

**Natural Resources Conservation
and Development
Level II**

Learning Guide-15

**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-6 LG-15

TTLM Code: AGR NRC2 M04 TTLM 0919v1

LO6: Dispatch seed & record data

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

- Interpreting and checking seed request specifications with appropriate personnel
- Retrieving seed from storage and; calculating quantity and species of seed to meet request specifications
- Weighing each seed species, documenting and placing in an appropriate container in accordance with request requirements and site procedures
- Mixing multiple seed lots thoroughly as required in accordance with request specifications
- Labeling accurately and clearly Seed and seed mixtures in accordance with industry requirements and site procedures
- Organizing and undertaking dispatch of seed in accordance with request specifications and site procedures

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:

- Interpret and check seed request specifications with appropriate personnel
- Retrieve seed from storage and; calculate quantity and species of seed to meet request specifications
- Weigh each seed species, document and placing in an appropriate container in accordance with request requirements and site procedures
- Mix multiple seed lots thoroughly as required in accordance with request specifications
- Label accurately and clearly Seed and seed mixtures in accordance with industry requirements and site procedures
- Organize and undertake dispatch of seed in accordance with request specifications and site procedures

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, Sheet 5 and Sheet 6”.
4. Accomplish the “Self-check 1, Self-check t 2, Self-check 3 Self-check 4, Self-check 5 and Self-check 6” **in page -5, 8, 10, 12,14 and 17**respectively.
5. If you earned a satisfactory evaluation from the “Self-check” proceed to “Operation Sheet 1” **in page - 18.**
6. Do the “LAP test” **in page – 19** if you are ready).

1.1 Interpreting and checking seed request specifications

Dispatching refers to movement of seed lots from the supplier, seed centre to users (nurseries in the same country/ nurseries or other users) in another country. Seeds are packed to protect them from changing temperature and moisture content.

Specification of the requested seed is necessary for dispatching. It indicates that specification of seed; origin, (stand, locality), certificate of quality like; date of test, result of quality parameters, moisture content, treatment applied, certificate of health (phytosanitary certificate), consignment notes (designates the sender and the consignees, net weight of the seed lot. It is used by carriers, and needed in the customs, quarantine.

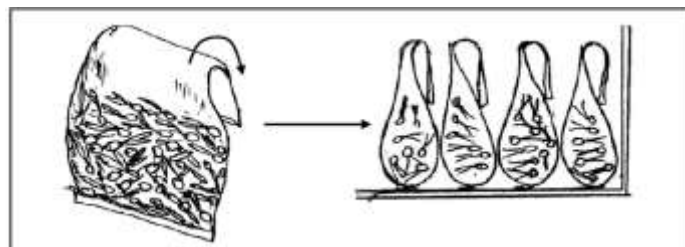
This information must be checked and interpreted by appropriate personnel.

Orthodox seeds are sealed in containers (e.g polythene restricts moisture passage but allows gas exchange). When distance is too long addition of a desiccant (silica gel) is recommended to absorb moisture.

Recalcitrant seeds are dispatched together with their storage media (peat, saw dust, vermiculite; moistened during long transport at high temperature).

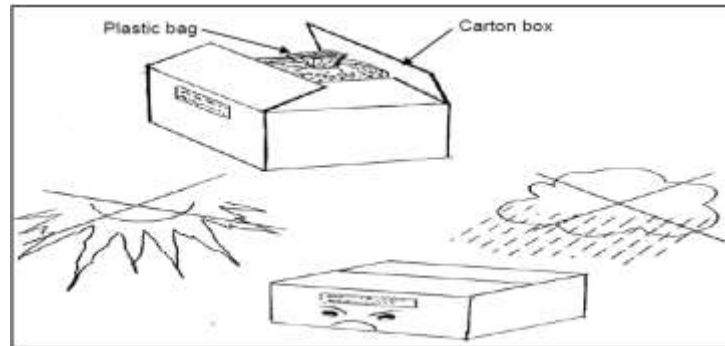
A. Pack in a bag

- Store 3-5 kilograms of seeds in a plastic or cloth bag, close the bag but make sure that air has access;
- Place the bags in a vertical position in the store room;
- Cover with a plastic sheet when transporting.

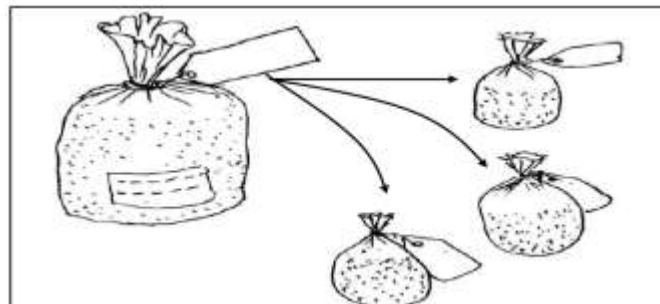


B. Transport of Long Lasting Seeds

- Take good care of the seeds during transport to the nursery bed, and during storage before sowing;
- When transporting, we shall double pack; the first layer should be plastic to keep out rain and the outer layer should be board or cloth sacking to avoid damage from hard objects and as protection from sun light.



- ❖ Some advice for people responsible for transporting seeds:
 - ✓ Keep the seed bag away from water and do not expose to the sunlight. When transporting, we shall use a thermometer to check the temperature and moisture in the storeroom. We shall not allow the temperature of the seed bag to exceed the setting, otherwise, the seeds will be ineffective or dead; and
 - ✓ Take care with sticking the label onto the seed bag;
- ❖ Advice for people responsible for the nursery bed:
 - ✓ Store the seeds properly upon delivery;
 - ✓ Take care with the remaining seeds, do not leave seeds on the nursery bed or in the sun, as this can reduce the quality of the seeds or spoil them; and
 - ✓ Use small bags to separate the seeds in the larger bag to avoid opening the bag many times, which can increase the seed moisture.



Self-Check -1	Written Test
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Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What do you mean by dispatching of forest seeds?(5pts)
2. Write the possible information that should be included during labeling of forest seeds. (5pts)
3. Write the steps of Packing of forest seeds in a bag during dispatching. (5pts)

Note: Satisfactory rating – 15 points

Unsatisfactory - below 15 points

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

Answer Sheet

Score = _____
Rating: _____

Name: _____

Date: _____

Short Answer Questions

Information Sheet- 2	Retrieving seed from storage and Calculating quantity and species of seed
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2.1 Calculating seed quantity

To determine quantity of seed /kg, it is important to know the purity of seed. Though seeds are said to be cleaned, samples may (unavoidable) contain impurities. Such impurities include undersized, shriveled, immature, diseased germinated/broken, inert matter, wings, twigs, stones, soil, leaves, and so on.

$$\text{So, purity\%} = \frac{\text{Wt.of pure seeds}}{\text{Total wt. of original sample}} * 100$$

Total wt. of original sample

Based on this purity analysis, the requested seed can distributed to meet the required specifications.

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

1. What are impurities? List them. (10 points)
2. What is the determining factor for quantifying seeds? (5 points)
3. What is the purity percentage of the seed if; the weight of pure seed is 3g and total weight of that sample is 4.5g? (10 points)

Note: Satisfactory rating – 25 points

Unsatisfactory - below 25 points

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

Answer Sheet

Score = _____
Rating: _____

Name: _____

Date: _____

Short Answer Questions

Information Sheet- 3	Weighing, documenting and placing each seed species
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3.1 Weighing and documenting species

Each seed species is weighed, documented and placed in appropriate container accordance with request requirements and site procedures to dispatch for the customer.

Seed should be stored at insect-proof containers at temperatures below 4°C. If possible, it should be dusted with an appropriate insecticide to minimize damage by brunched.

Store seed in airtight containers (jars, etc.) partially filled with a desiccant like calcium chloride, quicklime (burned lime, calcium oxide), or silica gel. Be sure to separate the seed (placed in envelopes) from the desiccant with a layer of cardboard or cotton, etc. Oven dry rice kernels are an excellent desiccant.

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

1. What is the appropriate temperature for seed storage? (8 points)
2. What is the importance of dusting seed with an appropriate insecticide? (7 points)
3. Why airtight containers are advisable for seed storage? (5 points)
4. How seeds are separated from desiccant when seed stores? (5 points)

Note: Satisfactory rating – 25 points

Unsatisfactory - below 25 points

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

Answer Sheet

Score = _____
Rating: _____

Name: _____

Date: _____

Short Answer Questions

1.1 Concept of seed lots

The quality of a seed lot determines how well seeds store or perform in the field. To assess the quality of a seed lot, draw a sample from a properly stirred or mixed seed lot

Multiple seed lots are thoroughly mixed as required in accordance with request specifications. The proportion of the seed lot is determined by the body that required the seed lot. To mix these seed lot, each seed lot quantify. The appropriate mixing technique is mixing by lying on the mat.

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

1. What is the importance of taking samples? (10 points)
2. Who determines the proportion of seed lot? (10 points)
3. What is the appropriate mixing technique for seed lot mixing? (5 points)

Note: Satisfactory rating – 12 points

Unsatisfactory - below 12 points

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

Answer Sheet

Score = _____
Rating: _____

Name: _____

Date: _____

Short Answer Questions

5.1 Labeling seed and seed mixtures

During storage, seed lots should be labeled with the species name, date of collection, collection site, number of mother trees from which the seed was collected and seed weigh. This information will maintain the identity of the seed source and make subsequent evaluation possible.

For this reason, Seed and seed mixtures are accurately and clearly labeled in accorded with industry requirements and site procedures. Label containers with the harvest and storage dates and place of harvest (or acquisition). If possible, also indicate the initial percentage viability or germination of seeds.

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

1. What is the importance of labeling seed lots? (5 points)
2. What information's should be included during seed lot labeling? (5points)
3. When seed containers must be labeled? (2 points)

Note: Satisfactory rating – 12 points

Unsatisfactory - below 12 points

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

Answer Sheet

Score = _____
Rating: _____

Name: _____

Date: _____

Short Answer Questions

6.1 Undertaking seed dispatching

Dispatching refers to movement of seed lots from the supplier, seed centre to users (nurseries in the same country/ nurseries or other users) in another country. Seeds are packed to protect them from changing temperature and moisture content.

Dispatch of seed is organized and undertaken in accordance with request specifications and site procedures. Seeds are organized and dispatched to who request and specify the site condition. When seeds are dispatched care should be taken about whether the transport distance is long or short. When distance is long addition of a desiccant is recommended for orthodox seeds to absorb moisture. Recalcitrant seeds are dispatched together with their storage media.

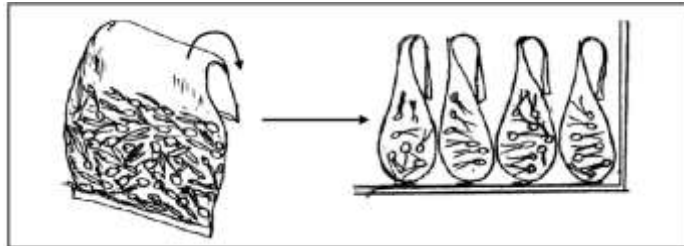
For slightly longer store abilities, keep these seeds well cleaned and moist (1 to 2 days of air-drying is generally sufficient to keep the seed coat slightly dry but still moist inside). Store them in small batches in a cool room in inflated plastic bags (half-filled with seeds and opened once a day to prevent fermentation) or in perforated plastic bags. Moist charcoal, peat moss, sawdust, sand or coir dust may also be placed inside the bags. Moist storage for more than a week requires that seeds be protected from molds and bacteria. This may mean soaking seeds in a sterilant like the commercial bleach, chlorox (1 part chemical to 5 parts water) or applying anti-mold substances like fungicides or some plant extracts (try extracts of garlic cloves, acapulco leaves, malunggay leaves or achuete seeds). A temperature of 15 C is often used to further prolong storabilities and, to some extent, reduce infection. Recalcitrant seeds also need special attention during transport. The life time of seeds can be extended if extraction is deferred until seeds arrive at the collection site at which time care must be taken to avoid heating and/or fermentation of fruits by aeration or cooling. Generally, minimum transport time is advisable, and synchronizes activities in the nursery to use seeds as soon as possible.

Orthodox seeds are sealed in containers (e.g polythene restricts moisture passage but allows gas exchange). When distance is too long addition of a desiccant (silica gel) is recommended to absorb moisture.

Recalcitrant seeds are dispatched together with their storage media (peat, saw dust, vermiculite; moistened during long transport at high temperature).

Pack in a bag

- Store 3-5 kilograms of seeds in a plastic or cloth bag, close the bag but make sure that air has access;
- Place the bags in a vertical position in the store room;



- Cover with a plastic sheet when transporting.

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

1. What is the basis for organizing and undertaking of dispatched seed? (10 points)
2. How recalcitrant seeds are dispatched? (10 points)
3. What is the importance of adding desiccant for orthodox seeds when it transports long distance? (5 point)

Note: Satisfactory rating – 12 points

Unsatisfactory - below 12 points

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

Answer Sheet

Score = _____
Rating: _____

Name: _____

Date: _____

Short Answer Questions

Objective: To acquire the trainee the skill of seed dispatching.

Conditions: All tools and personal protective equipments should be available on time.

Procedure:

Step1: Retrieve seed from storage

Step 2: Weigh, document and place in an appropriate container

Step3: Thoroughly mix Multiple seed lots

Step4: Labelle seed and seed mixtures accurately and clearly

Step5: Organize and undertake dispatch of seed

Step6: Record and report processed seed

Step7: Dispatch for the required body

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 5 hour.

Task 1- Interpret, check, retrieve from storage, weigh, document and place in an appropriate container, thoroughly mix multiple seed lot, label accurately, record the information, and show for your teacher how you dispatch your seed.