

GUIDELINES AND PROCEDURES FOR SAFE FOOD AND FORAGE CROPS GERMPLASM MOVEMENT



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



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Introduction

Within the framework of the CGIAR, ICARDA has the world mandate for the improvement of barley, lentil and faba bean. It also has a regional mandate for the improvement of wheat (bread and durum), Kabuli chickpea and pasture and forage crops in the dry areas. The development of improved germplasm and elite genotypes for use by national, regional and international breeding programs is the major objective of the ICARDA crop improvement program. ICARDA holds 'in trust' rich and valuable collections of genetic resources of cereals, food legumes, forages and range species in its genebanks that are located in Lebanon, Morocco and Syria. Based on CGIAR Intellectual Assets Principles, the breeding germplasm (including germplasm under development) developed by ICARDA and all the genetic resources held in trust are considered international public goods (IPGs) to be made available upon request to national and international researchers, individuals from the private sector, graduate students, farmers, and others around the world for use in breeding, research and education purposes. They are made available by means of the Standard Material Transfer Agreement (SMTA). Facilitated seed and germplasm exchange and movement are vital for crop improvement and conservation, as well as for use as genetic resources.

ICARDA has to ensure, to the best of its capacity and knowledge, and in close collaboration with national quarantine services, that all incoming and outgoing seeds are free from seed-borne pathogens, insect pests and weeds of quarantine importance for the sake of the countries sending and/or receiving the seeds.

The Seed Health Laboratory (SHL) established at ICARDA aims to test the seed health status of all incoming and outgoing seed samples of breeding germplasm and genetic resources (crop and microbial genetic resources) and to contribute to the disinfection and cleaning of infected and infested seeds prior to their distribution and use. ICARDA-SHL collaborates with the quarantine services of the host countries, where ICARDA has breeding and genetic resource conservation activities, to ensure safe movement of seeds and to avoid any breaches of the host and receiving countries' quarantine protocols. In order to safeguard countries from quarantine risks (insect pests, pathogens and weeds) associated with the movement of germplasm, ICARDA follows a regulatory and quarantine program working in close collaboration with competent institutions where ICARDA has platforms for crop breeding, germplasm multiplication and evaluation and genetic resources.

In the past, ICARDA, in collaboration with the Food and Agriculture Organization of the United Nations/International Plant Genetic Resources Institute (FAO/IPGRI), published Technical Guidelines for the Safe Movement of Germplasm No. 14 on 22 March 1994. The Guidelines included the standard quarantine monitoring and clearance procedures dedicated to [Small Grain Temperate Cereals](#) which are also applied to legumes and other crops. ICARDA-SHL updates

these guidelines whenever there are modifications or changes in the detection methods by the International Seed Testing Association (ISTA).

Inevitably, the movement of germplasm involves risks of accidentally introducing plant quarantine pests along with the host plant materials (mainly seeds) and poses a significant risk to the importing countries. In order to minimize such risks, effective testing procedures are required to ensure that incoming and outgoing breeding germplasm and genetic resources are free of pests that are of quarantine concern.

This bulletin describes, step by step, the standard operating procedures to be followed by ICARDA scientists and cooperators to comply with the nationally and internationally recognized standards for safe germplasm movement/exchange for ICARDA mandated food and forage germplasm and genetic resources.

Standard Operating Procedures

Movement of germplasm (international nurseries, diseases and insect pest nurseries, mapping populations, segregating populations, and genetic resources) are available as IPGs to requestors in all countries around the world. Both external and internal exchange of genetic resources (landraces, wild relatives, crop and microbial genetic stocks) are handled by the Genetic Resources Section (GRS), whereas breeding germplasm falls under the jurisdiction of the plant breeders supported by the International Nurseries (IN) platform. Seed health testing of all seeds to be exported from and imported to ICARDA is strictly handled by SHL (Figures 1, 2 and 3). The standard operating procedures for the incoming and outgoing seeds are illustrated in Figures 4 and 5.

Quarantine Monitoring, Clearance and Documentation

ICARDA-SHL is responsible for the monitoring, clearance and documentation of safe germplasm movement at the centers in Lebanon, Morocco and Syria. All incoming and outgoing genetic resources and breeding germplasm must go through a strict quarantine monitoring system (Seed health testing, quarantine clearance based on national and international procedures, norms and procedures (Tables 1 and 2: <https://www.seedtest.org/en/seed-health-methods-content---1--1452.html>)). Seeds cleared from the customs and quarantine services of ICARDA host countries are directly received by SHL, fumigated and then subjected to appropriate visual and microscopic examinations. If pest(s) are detected, appropriate eradication treatments, such as fumigation, heat treatment or chemical dressing, are applied before the release of the materials for sowing. Seeds that are released after laboratory testing are then planted without exception in the Post-Entry Quarantine Isolation Areas.

The quarantine monitoring and clearance procedures for seeds produced by ICARDA start with field inspections at different crop growth stages. This is followed by seed sampling and testing based on the requirements of host and recipient countries and on international seed health testing norms and standards. After rigorous field inspection and a comprehensive review of seed health test results, a phytosanitary certificate is issued by the quarantine authorities of the respective host country. All quarantine monitoring and clearance procedures are fully documented. This documentation includes the following: germplasm dispatch request proforma, phytosanitary certificate, certificates of donation, GMO free certificate, commercial invoices and certificates of origin (Annexes 1–6).

The exchange of breeding genotypes and genetic resources held at ICARDA is guided by the International Treaty on Genetic Resources for Food and Agriculture where a duly filled and signed Standard Material Transfer Agreement ([SMTA](#)) is compulsory to access the materials for conservation and use in research, breeding and education.

Post-Entry Quarantine Isolation Areas (PEQIAs)

ICARDA uses PEQIAs established at Marchouch (Morocco), Terbol (Lebanon) and Tel-Hadya (Syria) research stations and the designated PEQIA of host countries (Ethiopia, Turkey and India) to avoid any possible introduction of seed-borne pest(s). At ICARDA stations, the management of the PEQIA is under the supervision of the SHL staff, in close collaboration with researchers who are importing the seeds. The optimum number of plants (minimum sample size) needed to harvest a sufficient quantity of seeds for storage and to maintain genetic integrity of the sample should be planted, making sure to leave part of the seeds for replanting in case of crop failure. Optimal planting and crop management practices to ensure production of high quality seeds are required, and they include:

- Uniform plots with good drainage, free from weeds, pests and pathogens.
- Fertility and water management to provide suitable conditions for growth that ensure the maximum possible productivity of plants.
- Weekly field inspections to detect exotic pests and diseases associated with growing plants.
- Harvesting at optimal maturity.

The PEQIAs are dedicated to monitoring, detecting and destroying any entry with quarantine pathogens that may have not been detected by laboratory tests. Plants in the post-quarantine areas that show unusual symptoms will be removed, samples taken to the SHL for examination and the remaining plants will be destroyed by autoclaving at 121 °C, 15 psi for 15–20 min (Annex 7) and buried in designated areas at the ICARDA premises.

Exchange of Genetic Resources

The Genetic Resources Section (GRS) is responsible for germplasm collection, rejuvenation (multiplication and regeneration), conservation, documentation and distribution. ICARDA holds, in trust with the ITPGRFA, a rich collection of more than 150,000 accessions of barley, wheat, lentil, chickpea, faba bean, grass pea landraces/genetic stocks and wild relatives, forage legumes (*Medicago*, *Vicia* and *Trifolium*, etc.) and range/pasture species. New accessions are added annually, either from organized joint collecting missions or from researchers and partners inside and outside ICARDA. Within its routine genebank activities, all accessions are conserved in active and base collections and safety duplication is performed. Moreover, all samples that are to be distributed or acquired are cleaned of quarantine seed-borne pests. These accessions are also tested and cleaned after each cycle of multiplication or regeneration. Seed health test results are included in the genebank database, and the information is used for further distribution of seeds from the genebank without additional testing.

Exchange of Microbial Genetic Resources

The ICARDA Genebank holds over 1,380 accessions of *Rhizobium* spp. (microbial genetic resources) collected from food and forage legume crops in different countries. Production and exchange of *Rhizobium* is handled by the ICARDA GRS. *Rhizobia* isolates are provided to users upon request. Special quality control and quarantine measures are in place to ensure safe movement of the *Rhizobium* genetic resources.

Seed Production for International Nurseries

The International Nursery (IN) platform at ICARDA is operated by the Seed Section and the legume and cereal breeding programs, all within ICARDA's Biodiversity and Integrated Genetic Management Program (BIGMP). IN is responsible for healthy seed production and the distribution of elite breeding germplasm for testing and selection by cooperators in the ICARDA mandated areas and beyond. Seed production and distribution are research- and service-oriented activities that benefit a wide range of national and international cooperating institutions which maintain active breeding programs for wheat (bread and durum), barley (food, forage and malt), chickpea, lentil, faba bean and forage crops. The seed production activities are currently carried out at the American University Research and Educational Center located in the Beka'a Valley of Lebanon. The center is fully equipped with a seed science and technology and data management staff, in addition to the necessary crop management and post-harvest seed operation facilities, which include 25 ha of quality

land, agriculture machinery, irrigation system, seed cleaning, sterilization and treatment, storage, packaging and distribution. The seed production process is monitored by an independent SHL under BIGMP in coordination with the quarantine systems of the host countries in which ICARDA operates. Samples of the trial menus and field books for different crops, which are updated every year, can be downloaded from the file below:

<http://indms.icarda.org/user/login>



Figure 1. ICARDA quarantine monitoring and clearance facilities



Figure 2. International Nursery seed production, packaging and dispatch

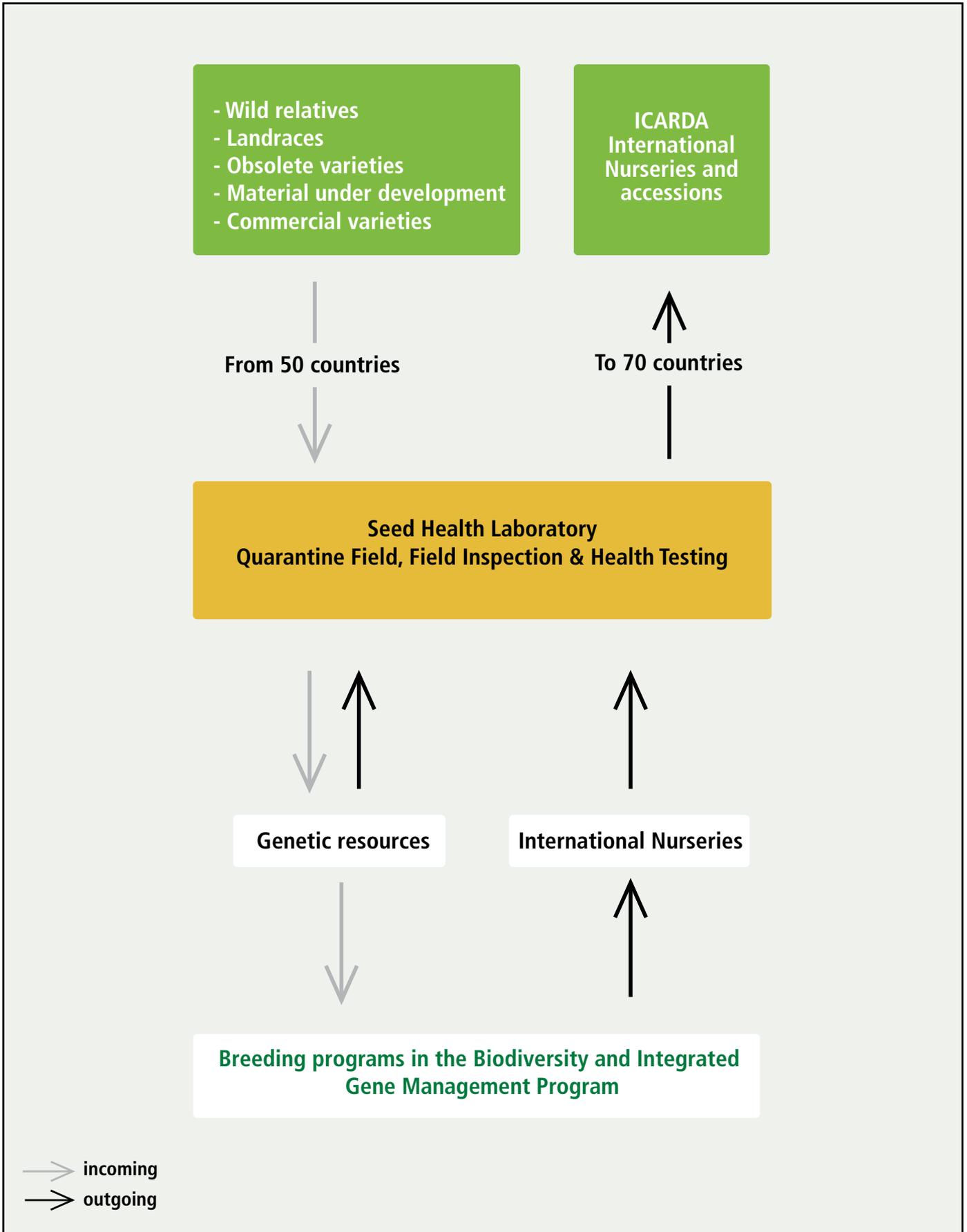


Figure 3. Movement of genetic resources and breeding lines to and from ICARDA

Activity	Responsibilities		
Identification of entries for seed production from material under development	Crop breeders/Genetic resource scientists		International Nurseries
Seed production, processing, storage, distribution and data collection		Genetic resource scientists	
Data processing, analysis and sharing			
Identification of entries for rejuvenation of germplasm for conservation and distribution			
Quarantine monitoring and clearance	Seed Health Laboratory and Quarantine Field		

Figure 4. Institutional arrangements for germplasm handling within ICARDA

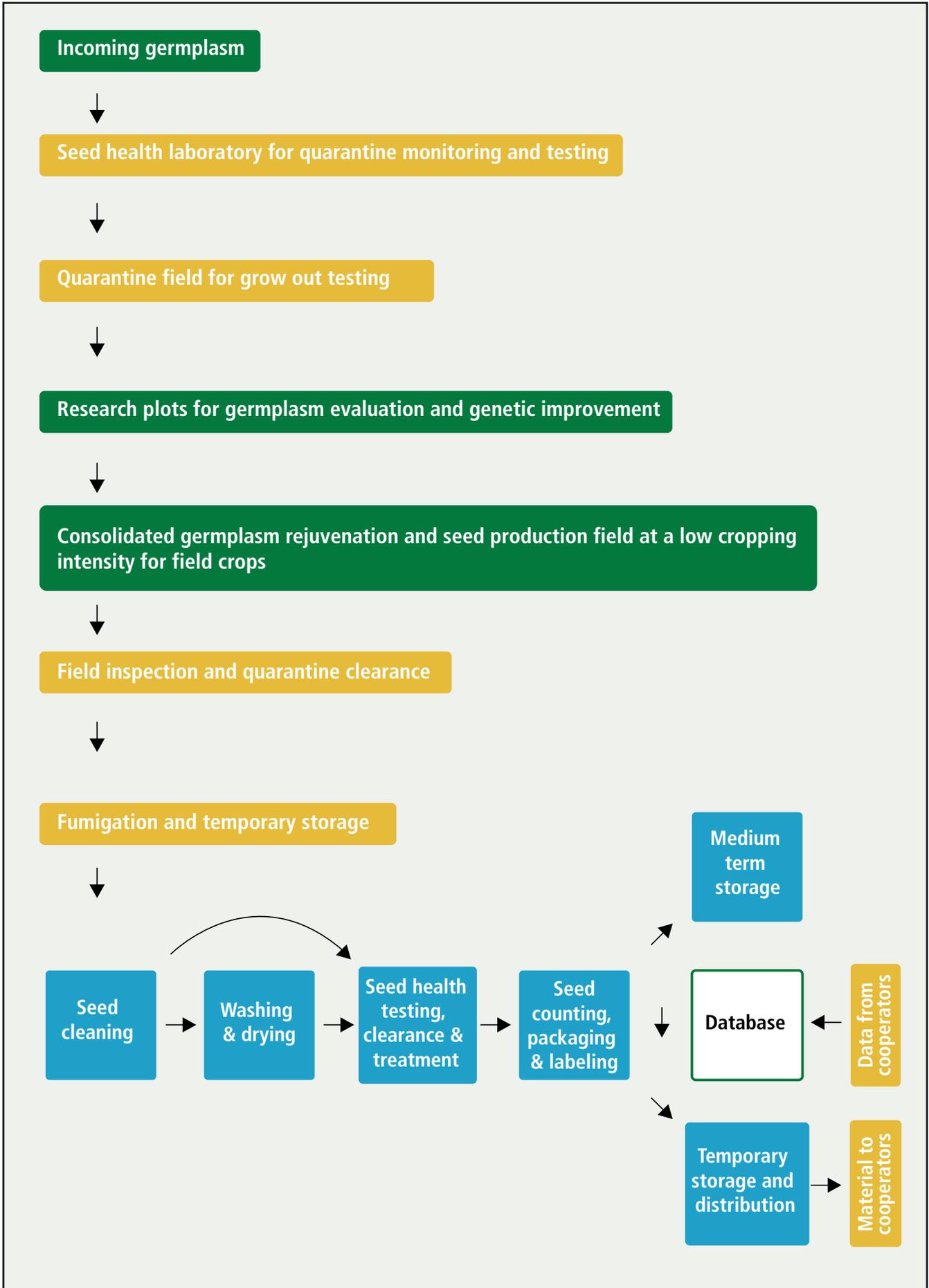


Figure 5. ICARDA facilities for seed production, germplasm rejuvenation, post-harvest, quarantine monitoring, clearance and distribution

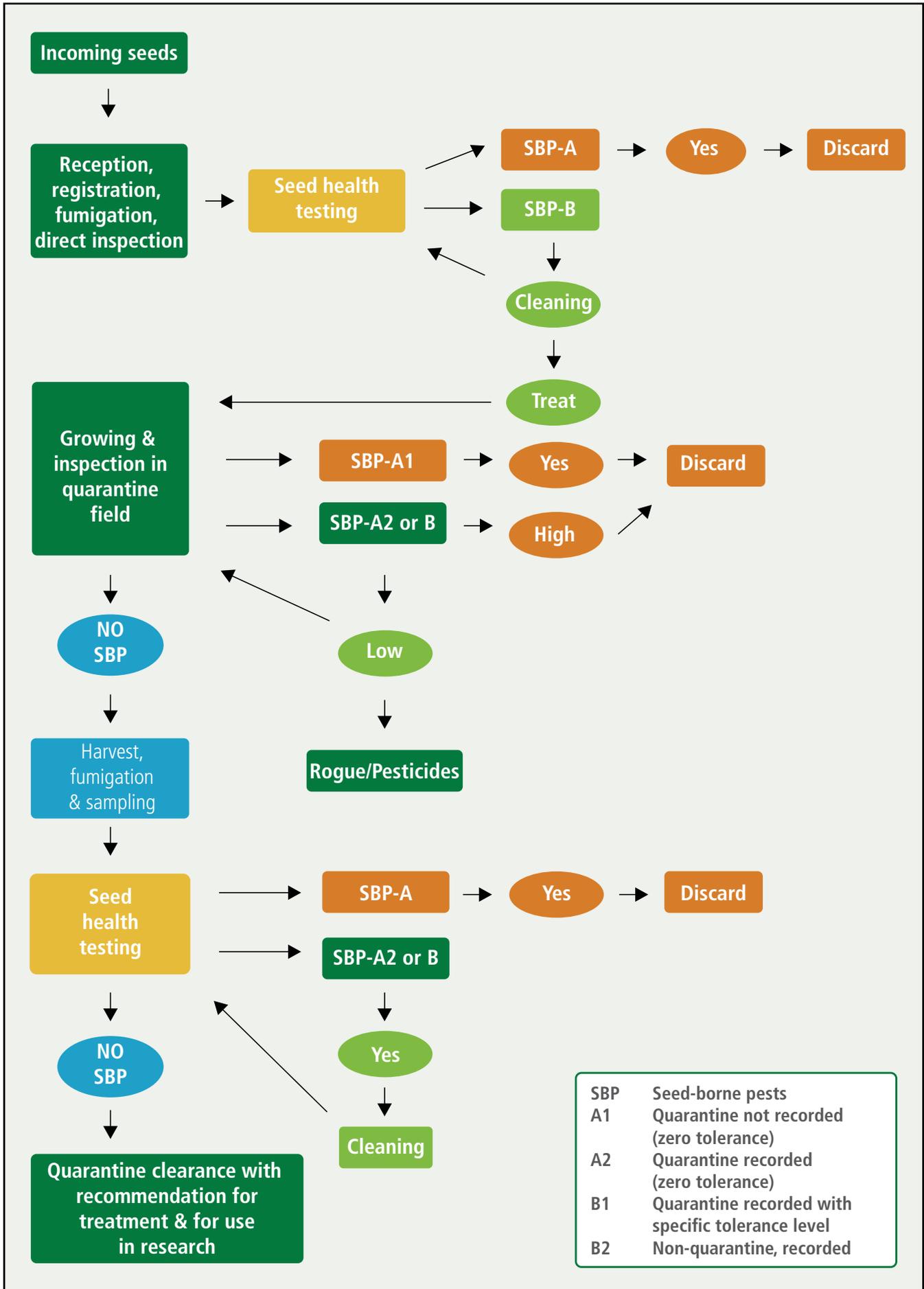


Figure 6. Flow chart for progress of incoming seeds to ICARDA research platforms

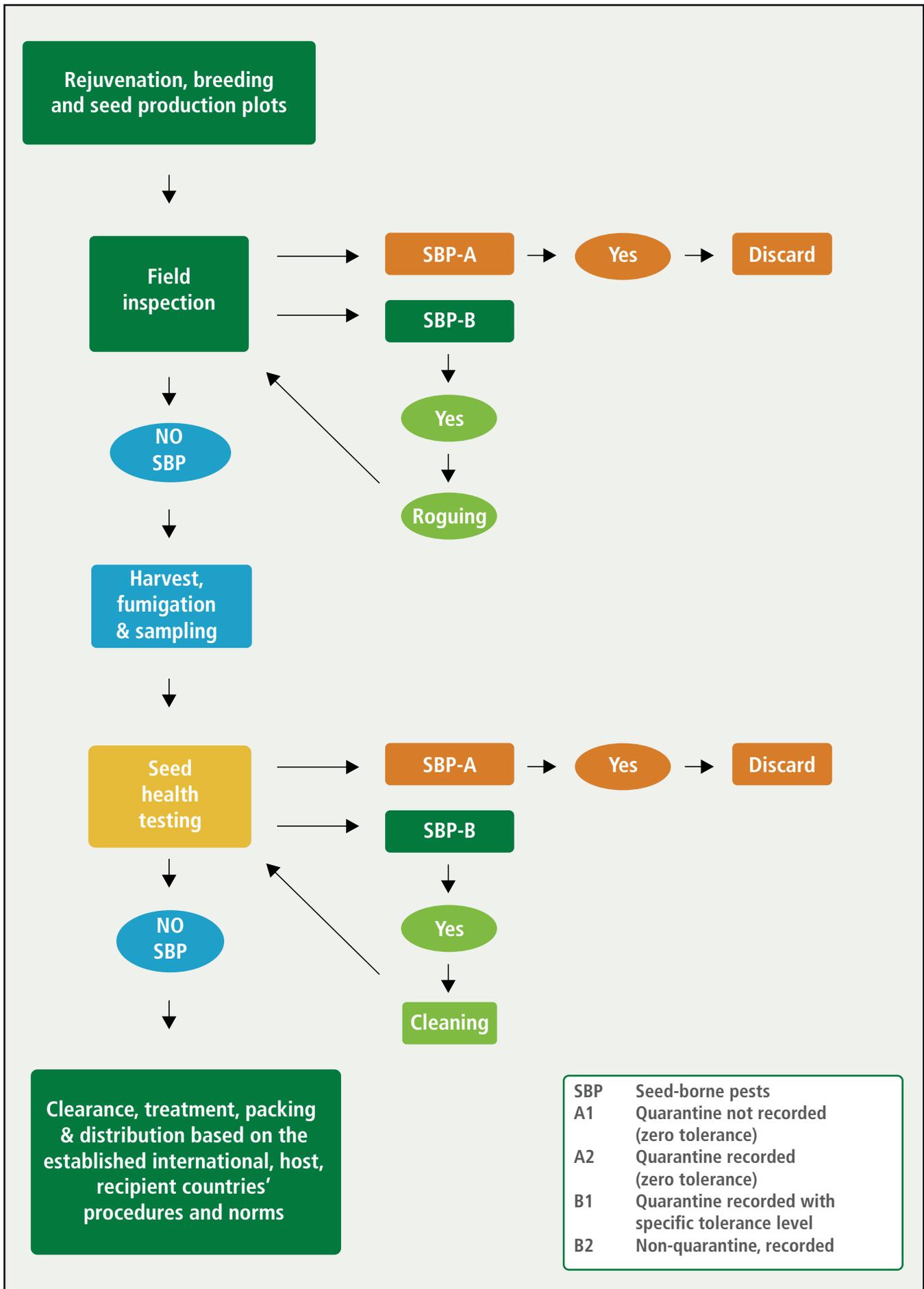


Figure 7. Flow chart progress of for outgoing seeds from ICARDA to collaborators

Table 1. Quarantine seed-borne pests and their detection methods

Crop/Pests	Common name	Detection methods	Category*
WHEAT			
<i>Barley stripe mosaic virus</i>	Barley stripe mosaic	ELISA or TBIA**	A2
<i>Wheat streak mosaic virus</i>	Wheat streak mosaic	ELISA or TBIA	A2
<i>Pseudomonas syringae</i> pv. <i>atrofaciens</i>	Basal glum rot	Agar plate and slide agglutination tests	A2
<i>Xanthomonas translucens</i> pv. <i>undulosa</i>	Black chaff, leaf streak	Agar plate and slide agglutination tests	A2
<i>Claviceps purpurea</i>	Ergot	Direct inspection	A1
<i>Cochliobolus sativus</i> (Anamorph: <i>Bipolaris sorokiniana</i>)	Spot blotch	Freezing blotter test	A2
<i>Fusarium graminearum</i>	Fusarium head blight	Freezing blotter test or agar plate test	A1
<i>Magnaporthe oryzae</i> (Anamorph: <i>Pyricularia oryzae</i>)	Wheat blast	Agar plate test	A1
<i>Phaeosphaeria nodorum</i> (Anamorph: <i>Stagonospora nodorum</i>)	Septoria glume blotch	Agar plate test	A2
<i>Pyrenophora tritici-repentis</i>	Tan spot	Freezing blotter test	A2
<i>Tilletia controversa</i>	Dwarf bunt	Centrifuge washing test	A1
<i>Tilletia indica</i>	Karal bunt	Centrifuge washing test	A1
<i>Tilletia tritici</i> & <i>Tilletia laevis</i>	Common bunt	Centrifuge washing test	A2
<i>Urocystis agropyri</i>	Flag smut	Centrifuge washing test	A2
<i>Ustilago tritici</i>	Loose smut	Centrifuge washing test	A2
<i>Alternaria</i> spp., <i>Cldosporium</i> spp., <i>Fusarium</i> spp., <i>Cochliobolus sativus</i>	Black point	Freezing blotter test or agar plate test	A2
<i>Rhizopertha dominica</i>	Lesser grain borer	Direct inspection	A2
<i>Sitophilus granarius</i>	Granary weevil	Direct inspection	A2
<i>Tribolium castaneum</i>	Red flour beetle	Direct inspection	A2
<i>Tribolium confusum</i>	Confused flour beetle	Direct inspection	A2
<i>Trogoderma granarium</i>	Khapra beetle	Direct inspection	A2
<i>Anguina tritici</i>	Seed gall nematodes	Nematode extraction test	A2
BARLEY			
<i>Barley stripe mosaic virus</i>	Barley stripe mosaic	ELISA or TBIA	A2
<i>Pseudomonas syringae</i> pv. <i>atrofaciens</i>	Basal glum rot	Agar plate and slide agglutination tests	A2
<i>Xanthomonas translucens</i> pv. <i>undulosa</i>	Black chaff, leaf streak	Agar plate and slide agglutination tests	A2
<i>Alternaria</i> spp., <i>Cldosporium</i> spp., <i>Fusarium</i> spp., <i>Cochliobolus sativus</i>	Black point	Freezing blotter test or agar plate test	B2
<i>Bipolaris sorokiniana</i>	Spot blotch	Freezing blotter test	A2
<i>Claviceps purpurea</i>	Ergot	Direct inspection	A1
<i>Drechslera graminea</i>	Barley stripe	Freezing blotter test	A2
<i>Drechslera teres</i> f.sp. <i>maculata</i>	Net blotch	Freezing blotter test	A2
<i>Fusarium avenaceum</i> , <i>Fusarium culmorum</i>	Foot & root rot	Freezing blotter test or agar plate test	A2
<i>Fusarium graminearum</i>	Fusarium head blight, leaf blight	Freezing blotter test or agar plate test	A1
<i>Phaeosphaeria nodorum</i> (Anamorph: <i>Stagonospora nodorum</i>)	Septoria glume blotch	Agar plate test	A2
<i>Pyrenophora tritici-repentis</i>	Barley leaf stripe	Freezing blotter test	A2

Table 1 cont'd

Crop/Pests	Common name	Detection methods	Category*
<i>Rhynchosporium commune</i> (Synonym: <i>R. secalis</i>)	Barley scald	Agar plate test	A2
<i>Ustilago hordei</i>	Covered smut	Centrifuge washing test	A2
<i>Ustilago nuda</i>	Loose smut	Embryo extraction test	A2
<i>Rhizopertha dominica</i>	Lesser grain borer	Direct inspection	A2
<i>Sitophilus granarius</i>	Granary weevil	Direct inspection	A2
<i>Tribolium castaneum</i>	Red flour beetle	Direct inspection	A2
<i>Tribolium confusum</i>	Confused flour beetle	Direct inspection	A2
<i>Trogoderma granarium</i>	Khabra beetle	Direct inspection	A2
<i>Anguina tritici</i>	Seed gall nematode	Nematode extraction test	A2
CHICKPEA			
<i>Alfalfa mosaic virus</i>	Alfalfa mosaic	ELISA or TBIA	A2
<i>Bean yellow mosaic virus</i>	Bean yellow mosaic	ELISA or TBIA	A2
<i>Cucumber mosaic virus</i>	Cucumber mosaic	ELISA or TBIA	A2
<i>Pea seed-borne mosaic virus</i>	Pea seed-borne mosaic	ELISA or TBIA	A2
<i>Alternaria alternata</i>	Alternaria blight	Freezing blotter test or agar plate test	B1
<i>Didymella rabiei</i> (Anamorph: <i>Ascochyta rabiei</i>)	Ascochyta blight	Agar plate test	A2
<i>Botrytis cinerea</i>	Gray mold	Agar plate test	A2
<i>Fusarium oxysporum</i> f.sp. <i>ciceri</i>	Fusarium wilt	Freezing blotter test or agar plate test	B1
<i>Cuscuta</i> spp.	Dodder	Direct inspection	A2
<i>Callosobruchus maculatus</i>	Cowpea seed beetle	Direct inspection	A2
FABA BEAN			
<i>Alfalfa mosaic virus</i>	Alfalfa mosaic	ELISA or TBIA	A2
<i>Bean yellow mosaic virus</i>	Bean yellow mosaic	ELISA or TBIA	A2
<i>Broad bean stain virus</i>	Broad bean stain	ELISA or TBIA	A2
<i>Broad bean mottle virus</i>	Broad bean mottle	ELISA or TBIA	A2
<i>Cucumber mosaic virus</i>	Cucumber mosaic	ELISA or TBIA	A2
<i>Pea seed-borne mosaic virus</i>	Pea seed-borne mosaic	ELISA or TBIA	A2
<i>Didymella fabae</i> (<i>Ascochyta fabae</i>)	Ascochyta blight	Agar plate test	A2
<i>Botrytis cinerea</i> , <i>Botrytis fabae</i> , <i>B. fabiopsis</i>	Chocolate spot	Agar plate test	A2
<i>Colletotrichum lindemuthianum</i>	Anthracnose	Agar plate test	B1
<i>Fusarium</i> spp.	Wilt	Freezing blotter test or agar plate test	B2
<i>Bruchus</i> spp.	Bean seed beetle	Direct inspection	A2
<i>Callosobruchus</i> spp.	Cowpea seed beetle	Direct inspection	A2
<i>Ditylenchus dipsaci</i> , <i>D. gigas</i>	Stem nematodes	Nematode extraction	A2
<i>Orobanche</i> & <i>Phelipanche</i> spp.	Broomrape	Direct inspection	A2
<i>Cuscuta</i> spp.	Dodder	Direct inspection	A2
LENTIL			
<i>Alfalfa mosaic virus</i>	Alfalfa mosaic	ELISA or TBIA	A2
<i>Bean yellow mosaic virus</i>	Bean yellow mosaic	ELISA or TBIA	A2
<i>Broad bean stain virus</i>	Broad bean stain	ELISA or TBIA	A2
<i>Cucumber mosaic virus</i>	Cucumber mosaic	ELISA or TBIA	A2

Table 1 cont'd

Crop/Pests	Common name	Detection methods	Category*
<i>Pea seed-borne mosaic virus</i>	Pea seed-borne mosaic	ELISA or TBIA	A2
<i>Didymella lentis</i> (Anamorph: <i>Ascochyta lentis</i>)	Ascochyta blight	Agar plate test	A2
<i>Botrytis cinerea</i>	Gray mold	Agar plate test	A2
<i>Phoma medicaginis</i> var. <i>medicaginis</i>	Phoma blight	Agar plate test	A2
<i>Colletotrichum lindemuthianu</i> , <i>Colletotrichum truncatum</i>	Anthracnose	Agar plate test	B1
<i>Fusarium oxysporum</i> f.sp. <i>lentis</i>	Fusarium wilt	Freezing blotter test or agar plate test	B1
<i>Stemphylium botryosum</i>	Stemphylium blight	Agar plate test	B1
<i>Cuscuta</i> spp.	Dodder	Direct inspection	A2
<i>Orobanche</i> & <i>Phelipanche</i> spp.	Broomrape	Direct inspection	A2
<i>Bruchus lentis</i> , <i>Bruchus ervi</i>	Lentil weevil	Direct inspection	A2
<i>Callosobruchus maculatus</i> , <i>Callosobruchus chinensis</i>	cowpea seed beetle	Direct inspection	A2
<i>Ditylenchus dipsaci</i>	Stem and bulb nematode	Nematode extraction test	A2
<i>Orobanche</i> & <i>Phelipanche</i> spp.	Broomrape	Direct inspection	A2
<i>Cuscuta</i> spp.	Dodder	Direct inspection	A2
FIELD PEA			
<i>Pea seed-borne mosaic virus</i>	Pea seed-borne mosaic	ELISA or TBIA	A2
<i>Pseudomonas syringae</i> pv. <i>pisi</i>	Bacterial blight	Agar plate and slide agglutination tests	A2
<i>Ascochyta pinodes</i> (= <i>Didymella pinodes</i>)	Ascochyta blight	Agar plate test	A2
<i>Ascochyta pisi</i>	Leaf and pod spot	Agar plate test	A2
<i>Botrytis cinerea</i>	Grey mold	Agar plate test	A2
<i>Fusarium oxysporum</i> f.sp. <i>pisi</i>	Fusarium wilt	Agar plate test	B2
<i>Orobanche</i> & <i>Phelipanche</i> spp.	Broomrape	Direct inspection	A2
<i>Bruchus pisorum</i>	Pea weevil	Direct inspection	A2
FORAGE LEGUMES (VETCHES, GRASS PEA & OTHERS FORAGE CROPS)			
<i>Alfalfa mosaic virus</i>	Alfalfa mosaic	ELISA or TBIA	A2
<i>Bean yellow mosaic virus</i>	Bean yellow mosaic	ELISA or TBIA	A2
<i>Broad bean stain virus</i>	Broad bean stain	ELISA or TBIA	A2
<i>Cucumber mosaic virus</i>	Cucumber mosaic	ELISA or TBIA	A2
<i>Pea seed-borne mosaic virus</i>	Pea seed-borne mosaic	ELISA or TBIA	A2
<i>Curtobacterium flaccumfaciens</i> pv. <i>flaccumfaciens</i>	Bacterial blight	Agar plate and slide agglutination tests	A2
<i>Pseudomonas syringae</i> pv. <i>phaseolicola</i>	Halo blight	Agar plate and slide agglutination tests	A2
<i>Xanthomonas axonopodis</i> pv. <i>phaseoli</i>	Common blight	Agar plate and slide agglutination tests	A2
<i>Ascochyta</i> spp.	Ascochyta blight	Agar plate test	A2
<i>Botrytis cinerea</i>	Gray mold	Agar plate test	A2
<i>Colletotrichum lindemuthianu</i> , <i>Colletotrichum truncatum</i>	Anthracnose	Agar plate test	B1
<i>Fusarium oxysporum</i>	Fusarium wilt	Agar plate test	B1
<i>Phoma</i> spp.	Phoma blight	Agar plate test	A2
<i>Acanthoscelides</i>	Bean weevils	Direct inspection	A2
<i>Ditylenchus dipsaci</i>	Stem and bulb nematode	Nematode extraction	A2

* A1 = Quarantine not recorded (zero tolerance); A2 = Quarantine recorded (zero tolerance); B1 = Quarantine recorded with specific tolerance level; B2 = Non-quarantine, recorded.

** ELISA = Enzyme linked immunosorbent assay; TBIA = Tissue blot immunoassay; Direct inspection = Can be by visual or by microscope, i.e., if an insect is noticed, using a binocular is useful to determine the species; also, if bunt balls are found, specimens from them should be examined under a microscope to be identified.

Table 2. Cont'd

Country	Import permit	Declaration					Invoice	CO	GMO	Remarks
		Wheat	Barley	Faba bean	Chickpea	Lentil				
EGYPT	+									
ETHIOPIA	+	Seeds harvested from fields which are inspected during active growth stages and found to be free of virus and other diseases (Karnal bunt) and are not GMO products.	Seeds harvested from fields which are inspected during active growth stages and found to be free of virus and other diseases (Karnal bunt) and are not GMO products.	Seeds are harvested from fields which have been inspected during active growth and found to be free of virus and other diseases.			Seeds are free from seed-borne pathogens and insect pests, and free from natural soil.			
FRANCE										
GERMANY										
GREECE										
GUYANA	+									
HUNGARY										
INDIA	+	Bread and durum wheat seeds are free from <i>Tilletia controversa</i> , <i>Claviceps purpurea</i> , <i>Sitophilus granarius</i> .	Barley seeds are free from <i>Pseudomonas syringae</i> pv. <i>atrofaciens</i> , barley stripe mosaic (<i>Hordeivirus</i>), <i>Claviceps purpurea</i> , <i>Sitophilus granarius</i> .	Faba bean seeds should free from <i>Ascochyta fabae</i> , <i>Heterodera glycies</i> , <i>Ditylenchus dipsaci</i> , broad bean viruses viz. mottle, necrosis, strain (<i>Comovirus</i>), true mosaic, wilt virus 1 and 2.	Chickpea seeds must be free from pod and stem blight.	Lentil seeds must be free from <i>Acanthoscelides obtectus</i> , <i>Bruchidius algiricus</i> , <i>Bruchus atomarius</i> , <i>Bruchus ervi</i> , <i>Bruchus loti</i> , <i>Bruchus luteicornis</i> , <i>Bruchus rufimanus</i> , <i>Bruchus rufipes</i> , <i>Bruchus signaticornis</i> , <i>Bruchus tristiculus</i> , <i>Bruchus tristis</i> , <i>Bruchus ulicis</i> , <i>Ditylenchus dipsaci</i> .	Grass pea seeds must be free from <i>Bruchidius jocosus</i> , <i>Bruchus rufimanus</i> , <i>B.rufipes</i> , <i>B.tristiculus</i> , <i>B.tristis</i> .	+		Letter to NBPGR and to cooperators

Annex 1. Seed Dispatch Request Proforma

To	ICARDA Seed Health Laboratory, Lebanon/Morocco
SHL ship. no.	
Originator (scientist name)	
Date	
Crop	
Seed source	
Budget code	
Net wt. (kg)	
Gross wt. (kg)	
No. of boxes	
Receiver name	
Receiver address	
P.O. Box	
City	
Country	
Fax	
E-mail	
Tel.	
Mobile	
Dispatch mode	
Custom airport (point of entry)	
Seed treatment	
Fumigation requirement	
Seed health testing	
Import permit certificate	
Phytosanitary required	
Non-GMO certificate	
Donation certificate/invoice	
Additional remarks	

Annex 2. Sample phytosanitary certificate-Lebanon

Name & address of exporter اسم وعنوان المصدر		LEBANESE REPUBLIC Ministry of Agriculture Plant Resources Directorate Import, Export & Plant Quarantine Department			الجمهورية اللبنانية وزارة الزراعة مديرية الثروة الزراعية مصلحة مراقبة التصدير والاستيراد والحجر الصحي الزراعي	
ICARDA-LEBANON		Name & address of importer اسم وعنوان المرسل اليه		Dr Filippo Bassi ICARDA Rabat office, Rabat Instituts, Rue Hafiane Cherkaoui, Rabat, Morocco		
Means of conveyance & No. وسيلة النقل ورقمها		شهادة الصحة الزراعية (النباتية) Phytosanitary certificate 245297 Original				
By Plane		Point of entry نقطة الدخول Rabat, Morocco				
Point of entry نقطة الدخول		T0 Plant Protection Organization of الي الجهة المختصة بوقاية النبات في MOROCCO				
Country of origin	Weight kg.	Number & description of packages	Botanical name	Name of produce		
Lebanon	31.0 kg	3 Boxes	Triticum durum	Durum wheat		
DRAFT						
<p>تشهد بان النباتات أو المنتجات النباتية أو المواد الأخرى الخاضعة للوائح الصحة النباتية قد تم فحصها و/أو اختبارها طبقاً للإجراءات المعمدة الملائمة، ووجدت خالية من آفات الحجر الزراعي التي حددها الطرف المتعاقد المستورد وفقاً لمتطلبات الصحة النباتية لدى الطرف المتعاقد المصدّر، بما في ذلك الاشتراطات الخاصة بالآفات غير الحجرية الخاضعة للوائح. واعتبرت خالية أساساً من الآفات الأخرى.</p> <p>This is to certify that the plants, plant products or other regulated articles described hereunder have been inspected and/or tested according to appropriate official procedures and are considered to be free from the quarantine pests specified by the importing contracting party and to conform with the current phytosanitary requirements of the importing contracting party, including those for regulated non- quarantine pests. They are deemed to be practically free from other pests.</p>						
التطهير و/أو عملية التبخير Disinfestations and / or Fumigation treatment			Place & date of issue مكان وتاريخ الاصدار			
Chemical (active ingredient) المادة الكيميائية (المادة الفعالة)			MASNAR-20-11-2015			
Treatment المعالجة			Name & signature of authorized office اسم وتوقيع الموظف المختص			
Date التاريخ			Stamp of service الختم الرسمي			
Concentration نسبة التركيز						
Duration and Temperature مدة التعريض ودرجة الحرارة						
Additional information معلومات اضافية						
لا تتحمل وزارة الزراعة اي مسؤولية قانونية أو مالية قد تنتج عن هذه الشهادة No financial liability with respect to this certificate shall attach to the Ministry of Agriculture or to any of its officers or representatives						

Annex 3. Certificate of donation

Date:

CERTIFICATE of DONATION

ICARDA, the International Center for Agricultural Research in the Dry Areas, declares that the shipment about:

XX kg of [Common & botanical names of the crop(s)]

is destined for:

COOPERATOR'S FULL ADDRESS

The samples are for experimental purposes only. The samples are unfit for human consumption and have no commercial value (price = USD \$1.00). No payment has been made, nor will be made, by the consignee.

Safaa Kumari

Head of ICARDA Seed Health Lab. & Plant Virologist

Email: s.kumari@cgiar.org

Annex 4. GMO free declaration

Date:

Declaration
Seeds are not/does not contain
Genetically Modified Organisms (GMOs)

ICARDA, the International Center for Agricultural Research in the Dry Areas, declares that the shipment of:

XX kg of [Common & botanical names of the crop(s)]

.....

is destined for:

COOPERATOR'S FULL ADDRESS

.....

We guarantee the absence of adventitiously introgressed GM materials in these genetic samples because, to the best of our knowledge, GMOs of our mandate crops are not grown commercially.

We guarantee that these seeds were developed using conventional plant breeding methodologies that did not involve gene transformation.

Director General
 ICARDA

Annex 5. Commercial invoice

Date:

COMMERCIAL INVOICE**To whom it may concern****FROM:**

ICARDA-office
 P.O. Box 114/5505
 Beirut, Lebanon
 Tel: +961 1843472/813303

TO:*COOPERATOR'S FULL ADDRESS*INVIOCE NO: # *XX/2016*

DESCRIPTION	QUANTITY (box)	WEIGHT/ NET (kg)	WEIGHT/ GROSS (kg)	ESTIMATED PRICE (USD)
<i>Common & botanical names of the crop(s)</i>	<i>X</i>	<i>XX</i>	<i>XX</i>	<i>0</i>
TOTAL	<i>X</i>	<i>XX</i>	<i>XX</i>	<i>0</i>

X **box(es)** containing experimental seed were donated for research purposes without any commercial value. The estimated value is USD **\$0.00** 'for customs purposes only'.

Country of Origin: **Lebanon/Morocco**

 Research Platform Director, ICARDA (Lebanon/Morocco)

Annex 6. Import permit for Lebanon

Date:

Import Permit (IP) seed request
for research purpose by ICARDA Scientists

TO: ICARDA's Seed Health Laboratory

FROM: _____

SUBJECT: Importing _____ seeds for research purpose only from _____

I. DESCRIPTIONS OF CONSIGNMENT:

Name and address of exporter: _____

Declared name and address of consignee: _____

Final destination: _____

Port of entry: _____

Origin: _____

Purpose/end use: _____

Quantity (gross weight): _____

Quantity (net weight): _____

Scientific name of the crop: _____

Common name of the crop: _____

Number of genotypes and number of boxes: _____

Seed treatments: _____

II. GENERAL IMPORT CONDITIONS:

The consignment of seeds should be free from seed-borne pests (insect pests, pathogens and weeds), soil, and other contaminants, accompanied by an official phytosanitary certificate.

III. ADDITIONAL DECLARATION (PLEASE SPECIFY, IF ANY):

Annex 7. Report for destroying seeds and plants infected with quarantine pests

		REPORT FOR DESTROYING SEEDS AND PLANTS INFECTED WITH QUARANTINE PESTS			
		Seed Health Laboratory (Lebanon/Morocco)			
Date of application:					
SHL expert name:					
Country of origin of seeds:					
No.	Description	Program	Quantity	Weight	Shipment description
1					
2					
3					
4					
Reason for destruction of seeds/plants					
Common name of the pest(s):					
Scientific name of the pest(s):					
ICARDA, the International Center for Agricultural Research in the Dry Areas, certified that all seeds or plants are condemned according to the provision of the platform hosting country plant quarantine laws.					
Destruction details					
Destruction of the above materials was carried out at the below location under the supervision of the Seed Health Scientific Committee established by ICARDA Platform Director/Country representative.					
Location: Date:					
Seed Health Committee Members			Name of Platform Director/Country Representative		
Name		Signature			
1.				Name: Signature:	
2.					
3.					
4.					

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About ICARDA

The International Center for Agricultural Research in the Dry Areas (ICARDA) is the global agricultural research organization working with countries in the world's dry and marginal areas to deliver sustainable systems solutions that increase productivity, improve rural nutrition, and strengthen national food security. ICARDA's integrated approach includes new crop varieties; agronomy; on-farm water productivity; natural resources management; rangeland and small ruminant production; and socioeconomic and policy research to better target poverty issues and accelerate technology adoption. A member of CGIAR Consortium, ICARDA works closely with national agricultural research programs and other partners in more than 40 countries across North and Sub-Saharan Africa, and Central, South, and West Asia.

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