

OECD SEED SCHEMES

CAPACITY BUILDING



IN THE OECD SEED CERTIFICATION SCHEMES

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Foreword

International seed trade has almost tripled in value over the past decade, from USD 3.5 billion in 2000 to USD 10 billion in 2010. To ensure the continued growth of this highly innovative and increasingly globalised market, seed certification plays an essential role because it signals to buyers and sellers that the seed traded has been produced and processed according to agreed principles. In this regard, the OECD Seed Schemes play a significant role in providing an international framework for the certification of seeds at the international level.

The OECD Seed Schemes provides an international framework for the certification of seed traded internationally and facilitates the trade of “quality-guaranteed” seed by reducing technical barriers. Capacity building is a key element of the Schemes as it ensures that only high quality seeds are traded. The training programmes are equally relevant to countries applying for membership in the OECD Seed Schemes as they are to new Members. There are currently 58 member countries of the Schemes.

This brochure offers comprehensive guidelines on capacity building activities in applicant and OECD Seed Scheme Member countries. It discusses the main instruments and the practical aspects of capacity building as these pertain to the applicant and to OECD Member countries, in addition to reviewing the new internet-based training methods. Training costs and funding sources are also considered.

Finally, it is hoped that this brochure will serve as a valuable tool for seed certification and inspection authorities to plan and organise their own training activities.

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1. Introduction

The value of international seed trade has almost tripled in the past decade; from USD 3.5 billion in 2000 to USD 10 billion in 2010. In the past two decades, seed trade has increased tenfold (from USD 1 billion in 1980). Today, the largest seed exporters are countries of the European Union and the United States. Growth in international seed trade is expected to continue because seed markets are highly innovative and increasingly globalised.¹

Seed certification plays an essential role in international seed trade because it signals to buyers and sellers that the seed traded has been produced and processed according to agreed principles. The OECD Seed Schemes provide a framework for the certification of seeds in order to facilitate international trade. The framework is designed to reduce technical barriers, improve transparency, and lower transaction costs.

The OECD Seed Schemes were established in 1958 and has a current membership of 58 countries. Each country is represented by a National Designated Authorities (NDA). The Schemes are based on a set of rules, procedures and techniques that ensure the varietal identity and purity of seeds. They cover seven groups of species to comprise seven distinct and independent Schemes. Membership is open to all OECD countries, and to members of the United Nations, its specialised agencies, and the World Trade Organization. Today, applications to the Schemes have been growing and Member countries are increasingly applying to access additional Schemes. Given the dynamics of the seed market, this trend is expected to continue.

Capacity building is a key element in the OECD Seed Schemes and covers a broad area. Capacity building means that individuals, organisations or governments are “enabled to raise productivity, wealth, and standards of living by developing new, competitive economic activities to serve local, regional, and global markets.”² Regarding the OECD Seed Schemes, capacity building implies that staff members of an NDA are trained in all aspects of the OECD Seed Schemes and their implementation and monitoring. Continuous capacity building facilitates accession to the Schemes, and ensures that the Rules and Regulations of the Schemes are correctly applied. This ensures that only the highest quality seeds are traded under the OECD Seed Schemes.

This brochure aims to assist seed certification and inspection authorities in candidate and Member countries to plan capacity building activities by providing information and training activities that promote a better understanding and implementation of the OECD Seed Schemes.

This brochure is organised as follows. The second section reviews capacity building activities that are particularly relevant for countries that wish to join the Seed Schemes (*pre-accession stage*). Key training activities and instruments for capacity building are discussed. Section 3 deals with capacity building in Member countries (*post-accession stage*), and Section 4 considers funding for capacity-building activities. Finally, Section 5 draws some conclusions.

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1. Statistics refer to the value of seed traded in 2011. For further information see *Seed Statistics* collected by the International Seed Federation (ISF) and accessible on www.worldseed.org.
 2. Watkins, A. and M. Ehst (Eds.). 2008. *Science, technology and innovation: capacity building for sustainable growth and poverty reduction*. Washington, DC: World Bank.

2. Capacity building at the pre-accession stage

Applying for membership in the OECD Seed Schemes

Before applying to join the OECD Seed Schemes, countries should assess the benefits of membership for their seed sector. This assessment is usually initiated by the Ministry of Agriculture in close co-operation with other stakeholders in the country. It could focus on the following elements.

- Examination of the current organisation of the NDA, national seed regulations and the technical and managerial level of NDA staff members.
- The opportunities for seed exports to other countries.
- The potential interest of foreign or multinational seed companies for seed multiplications in the country.
- Identifying the critical points and gaps with regard to the OECD Seed Schemes requirements.
- Identifying the measures to be taken in terms of organisation, management, investment in equipment, etc.
- Training to be organised for NDA staff members.
- Calculation of the cost of membership in the OECD Seed Schemes.
- Available financial resources.

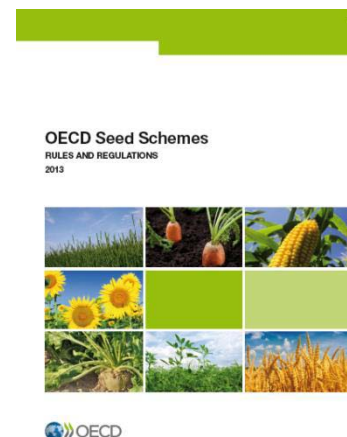
Once a country has expressed its desire to join the Seed Schemes, an appropriate action plan should be discussed by all stakeholders. Such a plan will facilitate preparations for becoming a Member of the Schemes and the planning of capacity building activities. An action plan should also assess the financial resources required for each training activity and the appropriate timeframe.

It is recommended that capacity building begins before the admission procedure to allow for rapid accession to the Schemes. For example, after submitting an application, an expert mission by the OECD or an NDA of a Member country could take place in the applicant country to assist them in identifying their training needs.

Planning training programmes

When countries submit their membership application, they must implement a seed certification system that covers all aspects of the OECD Seed Schemes. This includes the following key elements.

- General introduction to the OECD Seed Schemes.
- Variety registration (National List).
- Field inspection.
- Labelling.
- Post-control.
- Authorisation of field inspection, sampling and seed testing.



These elements and their related capacity building activities will be discussed in detail below. Elements (i) — (v) are particularly relevant to the pre-accession stage. Element (vi) applies to the post-accession stage.

General introduction to the OECD Seed Schemes

The OECD Seed Schemes provide standards and rules for seed inspection and certification. The national seed inspection and certification system of an applicant country should be based on these Schemes. It is advisable that capacity building in potential Member countries starts with training on the main aspects of the OECD Seed Schemes and their implementation. A training programme should focus on the following annexes and appendices of the rules and regulations of the OECD Seed Schemes:³

- Annex I (point 1-5): Basic principles
- Annex II: Method of operation
- Annex III: (points 1, 2, 4-7): Procedure for a new country to join the Schemes
- Common Appendix 1: Definitions of terms used for the purpose of the Schemes
- Common Appendix 2: Reference numbers for certificates and seed lots
- Common Appendix 3: Specifications of the OECD label or marking of seed containers
- Common Appendix 4: Specimen certificate and analysis results
- Common Appendix 5: Conditions for operating activities of the seed certification process by authorised persons and laboratories under official supervision
- Common Appendix 6: Procedure for the extensions of the scheme to include varieties under examination for registration on a national list.

In addition to training on the general aspects of the Schemes, a training programme could also cover the specific Schemes to which a country is applying and the critical points associated with each Scheme. Table 1 lists the different Schemes and some of their critical points.

Training could start with a general introduction to familiarise trainees with the framework and general principles of the Schemes. The senior management and managerial staff of the NDA of the applicant country would be the target group for this type of training. They could include the director of the NDA, heads of departments and the technical liaison officer at the Ministry of Agriculture. A training of four to five days can be organised at OECD Headquarters or in the candidate country. The latter would be less costly in terms of travel and accommodation costs. The training could be given by technical staff of the OECD Seed Schemes Secretariat or by an experienced staff of a Member country's NDA. It is advisable that training programmes are given by staff members who have a good theoretical knowledge of the OECD Seed Schemes and who are familiar with their practical implementation.

3. The Rules and Regulations of the OECD Seed Schemes are available in English, French and Spanish and can be accessed on the Schemes' website: www.oecd.org/tad/seed.

Table 1. Specific points associated with each Seed Scheme

Seed Scheme	Specific points
Grass and legume seed (Annex VI)	<ul style="list-style-type: none"> – Risk of cross-pollination from surrounding natural grass vegetation, road sides etc. – Cross-pollination between different species – Volunteer plants from previous cropping – Certification of mixtures (of different species and / or varieties) – Identity checks on synthetic varieties
Crucifer seed and other oil or fibre species (Annex VII)	<ul style="list-style-type: none"> – Volunteer plant from previous cropping especially in crucifers – Isolation distances in relation to the various species and types of hybrids – Male sterility in female line (hybrid varieties) – Intra-specific hybrids in cotton species
Cereal seed (Annex VIII)	<ul style="list-style-type: none"> – Different ways for applying a percentage norm (meter line versus quadrates) – Sterility and hybridity in hybrid varieties – Self-pollinating and cross-pollinating varieties of triticale
Sugar beet and fodder beet seed (Annex IX)	<ul style="list-style-type: none"> – Ploidy and male sterility – Risk of cross-pollination from wild beet and other – Monogerm, multigerm and precision seed – Seed standards
Seed of subterranean clover and similar species (Annex X)	<ul style="list-style-type: none"> – Variable dormancy periods – The phenomenon of self-seeding in relation to generation to be inspected – Detection of seed or plants of contaminant varieties already present in the field
Maize and sorghum seed (Annex XI)	<ul style="list-style-type: none"> – Pollen-shedding tassels or portions of tassels in the female line – Separation and identification of male and female lines – Species purity in sorghum
Vegetable seed (Annex XII)	<ul style="list-style-type: none"> – Role of post-control in the production of certified seed – Standard seed – Multiple maintainers

Each of these subjects should be treated by explaining their meaning and how they are efficiently organised. The trainer should encourage interaction among participants and stimulate discussions on the best way of implementing the Schemes. This will ensure that the training programme is embedded in the national context of the applicant country. To invite participants to come up with ideas and solutions, the course could consist of assignments which can be discussed with the trainer. In preparation of the training, participants should study the most relevant parts of the Schemes. Questions on the study material can be sent to the trainer beforehand.

Variety registration

In order to access the OECD Seed Schemes, a country must have a National Variety List. This implies that each listed variety has been tested for Distinctness, Uniformity and Stability (DUS) as well as for Value for Cultivation and Use (VCU). In addition, there

must be a description of each listed variety. Training on variety testing and listing should cover the following aspects:

Tests on Distinctness, Uniformity and Stability (DUS)

DUS tests assess whether a new variety is distinct, uniform and stable. Testing is carried out on the basis of internationally recognised technical protocols such as those of the International Union for the Protection of New Varieties of Plants (UPOV). Each protocol contains a set of mainly morphological characteristics, which are assessed over a number of years. The results of these recordings are included in a variety description.

Training on DUS tests can cover the following aspects.

- Introduction to distinctness, uniformity and stability.
- Objectives of DUS: protection of breeders and varietal certification of seeds.
- Lay-out of DUS test plots: number of replicates, etc.
- Characters to be recorded.
- Processing of recordings.
- Variety descriptions.
- Standard samples: acquisition and storage;
- Role and types of standard samples.
- Maintenance of listed varieties.



Tests on Value for Cultivation and Use (VCU)

VCU tests assess whether a new variety is adapted to growing conditions in a certain region or country (cultivation) and that it can be used for the purpose it has been bred for (use). There is no set of international characteristics for VCU testing because climatic and growing conditions vary. However, quality traits such as yield and resistance to certain diseases are used by most countries. Training on VCU testing should cover the following aspects:

- Relevant quality traits for cultivation and use in the country concerned.
- Lay-out and number of replicates.
- Selection of regions in which VCU tests will be carried out.
- Traits and characteristics to be assessed.
- Processing of data.
- Publication of test results in the National Variety List.

Theoretical training in the general aspects of setting up and maintaining a variety testing system could be targeted at the managerial staff of the variety testing institute and the authority responsible for the national list. If the potential NDA is different from the authority responsible for the National List, a staff member of the NDA could also attend

the training to be aware of all aspects associated with the listing of a variety. A three- to four-day theoretical training can cover topics like management, organisation, budget and staff requirements in setting-up a variety testing and listing system, and/or bringing the national system up to international standards.

Training on DUS is best organised by a country with experience in DUS testing, on the condition that the country cultivates similar species as the applicant country. For VCU, it is advisable that training should be organised by a country with similar climatic conditions and species ranges as the applicant country. During the training, trainees can study: i) how to plan and organise DUS and VCU testing; ii) what characteristics should be tested and how to use and score them; iii) how to draft and manage a database for test results; iv) how to translate test results into a final test report; and v) how to set-up, maintain and update a national list.

Department heads responsible for the organisation of tests and staff members who carry out the assessments of the DUS and VCU plots should be part of the group trained. Preferably all plot assessors would follow this training. However, if the number of plot assessors is high, a “train the trainer” approach should be taken. In this case, senior assessors are trained and they in turn will train their colleagues.

Practical training can focus on the assessment of plots and could take place over a period of two years. In the first year the training would preferably take place in the host country. Trainees can assess the DUS and VCU plots with an experienced staff member of the organising country. The training should also cover data recording and translation of the data into final test results. At the end of the training session, assignments can be given in which trainees assess a number of plots and compare their score with that of the hosting institution.

In the second year of training, courses should take place in the acceding country, assuming that DUS and VCU plots have been set-up in the country. In this way, the trainer will have a clearer idea of how the test system is organised and plots are assessed. If required, the trainer can verify how training results from the first year of training were put into practice and suggest improvements.

Both training sessions for DUS and VCU tests should be organised at a time when the majority of the plant characteristics are scored. Another option is to have two shorter (2-3 days) training sessions per year in order to cover as many plant characteristics as possible.

Field inspection, labelling and post-control

These three activities are closely related.

Field inspection

Field inspection is one of the most important elements in the OECD Seed Certification System. Training on field inspection should cover the following subjects.



- Aim of the field inspections.
- Assessment of varietal identity and varietal purity through crop assessment.
- Previous cropping.
- Isolation distances in cross pollinators and physical isolation for self pollinators.
- Role and importance of the variety description and standard sample in field inspection.
- Varietal purity norms as mentioned in the OECD Seed Schemes.
- Execution of varietal purity counts (number of off-types).
- Differences in the approach between self-pollinators and cross-pollinators.
- Characteristics to be tested and how to use them (*OECD Guidelines for Control Plot Tests and Field Inspection of Seed Crops*).⁴
- Instructions for field inspections.
- Instruments to safeguard uniformity and consistency of field inspections.
- Identification of harvested seed during transport, storage and processing.
- Use of labels and transport documents.

Labelling

Labelling is the final step in the process of OECD varietal certification. Correct labelling and complete information on the labels are very important in the international seed trade. Training on labelling can cover the following aspects:

- Types and format of OECD labels.
- Type of label material.
- Information on labels (mandatory and additional information).
- Label printing systems.
- Affixation of the labels.
- Maximum seed lot sizes.



Post-control

Control plots form an integral part of OECD varietal certification. Post-control results show whether the seed certification procedure has been carried out properly. Furthermore, control plots (pre-control) are essential in verifying varietal identity and they play a supportive role in the field inspection of corresponding seed multiplications. Training on post-control should cover the following subjects.

- Difference between pre-control and post control.

⁴ The guidelines are available in English, French and Spanish on the OECD Seed Schemes' website: www.oecd.org/tad/seed.

- Control plots (e.g. lay-out, size, sowing, previous cropping).
- Role of standard samples and how / where to obtain them.
- Role of the official variety description.
- Characteristics to be used and how to use them.
- Varietal identity and varietal purity.
- Off-types and how to count them.



Training on field inspection, labelling and post-control are best organised by a National Designated Authority, which is the national seed certification body in most cases. Training is preferably organised by a country that is a member country of the OECD Seed Schemes and inspects and certifies those species which are in the Scheme to which a country has applied.

Theoretical training should be aimed at managerial staff who are responsible for the system of field inspections, post-control and certification. The following aspects are to be covered.

- Staff requirements and training (e.g. organisation, equipment, transport, etc. for a system of field inspection, control plots and OECD certification).
- Establishing a database and efficient data processing (e.g. results of field inspection, control plot assessments, etc.).
- Interface between field inspection, control plots and final OECD certification to safeguard the identity of fields and lots.

Practical training activities will focus on field inspection, post-control assessment and certification. Numerous staff members are normally involved in these activities. This may necessitate a “train the trainer” approach in order to keep training costs manageable. Therefore, training would ideally target senior staff members and / or staff member with good teaching skills. The training sessions should equip trainees with the following: i) the ability to carry out proper field inspection and control plot assessments; ii) a good knowledge of the meaning of identity, varietal purity, previous cropping, isolation distances; iii) the ability to make proper quadrat counts; iv) knowledge of which characteristics to use and how to apply them; and v) the ability to register results in a correct and complete way.

Training should be provided over a two-year period. In the first year, training should take place in the host country; and in the second year training could take place in the acceding country once a system of inspection and certification has been set-up. In the first year, theoretical and practical sessions should take place (e.g. field inspection, assessment of control plots). After each theoretical session, participants should apply their new knowledge in the field. This could be done in co-operation with an experienced staff member of the host organisation. At a later stage practical assignments should be carried out by trainees. The results of such assignments may be compared to those of the trainer and discussed in plenary and control-plot sessions. In the second year, similar training should be continued in the applicant country.

Instruments for capacity building

In addition to the theoretical and practical training programmes discussed above a number of other instruments can be used to implement capacity building activities. Instruments include the following.

- OECD meetings, seminars and workshops.
- Comparative fields.
- Educational tours.
- E-learning, social networks, web meetings.

Each of these instruments are discussed below.

Attending OECD meetings, seminars and workshops



The OECD grants candidate countries *observer* status. Observers are invited to the meetings of the Seed Schemes and can take an active part in the discussions. Once a country has received observer status, it is advisable that the management of the NDA and the technical liaison officer of the Ministry of Agriculture attend the Annual Meeting (AM) and the meetings of the Working Groups (WGs). This will give them the opportunity to become acquainted with the work of the Schemes and the challenges related to seed inspection and certification. The AM and WG meetings can stimulate the exchange of knowledge and experiences with NDAs in Member countries. Areas of interest to

the applicant countries can be discussed at these meetings in order to facilitate capacity building.

Comparative field trials

Capacity building could also be enhanced by organising comparative control fields in a Member country. The host country would make an assessment and prepare a preliminary report after the fields have been inspected and assessed by experts from the countries that submitted samples. Comparative fields are a very good tool to promote uniformity and the exchange of views and experiences. Moreover, such fields provide information on the quality of OECD certified seed. Countries that organise comparative field inspections should be reimbursed for the cost of sowing, assessing the plots, and drafting the preliminary and final reports. Costs will mainly depend on the number of submitted samples and characteristics observed. A less costly alternative would be to jointly assess post-control plots of a certain species in one Member country of the OECD Seed Schemes.

Educational tours

When the annual meeting of the OECD Seed Schemes is hosted by a Member country, delegates from the applicant country should visit control plots and multiplication fields in that host country. This would provide good insights into the practical application of field inspections, post-control, labelling, etc. Educational tours also broaden the

knowledge of other participants, particularly those who are relatively new to the Schemes. Another option is to visit a neighbouring country that is already a Member of the OECD Seed Schemes. This has the advantage that a neighbouring country often grows and certifies the same species as the applicant country. This would also reduce travel costs.

E-learning, social networks, web meetings



There is little experience to date with e-learning within the OECD Seed Schemes. E-learning reaches a larger audience and could be useful in theoretical training activities. Assuming that the required equipment is in place, e-learning is a very cost and time efficient tool. The same applies to courses that can be taken on-line, downloaded to a computer, or ordered on a CD-ROM. Electronic courses normally have a set of questions that allow trainees to test their newly acquired knowledge. Other innovative tools that

stimulate learning are animated PowerPoint presentations, quizzes, and learning boxes. Tools used in facilitated on-line courses include Wikis, blogs, and community cafés that encourage communication between the trainer and trainees. The potential of e-learning activities in the OECD Seed Schemes should be further explored.

Practical training should continue to be carried out “in the field” (e.g. seed multiplication fields, control and variety test plots, place of labelling, laboratory). This can be supported by video presentations, which trainees could also use as refresher course. Databases with photos of the characteristics and various states of these characteristics would be helpful in assessing multiplication fields and control plots.



3. Capacity building for new and existing member countries

For new and existing Member countries of the OECD Seed Schemes, capacity building remains important.

- Recently admitted countries may need further training for both current and new staff.
- A country may apply for participation to other Schemes than the one(s) it has been admitted to.
- A country may wish to apply for authorisation of field inspections.

Further training of experts in new OECD Member countries

Once a country has been admitted to one or more OECD Seed Schemes, further training programmes may be required for staff trained at the pre-accession stage and/or new staff members.

For trained staff, further training needs should be established by carrying out an evaluation of completed training programmes and challenges in the implementation of the OECD Schemes. Based on this evaluation, a training programme – including the estimated number of staff to be trained and associated costs – should be drafted. Training should preferably take place in the country itself and given by an experienced staff member or by an external expert.

New staff members could either be trained by national trainers (“train the trainer” approach) or abroad. Training abroad may have the advantage in that it broadens the view of the trainee. In addition, it is advisable that staff members of the NDA continue to make educational tours, attend seminars, and participate in e-learning activities after accession to the Schemes.

Extension to other OECD Seed Schemes

Countries may apply for extension of their membership to other OECD Seed Schemes. In order to do this, additional training may be required. The training should focus on all aspects that are specific to the species in the OECD Seed Schemes for which extension is sought. The training can also deal with DUS and VCU tests, field inspection, labelling, and post-control for the new species (group).

Authorisation of field inspection

Countries that have joined one or more OECD Seed Schemes may wish to introduce authorisation for field inspection. Authorisation means that companies are licensed by an NDA to carry out field inspections. Authorisation of field inspections is attractive for NDAs with staff shortages and to seed companies that operate a Quality Management system covering the whole process of seed production. In the latter case, it may be less costly if a company field inspector carries out inspections under the supervision of the NDA. In addition, there is a general trend to provide seed companies with more responsibilities for quality assessments such as field inspections.

Common Appendix 5 of the OECD Seed Schemes *Rules and Regulations* provides the conditions for the operating activities of the seed certification process by authorised persons and laboratories under official supervision. The OECD Seed Schemes primarily deals with varietal identity and purity, which are controlled by means of field inspections and control-plot assessments. Therefore, this brochure only discusses the authorisation of field inspections. Theoretical and practical training on the authorisation of field inspections should cover the following elements.

- Technical training of company staff.
- Examination.
- Supervision by means of audits, check inspections, etc.
- Refresher courses.

Technical training of company staff should cover the following aspects.

- Concepts of varietal identity.
- The role and use of the official variety description.
- Standards and rules for field inspections.

- Implementation of field inspections.
- Detection and counting of off-types.
- Application of isolation distances.
- Registration and documentation

In the examination, company field inspectors should be able to show their skills to carry out field inspections according to the rules and standards. The examination should also test the inspectors' knowledge of documentation related to field inspections.

Once a company field inspector has been officially authorised to carry out field inspections, he/she will be supervised by the NDA. A minimum of 5% check inspections should be carried out on a yearly basis. This means that 5% of all fields that have been inspected by a company inspector are also inspected by an official field inspector. Check inspections should take place shortly after the first inspection, and the results of the two inspections are to be compared. In addition, an NDA can audit a company field inspector on a regular basis. In this case, an NDA auditor accompanies the company field inspector during field inspections to assess the whole process of these inspections. Refresher courses, best given before the start of a new growing season, are organised by the NDA to update the skills of the company field inspectors and to inform them about new rules.

In addition to theoretical training on the basic aspects of authorisation, training activities should also cover the basic principles of Quality Management (QM). QM is often a key element in the authorisation system of company staff. Training on authorisation should be aimed at the heads of departments and quality managers of the NDA. Three to four days of training in a host country would allow for a demonstration of the authorisation and QM system in place. As a follow-up, the trainer could visit the new Member country once it has started to set up its own system of authorisation and, if required, provide advice. The skills acquired by participants should include: i) ability to train company staff on field inspection; ii) knowledge of elements included in the examinations of company staff; iii) the ability to carry out check field inspection; iv) knowledge of how to properly read and assess company procedures and instructions with regard to field inspections by company staff; and v) the ability to carry out audits of authorised company staff.

4. Funding for capacity building and possible sources

Sufficient funding is a pre-condition for planning and implementing capacity building activities in acceding and new Member countries. This section discusses the cost of training and possible sources of funding. This list is not exhaustive and funding sources need to be explored in a country-specific context.

Cost of training

There are no standardised international fees for training activities. Training costs are country-specific and depend on the duration of the training and the number of participants. The duration of the training described above is in most cases approximately one week. A rough estimate is that a week of training a group of five to eight people would cost between USD 4 000-6 000. This covers the cost of the trainer, training facilities, demonstration material, etc. Transport and accommodation costs for the participants and trainers are not included in this figure because they location-specific. Real costs will be higher for host institutes with limited resources in terms of staff time.

In order to keep training costs low, it is recommended to train small groups of trainers who can disseminate their knowledge. For this reason, it is advisable that trainers be selected on the basis of their teaching skills and experience.

Costs can be further reduced when the training is organised in a neighbouring country or a country located on the same continent. However, proper training can only be given in countries and by institutes that are familiar with seed certification and the OECD Seed Schemes. The same applies to training on DUS and VCU testing: only institutes with experience in DUS and VCU testing will be able to provide high-quality training. Concerning VCU tests, it is also important that the applicant country and the country that organises the training have similar climatic conditions.

Funding sources

The costs related to the admission to and participation in the OECD Seed Schemes can be split into recurrent and non-recurrent costs.

Recurrent costs consist of an annual contribution (see Annex I of the OECD Seed Schemes Rules and Regulations) and the costs of attending the meetings of the OECD Seed Schemes. The annual contribution consists of a base fee, which is equal for all participants (e.g. EUR 2 700 for 2012), and a scale fee that varies by country. Member countries must pay their annual contribution, and in most cases these are paid by the NDA and/or the Ministry of Agriculture.

Non-recurrent costs include the costs of the OECD evaluation mission. Before admission to the OECD Seed Schemes an evaluation mission takes place to assess whether the applicant country meets all requirements. Other non-recurrent costs are the costs of training programmes. Training costs are in principle non-recurrent because they are normally not part of the annual budget of the NDA or the Ministry of Agriculture. It could be envisaged that the National Seed Association contributes to training programmes. The argument in favour of such a cost-sharing arrangement is that seed companies benefit from accession to the OECD Seed Schemes.

Other possible options for national funding sources for capacity building activities are as follows.

- *Special funds.* Seed production is often seen as the basis sustainable food production. For this reason, the Ministry of Agriculture may provide funds to promote the production of seed and other propagating material. If such funds are available, they could also be used for training activities.
- *National innovation funds* are often operated by the Ministry of Economic Affairs to strengthen national industries in order to make them more competitive in global markets.

Developing economies that apply for OECD Membership may lack the necessary funds to implement training programmes. In this case, a country may apply to “external” sources to co-finance training programmes. For example, at the last World Seed Conference FAO, ISF, ISTA, OECD, and UPOV decided to co-operate in the *World Seed Project* to facilitate the establishment of a functioning seed value chain in selected countries. This includes a functioning system of seed certification. To date, such funds are not available, but it is hoped that the World Seed Project will be able to provide financial support for capacity building in the near future.

An applicant country could apply for bilateral funding for specific training activities. For example, training programmes such as “Introduction into the OECD Seed Schemes” and “Field inspection, labelling and post-control,” could be supported by the OECD. Training programmes on the National Variety List and DUS and VCU testing could be set-up with the assistance of UPOV. ISTA would be the appropriate organisation for training on seed sampling and seed testing.

Another option to support training activities is to foster close co-operation between the applicant country and the NDA that is closely linked to that country. There are cases where the NDA of an existing OECD Member country mentors the candidate country. Sometimes the seed industry in the mentoring country is also involved with a view of co-operating with the applicant country in the future. In this case, the NDA and/or the seed industry of the mentor country could be involved in co-financing training activities in the initial stages of admission to the OECD Seed Schemes.

5. Conclusions

International seed trade has steadily increased in the past decade and is expected to grow. As a consequence, more countries will apply for membership to the OECD Seed Schemes, which offer an international framework for seed certification. Capacity building is a major element in the OECD Seed Schemes as it facilitates the accession to the Schemes and ensures that seeds of the highest quality are traded under these Schemes.

This brochure is aimed at assisting inspection and certification authorities in candidate and Member countries to plan capacity building activities. Key elements of the OECD Seed Schemes and the main training activities associated with each element have been reviewed, including testing for distinctness, uniformity and stability, and value for cultivation and use.

Instruments that could be used for capacity building have also been considered. These include theoretical training and comparative field trials, but also educational tours and OECD seminars, which provide an overview of how the OECD Seed Schemes are implemented in other Member countries. In the future, on-line learning tools will become more important. Examples include blended learning workshops which combine, for example, e-learning with practical training. Section 1 discussed training activities, instruments and on-line tools.

Training programmes that are particularly relevant to Member countries, including training activities related to the authorisation of field inspections were examined in Section 2. Given that such authorisation means that companies are licensed by a National Designated Authority to carry out field inspections, this requires special training and monitoring activities.

Sufficient funding is a critical factor in planning and implementing training programmes. This brochure discussed the costs of capacity building activities and provided an overview of potential funding sources. Funding sources are country-specific, however, and the list of possible sources described is far from exhaustive. Innovative funding sources, which may include the private sector, must be found by countries to ensure continuous capacity building.

Any capacity building activity will require careful targeting in order to be effective. Specific needs must be identified in co-operation with the different stakeholders in the seed sector. Training will have to be adapted to a country's requirements and should be targeted, cost-effective and sustainable. New learning tools in combination with practical training can play an important role in achieving these goals.

Effective capacity building in Member countries of the OECD Seed Schemes will ensure that high quality seeds are traded under the Schemes. This will contribute to further growth in the value of seeds traded internationally.

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