

Transplantation of Cotton Seedlings on Nutriblocs

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MICCO Project

How to set up a Cotton Crop

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Abstract: *In Cote d'Ivoire, the density of cotton plants obtained at harvest varies between 45,000 and 55,000 plants/ha. This low density is explained by the failure of reseeding. The objective of transplanting is to improve plant density at harvest by replacing reseeding with transplants. The transplanting technique consists of transposing plants previously prepared in a nursery into the cultivation plot. Transplanting requires two specific tools: a cylinder to make nutriblocs and a "planter" to make holes. The substrate for making nutriblocs is a well-mixed mixture of black soil and fertiliser or mineral fertiliser (NPK). The seedling nursery is formed by placing the sown nutriblocks close together. The nursery is set up under a shelter to protect it from heavy rain and strong sunlight. The nursery is sown 2 to 3 weeks before the planned sowing date of the crop plot. The nursery is watered every day or every other day. Transplanting should be done 7-10 days after emergence in the cultivation plot. With the planter, holes are dug in which the nutriblocks are placed.*

Keywords: Cotton, cylindroir, nutribloc, nursery and transplanting

1. Problem Awaiting Innovation

Plant density at harvest is an important factor in yield. In Côte d'Ivoire, the density obtained at harvest is on average 45, 000 to 55, 000 against a recommended density of 83, 300 plants/ha, despite frequent reseeding.

The growth of the reseeded plants is often weak, especially if the resowing is late, because of competition from the seedlings. Such an observation is at the origin of the farmers' expression that "cotton does not like its little brother".

Objective

The objective of the transplanting technique is to improve the density of plants at harvest by improving the density of the installed plants, using a technique that is more efficient than reseeding to compensate for the lack of plants at emergence.

Transplantation, what is it?

The transplanting technique is carried out from plants obtained on substrate cylinders, called "nutriblocs" in China where the technique has been used since the 1980s. The term used indicates that the substrate used in China is enriched with nutrients to ensure good growth of the plants before transplanting.

In practice, this involves transplanting seedlings prepared in a nursery into the cultivation plot. The transposed seedlings are older than the seedlings sown in the plot. This means that any shortcomings at emergence are not compensated for by "little brothers" as in the case of reseeding, but by "big brothers".

The necessary tools

The transplantation technique requires two specific tools that local blacksmiths can produce from Chinese models already introduced in Côte d'Ivoire.



A tool for making nutriblocs from soil - based substrate. In the absence of an established term, it can be called "cylindroir".



A tool that can be called a planter, allowing to make the holes in which the plants obtained on nutriblocs are placed.

Preparation of the substrate for nutriblocs

The substrate to be prepared must allow to obtain cylinders which, on the one hand, hold and resist watering, and on the other hand, are not so compact as to prevent the development of roots.

In order to adapt to what the growers have available, no rigid formula is given for the constitution of the substrate. At the very least, black soil should be used. After mixing the soil evenly, water is added until crumbly pellets can be obtained with the hands.

If possible, manure should be added to enrich the substrate with fertilising elements and to improve the performance of the substrate.

Even better would be to add NPK fertiliser, at the rate of 1 capful of AWA 1.5 l water pot in 1 x 25 l oil can cut 40 cm from the ground and filled with black soil.

Making nutriblocks

Nutriblocs are made by pressing the "cylindroir" into the substrate. The crossbar is pressed down with the foot to pack the substrate while the cylinder is pressed into it. The cylinder is then removed from the substrate and the crossbar is kicked out to extract the resulting block.



Production of nutribloc



Nutribloc with top depression

Sowing nutriblocks

Sowing consists of sowing two seeds in the depression of the nutribloc, 1 cm deep.



Start of seed emergence

Establishment of the nutribloc nursery

The nursery is built up by placing the sown nutriblocs close together. To prevent the nutriblocs from disintegrating when watered and to maintain their moisture content, the gaps between the nutriblocs should be filled and covered with sand or the substrate used to make the nutriblocs.



Interstices to be filled



Plants on nutriblocks

Protection of the nursery

The installation of a shelter is recommended to protect the growing plants from the possible violence of the rains or from too much sun. Insecticide granules should be applied to the ground inside and outside the shelter to control myriapods, ants and termites

The shelter can be a local style apatam from materials available at the producer level.



Two shelters made by farmers

least 20 mm, ensures that the transplanted plants will grow well again.

How to transplant?

Using the planting tool, holes are dug into which the nutriblocs, which are smaller in diameter, are placed. The soil removed by the planting tool is used to ensure good contact of the nutriblocs with the soil.



Transplanting seedlings onto nutriblocs

When to sow the nursery?

Sowing is done with the objective of having plants to transplant that are 2 - 3 weeks older than the plants to be completed in the growing plot. In other words, sowing in the nursery should be done 2 to 3 weeks before the planned date of the cultivation plot. As the actual sowing date of the crop plot depends on the uncertain rainfall, it makes sense to sow the nursery with different dates.

How many plants to plan for?

Transplanting is intended to fill in the missing clusters in a plot. Based on a target of 40, 000 clusters per hectare and 5 - 10% missing clusters, 2 - 4, 000 plants need to be prepared in the nursery.

Watering the nursery

Water every day or every other day until you see water seeping out of the base of the nutriblock. Water as much as possible with fine droplets to prevent the nutriblocks from disintegrating under the violence of the water jets. A layer of sand or substrate on top of the nutribloc should reduce the violence of the water jets.

When to transplant?

Transplanting should be carried out 7 to 10 days after emergence in the cultivation plot when the missing clumps can be seen. It should be carried out with plants that are 2 to 4 weeks old in the nursery.

The exact date of transplanting, and thus the age of the plants to be transplanted, depends on the soil moisture in the cultivation plot. This is the main factor for successful transplanting. Soil moisture, obtained after a rainfall of at

Expected outcome

The growth of transplanted plants should be as good as or better than that of seedlings.

Transplantation is compatible with growth regulation.



Two transplanted feet with capsules