Technical Report

TRAINING COURSE
ON

Seed Health Testing

9 – 13 May, 2016
Terbol, Lebanon

Organized by
International Center for Agricultural Research in the Dry Areas (ICARDA)

In cooperation with
Lebanese Agricultural Research Institute (LARI)

Under the support of
Japan International Cooperation Agency (JICA)
Arab Fund for Economic and Social Development (AFESD)
CGIAR Research Program (CRP) on Wheat

WWW.ICARDA.ORG

Table of Contents

EXECUTIVE SUMMARY 1

GENERAL OVERVIEW 2

PURPOSE 2

TARGETED AUDIENCE 2

ORGANIZING COMMITTEE 2

COURSE STRUCTURE 2

COURSE IMPLEMENTATION 3

Zero - Final ASSESSMENT 3

GENERAL COURSE EVALUATION BY TRAINEES 4

CONCLUSION 4

Annex I: Course Program ..... **Error! Bookmark not defined.**

Annex II: Trainers ..... **Error! Bookmark not defined.**

Annex III: List of Participants ..... **Error! Bookmark not defined.**

Annex IV: Zero assessment-Scores ..... **Error! Bookmark not defined.**

Annex V: Zero assessment-Test ..... **Error! Bookmark not defined.**

Annex VI: General Course Evaluation ..... **Error! Bookmark not defined.**

II. Schedule and time allocation: ..... **Error! Bookmark not defined.**

III. Teaching aids: ..... **Error! Bookmark not defined.**

IV. Administrative arrangements: ..... **Error! Bookmark not defined.**

V. Your comments and suggestions on the course: ..... **Error! Bookmark not defined.**

EXECUTIVE SUMMARY

Name of the project

Capacity Development in Agriculture for Afghanistan and Regional countries

Partners

Japan International Cooperation Agency (JICA)

Arab Fund for Economic and Social Development (AFESD)

CGIAR Research Program (CRP) on Wheat

International Center for Agricultural Research in the Dry Areas (ICARDA)

Lebanese Agricultural Research Institute (LARI)

Purpose

To enhance Capacity Development of government officials and researchers who are engaged in agricultural development in Afghanistan and other countries.

Specific objectives of the training course on Seed Health Testing

Up-to-date knowledge and enhanced capacity on best practice for seed health testing.

Specific outputs

Seven professionally-trained NARS partners from Afghanistan, two from Lebanon, and six from other countries: one from Syria, one from Iraq-Erbil, one from Egypt, and three from Tunisia on improving skills for seed health testing with an emphasis on dryland agriculture. While seven Afghanis, two Lebanese, one Iraqi and one Egyptian are funded by JICA, two Tunisian were funded by CGIAR Research Program (CRP) on Wheat and the others were sponsored by Arab Fund for Economic and Social Development (AFESD).

Specific outcomes

Design, implement, manage, analyze and report on research and development in seed Health Testing and acquire up-to-date information on research and practical activities in seed health testing in each participating country.

GENERAL OVERVIEW

The aim of seed health testing is to provide crop producers with quality seed to increase crop productivity and quality and achieve food security and poverty reduction. Seed health testing is an integral part of seed production in all functional national seed supply systems. To improve crop productivity for greater food security, the Japanese International Cooperation Agency (JICA) funded a training project for Afghanistan and selected countries in the West Asia and North Africa (WANA) region covering a wide range of agriculture research for development disciplines including seed. This course was one of three courses on seed-related issues to be organized in 2016.

PURPOSE

The movement of germplasm involves a risk of accidentally introducing plant quarantine pests (viruses, fungi, bacteria, nematodes, insect pests and weeds) along with the host plant materials (mainly seeds) and poses a special risk to the importing countries. Of particular concern to the seed industry is seed used for sowing. Seed-borne pathogens may cause disease or death of plants resulting in crop losses and thereby, productive. In order to minimize risks, and avoid the transmission of seed-borne pathogens into counties effective testing procedures are required to ensure that distributed materials are free of pests.

This course included various methods for the detection of seed-transmittable pathogens. Lectures and hands on experiments were given on methods that are used in seed health testing.

TARGETED AUDIENCE

A total of 15 trainees (primarily seed specialists and researchers, details in Annex III) from six countries (Afghanistan, Egypt, Iraq, Syria, Lebanon and Tunisia) participated in the course. While seven Afghanis, two Lebanese, one Syrian and one Egyptian were funded by JICA, two Tunisians were funded by the CGIAR Research Program (CRP) on Wheat and the remaing participants are sponsored by the Arab Fund for Economic and Social Development (AFESD).

ORGANIZING COMMITTEE

Mr. Charles Kleinermann, Head, ICARDA Capacity Development Unit (CDU) - (c.kleinermann@cgiar.org)
Dr. Safaa Kumari, Head of ICARDA Seed Health Laboratory/Plant Virologist, (BIGM) - (s.kumari@cgiar.org)
Mr. Masafumi Tamura, Technical Training Officer, ICARDA CDU (m.tamura@cgiar.org)
For the list of trainers, please refer to Annex II.

COURSE STRUCTURE

The course program consisted of class room lectures, technical visits and practical sessions on seed health testing (Annex I). A training manual on seed health testing and reference materials of PowerPoint presentations on seed health testing were distributed to the trainees. All the training materials were provided to the trainees at the end of the course.

COURSE IMPLEMENTATION

The five-day course was designed to cover major quarantine seed-borne pests of food legume and cereal crops, seed health testing methods, methodology of seed sampling, seed certification and quality, and management of seed-borne pest.

The first day: Prior to the course introduction, a zero assessment test was undertaken to examine the background knowledge of the trainees in order to ensure that the level of lecturing, practical sessions, and exercises were adapted to the level of knowledge of the group. Following the zero assessment, Dr. Safaa Kumari introduced **Seed Health Testing & Quarantine**, and also **major quarantine seed-borne pests of food legume and cereal crops**. Mr. Abdul Rahman Moukahel in collaboration with Dr. Safaa Kumari introduced the **methodology of seed sampling**.

On the second day, Dr. Safaa Kumari introduced **detection methods of seed-borne pests**, and this was followed by trainees conducting three **laboratory detection methods (Centrifuge Washing Test, Freezing Blotter Test, and Direct Inspection/Visual Examination**) at ICARDA's seed health Laboratory in Terbol accompanied by Dr. Kumari and Mr Moukahel.

On the third day, trainees spent the whole day at **ICARDA's seed health laboratory** and conducted four **laboratory detection methods (Tissue blot immunoassay, Slide Agglutination Test, Nematode Extraction Test, and Agar Plate Test**) accompanied by Dr. Kumari & Mr Moukahel.

On the fourth day, Dr Safaa Kumari introduced the trainees to **management of seed-borne pests**, followed by a visit to the **Advancing Research Enabling Communities Center (AREC) in American University of Beirut**. Trainees explored a series of demonstration sessions on **seed processing** followed by lectures on **Seed Certification Components and Functions, Seed Quality Attributes and Evaluation Methods, Seed Processing and Storage** in Quality Seed Production by Dr. Abdoul Aziz Niane.

On the final day, the trainees together with Mr. Moukahel visited **the fumigation unit and fields at ICARDA's Terbol station.** This was followed by discussions and a final assessment of the trainees. The assessment indicated an average score of 81.7% and an average improvement of 30.7% (for more information about the zero assessment scores, please refer to Annex IV).

Participants during field inspection, ICARDA Terbol station, May 13, 2016

Zero – Final ASSESSMENT

A zero assessment was conducted on the first day of the training. The results showed that the knowledge of the trainees was basic: 6 trainees received a score under 40% ; 7 Trainees received a score between 40 and 60%. For more information, please refer to Annex IV. The average percentage group score at the zero assessment reached a score of 52.8%.

In order to evaluate the knowledge that the trainees gained after a week of training, a final assessment was conducted and the results showed a tangible improvement. The percentage group score increased by 83.9%, and a 31.1% of average gain in knowledge. One trainee received a score of 100%, and 15 trainees received a score between 80-95%, while only two trainees scored between 40-45% (See details in Annex IV).

GENERAL COURSE EVALUATION BY TRAINEES

At the end of the training cource, each participant provided their feedback on their perception of the effectiveness of the training course format and content.

64% of the participants qualified the course as excellent and 35% qualified it as very good. Participants expressed their interest in giving more time for lectures by extending the course duration, which will also allow more time for discussion and group work.

With respect to the technical level of the topics covered in the training, 78% of the participants considered that the delivered material was very useful.

CONCLUSION

The trainees nominated for the course were of high quality and appeared eager to participate. The mixture between lectures, practical work and discussions appeared to work well, and the enthusiasm of the trainees over the five-day course appeared to remain high. The course evaluations supported the approach taken, and the pre and post-knowledge assessment tests demonstrated an overall improvement in understanding the material.

The financial support of JICA, AFESD, CRP Wheat and the logistical support by LARI and course arrangements made by ICARDA CDU and ICARDA office in Lebanon were crucial in the organization and success of the course. The technical visit to ICARDA's seed unit facilities at the Advancing Research Enabling Communities Center (AREC) of the American University of Beirut, and the demonstration of their seed processing and storage facilities and management practices were highly appreciated. Special thanks goes to Ms. Ghinwa Salhab for the exceptional logistic support provided throughout the course.