

4 Healthy seed

Background

Sweetpotato, like other root and tuber crops, can be multiplied vegetatively through stem cuttings or roots. Vegetative multiplication has several advantages and disadvantages, as follows:

Advantages	Disadvantages
<ul style="list-style-type: none"> • Seed is easy to obtain from the previous crops or other farmers. • Seed can be planted directly in the field; it does not need to be transplanted from a seedbed. • Desired varietal characteristics are easily maintained. • Planting material with desired characteristics can be easily multiplied. 	<ul style="list-style-type: none"> • Diseases are easily transferred through stem cuttings, and will spread from one field to another. Populations of certain diseases easily built up over several consecutive seasons. • Both stem cuttings and seed roots can contain insect pests. • Stem cuttings easily dry out and can not be stored for long.

Objectives

The objective of this activity is to:

- Enhance the participants' understanding about the important role of healthy seed on crop health and pest management.
- Strengthen their skills in seed selection and seedling preparation.

Materials

- Sweetpotato ICM technical manual (Part III) for pictures of disease symptoms.
- A nearby sweetpotato field ready for harvest where cuttings can be taken to plant in the ICM FFS field.
- Analysis board (see Part I, Section 3.2.3: Agroecosystem analysis).
- Felt-tip markers.

- Newsprint paper.
- Some seed roots for a seedbed of 1-2 m².

Activity steps

A Healthy and unhealthy seed samples

- A.1 The participants are divided into small groups.
- A.2 Each small group searches in neighboring fields for examples of healthy and unhealthy sweetpotato cuttings. Unhealthy cuttings should show symptoms of virus infection, scab and insect infestation.
- A.3 All sample cuttings are brought to the FFS meeting place. In the small groups, healthy cuttings are separated from unhealthy ones and placed under the analysis board under the column "healthy" and "unhealthy", respectively.



- A.4 The analysis boards of the different small groups are compared. Cuttings with resembling symptoms are put together and the cause

of the symptoms is determined by the whole group. If necessary, the samples can be compared with the pictures in Part II of this manual showing symptoms of viruses, scab and other diseases and pests.

A.5 The following questions can be used to lead a discussion:

- What are the characteristics of unhealthy cuttings?
- What are the characteristics of healthy cuttings?
- How can we obtain healthy seed?
- How should we handle seed (storage and planting) in order to maintain good health?
- How do seed health and method of handling the seed influence (storage) root formation?

B *Healthy seed selection and planting on the FFS field*

B.1 The participants are divided into small groups and asked to collect sweetpotato cuttings in neighboring fields to be planted in the FFS field*. Prior to seed collection, the participants should have agreed on the sweetpotato variety/ies to be planted and the planting density. The amount of seed needed is calculated together, then divided by total number of participants to determine the amount that each participant has to collect. A small excess amount of seed should be collected to replace discarded, unhealthy cuttings. The participants should look for healthy cuttings meeting the requirements as determined by the whole group during the previous activity.

* *In case there are no fields in the nearby area from where sweetpotato cuttings can be collected, or the owners of the fields would not allow it, the facilitator could ask the participants during the previous FFS session to bring cuttings from their own field, or buy cuttings on the market.*

B.2 The cuttings collected by all participants are evaluated and selected together using the previously determined criteria. Unhealthy cuttings with pest and disease symptoms are destroyed.

B.3 Reach a collective agreement about the way how to plant the FFS field (planting distance, direction of cutting in the soil, lay-out of plots for experiments, etc.), before going out together and doing it. The field should be divided into several plots corresponding with the

treatments of the experiments planned, including the FFS defoliation experiment (see Field Guide 10), and the seedbed trial (see below).

C *Seedbed trial*

- C.1 It is suggested to make a small seedbed with storage roots on the FFS field to provide a demonstration trial of the rapid seed multiplication method explained in Section 2.3 of Part III (Healthy seed). The seedbed trial requires an area of about 1-2 m² and several healthy storage roots of a desired variety.
- C.2 The facilitator explains the method of seed multiplication from storage roots. Compare this method with farmers' experiences on seed multiplication.
- C.3 Explain the objective of seedbed trial, which is to demonstrate and practice how to make clean seedlings from storage roots, and to implement the rapid single-node seedling multiplication method.
- C.4 Storage root to be planted in the seedbed are selected together, by choosing big, healthy roots of the same variety.
- C.5 The participants are asked to prepare the seedbed and plant the roots.
- C.6 The trial is continued during the FFS session about 2-3 weeks later, when the vines emerging from the seed roots have reached a length of 30 cm or more. The seedlings are multiplied by making single-node cuttings, as described in Section 2.3.3 of Part III. The cuttings are planted close together in a newly prepared seedbed which contains compost or ripened manure and ash. Two weeks later the seedlings that have formed roots are moved to the planting ridges prepared in the field, and planted at normal distance. The development of the young plants is observed during the rest of the season and compared with the growth of plants from normal cuttings. Preferably, a few participants are assigned the task of observing the growth development of these plants, and reporting the results to the group.

For more information see:

- Healthy seed (Part III, Section 2.3).

Notes



