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The International Exchange and Testing
of

CASSAVA GERM PLASM in AFRICA



Proceedings of an interdisciplinary workshop
held at IITA, Ibadan, Nigeria
17-21 November 1975

Editors: Eugene Terry and Reginald MacIntyre

Cosponsored by the
International Development Research Centre
and the
International Institute of Tropical Agriculture

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Part C

A Rapid Multiplication Technique

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This technique has been developed for use in rapid multiplication of desirable clones and for the production of planting material free from bacterial blight.

Basically the method involves planting mature stem cuttings, repeatedly cutting off the young green shoots, as they occur, and rooting these in a controlled environment of high humidity and shade. Thus from any one mature stem cutting it is possible to produce a number of green rooted cuttings.

In the mature stems cassava bacterial blight (CBB) is confined to the vascular system and it does not immediately translocate to the young new growth. Therefore if the young shoots are removed and rooted separately disease-free material should result.

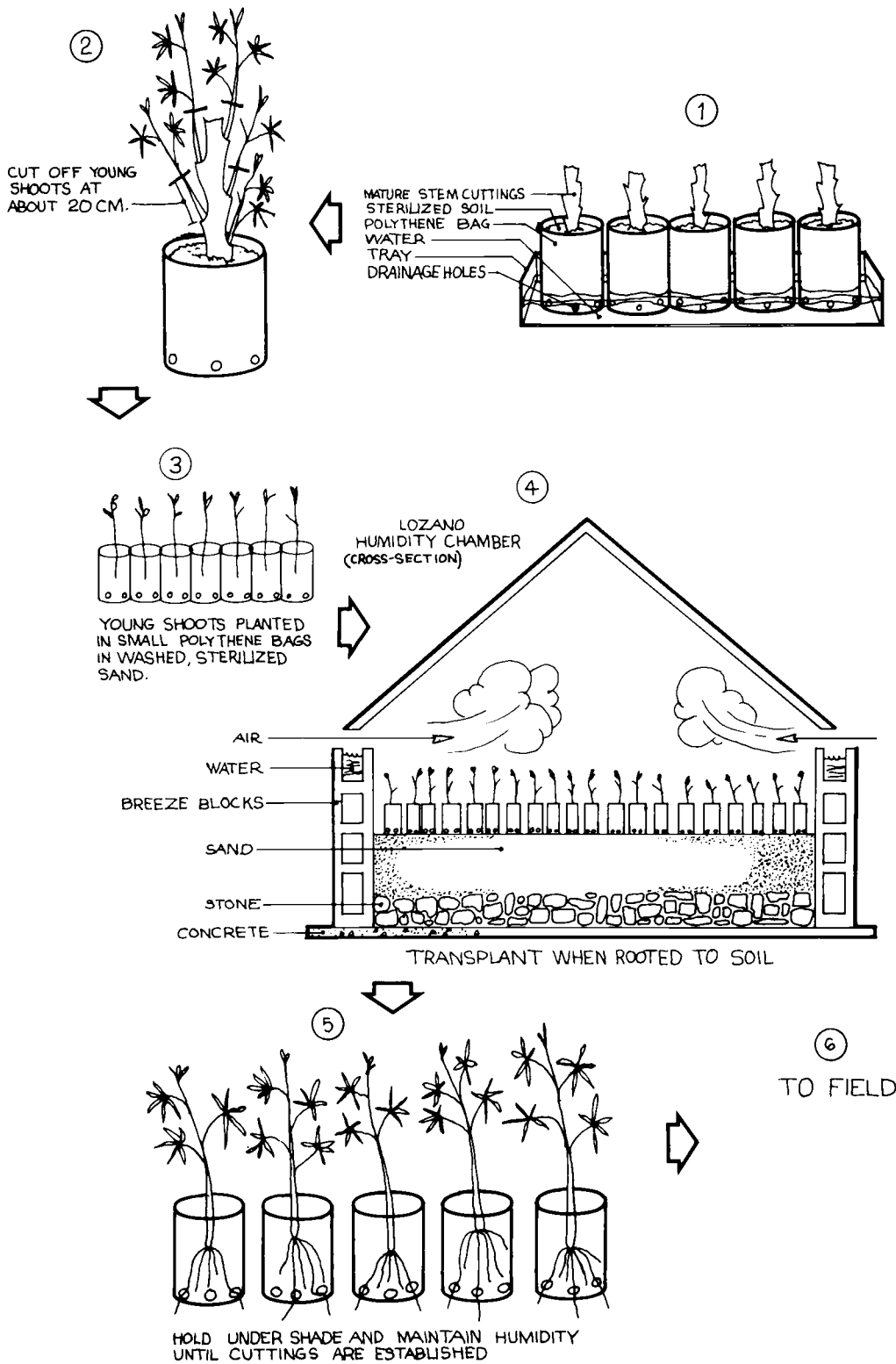
The success of this method depends upon good horticultural practices (clean equipment and controlled moisture, humidity, and shade).

Method

Mature stem cuttings about 25 cm long (i.e. the same type which would be used in field planting) are planted upright in polyethylene bags having drainage holes at the bottom. These are held in trays and sub-irrigated. No overhead watering is done to avoid the possibility of cross-infection if, by any chance, any of the young shoots are diseased. These mature stem cuttings will produce shoots 20 cm long in about 3 weeks. Shoots are cut at about 15 cm and all but the youngest leaves are removed. These green cuttings are planted in small polyethylene bags with drainage holes in washed, sterilized sand, watered, and then placed in a humidity chamber until rooting occurs and new growth is observed. Rooting takes 2–3 weeks. Alternatively the cuttings may be planted directly into the bed of the humidity chamber thereby accommodating a greater number of cuttings.

Humidity chambers

Lozano Chamber: A trough is constructed of breeze blocks on a concrete plinth. Two traces of blocks are sufficient. If the blocks are made of very coarse concrete the inside and outside walls of the trough will need plastering. The trough is filled with a layer of coarse stone and then a layer of washed, sterilized sand and then watered. The green cuttings are placed on the sand layer. An alternative composition of the humidity chamber bed is a base layer of sterilized soil and a top layer of sterilized sawdust which had previously been rotted for 3 weeks. Direct planting into such a sawdust layer induces more rapid rooting. The trough is covered with a hood which should reach to half way across the breeze block holes, which are kept filled with water. The hood has a triangular elevation and consists of a wooden frame,



covered with clear polyethylene sheeting. The frame is supported at each corner with a wood block about 2 cm thick to ensure air flow.

The hood should be shaded at first, but the shade can be reduced after a few days. Sacking, black polyethylene sheet, or palm leaf can be used for shade.

This humidity chamber design is useful in dry areas since the air takes up moisture as it passes over the water-filled breeze blocks.

Simple humidity hoods may be constructed using rectangular wooden frames covered with clear polyethylene with a 2 cm leg at each corner. This type of hood can stand on a bed of moist sand or soil.

Transplanting of rooted cuttings

The small polyethylene bags are slit open and the rooted cutting is carefully removed and planted in a larger container in soil. They should be held under shade and humidity should be maintained until the plants are strong enough to be transplanted to the field.