

3. In addition to the above general recommendations:
- a) material being exported from a country where superelongation is known to be present should receive a hot water dip (50°C for 30 min) before despatch
  - b) countries without cassava bacterial blight (CBB) importing material from countries where CBB is present should undertake shoot tip indexing within 20 days of germination
- C. *The Movement of True Seeds*
- a) *In the donor country:*
    - (i) Seed for export should be selected only from plants free from symptoms of:
      - all virus and virus-like diseases
      - superelongation
      - mycoplasma
      - cassava bacterial blight
    - (ii) the best quality seed should be selected visually
    - (iii) seed should be dusted with a fungicide (e.g. Thiram) and an insecticide (e.g. Malathion) powder at the manufacturers recommended level prior to shipment
    - (iv) seed should be handled carefully and all handling and packing materials should be disinfected and sterilized before use
  - b) *In the recipient country:*
    - (i) seed which is pest-infested or obviously diseased should be destroyed on arrival
    - (ii) imported seed should be planted in an isolation area and be subjected to regular and careful inspection for a period of one year
    - (iii) if at any time the plants originating from imported seed show evidence of pests or diseases hitherto unknown to the country they should be destroyed by burning.

CENTRO DE DOCUMENTACION

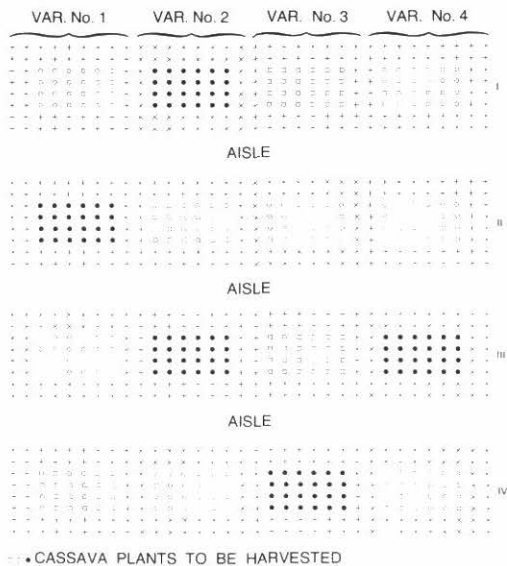
## ANNEX 2\*

### Suggested Guidelines for the Design of Agronomic Trials For Evaluating Promising Cassava Cultivars

These guidelines are intended for the field evaluation of promising material that has already undergone preliminary yield trials.

1. *Design*  
The trials should be planted in randomized blocks with a minimum of four replications.
2. *Size of the Plot*  
Plots located at the end of each block will have  $9 \times 8 = 72$  plants and those located in the middle will have  $8 \times 8 = 64$  plants. In other words, the plots at the corners will have one more row than those in the middle (see Fig. 1).  
In both cases, the area occupied by the middle 24 plants will be harvested from each plot. If plants are missing at harvest they should not be replaced by border plants. The number missing should be noted.
3. *Land Preparation*  
This should be done according to best practices available to farmers in the region.
4. *Cuttings Required*  
For those varieties planted at the ends of each block an additional eight cuttings will be required for each replication.

\*This Annex was drafted by Drs J.C. Toro and J. Cock of CIAT and subsequently modified by the Workshop.



An additional 10-15% of cuttings of each variety should be prepared so as to be able to replant each block to a full stand in those cases where germination is not complete.

Blocks with less than 80% germination should be discarded. Where replanting is carried out it should be performed within 5 weeks of the original planting date.

To take care of all unforeseen situations, a minimum of 320 cuttings of each variety should be available for each trial.

The stakes used for planting should be from plants 8-18 months old and should have been grown for this period in the region where the trial is being carried out.

#### 5. *Planting System*

Cuttings 25 cm long should be planted with a distance of 1 m between rows. Plant density will depend on soil type, etc., but should be between 10,000 and 20,000 plants/ha.

#### 6. *Weed Control*

Weed control should be according to local practice.

#### 7. *Insect Control*

a) *In the soil:* To control pests attacking the cuttings and hindering germination and good development of the seedlings during the initial stage of growth, from 3 to 5 litres/ha of "toxaphene" DDT 40-20 should be applied to the soil without incorporation.

b) *On the aerial parts:* To control the hornworm when very severe attacks are noticed, a contact insecticide should be used. Other insects should not be controlled as resistance to these is a varietal characteristic.

#### 8. *Disease Control*

In order to avoid decay of the cuttings and postemergence death of seedlings, the cuttings should be dipped in a 5% solution of *arasan* (Thiram) for 3 min before planting. Planting material infected with CBB or superelongation disease should not be used.

#### 9. *Fertilization*

Fertilization should be carried out according to the prevailing local practices with cassava. Since in many areas the crop is not fertilized it is also desirable, where resources permit, to use a fertilizer level based on agronomic recommendations in addition to the prevailing local practice.

#### 10. *Visits Required*

A minimum of eight visits to each trial will be required as follows:

1. To select the site
2. To plant
3. After 20-25 days to replant.
4. After 2 months to observe weeds and plan weeding, if necessary.
5. After 3 months to observe diseases.
6. After 4 months to observe diseases and weeds.
7. After 6 or 7 months to observe diseases and weeds.

8. To harvest the crop.
11. *Collection of Data*  
 The most important data to be collected from the trial are the same as those listed in Annex 3.  
 In addition, the trial should record the land preparation, weed control and fertilizer practices adopted, the planting density, the number of plants germinating, replanted, and harvested.  
 A standard soils analysis should be carried out and climatic data obtained from the nearest meteorological station.
12. *Analysis of Data*  
 Data should be analyzed using standard techniques for randomized block designs. An overall analysis of the results will be made by CIAT in collaborative trials.  
 Pending the establishment of an international check cultivar it is suggested that collaborative trials should use both a local and a CIAT cultivar as controls.

## ANNEX 3\*

### Suggested Criteria to Record for Evaluating Cassava Germ Plasm

#### A. *Indispensable*

- 1) Accession number
- 2) Accession origin
- 3) Root yield (for stated length of growth cycle)
- 4) Harvest Index (per unit time and planting density)
- 5) Whole root cyanide content
- 6) Whole root starch content
- 7) Ease of harvest
- 8) Cassava mosaic disease incidence/resistance\*\*
- 9) Cassava bacterial blight incidence/resistance\*\*

#### B. *Highly Valuable*

- 1) Germination
- 2) Vegetative vigour
- 3) Plant height
- 4) Branching habit
- 5) Leaf area retention
- 6) Percentage of roots that are commercial
- 7) Root perishability
- 8) Earliness
- 9) Consumer acceptability (food, feed, starch)
- 10) Incidence/resistance to superelongation
- 10) Incidence/resistance to thrips
- 12) Incidence/resistance to spidermites
- 13) Incidence/resistance to *Phoma*
- 14) Incidence/resistance to *Cercospora*
- 15) Incidence/resistance to stemborer
- 16) Incidence/resistance to shootfly

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\*This Annex is based on a survey conducted by Dr K. Kawano of CIAT.

\*\*When specific screening for diseases is carried out resistance levels can be recorded. In other cases observations showing presence or absence of the disease can be noted.