



FOREST LANDSCAPE RESTORATION PROJECT

ACIAR ASEM/2016/103 Enhancing Livelihoods through Forest & Landscape Restoration



A SIMPLE GUIDE TO



FOREST NURSERY ACCREDITATION

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ASEM 2016/103
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Project Office:
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Why Accredited Forest Nurseries?

Seedling quality is a significant factor that determines the success of tree farming endeavours and reforestation programs. The survival of trees, growth performance, length of rotation period and volume and quality of timber that can be harvested are greatly influenced by the quality of seedlings used in establishing the plantation. Seedling quality has a broad meaning, but in general, it is defined based on seedling genetic and physical characteristics. Genetic quality relates to the genetic aspects of the mother tree. In contrast, physical quality refers to the morphological and physiological conditions of the seedlings as a result of nursery cultural practices.

The Australian Centre for International Agricultural Research (ACIAR) has implemented a series of research projects in the Philippines to promote improved outcomes of forest restoration aspirations in the country. Recognising the recurring issue on low-quality seedlings as a primary factor for the less successful results of tree farming and reforestation programs in the Philippines, a national policy on Forest Nursery Accreditation (DAO-2010-11) was institutionalised by the Department of Environment and Natural Resources (DENR) based on research findings of ACIAR Quality Seedling (Q-seedling) Project (ASEM/2006/091). The policy aims to regulate the quality of seedlings in government-supported reforestation programs and enhance the use of high-quality seedlings in restoration projects of non-government agencies and organisations. However, implementing the policy is fraught with many challenges, including the complexity of the forest nursery accreditation protocol, lack of understanding of seedling producers on the accreditation process, and less appropriate criteria on assessing seedling quality.

This manual presents a simplified protocol of accrediting forest nurseries. The process of nursery accreditation and the method of assessing seedling quality and capacity of nurseries were developed by ACIAR Q-seedling Project with inputs from personnel of DENR Offices in Regions 8 and 10 in the Philippines, forestry experts from the Visayas State University, local government units, people's organisations involved in large-scale reforestation projects, private tree farmers, and operators of nursery enterprises. The protocol has been updated since it was formulated in 2010 to integrate research findings of the recent ACIAR Watershed Project (ASEM/2010/050) and ACIAR Forest and Landscape Restoration Project (ASEM/2016/103).

This manual is envisaged to help improve the effectiveness of regulating seedling quality in tree farming and reforestation programs in the Philippines through implementing a simple forest nursery accreditation protocol and employing easy but robust criteria of assessing seedling quality.

Annex 4. Sample of a Certificate of Accreditation

Republic of the Philippines
Department of _____

CERTIFICATE OF ACCREDITATION

This is to certify that

JUAN DELA CRUZ

with business address at _____,
has undergone the requisite assessment and evaluation and
meets the requirements and/or standards as prescribed
for under DAO 2010-11 thereby given the privilege
appurtenant thereat to operate a

PRIVATE TREE NURSERY

Regional Executive Director

Certificate Number

Validity of Certificate :
Date Issued :

National Greening Program: Para sa Bayan ...

Basis	Maximum Points	Points
Physical quality of seedling		
1. Health	3	
2. Stem Form	3	
3. Root Form	3	
4. Sturdiness	3	
5. Shoot-root Ratio	3	
Skills of the nursery operator to produce high quality seedlings		
6. Training	3	
7. Experience	3	
Nursery set-up and its facilities		
8. Facilities	7	
9. Seedling Container	2	
10. Potting Mix	2	
Production capacity		
11. Production Capacity	2	
TOTAL	34	

Who can apply?

Any government (except the program implementer) and non-government organization (NGO), academe, private individual, corporation or cooperative engaged in managing a forest nursery and using the prescribed Best Management Practices (BMP) for nursery operation and growing of seedlings (demonstrated in the BMP manual developed by ACIAR Smallholder Forest Project for this purpose) may apply for accreditation.

Requirements for Application

The requirements for the application for the forest nursery accreditation are the following:

1. Name of the nursery
2. Name of owner and proof of land ownership used for the nursery establishment/ tenure/consent to use/legal document
3. Address
4. Area, location, and capacity of forest nursery (volume of seedlings produced)
5. Membership in association
6. Sources of seeds, wildlings and cuttings
7. List of available facilities such as water system, potting and hardening sheds, among others
8. Accessibility and disposal of planting materials produced
9. Capability of nursery operator (training attended, employment of nursery consultant, or three (3) years of nursery operation)
10. Photograph of the nursery
11. Business permit

Accreditation Fee/Administrative and Renewal Fee

An accreditation or administrative fee of five hundred pesos (P500.00) shall be paid upon application for individual applicant and one thousand pesos (P1,000.00) for cooperative, corporation, LGU, NGO, private group and academe application.

Two hundred pesos (P200.00) for the renewal of nursery accreditation permit or renewal shall be paid by the nursery operators every two (2) years.

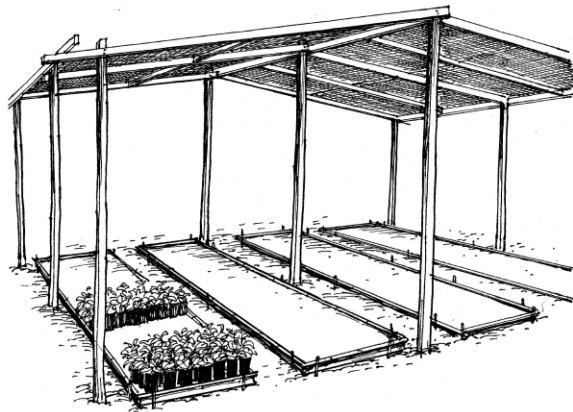
Process of Accreditation

Accrediting a forest nursery requires simple steps:

1. The applicant submits the application form (Annex 1) to the office of _____ . The applicant should attach all the required documents and payments for the accreditation.



2. The Forest Nursery Accreditation Team reviews the required documents and conduct inspections of nursery including its seedlings and nursery operator skills in producing quality seedlings.



Annex 2. Assessment form for seedling physical quality.

Sample	Health	Stem Form	Root Form	Stem Height (cm)	Stem Width (mm)	Sturdiness	Shoot Biomass	Root Biomass
1								
2								
3								
4								
5								
6								
7								
8								
9								
10...								
50								

Annex 1. Nursery accreditation application form.

DEPARTMENT OF _____

APPLICATION FOR ACCREDITATION OF FOREST NURSERY

Name of Applicant : _____

Name of Establishment or Business Name: _____

Address : _____

Region : _____

Location of Forest Nursery : _____

Area (sq.m.) : _____

I hereby certify that I will abide and follow the guidelines and policies of the Department of _____ relevant to the application of best practice in nursery seedling production of forest trees.

Signature of Applicant

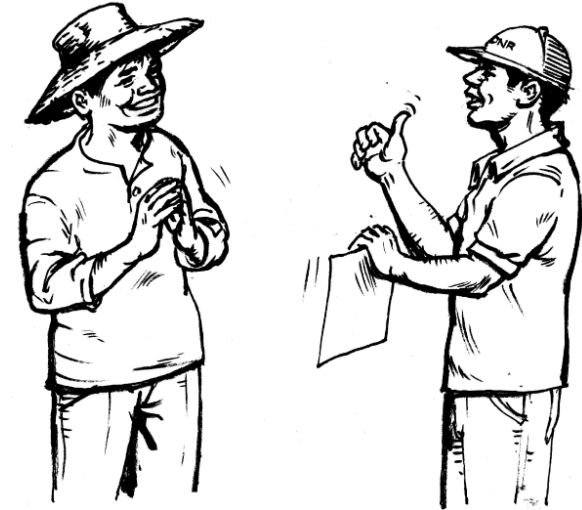
INSPECTED BY:

CERTIFIED BY:

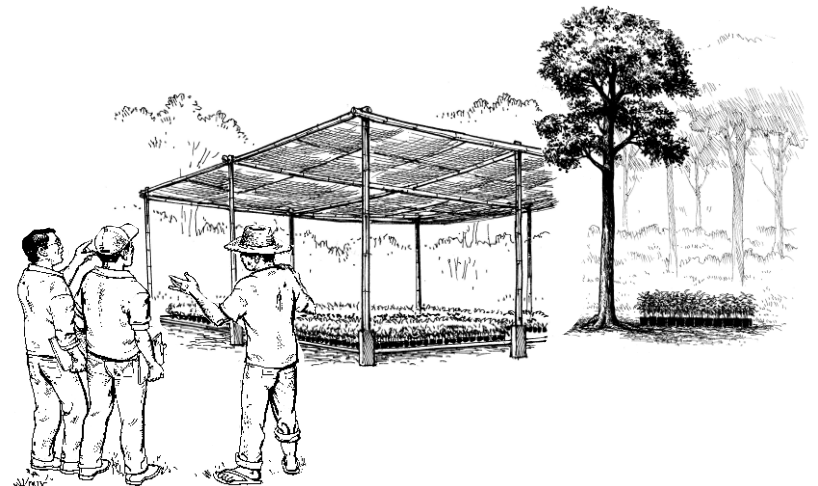
PENRO/CENRO Representative

Chair, RFTSC

3. The Forest Nursery Accreditation Team approves or disapproves the application for accreditation, informs the applicant of the decision and gives advice to the nursery operator to improve the weak points of the application in order to obtain the accreditation and to pass the certificate of accreditation.



4. Regular monitoring of accredited nursery shall be conducted either by the Forest Nursery Accreditation Team or deputy experts. The report will be the basis for continuous operation, suspension or cancellation of the accreditation permit.



Criteria for Nursery Accreditation

4 Production Capacity

A set of criteria will serve as basis for accrediting forest nurseries. These criteria put emphasis on the following major concerns:

1) Seedling physical quality which will include seedling health, stem form, root form and sturdiness; 2) Skills of nursery operators or their capacity to produce high quality planting materials; 3) Nursery facilities; and 4) Production capacity.

Corresponding points shall be awarded on the basis of satisfying each criterion. A nursery should obtain a total score of at least 20 points from the 50 sample seedlings selected using quota sampling.

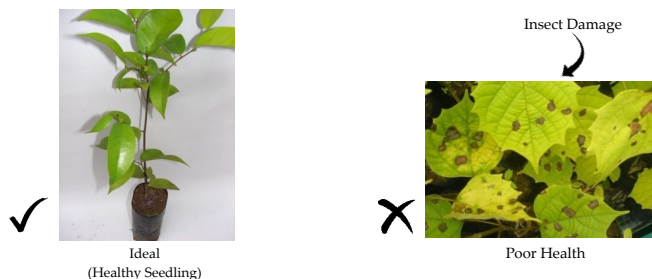
1 Physical Quality of Seedling

The physical quality of a seedling is based on the following criteria:

1. Health
2. Stem form
3. Root form
4. Sturdiness
5. Shoot-root ratio

Basis for Assessment

1.1 Health – Q-seedling should be free from pest and diseases.



Maximum Points for the health - 5 Points

- 0 - Poor (More than 15 samples are affected by pests and diseases)
 - 1 - Moderate (10-15 samples are affected by pests and diseases)
 - 3 - Good (5-9 samples are affected by pests and diseases)
 - 5 – Excellent (less than 5 samples are affected by pests and diseases)
-

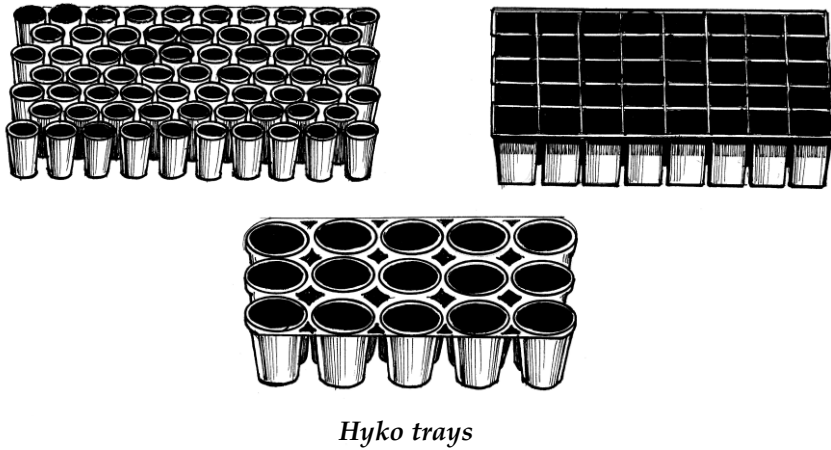
Production Capacity— capacity to supply planting stock.

DESCRIPTION	POINT
Nursery can produce less than 1,000 seedlings per production season	0
Nursery can produce 1,000-5,000 seedlings per production season	1
Nursery can produce more than 5,000 seedlings per production season	2

List of materials for the assessment of the physical quality of the seedling

- Record sheet
- Pencil
- Marking pen
- Paper bag
- Stapler
- Basin
- Ruler
- Caliper
- Scissors
- Calculator
- Oven

1.2 Stem form – Q- seedling should have straight stem.



c. Potting mix – relates to texture and nutrient content of the potting mix

DESCRIPTION	POINTS
Pure clay soil	0
Clay soil plus drainage enhancers (e.g. sand, rice hulls)	0.5
Clay soils plus drainage enhancers (e.g. sand, rice hulls) plus fertilizer organic and inorganic	1.0
Top soil (topsoil with high OM)	1.0
Top soil plus drainage enhancers (e.g. sand, rice hulls)	1.5
Top soil plus drainage enhancers (e.g. sand, rice hulls) plus fertilizer organic and inorganic	2.0

Maximum Points for Stem Form - 5 Points

- 0 - Poor (more than 15 samples have two or more stem leaders and bent shoots more than 30 degrees from stem axis)
- 2 - Moderate (10-15 samples have two or more stem leaders and bent shoots more than 30 degrees from stem axis)
- 3 - Good (5-9 samples have two or more stem leaders and bent shoots more than 30 degrees from stem axis)
- 5 - Excellent (less than 5 samples have two or more stem leaders and bent shoots more than 30 degrees from stem axis)

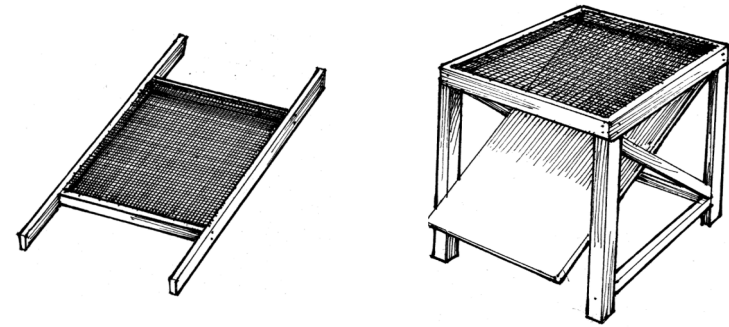
1.3 Root form – Q- seedling should have well-developed root system with no evidence of root deformations



Maximum Points for Root form – 10 Points

- 0 – Poor (more than 10 samples have J, pot bound and curled roots and primary roots growing out from container and penetrating into the ground)
- 5 - Moderate (5-10 samples have J, pot bound and curled roots and primary roots growing out from container and penetrating into the ground)
- 7 – Good (1-4 samples have J, pot bound and curled roots and primary roots growing out from container and penetrating into the ground)
- 10 - Excellent (none of the samples have J, pot bound and curled roots and primary roots growing out from container and penetrating into the ground)

1.4 Sturdiness – Q- seedling should have robust stem.



Soil sieving material

Maximum Points for Sturdiness – 15 Points

$$\text{Sturdiness Quotient (SQ)} = \frac{\text{height (cm)}}{\text{base diameter (mm)}}$$

Right value is less than or equal to 6

- 0 - Poor (More than 15 samples have sturdiness quotient value of more than 6)
- 5 - Moderate (10-15 samples have sturdiness quotient value of more than 6)
- 10 - Good (5-9 samples have sturdiness quotient value of more than 6)
- 15 - Excellent (Less than 5 samples have sturdiness quotient value of more than 6)

b. Seedling container – Quality of the materials used for growing the seedlings.

DESCRIPTION	POINT
Nursery uses makeshift materials (e.g. cans, juice packs, plastic cups)	0
Nursery uses polybags	1
Nursery uses hyko trays and equivalent containers with root trainers	1

1.5 shoot – root ratio - the ratio of shoot dry weighs to root dry weight



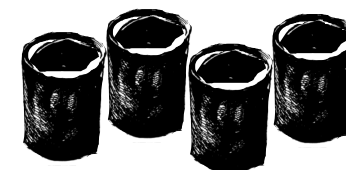
Makeshift materials

Maximum Points for Shoot-root ratio – 15 Points

$$\text{Shoot-root ratio (S:R)} = \frac{\text{dry weight of shoot}}{\text{dry weight of roots}}$$

Right value is 1

- 0 – Poor (More than 15 samples have shoot: root value of 2 and above)
- 5 – Moderate (10 – 15 samples have shoot: root value of 2 and above)
- 10 – Good (5 - 9 samples have shoot: root value of 2 and above)
- 15 – Excellent (Less than 5 samples have shoot: root value of 2 and above)



Polybags

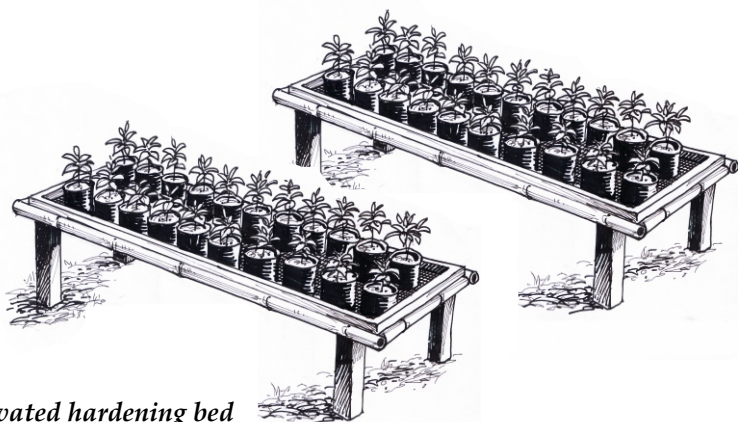
3 Nursery Set-up and its facilities

a. **Facilities** — presence of necessary nursery facilities for quality seedling production.

DESCRIPTION	POINTS
Has a hardening bed but not elevated	0
Has elevated hardening bed	5
Has a soil sterilization facility	1
Has a soil seiving facility	1



✗ *Not elevated hardening bed*



✓ *Elevated hardening bed*

2 Skills of the Nurset Operator to produce high quality seedlings

a. **Training**— nursery operator's participation in training on nursery development and management conducted by _____ or any reputable agency.

DESCRIPTION	POINTS
Attended one (1) training event	1
Attended two (2) or three (3) training event	2
Attended more than three training event	3

b. **Experience** — length of time of actual practice in nursery seedling production of the nursery operator

DESCRIPTION	POINT
Have operated a nursery for at least one year but less than two years	1
Have operated a nursey for two to five years	2
Have operated a nursery for more than five years	3