

## Planting sexual seed and transplant or rapid Multiplication

The handling of sexual seed is not difficult, but if carefully, especially in the early stages of development.

### 1. Planting time

The first consideration is the time to planting the seeds. Normally the planting should be 6-8 weeks before the normal time for planting cassava in the area, for to go out to transplant coincidentally with the normal raining season.

The literature speaks of 40 days dormancy of the seed from the time of harvest, for this when the seed is harvested and is intended to be planted immediately has been used to subject the seeds to a temperature of 60 °C for a period of 14 days. Although by own experience has been seeded recently harvested seed and the results have been very good. The researchers in IITA have used immersing the seed in water at 60 °C for a time of one minute to stimulate germination.

In general, well-selected seed germination at the time of harvest has no germination problems (visual selection of seed and water density test), obtaining a germination that is around 85-90%.

### 2. Planting form

Planting is generally done in trays, plastic bags or in a bed prepared in the field. The germination percentage of the sexual seed sown directly in the field is acceptable when there are good humidity and temperature conditions, but the initial competition with weeds is enough since the initial growth of the cassava plant is slow and should be avoided if it's possible. The preferred method is planting in trays with individual compartments for each seedling. Compartment size of about 3 x 3 cm by 10 cm deep is ideal. Also trays without gaps are acceptable, but be careful to keep the exact identification of each seed.





### **3. Medium preparation**

The seed medium may be soil or an artificial mix, At CIAT we are using a mixture of soil (3 parts) and sand (1 part). This mix must be well drained and free of insects, pathogens and weed seeds. For safety, we recommend sterilizing the soil with steam or spraying. The medium should have a good balance of nutrients and especially an adequate level of phosphorus. In recent years, peat is being used (Planting blend - Professional substrate) or a 1: 1 mixture of peat and sterilized soil. The use of peat allows greater drainage and a lower incidence of rot due to fungi or bacteria.

### **4. Sow seed**

After having prepared trays or the bags with the soil mix, seeds are planted systematically. It is recommended to order seed packets in ascending order of the code, and planting them in the same way. Each family is identified with a plastic straw or wood with code that is placed in the first row or at the beginning of each family. It is planted at a depth of about 1 - 1.5 cm.

### **5. Conditions for germination**

The cassava seed has very specific requirements for germination, and if you do not meet these requirements germination may become too low. The two most important requirements are an appropriate temperature and good soil moisture. The optimal temperature regime is alternating between 25 and 35 °C if you are working on a site where you can control the temperature, otherwise in a greenhouse or screen house where temperatures above 35 °C during the day are reached. The soil should be kept moist, but not saturated with water, and plants grow better with a normal intensity light and without shadow.



## 6. Transplant

Between 6 and 8 weeks after planting seed or when seedlings have on average about 20cm in height, they are transplanted to the field. The soil should be well prepared and preferably with ridges. The planting distance depends on the selection system. At each site to transplant a small hole is made for the seedling. It is taking the seedling tray to do the minimal damage to roots; transplantation is in the same order as the seeding, in ascending order of the number of crossing. The easiest way to do the transplant is in a zigzag pattern, spreading throughout the field, returning in the opposite direction. Among crosses a gap is left, where is placed a stake with the identification of the cross.







If the soil is not too wet at the time of transplanting, the watering is recommended individually for each seedling. During the first month, until established well, keep the soil with good moisture. Also during this period of seedling establishment are very susceptible to damage from insects cutworms, slugs, and others, which require continual checks.







## 7. Management during the cycle

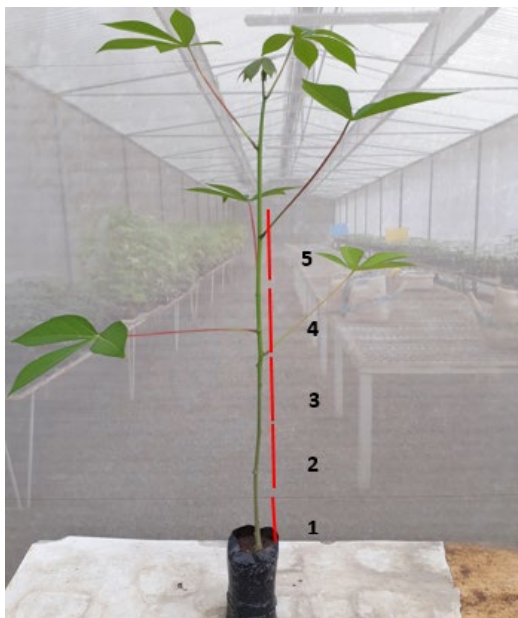
During the cycle are carried out the normal operations that are done in any cassava trial. Only during the first two or three months, sexual plants from seed are more delicate compared to those from cuttings. After this period, this plants reaching almost normal development. During the first months, adequate weed control, irrigation and insect control is critical for the delicate state of transplantation. In areas where trips can cause damage, it is important to early protect the plants with insecticide, because the young seedlings are not pubescence on leaves bud, the most common form of resistance.



## 8. Rapid Multiplication in Greenhouse

When the number of individuals per genotype needs to be rapidly increased, we are required to sow immature cuttings from greenhouse planted cuttings or sex seed.

In the case of seedlings generated from sexual seed, it is very careful because they are unique plants with little lignified stems. Generally when we have sown the seed in trays, one month after sowing the plants should be transferred to larger plastic bags so that they have a greater development and can generate several immature cuttings. For this, the plants must have a minimum of 3 months of sowing (70-80 cm in height) so that the stem is sufficiently lignified (7-8 mm in diameter) and this can generate approximately 4 new immature cuttings of at least 2 knots or buds



In the previous photo, stakes 1, 2 and 3 have the necessary lignification to be successful in planting, stakes 4 and 5 are quite immature and are more susceptible to rot.

These immature cuttings can be sown in a mixture of soil and sand in a ratio of 1: 1, or in a special substrate (peat) or in jiffys (pressed peat), being very careful with humidity to avoid rot.



Preferably apply a broad-spectrum fungicide to control damping-off, root and stem rot diseases of nursery crops caused by *Pythium*, *Phytophthora* or *Fusarium*.

It is also recommended to make foliar and soil fertilization with some mixed NPK compound (30-7-6) at least every 15 days to stimulate growth.