	Colonies are round, smooth, raised, white to light brown, glistening, translucent, and 3 – 5 mm in diameter.
Acidovorax avenae subsp. *avenae*	Colonies are round, smooth, raised, chalk white, and glistening. Old colonies are sticky and adhere to the agar.
Burkholderia glumae	Colonies are round, smooth, raised, grayish white, and viscid.
Xanthomonas oryzae pv. *oryzae*	Colonies are round, smooth convex, butyrous, whitish yellow to straw yellow later, and opaque against transmitted light. The colonies appear as small dots on the 3rd or 4th day and reach 1-2 mm diameter on the 5th to 7th day. They grow slowly.
X. oryzae pv. *oryzicola*	Colonies are round, smooth, convex, viscid, whitish to pale yellow later with maturity. The colonies reach 1 mm diameter in 3 days. They grow more rapidly than Xoo.

Procedure:

A. Extraction

Preparation of samples

1. Put working sample in nylon mesh (individually).

2. Tie the nylon mesh with green tie (or equivalent) so as to secure the seeds.

3. Put the samples in a container (plastic or glass).
   The container must allow samples to “move about”

4. Cover the container with nylon mesh and secure with rubber band (or equivalent) to secure the samples inside.

5. Wash the seed samples in running water for 30 minutes.

6. Blot dry seed samples by putting each seedlot on a sterile paper towel

7. Crush seed samples in a sterile mortar and pestle until 80% of the seeds are crushed.

8. Transfer crushed seed samples in an Erlenmeyer flask with Phosphate Buffer Saline (PBS) solution with 0.25% Tween

Standard:

Vol. of seeds	Vol. of PBS
25 seeds	5 ml
5 gms	25 ml
25 gms	50 ml
50 gms	100 ml

9. Allow set up to stand for 1 hour

10. Shake samples for 2 hours in an orbital shaker at 100rpm

B. Isolation

From the seed extract, prepare a ten-fold dilution series up to 10^{-5} in sterile Saline Solution (0.85% NaCl)

1. Transfer 1 ml of seed extract into 9 ml of sterile Saline Solution

2. Pipette 0.1 ml. from each serial dilution of 10^{-3}, 10^{-4}, and 10^{-5} on plated semi selective medium*

*King's Medium B (KMB)- for fluorescent Pseudomonas, Tryptic Soy Agar (TSA), Suwa's Medium/Modified Wakimoto Medium. Cycloheximide (0.1%) is added to the medium prior to plating to reduce fungal contamination.

3. Spread bacterial suspension on the surface of the agar using sterile L-shaped glass rods.

4. Incubate KMB/TSA plates for 72 hours, while Suwa's/Wakimoto Medium for 6 days at 28-30°C.

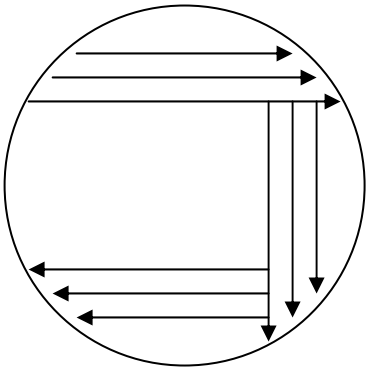
5. Observe plates after incubation period.

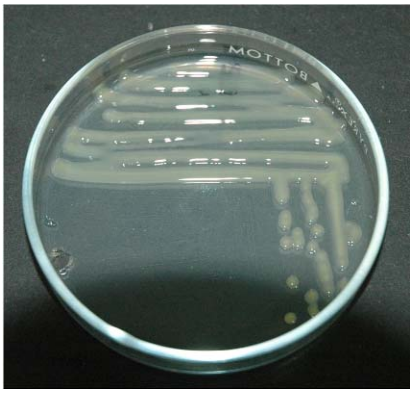
6. Compare colonies with reference Strain Isolates for identification. Mark suspected colonies

7. Record observations

C. Purification

1. With a sterile wireloop or sterile inoculating stick, pick a single distinct colony and streak in duplicated media. Incubate at 28-30°C for 48 hours.





2. Single, distinct colonies are then streaked in test tube slants.

D. Pathogenecity Test

Refer to handouts on Inoculum Preparation and Inoculation of *Xanthomonas oryzae* pv. *oryzae* and *Xanthomonas oryzae* pv. *Oryzicola*

Authored by I. Ona and F Elazegui during the Training-Workshop on Harmonizing Detection of *Xanthomonas oryzae* pathovars

Quality Assurance Check:

The designated lead person in the preparation of materials, solutions, and culture medium to be used in the isolation, extraction, and purification shall:

1. ensure that all materials are prepared according to set standards and prepared at least 2 days before the scheduled run date(s).
2. ensure that the isolation room is clean and "sterilized".
3. ensure that the temperature of the incubator has been calibrated according to required temperature (Note: must be done at least 2 days before the extraction/isolation)
4. ensure that persons who will assists in conducting the tests are properly oriented with regards to the procedure, rules, and standards.
5. ensure that the tests and evaluation shall be done according to set standards.

Data entry: Following the data sheet, observations are indicated as + (for presence of target genus of bacteria) or – (for absence of target genus of bacteria). If +, the isolate number and dilution are indicated.
Following the data sheet, the morphology of the bacteria are described following appropriate descriptions.

Safety: This procedure shall be conducted in the isolation room (under the laminar flow hood) of the seed health testing laboratory by persons with working knowledge of this method and familiar with the principles of Good Laboratory Practice
After extraction, isolation, and purification, seeds, and agar media used in this test shall be disposed following Disposal Protocol.

Reference(s):

Cottyn, Bart. 2002-2003. Bacteria Associated with Rice Seed from Philippines Farmer's Field. IRRI 236 pp.

Kyin Kyin Win. 2008. Studies on the transmission of *Xanthomonas oryzae* pv. *oryzae* (Ishiyama) Swings et al through rice (Oryza sativa L.) seeds from bacterial blight infected fields

Bacterial Pathogens. Lecture presented by Ms. Isabelita Ona during the Training Workshop on the Diagnostics of Seed-borne Rice Diseases, 30 August- 05 September 2008, IRRI

Unpublished Final Reports of Ms. Helen Barrios (former AS I) and Ms. Jocelyn Guevarra (former Researcher) who conducted research and test runs re: seed wash assay test using semi selective medium for bacterial testing

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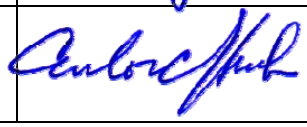
Quality Assurance	Carlos C. Huelma, RMQA Officer		20 Sept 2018

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Guide in illustrating and describing seedborne fungi (for identification purposes)

SHU – Control No.: IRRI-SHU-TP-RSHT-306
Version 3

Author/Prepared by: Isabel L. Penales

Approved by:

Dr. Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

January 2019

Distribution list:

Copy 1 – SHU Site
Copy 2 – Secretary
Copy 3 – Laboratory

For Internal Use Only

Title: Guide in illustrating and describing seedborne fungi (for identification purposes)

Application:

A. Habit character:

When drawing/making illustrations

1. Use pencil
2. Make line illustration/drawing only. No shadings except when emphasizing color difference.
3. Size of organism should be realistic in relation to size of seed
4. Illustration should be as seen in specimen
5. Do not forget to specify magnification

When describing, take note of the following aspects:

1. Aerial mycelia Present or Absent

   If present: Abundance (Abundant, Moderate, Scanty)
   Appearance (Hairy, Cottony, others –specify)
   Color (Colorless, brown, white, cream, others-specify)
   Location on the seed (Sterile glumes, awn, all over the seed surface, others-specify)

   Other remarks – abundant branching (loose or compact)
   conidia collected together as false heads (dry or wet)

   If absent: Conidiophore and conidia only; mass of spores (pionnotes)
   Conidia contained in specialized structures, i.e. pycnidia (describe shape, color, other features)
   Location on the seed (sterile glumes, awn, scattered all over the seed surface)
   Other remarks – relative length of conidiophore

B. Microscopic Character:

When drawing/making illustrations

1. Use pencil
2. Make line illustration/drawing only. No shadings except when emphasizing color difference.

3. Draw at least 5 illustrations for big conidia (i.e. *Bipolaris oryzae*) and 10 illustrations for small conidia (i.e. *Sarocladium oryzae*)
4. Orientation should be in one direction only
5. Do not forget to specify magnification

When describing conidia or spores, take note of the following aspects:

1. Color – hyaline, slightly pigmented, brown, others-specify
2. Shape – globose, fusiform, clavate, sickle, others-specify
3. Septation – present or absent; if present –how many
4. Cell Wall – rough, smooth
5. Other features – shiny, opaque, with sterile appendage, others-specify

When describing conidiophores, take note of the following aspects:

1. Simple, branched-how many
2. Color – hyaline, brown, slightly pigmented, others-specify
3. Cell Wall –smooth, rough
4. Septation-present or absent
5. Other features – is it tapering towards the top; becoming lighter in color towards the top

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Isabel L. Penales, Research Technician III		30 Jan 2019
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Quality Assurance	Ma. Velinda H. Ilao, RMQA Officer		30 Jan 2019

REVISION HISTORY

Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)
1	Patria G. Gonzales	9 Nov. 2017	Version 2

Different Methods of Germination Test

SHU – Control No.: IRRI-SHU-TP-RSHT-307
Version 3

Author/Prepared by: Isabel L. Penales

Approved by:

Dr. Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

January 2019

Distribution list:

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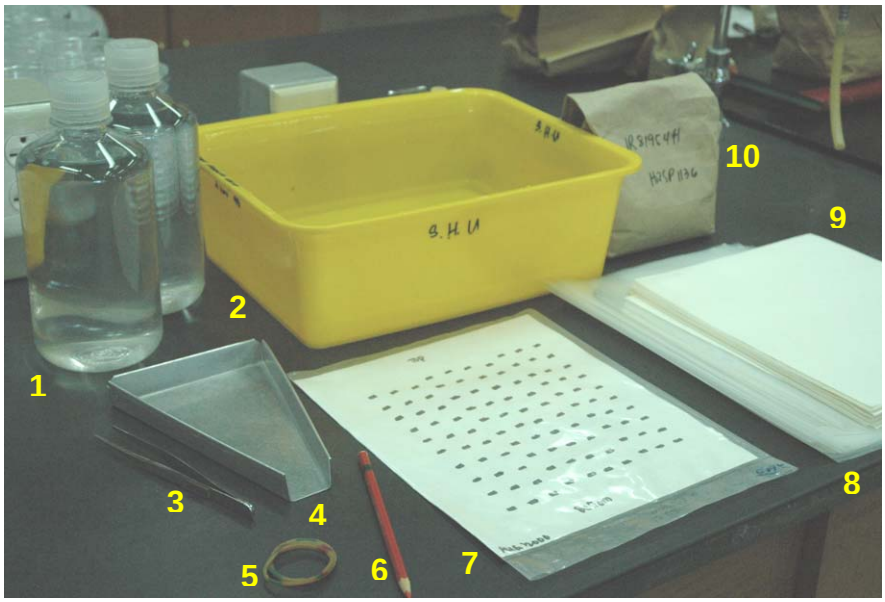
Title: Different Methods of Germination Test

A. Between Paper Germination Test

Application: To evaluate germination and vigour of rice seeds. Evaluation for normal and abnormal seedlings and ungerminated seeds are included in this test.

Background: Between Paper (BP) test appears in Chapter 5 of the International Seed Testing Association (ISTA) Rules for Seed Testing, 2008 edition

Material:



1) Distilled water
2) Tray, plastic, rectangular
3) Forceps
4) Sampling pan
5) Rubber bands
6) Marking Pencil-water proof
7) Template-for seeding
8) Plastic bags
9) Germination blotters-rectangular, 8”x11.5”
10) seed samples

Incubator/Incubation room (not shown)- capable of operating at 28°C and alternating cycles of 12 hrs darkness and 12 hrs light (from an artificial source).

Quality Assurance Check:

The designated lead person for the between paper test shall:

1. Check the incubation room regularly (everyday, early in the morning and before 5:00 PM) and ensure that the air-conditioning unit and thermostat are set accordingly to meet required/standard incubation temperature (28 ºC $\pm$ 1) and lighting requirement (alternating cycles 12 hrs NUV and 12 hrs darkness)
2. Check/ensure that all materials to be used in this test are clean according to IRRI-SHU set standards.
3. The designated lead person shall ensure that the set up are set properly on the assigned shelves inside the incubation room.
4. Ensure that non-SHU staff/ new contract worker, who shall conduct the test are properly oriented with regards to the procedure, rules, and standards.

The person conducting the test shall:

1. Counter check that the labels of the seedlots are consistent with the information in the seedlist.
2. Ensure that the number of blotters, plastics, etc. set on the working table corresponds to the number of seedlots and recommended working sample to be seeded.
3. Ensure that the blotters are labeled accordingly.
4. Ensure that the samples are seeded on the corresponding germination blotters.
5. Ensure that the seeding and evaluation is done according to set standards.
6. Ensure that the corresponding data sheets have been prepared.

Procedure:

Pre-treatment: N/A

Sampling: 400 seeds/seedlot are used as working sample, taken randomly.

A. Seeding

Use 2 pieces of germination blotter paper (8.5 X 11) for 100 seeds

1. With a water proof marking pen, put label on the upper left hand corner of the germination blotter
2. Dip the germination blotters in distilled water
3. Lay down the moist germination blotters on top of the seeding template making sure that the label is at the back
4. Put/place 100 seeds making sure that the seeds are equidistant from each other.
5. After seeding, roll the germination blotters carefully making sure that the set up is not too tight not loose.
6. Put the rolled germination blotters inside a plastic bag in an upright position using the label as the point of reference.

7. Secure the plastic bag with rubber bands.
8. Incubate under alternating cycles of 12 hrs light and 12 hrs darkness and 28°C.

B. Evaluation

1. Evaluate on the 5th, 7th, and 15th day after seeding and seedlings must be evaluated in accordance to the general principles stated in Sections 5.2.3 and 5.2.4 of the ISTA Rules.
2. When evaluating, care should be taken so as not to "disturb" other seedlings.
3. On the 1st and 2nd evaluation, remove and count all normal seedlings and badly decayed seeds or seedlings so as to reduce the risk of secondary infection. Seedlings that can not be evaluated as normal should be retained until the final evaluation.
4. Roll back the germination blotters and put inside the plastic bags again for re-incubation.
5. On the final evaluation, record the final observations and compute accordingly.

Calculation: N/A

Solution: N/A

Data entry: For each evaluation day, data should reflect the number of Normal (N) seedlings, Abnormal (Ab) seedlings, Dead/Ungerminated seeds. Other observations should be indicated - if there are fungal/bacterial growths.
On the final day of evaluation, the total number of N/ Ab seedlings and D seeds are tallied.
Ensure that all data are recorded.

Safety: This procedure shall be conducted in the seed health testing laboratory by SHU staff with working knowledge of this method and familiar with the principles of Good Laboratory Practice.
After the test, all materials shall be disposed following Disposal Protocol.

Reference(s): International Rules for Seed Testing, ISTA, 2008 Edition

B. Top of the Paper Germination Test

Application: To determine seedling vigour and germination percentage of seeds at the same time determines the cause of seedling abnormality and failure in germination.

Materials:

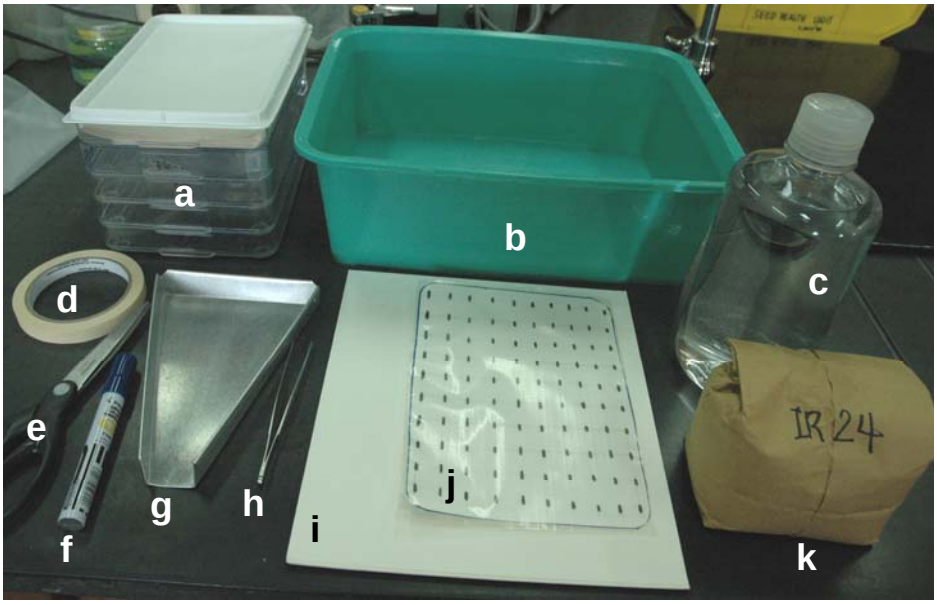


Fig. 1 Materials used in top of the paper test

Legend:

a. tray (plastic, clear, clear,7.5 x 6 x 1.5 in)
b. tray (plastic)
c. distilled water
d. masking tape (0.5 in)
e. pair of scissors
f. marking pen
g. sampling pan
h. forceps
i. germination blotters (rectangle)
j. template for seeding (10x10, improvised)
k. seed sample

Not shown:

Incubator-capable of operating under ±1 28°C with alternating cycles of 12 hrs daylight and 12 hrs darkness

Quality Assurance Check:

The person conducting the test has a working knowledge in conducting the test and evaluation based on set standards

The person conducting the test should ensure that all materials are prepared before conducting the test

Procedure:

A. Seeding

1. Label the plastic trays accordingly
2. Put plastic tray over seeding template
3. Put 1 layer of moistened germination blotter paper
4. Put the seeds

   Note: make sure that there are 10 rows and each row should include 10 seeds; seeds should have the same orientation and equidistant with one another)
5. Put the plastic cover.
6. Incubate seeded trays under ±1 28 °C with alternating cycles of 12 hrs darkness and 12 hrs light

B. Evaluation

1. Evaluate on the 5th, 7th, and 15th day after seeding and seedlings must be evaluated in accordance to the general principles stated in Sections 5.2.3 and 5.2.4 of the ISTA Rules.
2. When evaluating, care should be taken so as not to “disturb” other seedlings.
3. On the 1st and 2nd evaluation, normal and abnormal seedlings are removed, counted, and recorded using Data Sheet.
4. Put back plastic cover and re incubate.
5. On the final evaluation, record the final observations and compute accordingly.
6. Examine under the stereo microscope seeds which failed to germinate/abnormal seedlings for the presence of microorganisms; or incubate following the blotter test method to allow microorganisms to grow which can be the possible cause of failure in germination or abnormality.

Calculation: $\frac{\text{Total Number of type of seed/seedling}}{\text{Total Number of seeds}} \times 100 = \%$

Solution: N/A

Data entry: For each evaluation day, data should reflect the number of Normal (N) seedlings, Abnormal (Ab) seedlings, and Dead/Ungerminated

seeds. Other observations should be indicated - if there are fungal/bacterial growths.
On the final day of evaluation, the total number of N/ Ab seedlings and D seeds are collated.
Ensure that all data are recorded.

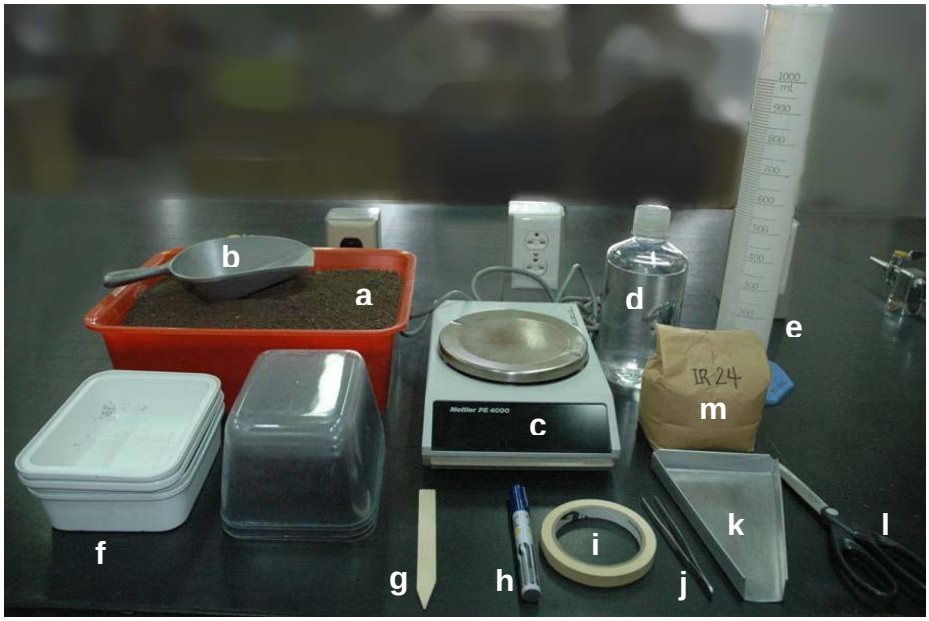
Safety: This procedure shall be conducted in the seed health testing laboratory by SHU staff with working knowledge of this method and familiar with the principles of Good Laboratory Practice.
After the test, all materials shall be disposed following Disposal Protocol.

Reference(s): International Rules for Seed Testing, ISTA, 2008 Edition

C. In sand and in soil Test

Application: To determine seedling vigour and germination of seeds at the same time determine the cause of seedling abnormality and failure in germination.

Materials:



Legend:

a. soil/sand
b. scoop
c. weighing balance
d. distilled water
e. graduated cylinder
f. Bema tray (or equivalent)
g. pot label
h. marking pen
i. masking tape
j. forceps
k. sampling pan
l. pair of scissors
m. seed sample

Quality Assurance Check:

The person conducting the test has a working knowledge in conducting the test and evaluation in terms of standards.

The person conducting the test should ensure that all materials are prepared before conducting the test.

Procedure:

A. Seeding

1. Label the bema trays accordingly
2. Put appropriate amount of soil/sand (500gms/bema tray)
   Note: initially, put about 400 grms; the remaining 100 grms shall be used to cover the seeds
3. Water the set up (approximately 100 ml/ tray)
4. Create furrows (4) longitudinally with the help of a pot label.
5. Put the seeds in the furrows
   Note: Each tray should accommodate 100 seeds; 25 seeds per furrow (For each furrow, put 25 seeds equidistantly, making sure that the seeds are in one orientation)
6. Cover the seeds with the remaining 100 grms of the soil/sand.
7. Put the transparent plastic cover of the bema tray.
8. Incubate seeded trays under 28 °C with alternating cycles of 12 hrs darkness and 12 hrs light*

B. Seeding

1. Evaluate on the 5^{th}, 7^{th}, and 15^{th} day after seeding and seedlings must be evaluated in accordance to the general principles stated in Sections 5.2.3 and 5.2.4 of the ISTA Rules.
2. When evaluating, care should be taken so as not to “disturb” other seedlings.
3. On the 1^{st} and 2^{nd} evaluation, count all normal and abnormal seedlings and mark spots (with a toothpick) wherein seeds failed to germinate. Then record the observations appropriately.

4. Put plastic cover back and re-incubate.
5. On the final evaluation, pull out the abnormal/normal seedlings and "unearth" seeds which failed to germinate.
6. Record the final observations and compute accordingly.
7. Seeds which failed to germinate and abnormal seedlings with lesions can be examined under the microscope for presence of microorganisms; or can be blotter tested to determine the cause of failure in germination or seedling abnormality.

Calculation: $\frac{\text{Total Number of type of seed/seedling}}{\text{Total Number of seeds}} \times 100 = \%$

Solution: N/A

Data entry: For each evaluation day, data should reflect the number of Normal (N) seedlings, Abnormal (Ab) seedlings, and Dead/Ungerminated seeds. Other observations should be indicated - if there are fungal/bacterial growths.
On the final day of evaluation, the total number of N/ Ab seedlings and D seeds are collated.
Ensure that all data are recorded.

Safety: This procedure shall be conducted in the seed health testing laboratory by SHU staff with working knowledge of this method and familiar with the principles of Good Laboratory Practice.
After the test, all materials shall be disposed following Disposal Protocol.

Reference(s): International Rules for Seed Testing, ISTA, 2008 Edition

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Isabel L. Penales, Research Technician III		30 Jan 2019
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		30Jan 2019
Quality Assurance	Ma. Velinda H. Ilao, RMQA Officer		30 Jan 2019

REVISION HISTORY

Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	4 Nov. 2009	Original (Version 1)
1	Patria G. Gonzales	9 Nov. 2017	Version 2

Disposal of Waste Materials

SHU – Control No.: IRRI-SHU-TP-RSHT-308
Version 1

Author/Reviewed by: Everlyn A. Amparado

Approved by:

Dr. Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

February 2019

Distribution list:

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Title: Disposal of Waste Materials

Application: Proper disposal of all waste materials from Routine Seed Health Testing in an appropriate way to avoid the spread of seedborne diseases and in accordance with the Biosafety standard and good laboratory practices for environmental and safety regulations.

Material(s):

a. Autoclave Machine
b. Autoclavable Plastic Container
c. Autoclave Indicator Tape
d. Plastic Bags
e. Heat resistant gloves
f. Spatula

Quality Assurance Check:

The designated lead person for disposal of waste materials shall:

1. Check the autoclave machine if it is properly working.
2. Check/ensure that all materials to be used are clean according to IRRI-SHU set standards.
3. Check and fill the chamber with water to the fill line and ensure that it would not run out of it for safety precautions.
4. Ensure that there are no other seeds left in the Petri plates/ dish.
5. Ensure that the safety interlocks are properly closed to prevent the opening of the lid or door when the chamber is pressurized and to prevent pressurization if the door/lid is not fully closed.
6. Collect all the waste materials every time the blotter test evaluation has been done.
7. Check if the autoclave indicator tape changes its color to see if the autoclave machine has reached the proper temperature.
8. Wear appropriate personal protective equipment when unloading the autoclave materials including lab gown and heat resistant gloves to protect you from heat and steam.
9. Keep away the face from the door of the chamber and wait the machine cools down before opening the lid after the cycle has been finished.
10. Collect and store the generated waste properly inside the garbage bag and place in the proper disposal bin inside the washing area.

11. Dispose the waste materials into the general waste bin outside Seed Health Unit laboratory is done every other day. The general waste bin will be collected in a timely manner by a licensed waste contractor.

Procedure:

A. Waste for Blotter Test

1. Clearing of seeds and blotter paper from the Petri plates/ dish.
2. Collecting of waste materials and putting it in the autoclavable container.
3. Put autoclave tape strips to the container to indicate that the specific temperature has been reached in the sterilization process.
4. Load the waste into autoclave tubs, and secure that the door is properly close and lock before starting a cycle. Do not overfill waste in the autoclave machine.
5. Set up the temperature of the autoclave machine to 121°C for at least 1 ½ h.
6. Check if the chamber temperature has dropped and pressure is zero before fully opening the door to avoid steam burns. Avoid standing directly in front of the door.
7. Slowly open the door to allow steam to escape gradually. Keep your face away from the door.
8. Carefully remove waste materials and place in a safe area to cool.
9. Dispose of the item should be placed properly in the disposal waste bin.

B. Waste for Modified Baermann Funnel Method Test

1. Collect the remaining suspension/ water from the extract.
2. Remove the pre-germinated seeds from the wire mesh.
3. Separate the water from the seeds.
4. Put the waste in their designated containers.
5. Autoclave the water to liquefy the presence of nematode.
6. Autoclave the germinated seeds together with the waste from the blotter test.

C. Waste for Macro Test

1. Put the collected seeds that have been removed from the seedlots with *Tilletia barclayana* (Tb) contamination in the autoclavable container.
2. Follow the same procedure on autoclaving waste for Blotter Test.
3. After the seeds have been autoclaved, seeds will be handed over to Dry seeds, Treatment and Crop health inspection and monitoring (DTC) group for proper disposal.

D. Waste for Seed Wash Assay Test

1. Waste materials (eg. agar, seed samples, suspension) that have been used in the test should undergo sterilization using autoclave machine.
2. Put all the materials in the autoclavable plastic container and start sterilization process.
3. Inform the Safety Health Office (SHO) that waste is ready for disposal.
4. Weigh the waste material and place in the carton box.
5. Get waste disposal form from SHO and fill out the form and declare if it is hazardous or non-hazardous.
6. Turnover the waste to SHO.

E. Other waste materials from RSHT group (eg. Broken glass, petri dish, test tube, etc.)

1. Segregate glass and plastic
2. Put in a used carton box
3. Fill out waste disposal form
4. Inform SHO for proper disposal

Safety:

This disposal protocol shall be conducted in the seed health testing laboratory by persons with working knowledge of this method and familiar with the principles of Good Laboratory Practice.

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Everlyn A. Amparado, Research Technician II	Eamparado	21 Feb 2019
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		21 Feb 2019
Quality Assurance	Ma. Velinda H. Ilao, RMQA Officer		21 Feb 2019

REVISION HISTORY

Revision History	Issued by	Date	Remarks

SHU Team Structure

Business Continuity Team Structure

Version 3

Author/Reviewed by: Dr. Gururaj Guddappa Kulkarni

Approved by:

Dr. Gururaj Guddappa Kulkarni
Senior Scientist, Head of Research & Regulatory
Compliance and Seed Health Unit

May 2019

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Research and Regulatory Compliance (RRC)/ Seed Health Unit (SHU)
Cluster Head: Gururaj Guddappa Kulkarni
SHU Manager: Gururaj Guddappa Kulkarni
RMQA Officer: Ma. Velinda H. Ilao

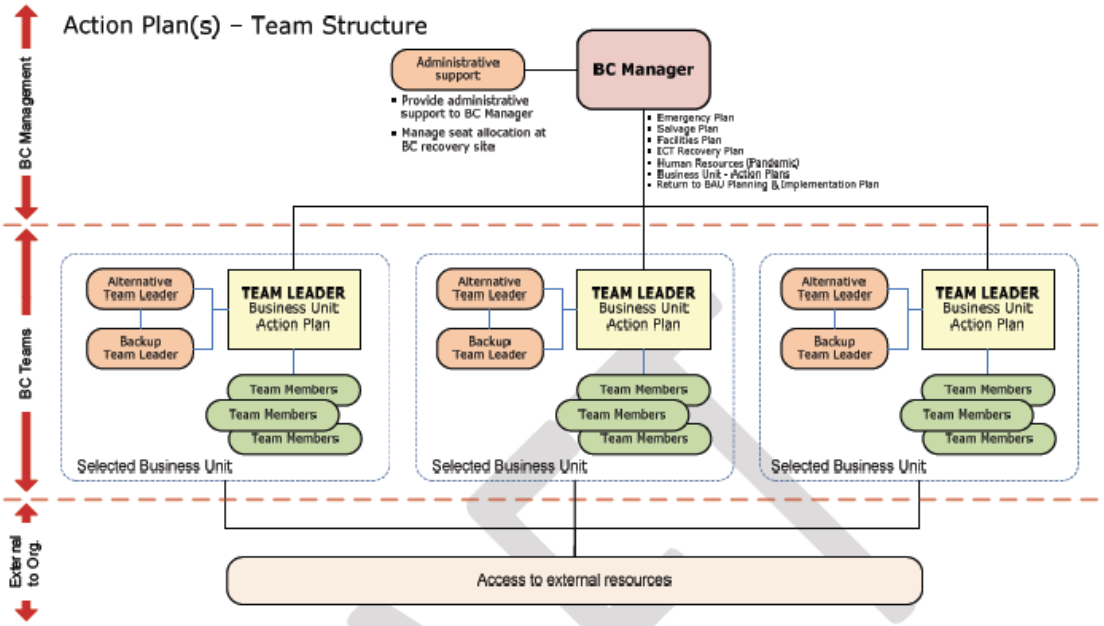

Figure 2: Business Continuity Team Structure

SHU Objectives:

1. To ensure that exported (outgoing) and imported (incoming) seeds and non-seed biological materials meet seed health standards and regulations of receiving countries and host country.

To ensure that the protocol on intellectual property rights established by the Institute are complied with.

Business Continuity Team Structure

Group	Role	Contact Name	Position	Mobile Number
SHU	Cluster Head	Gururaj "Guru" Guddappa Kulkarni	Senior Scientist, Head of RRC & SHU	0917 324 2883
	SHU Manger	Gururaj "Guru" Guddappa Kulkarni	Senior Scientist, Head of RRC & SHU	0917 324 2883
	Team Member	Monina "Moni" Magat	Administrative Support	0905 148 0787
sMTA, Database and Information Controller	Sub group leader	Ma. Velinda "Vel" Ilao	sMTA and Information Controller	0917 855 5312
	Alternate team leader	Salome "Sally" Bulaquiña	DBM group	0999 864 2298
	Backup team leader	Joel "Joel" Dumlao	DBM group	0905 240 2480
RSHT Group	Sub group leader	Sheryl "Sheng" Catausan	Specialist – RSHT	0917 805 4058
	Alternate team leader	Isabel "Bel" Penales	RSHT group	0908 736 0737
	Backup team leader	Florencio "Renzy" Lapiz	RSHT group	0948 964 7932
	Team members	Everlyn "Dutch" Amparado	RSHT group	0905 298 2109
DTC Group	Sub group leader	John Bethany "Bethany" Macasero	Senior Specialist	0998 889 7253
	Alternate team leader	Aurelio "Ohrie" Gamba	DTC group	
	Backup team leader	Jay "Jay" Angeles	DTC group	0936 213 6837

Emergency Response Team	Team leader	Joel "Joel" Dumlao	Floor Marshall, Database group	0905 240 2480
	Alternate team leader	John Bethany "Bethany" Macasero	Senior Specialist, DTC group	0998 889 7253
	Backup team leader	Aurelio "Ohrie" Gamba	DTC group	
	Team members	Florencio "Renzy" Lapiz	RSHT group	0948 964 7932
	Team members	Salome "Sally" Bulaquiña	DBM group	0999 864 2298
	Team members	Jay "Jay" Angeles	DTC group	0936 213 6837

AUTHENTICATION RECORD

APPROVALS		Signature	Date
Prepared by	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		15 May 2019
Authorizer	Gururaj Guddappa Kulkarni, Senior Scientist, Head of RRC and SHU		15 May 2019
Quality Assurance	Ma. Velinda H. Ilao, RMQA Officer		15 May 2019

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Revision History	Issued by	Date	Remarks
0	Patria G. Gonzales	7 Oct. 2009	Original (Version 1)
1	Gururaj Guddappa Kulkarni	15 Sep. 2018	Version 2

Resource Persons

Resource Persons

Dr. Gururaj Guddappa Kulkarni Head – Research and Regulatory Compliance and Seed Health Unit International Rice Research Institute (IRRI)	
DBM Group	
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Salome P. Bulaquiña Technician III – Data Encoding International Rice Research Institute (IRRI)	
Joel C. Dumlao Assistant – Data Management International Rice Research Institute (IRRI)	
DTC Group	
Carlos C. Huelma (deceased) Senior Specialist International Rice Research Institute (IRRI)	
John Bethany M. Macasero Senior Specialist – Seed Quality Assurance and Crop Health International Rice Research Institute (IRRI)	

Aurelio A. Gamba Technician III – Seed Technology and Seed Treatment International Rice Research Institute (IRRI)	
Jay A. Angeles Technician II – Seed Technology and Crop Health Inspection International Rice Research Institute (IRRI)	
RSHT Group	
Sheryl C. Catausan Specialist – Routine Seed Health Testing International Rice Research Institute (IRRI)	
Isabel L. Penales Technician III – Seed Health Analyst International Rice Research Institute (IRRI)	
Florencio I. Lapiz Technician III – Seed Health Analyst International Rice Research Institute (IRRI)	
Everlyn A. Amparado Technician II – Seed Health Analyst International Rice Research Institute (IRRI)	
Administrative Support	
Monina E. Magat Senior Assistant – Administrative Coordination International Rice Research Institute (IRRI)	

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"IRRI's Seed Health Unit is a single gateway for safe, efficient and compliant germplasm exchanges for innovative research."

Dr. Gururaj Guddappa Kulkarni
Head of Research & Regulatory Compliance

IRRI
International Rice Research Institute

About IRRI

IRRI aims to improve livelihoods and nutrition, abolishing poverty, hunger, and malnutrition among those who depend on rice-based agri-food systems. In doing so, IRRI's work protects the health of rice farmers and consumers, and the environmental sustainability of rice farming in a world challenged by climate change. IRRI's work promotes the empowerment of women and supports opportunities for youth in an equitable agri-food system