

## POLYBAG TECHNOLOGY IN SUGARCANE

For raising of sugarcane crop, different methods of planting are adopted. These planting methods generally differ on the basis of planting material (cane setts, settlings, rayungans etc.) used and the nature of earth work (making of shallow / deep furrows, trench or pit). Placing of 40 to 60 thousand two / three budded setts in furrows opened by bullock or tractor drawn implements is the most common method of sugarcane planting in India. However, the method requires huge quantity (6-7 tonnes cane stalk / ha) of planting material. To have greater seed economy, transplanting of single bud cane settling has been developed. The settlings may be raised either in nursery beds as used in spaced transplanting (STP) or in polythene bags containing mixture of soil, sand and organic manures (FYM/ Press mud). Use of polythene bag raised settling for growing of a bumper crop of sugarcane is known as polybag technique of sugarcane cultivation. The technique apparently resembles STP but there are certain differences between Polybag technique and STP as given below:

Differences between Polybag technique and spaced transplanting (STP)

STP	Polybag technique
<ul style="list-style-type: none"> <li>• Settlings are raised in nursery beds which require cultivated land.</li> </ul>	Settlings are raised in polythene bags and these can be put at any place.
<ul style="list-style-type: none"> <li>• Post-transplanting mortality is high because of jerk to roots during uprooting of settlings.</li> </ul>	Post-transplanting mortality is very low since polybag settlings are transplanted with earth ball by removing polythene so root system of young shoots is not disturbed, which helps in quick and better establishment of transplanted settlings in the main field.
<ul style="list-style-type: none"> <li>• Two / three irrigations are needed to get the transplanted settlings established.</li> </ul>	Only one irrigation is needed.
<ul style="list-style-type: none"> <li>• Weeds germinate and grow profusely due to continuous high soil moisture caused by frequent irrigations during establishment period of settlings. Thus it creates serious weed management problem. High moisture content in soil does not permit tillage operation.</li> </ul>	Weed problem is not so aggravated. Moreover, any weed growth can easily be controlled by tillage operation as soil comes at workable moisture level few days after irrigation.

### Advantages of Polybag technology:

- Cultivated land is not required for raising settlings.
- Germination is 90-95% as against 30-35 per cent in conventional system
- Immense saving of seed. Raising of sugarcane crop by Polybag technique requires only 1.5 to 2.0 tonnes seed cane per hectare while in conventional sett planting, 6-7 tonnes seed cane per hectare is needed.
- Higher cane multiplication ratio. There is increased cane multiplication ratio (1:40) over conventional method (1:10). Hence the technique is most suited for rapid multiplication of newly released varieties.

- Better crop stand with more early vigour of plants produce higher stalk population of higher stalk weight which ultimately results in higher cane yields.
- Higher sugar recovery because of synchronous and higher earlier tillering which leads to production of uniformly matured stalks.
- Reduced cane lodging
- Suited for adverse agronomic situations. Settlings can be used for transplanting in wetlands after harvesting of paddy in waterlogged areas and after harvesting of wheat under delayed planting connections.
- Increased productivity of subsequent ratoon crop due to minimum gaps because of uniform stand in plant cane.

## The Method

**Preparation of polybags with soil mixture:** Polythene bags of size 10 x 15 cm should be filled with a mixture of soil, sand and FYM/ press mud in 1:1:1 proportion. Before filling, the bags are punctured at few places to allow proper aeration and drainage of excess water.

**Sett preparation:** Seed cane should be drawn from healthy crop of sugarcane preferably from the top half of the canes, if drawn from a mature crop. If seed canes are taken from immature crops, the entire cane can be used for seed. Single bud setts are prepared by cutting just above growth ring and leaving 8-10 cm of the internode below the bud. Insect-pest and disease infested setts should be discarded. For transplanting of one hectare land, about 25000-30000 settings are needed. For this, the quantity of seed cane required would be approximately 1.5 – 2.0 tonnes.

**Sett treatment and planting:** After soaking in 0.2% solution of Bavistin for 20 minutes, the setts are pushed vertically in soil mixture filled polybags with the bud in top position. While pushing the setts vertically into polybags, the bud with root band zone is kept just above the soil surface. Thereafter, the polybags are placed on a leveled ground in a systematically arranged manner and mulched with dried cane leaves or paddy straw. Dry loose soil may be lightly sprinkled over the mulch to prevent it from being dislodged by wind. Watering of the polybags is done with the help of rose-can daily or on alternate days as required. There should be no water stagnation in the polybags. Under proper management, 95% germination is achieved. The three weeks to one month depending upon the ambient temperatures. Settlings transplanted at this stage are most suitable for survival and better tillering.

**Transplanting of settlings in main field:** For transplanting of settlings in main field, land is to be prepared as in conventional planting in order to have good tilth and weed-free condition. Settlings are taken carefully for transplanting to the prepared field. Before transplanting, settlings should be detopped with sharp edged knife or scissors and polythene bags removed. Furrows are opened at a distance of 75 cm and settlings are transplanted at 60 cm apart within the row with the help of Kudali or spade. About 8 to 10 per cent settlings should be retained for gap filling. If needed, in case of moderate tillering varieties or in late planting, the intra-row spacing may be reduced to 45 cm. after transplanting; the field is given a light irrigation. In case

of appearance of gaps due to any adverse condition, the plants retained should be utilized for filling the gaps so as to maintain uniform crop stand.

**After care:** All other recommended agronomic practices of the area for raising a normal crop of sugarcane should be adopted.