MAURITIUS SUGAR INDUSTRY RESEARCH INSTITUTE

Recommendation Sheet

*July 2000, No 118**

# Transplanting tissue-cultured (*in vitro*) plantlets of sugar cane in the field

Rapid propagation of sugar cane varieties can be efficiently achieved with the use of plantlets issued from tissue culture. Such plantlets are distributed in either "speedling" trays or in pots *(Figure 1)*. They develop vigorously in the field, with a large number of tillers, if optimum conditions are provided during the early stages of growth *(Figure 2)*.

Plantations established with tissue-cultured plantlets should be considered as "A" nurseries and the cuttings obtained can be used to plant "B" nurseries after short hot water treatment (50°C for 30 minutes).

***Fig. 1: Hardened plantlets in "speedling" trays and pots, ready for distribution***

***Fig 2: A stool derived from a tissue-cultured plantlet***

To ensure good establishment of the plantlets in the field, it is essential to follow carefully a well-designed procedure which takes into account plant density, fertilization and irrigation.

## The following recommendations are therefore to be strictly followed.

### *1. Land preparation*

Land should be well prepared. A furrow depth of 15 to 20 cm is essential to allow good root development and proper anchorage of plantlets in the soil.

*** This Recommendation Sheet cancels Recommendation Sheet No 92, April 1996.**

## 2 *Fertilization*

Either 17-8-25 or 17-2-27 may be used and the choice will depend on the results of soil analysis and the P status of the field. The following rates are recommended:

| | ***17-2-27 or 17-8-25 (kg/ha)*** |
|---|---|
| ***High response soils*** (LRP, LHL, HL, DMC) | 850 – 950 |
| ***Low response soils*** (HFL, LBF, MSC) | 700 – 850 |

The fertilizers should be covered with a layer of soil before transplanting, to avoid direct contact of the roots with them.

## 3. *Transplantation*

*Fig. 3: Removal of plantlets from "speedling" tray or plastic pot*

Pull out the plantlet gently from the "speedling" tray so that it comes out with a lump of soil.

Plantlets distributed in pots can be transferred to the field after removal of the plastic bag with due care not to break the lump of soil *(Figure 3)*.

## 4. *Plant density and spacing*

The plant density is about 16 000 plantlets / ha with an intra row spacing of 0.40 m and 1.60 m between the rows *(Figure. 4)*.

*Fig.4: Transplantation of plantlets in a field*

### 5. *Irrigation*

Irrigation is vital, especially during the first two weeks following transplanting. Depending on the irrigation system available and the soil type, the following rates are recommended:

| *Soil type* | *Overhead irrigation* | | *Drip irrigation* |
|---|---|---|---|
| | *Before transplanting* | *Subsequently at 4-day intervals during 2 weeks* | Ensure that soil is at field capacity before transplanting. Subsequently, apply 4-5 mm daily for 2 weeks. |
| LHL soils | 40-50 mm | 15-20 mm | |
| LRP soils | 25 mm | 15-20 mm | |

Once the establishment of the plantlets has been achieved, the current irrigation practice is recommended.

➔ ***In absence of irrigation facilities in the soils mentioned above, plantlets <u>should not</u> be transferred to the fields.***

### 6. *Herbicide application*

After transplanting and first irrigation, one of the following herbicide treatments should be applied in pre-emergence of weeds:

| | L $ha^{-1}$ | L $arp^{-1}$ |
|---|---|---|
| **Atrazine + Harness** | **4.8 + 2.4** | **2.0 + 1.0** |
| **or** | | |
| **Atrazine + Falcon Gold** | **4.8 + 1.5** | **2.0 + 0.6** |

A second herbicide application may be required 10 to 12 weeks after transplanting, when weeds have generally emerged. If this is the case, add **2,4-D amine salt @ 3.0 L $ha^{-1}$ (1.3 L $arp^{-1}$)** and a wetting agent to one of the above mixtures, preferably not the same one applied after transplanting.

### 7. *Other precautions*

Precautionary measures may have to be taken against hares that tend to feed on the soft and tender leaves of the newly transplanted plantlets. It is advised to have a fence of metallic wire, 0.75 to 1 m high around the plot.