

**Natural Resources Conservation  
and Development  
Level-II**

**Learning Guide-11**

**Unit of Competence: Assist in Planting Material  
Collection and Processing**

**Module Title: Assisting in Planting Material  
Collection and Processing**

**LG Code: AGR NRC2 M04 LO-2 LG-11**

**TTLM Code: AGR NRC2 M04 TTLM 0919v1**

**LO2: Plan seed collection**

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Identifying and analyzing seeding and/or planting program, required seed characteristics and implementation issues
- Identifying and determining seed collection opportunities and a suitable area for seed collection
- Selecting and determining method of seed collection, quantity, cost and impacts on provenances and species to be collected
- Identifying, sourcing and obtaining required approvals from relevant authorities
- Determining and documenting measurable performance indicators, specifications and targets
- Documenting Seed collection plan and its performance indicators and communicating clearly to appropriate personnel

This guide will also assist you to attain the learning outcome stated in the cover page.

Specifically, upon completion of this Learning Guide, you will be able to:

- Identify and analyze seeding and/or planting program, required seed characteristics and implementation issues
- Identify and determine seed collection opportunities and a suitable area for seed collection
- Select and determine method of seed collection, quantity, cost and impacts on provenances and species to be collected
- Identify, source and obtain required approvals from relevant authorities
- Determine and document measurable performance indicators, specifications and targets
- Document Seed collection plan and its performance indicators and communicate clearly to appropriate personnel

### **Learning Instructions:**

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below 3 to 6.
3. Read the information written in the information “Sheet 1, Sheet 2, Sheet 3, Sheet 4 and Sheet 5”.
4. Accomplish the “Self-check 1, Self-check t 2, Self-check 3, Self-check t 4, Self-check 5, Self-check 6 and Self-check 7” **in page -7, 9,12, 21, 24,26 and 28** respectively.
5. If you earned a satisfactory evaluation from the “Self-check” proceed to “Operation Sheet 1,” **in page -29.**
6. Do the “LAP test” **in page – 30** (if you are ready).

### 1.1 Analyzing Seeding and/or planting program

*Plantation is a forest community or stand that is established artificially by sowing or planting. Sometimes it is referred as manmade forest.* Biologically, plantations are favored when it is known that natural means would likely fail. Since the time of germination and early growth of the plant is the most critical period in the life of a tree, planting will give better survival. Seedlings are raised in nursery and spend their first weeks in sheltered, favorable conditions and hence are fitter to start in the planting site than seedlings originating from direct seeding. A plantation with one species is called **monoculture**. **Mixed plantations** consist of two or more species.

Depending on their origin, five types of plantation can be identified:

1. Forest created by **afforestation** of bare land where there has not been forests for at least 50 years. E.g. afforestation of grass lands.
2. **Reforestation** of land, which has carried forest with in the last 50 years but the previous vegetation, is replaced by an essentially different one. E.g. the replacement of natural forest by plantations.
3. Reforestation of land which has carried forest with in the last 50 years by renewal of the same vegetation as before.
4. Forests established by natural regeneration with deliberate silvicultural intervention and manipulation i.e. by employing different silvicultural cuttings e.g. shelter wood system and seed tree method.
5. Forests, which have been regenerated naturally with out human assistance. E.g. all natural forests.

During plan for plantation, the point that we should consider:-

- ✓ Species /provenance choice
- ✓ Seed procurement
- ✓ Seedling production
- ✓ Site preparation
- ✓ Planting

- ✓ Tending (weeding & fertilizing)
- ✓ Pruning and thinning
- ✓ Harvesting

### **Objectives of ground preparation**

In plantation establishment the aim is to achieve adequate cultivation of the soil at least cost to ensure good survival and rapid establishment of the newly tree by breaking barriers to root growth and optimizing soil aeration and drainage. The minimum 'cultivation' needed to plant a tree is simply to make single opening in the soil and to insert the roots.

There are three main kinds of cultivation. Opening of narrow channels in to the subsoil, to depth of up to a meter, to improve downward rooting by breaking impermeable barriers and aiding drainage- ripping, sub soiling tinning etc; Cultivation of the topsoil to 20-30 cm depth either completely over the site or in strips to form ridges or mounds – ploughing; and complete surface cultivation of the top 10cm to keep the soil surface friable and to discourage weeds – discing, harrowing, rotivating.

### **Methods of cultivation**

i. Spot hoeing: In areas where short grasses are predominant, mere hoeing of large circular spots for each plant is sufficient for *Pinus patula*. A recommended spot size is 60cm from the planting spot (120cm in diameter), But as small as 30 cm radiuses have been used successful in some areas. Preferably, the hoeing should be done as deeply as possible. More intensive ground preparation (cultivation) is recommended for cypress and Eucalypts. If spot hoeing is, used with this species, the spots should be large and deeply hoed to give the plants possible start.

ii. Strip cultivation: is practiced on sites with dense, tall grass growth. Up to 1.5m wide strips are held along planting lines. The strips provide an easier access to the planting line, and they are kind of compromise between total cultivation and spot holing. Strip cultivation reduces competition from vegetation much more efficiently than spot holing and at the same time prevents soil erosion as strips of natural grass are left intact between the cultivated strips. Strip cultivation is recommended for eucalypts and

cypress, particularly in cases when total cultivation is out of question because of the risk of erosion.

iii. Complete cultivation: The whole planting site is cultivated either by hoeing or by ploughing. Total cultivation opens the ground very well and reduces weed competition to nil and so gives the plants the best possible start. For this reasons it is particularly recommended for planting eucalypts in dry areas. In addition, other species would benefit from clean cultivation. Total cultivation must not be practiced on slopes and other sites prone to soil erosion.

<b>Self-Check -1</b>	<b>Written Test</b>
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**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the

1. Write the methods of cultivation (5pts.)

**Note: Satisfactory rating - 3 and 5 points**                      **Unsatisfactory - below 3 and 5 points**

You can ask you teacher for the copy of the correct answers.

**Answer Sheet**

Score = _____
Rating: _____

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Short Answer Questions**

## 2.1 Seed collection opportunities

There are a great variety of opportunities available for collection of fruits and the choice depends on a number of factors. These are:

- **Characteristics of the fruit:** size, number, position and distribution of fruits; resistance of peduncles to shaking, pulling, breaking or cutting; interval between ripening and opening.
- **Characteristics of the tree:** diameter, shape and length of bole, bark thickness; shape of crown; size, angle, density and resistance to breakage of branches; density of foliage and depth of crown.
- **Characteristics of the stand:** distribution and stocking of trees (e.g. isolated trees, open or dense stand); density of understory and ground vegetation).
- **Characteristics of the site:** slope, accessibility.
- **Availability and transport of equipment**

Seeds on lower branches are easy to harvest but they are not good quality. Seeds from the upper branches are good but they are difficult to harvest. Therefore, we should collect seeds from both the lower, middle or upper branches.



<b>Self-Check -2</b>	<b>Written Test</b>
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**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What are seed collection opportunities? (3points)

**Note: Satisfactory rating - 3 points**                      **Unsatisfactory - below 3 points**

You can ask you teacher for the copy of the correct answers.

**Answer Sheet**

Score = _____
Rating: _____

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Short Answer Questions**

<b>Information Sheet- 3</b>	<b>Determining and documenting suitable area for seed collection</b>
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### 3.1. Concepts of gathering information

Gathering information is the process collection of data for dealing with the individual's or the organization's/communities', etc. current situation. More data means more and better ways of dealing with the current situation. More data broadens the minds of those who will use the data to solve current organizational problems. New and additional ideas come more easily if there are lots of facts to be used as bases.

Gathering additional information means an event and activities that collects different data, facts, figures, and information through employing different methods which intended to the organization's/communities' intended objectives.

### 3.2. Methods of gathering additional information

It's difficult to build a solution if someone doesn't know the requirements (in spite of the fact that many teams still try to do it today). The "elicitation" step is where the requirements are first gathered from the client. Many techniques are available for gathering requirements. Each has value in certain circumstances, and in many cases, it needs multiple techniques to gain a complete picture from a diverse set of clients and stakeholders. Here are below the types of method that used during gathering information;

- ✓ **Interviews** – collecting information verbally from informants, using a question and answer format. Interviews can be conducted in different ways, such as in person or over the phone. Interviews can be fairly unstructured, allowing you to be flexible in deciding what questions to ask or how to best ask the question, or can be tightly scripted, requiring you to ask questions the same way across respondents.
- ✓ **Surveys or questionnaires** – collecting information from respondents without direct contact. Paper versions of a survey may be handed out or mailed. You might also ask people to complete surveys electronically via email or internet.
- ✓ **Focus groups** – conducting group interviews with a small group of participants or other informants at the same time.
- ✓ **Observation** – recording what actually happens during a situation or event.

### 3.3. Sources of additional data/information gathering

There are two main types of sources in the field of information gathering, namely:

- I. **Existing sources:** existing sources are those sources of information that can be found in the printed, in video, in audio and other materials that are available to the public or upon request to proper bureaucracy.
- II. **Natural sources:** natural sources are first hand sources such as those who have tried products, services and methods, and expressing their experience and opinions to the information collector.

### 3.4. Purpose of gathering additional information

Researchers undertake information gathering in order to:

- ✓ Know the extent of resources that vested from inside and outside of the given community
- ✓ Create awareness on how to mobilize such resources timely
- ✓ Use resources to identify community connections, meet community needs, & other activities
- ✓ Recognize and value the resources within communities

<b>Self-Check -3</b>	<b>Written Test</b>
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**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What are methods of information gathering(3 points)
2. List out the sources of additional information gathering.(4 points)

**Note: Satisfactory rating – 7points**

**Unsatisfactory - below 7 points**

You can ask you teacher for the copy of the correct answers.

**Answer Sheet**

Score = \_\_\_\_\_

Rating: \_\_\_\_\_

Name: \_\_\_\_\_

Date: \_\_\_\_\_

#### 4.1. Concept of seed collection

By now, we have identified our parent trees (right species/ provenance, with the desired quality), have trained crew (if necessary reference collection), determined the optimum age, the next step is flower and seed survey. This is necessary at least 1-2 months prior to actual collection.

**a) Flower Survey:** It provides information on:

- Whether flowering is distributed regularly throughout the area,
- If flowering plus trees are distributed throughout the area,
- How many male trees are contributing to pollination,
- Whether male trees are distributed uniformly.

It is prudent to monitor flowering over a certain period on a number of sample seed trees, and develop a rating system, index or conversion factor.

#### **b) Seed Survey**

Flower survey is not enough, as many of the flowers might not develop in to seeds because of abortion, failure of fertilization or other factors. Then, seed survey is a reliable tool towards crop estimation. The information gathered includes:

1. Checking existing stock
2. Whether the crop is sound ( not attacked by insects, disease etc.)
3. Whether seeds are mature: Seeds should be harvested when or just before they are matured. It is also important to make sure that a high proportion of it is viable when harvested.

#### 4.2. Seed maturity

**Seed maturity is judged by different means:**

**i) Field Methods:**

**Color:** Seeds/ fruits turn from green to grey, shades of yellow, brown or reddish when matured. Fleshy and pulpy fruits commonly lose their hardness and become soft when matured.

**Cutting test:** One of the best ways to see if a fruit/ seed is ripe; simple and practical. It also helps to see the soundness (viability and insect attack).

The cutting test gives more information than simply the colour. It enables us to discern the stage of maturity of the **embryo** and **endosperm**. Most embryo and endosperm have 'milky' appearance when immature followed by a 'dough' stage. Mature seeds have a fully developed and firm embryo and endosperm.

#### ii) Laboratory Methods:

- determining the **maximum dry weight** of seeds when they reach maturity (i.e., physiological maturity)
- **Chemical analysis** ( based on the contents of fat, protein, carbohydrate; increase during maturity)
- **Seed radiography:** shows different shades of colours showing the degree of maturity; quick but needs skilled personnel and resources)
- **Specific gravity:** lower when seeds mature

#### 4.3 Seed collection techniques

Two major techniques:

- Collection of fallen seeds/ fruits
- Collection from the crown

##### ❖ Collection of Fallen Seeds

**a) After natural dispersal:** for species with big seeds or fruits that drop when matured.

The method involves large plastic sheets or canvas, nets under the tree or clearing the site under.

**Advantage:** Easy, cheap, requiring less skill

**Disadvantage:**

- loss of viability of many tropical species' seeds after dispersal; attack by insects and fungi, competitors
- inefficient for tiny seeds

**b) After manual or mechanical shaking**

For seeds/ fruits which detach easily after shaking; manually it is limited to small trees, mechanical shakers (high cost/hr, skill)

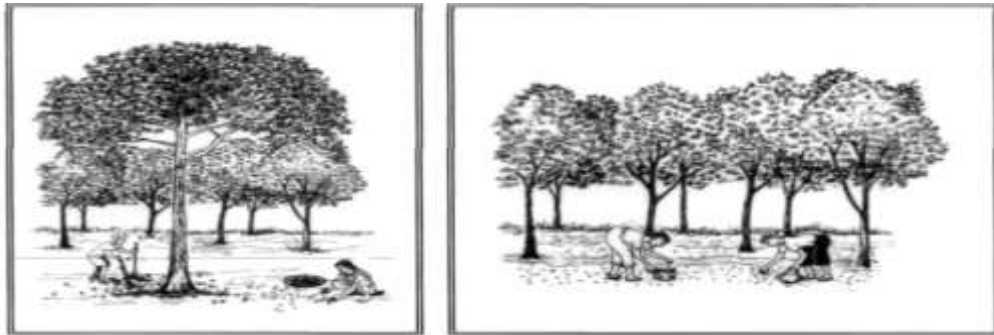


Figure1. Seed collection from the forest floor

❖ **Collection from the Crown**

This technique is advantageous when:

- fruits release too tiny seeds ( and it is difficult to pick from the ground)
- it is necessary to ascertain identity of mother trees
- it is needed to avoid competitors
- when seeds germinate soon after dropping
- when seeds rot easily once they have fallen

**A) Access from the ground:**

In the case of shrubs or tree with low branches, the collector would stand on the ground and pick seeds, branches are bent over and seeds released to bags or canvas.

- **Advantage:** Easy and cheap
- **Disadvantage:** fruits of lower branches of some species contain few seeds, possibly of insufficient pollination. Moreover, lower branches often bear less viable seeds due to old age and low photosynthesis.



**Figure 2. Seed collection from the crown**

**B) Collection in the crown (climbing)**

There is a limit of the height to which long handled tools can be used for collecting seeds and then the climbing in to the crown of the mother tree is only the practical method. This is necessary in the following cases:

**Equipment:** Ladder, climbing spurs, safety belts, safety ropes, glove, helmet, boots with non-slipping sole, cotton underwear.

**Disadvantages:** dangerous, exhausting, time consuming, expensive, requires experience





### **Figure 3: seed collection in the crown (climbing)**

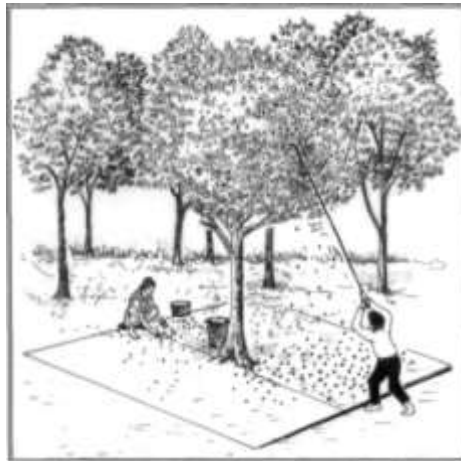
#### **C) Using pole implements**

Collection from the ground but using pruning shears, hooked poles (sometimes used to bend and shake). Poles should be made of light but rigid material; bamboo, aluminium)

#### **D) Using ropes**

With a weight on one end and throwing it over a chosen brunch; twisting and pulling the brunch. However, skill is required in throwing rope over the aimed brunch.

Skill required in throwing rope over the aimed brunch, but once the collector is experienced... ropes are cheaper!



**Figure 4: Seed collection using pole implements**

#### **E) Collection from felled trees**

Easy and cheap, but never fell a tree for collecting seeds, use a tree felled for another purpose. Also take care of the quality of the seed.

## **F) Hydraulic platforms**

## **G) Rifle**

### **4.4 Determining seed quantity**

For some seed sources, collection may be subject to special restrictions in relation to ownership, administration or conservational aspects. This may put limitations on both amount of seed to be collected and collection methods.

Prediction of quantity and quality of an expected seed crop and prediction of the correct harvest time is especially essential for species with variable seed crops from year to year, and with a short harvest season. Some years, fruit production may be so low that collection does not pay at all; other years a sudden mast production may justify a very large collection, where stores are filled up to serve as seed supply during interim low production years. In some cases an exceptionally large seed production may even influence the current nursery program.

The best seeds are produced in mast years, or in stands with prolific flowering, efficient pollination and few predators. The best time to collect seeds is when they are mature but before they are lost to predators or dispersal. Forecasting quantity, quality and timing of a seed crop is subject to the following inevitable problem: the earlier the assessment, the better it can be incorporated into the work plan, but the more unreliable the prediction. In some cases where the potential seed sources are located far away, it may be impossible to make preliminary assessments on the actual stand, and one must rely on geographic correlations or other measures.

#### **Calculation of quantity of seeds required**

From:

- Size of area to be planted for each species (in hectares)
- intended number of seedlings for planting depending on spacing (N)
- Estimate of survival after planting & the need to fill gaps(S)
- Estimated number of palatable seedlings per kg (Ps)

$$\text{Quantity (kg)} = \underline{N} \quad \underline{G\% \times P\%} = \text{U.V. (Utilization value)}$$

Number of seeds/kg x U.V. = Effective germination per Kg.

$$Ps = n/kg \times \frac{G\% \times P\%}{100} \times (1-C.F)$$

**100**

Where C.F. = Casualty factor

There is always a loss in the nursery between time of germination & the harvesting of seedlings for dispatch to the planting site. The annual losses due to disease and the proportion culled should be recorded in the nursery records so that over a period of time the nursery manager knows the average proportion of seedlings he expects to lose each year.

❖ If records for C.F are unavailable, factors of **0.5 - 0.6** can be assumed.

An additional **5-10 %** should also be dispatched to compensate for losses from packing or unpacking during handling.

#### **4.5 Cost estimation and analysis**

Larger seed collecting expeditions, taking several days and going to remote areas, should be budgeted and later accounted for individually. This assists the economic planning of collection i.e. determining appropriate amount of seed to be harvested and duration of collection tours. The procurement costs ultimately influence pricing of the seeds.

A seed-collection tour has typically certain basic expenditures which are independent of the duration of the trip and the amount of seeds collected (e.g. transport to collection site and equipment), and some variable expenditures according to duration and amount of seed collected (e.g. local transport, salary and daily subsistence allowance (DSA)). Collection in remote areas typically has large basic costs both because of the direct transport cost and because people must be paid while unproductively sitting in the vehicle to and from the collection site. In some cases hiring of local casual labourers near the seed source may be an economical alternative to bringing many people from the central seed unit. Hiring local staff may also have other positive effects, e.g. facilitating access to seed sources. On the other hand, much time may be used looking

for labourers, and operations that require technical skills, such as climbing, can only be done by trained personnel.

<b>Self-Check -4</b>	<b>Written Test</b>
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**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Explain the needs of flower and seed survey? (2 pts)
2. Seed maturity is judged by different means explain some of them? (3pts)
3. What are the main points you focus on in planning the seed collection? (2pts)
4. Briefly specify seed collection techniques with the appropriate materials needed? (3pts)

**Note: Satisfactory rating – 10 points**

**Unsatisfactory - below 10 points**

You can ask you teacher for the copy of the correct answers.

**Answer Sheet**

Score = _____
Rating: _____

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Short Answer Questions**

### **5.1 Required approvals**

If the seed collection unit and the owner or administrator of the seed source are under the same administration, e.g. forestry department, permission for seed collection may be irrelevant or a minor formality. This is often the case in collections from seed orchards, seed-production areas or plantations. In the cases where several governmental offices are involved, or the responsibilities and authorities is not clearly defined, seed collection can be seriously delayed due to bureaucratic procedures. On private land, permits and restrictions are often up to the individual owner and often more easily negotiated. In either case payment for the collection may be involved, either as a fixed fee or dependent on quantity collected. Collection in natural stands may imply specific problems since they may be conservation areas and subject to various restrictions. Seed collection in national parks, game parks, sanctuaries or forest reserves is normally limited by protective legislation, which differs from one country to another. Special restrictions on seed collections are often put on the following activities:

Permits including specification of limitations or restrictions plus possible fee should generally be negotiated well in advance of the actual collections. On public or governmental administrated land (parks or reserves) the permit is often obtained from the head office of the administrative department, and confirmation obtained from the local administrative unit (forest office, park office etc.) just before the collection takes place. In most cases the particular permit is based on a general agreement between the unit in charge of seed collecting and the administration of the seed sources. In some countries there are restrictions on the transfer of plant material between regions; local legislation should be consulted.

### **5.2 Legislative requirements**

Appropriate legislation and regulation, together with adequate means of enforcement, are essential for the protection of workers' health and safety.

**Legislation:** - is the very foundation of social order and justice; without it, or where it is not enforced the door is wide open to all forms of abuse.

- Each country should therefore take such measures as may be necessary to protect workers' health and safety.
- This could be enacting laws or regulations or any other method consistent with national conditions and practice.
- The law directly regulates certain components of working conditions and the work environment, including hours of work and occupational health and safety.

**Legislative includes:**

- Complying with, regulations, standards, codes of practice and established safe practices and procedures for collecting seed.
- Award and enterprise agreements
- Industrial relations
- Confidentiality and privacy
- The environment
- Equal opportunity
- Anti-discrimination
- Relevant industry codes of practice
- Duty of care heritage and traditional land owner issues

### **1.3 Occupational requirements**

- may include legal, organizational and site guidelines, policies and procedures relating to own role and responsibility, quality assurance, procedural manuals,
- quality and continuous improvement processes and standards, emergency and evacuation, ethical standards, recording and reporting, access and equity
- principles and practices, equipment use, maintenance and storage, environmental management (waste disposal, recycling and re-use guidelines)

**Refer:** (Extract from 'Guide to Handling of Tropical and Subtropical Forest Seed' by Lars Schmidt, Danida Forest Seed Centre. 2000).

<b>Self-Check -5</b>	<b>Written Test</b>
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**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Explain the needs of flower and seed survey? (2 pts)
2. Seed maturity is judged by different means explain some of them? (3pts)
3. What are the main points you focus on in planning the seed collection? (2pts)
4. Briefly specify seed collection techniques with the appropriate materials needed? (3pts)

**Note: Satisfactory rating – 10 points**

**Unsatisfactory - below 10 points**

You can ask you teacher for the copy of the correct answers.

**Answer Sheet**

Score = _____
Rating: _____

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Short Answer Questions**



### **6.1 Determining measurable performance indicators, specifications and targets**

The determinants measurable performance indicators, specifications and targets of seeds are:-

- ✓ Seed Lot
- ✓ Purity Test
- ✓ Seed Weight
- ✓ Seed Moisture Content
- ✓ Germination Test
- ✓ Laboratory germination counts (LGC)
- ✓ Germination energy
- ✓ TTZ Test

<b>Self-Check -6</b>	<b>Written Test</b>
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Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What are the Determinants measurable performance indicators? (5pts.)

Note: Satisfactory rating – 5 points

Unsatisfactory - below 5 points

You can ask you teacher for the copy of the correct answers.

### Answer Sheet

Score = \_\_\_\_\_

Rating: \_\_\_\_\_

Name: \_\_\_\_\_

Date: \_\_\_\_\_

### Short Answer Questions

### 7.1 Planning of seed collection

It is important that careful planning precedes seed collection and all the processes that follow. Since planning relates to future activities, it not only requires knowledge of the biological basis, but also of succeeding activities like collection, processing, storage and germination.

Planning of seed collection relates directly to the following questions:

- Which species to collect (species selection)
- How much seed to collect (quantity)
- Where to collect (seed sources, seed trees)
- When to collect (harvest time)
- How to collect (collection method)

#### ❑ Calculation of quantity of seeds required

From:

- Size of area to be planted for each species (in hectares)
- intended number of seedlings for planting depending on spacing (N)
- Estimate of survival after planting & the need to fill gaps(S)
- Estimated number of palatable seedlings per kg (Ps)

|

$$\text{Quantity(kg)} = \frac{N}{S \times Ps} \times \frac{G\% \times P\%}{100} = U.V. \text{ (Utilization value)}$$

Number of seeds/kg  $\times$  U.V. = Effective germination per Kg.

$$Ps = \frac{n/\text{kg} \times G\% \times P\% \times (1-C.F)}{100}$$

Where C.F. = Casualty factor

There is always a loss in the nursery between time of germination & the harvesting of seedlings for dispatch to the planting site. The annual losses due to disease and the proportion culled should be recorded in the nursery records so that over a period of time the nursery manager knows the average proportion of seedlings he expects to lose each year.

❖ If records for C.F are unavailable, factors of **0.5 - 0.6** can be assumed.

An additional 5-10 % should also be dispatched to compensate for losses from packing or unpacking during handling.

<b>Self-Check -7</b>	<b>Written Test</b>
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Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What causality factor for palatable seed? (5pts.)

Note: Satisfactory rating – 5 points                      Unsatisfactory - below 5 points

You can ask you teacher for the copy of the correct answers.

**Answer Sheet**

Score = _____
Rating: _____

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Short Answer Questions**

**Objective:** To perform seed collection operation.

**Procedures:**

**Step1:** identify materials and equipments

**Step2:** Organize collecting team

**Step3:** Assess seed and fruit

**Step4:** Select collection method (climbing, rope, shaking, or other method)

**Step5:** Collect the required seed

**Step6:** Place it in clean container at shade and cool place

**Step7:** Label it with appropriate information

LAP Test	Practical Demonstration
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Name: \_\_\_\_\_ Date: \_\_\_\_\_

Time started: \_\_\_\_\_ Time finished: \_\_\_\_\_

**Instructions:** Given necessary templates, tools and materials you are required to perform the following tasks within 8-12 hours.

**Task 1:** Identify a range of stands and undertake fruit and seed assessment. Then select any method of seed collection and collect seeds from a range of species and label it with appropriate container.