EFFECT OF PLANTING OF SUGARCANE POLYBAG SAPLINGS ON THE WATER SAVINGS AND CROP GROWTH

INTRODUCTION:

Sugarcane is a cash crop in Maharashtra. Climate and soils are suitable for sugarcane cultivation. Yield of millable cane and sugar recovery is better as compared to national average. Processing facilities are also available in more than 160 sugar factories. But irrigation requirement of this perennial crop is very high and water is not available in adequate quantity for irrigation in most of the region of Maharashtra. Hence there is no scope to increase the area under sugarcane. Considering the situations, more emphasis is required on water saving techniques, higher productivity and more sugar recovery. Sugar factories are also facing the problems like low recovery of sugar at the end of season particularly in March – April and inadequate millable canes. Recently Vasantdada Sugar Institute, Pune has shown that it is possible to increase the yield of sugarcane by planting sugarcane by polybag sapling method in the month of April. In this technique, the single budded setts are planted in polybag. Seedlings are raised in nursery for 60 days and then it is transplanted in the field. The millable canes are available for crushing at the end of the season for sugar factories. Now in the above situations, the information about irrigation requirement is not available. Hence, the experiment was conducted to evaluate the yield performance and irrigation requirement of sugarcane, planted by polybag sapling method.

METHODOLOGY:

The field experiment was conducted on Demonstration Farm of Water And Land Management Institute, Aurangabad during 2004 - 05 season. The soils of the experimental plot was sandy loam in texture. The soil depth was 30cm and below the soil layer there is soft weathered basalt material with calcium carnorata. The experiment was conducted on 500 m^2 area of drip and 500 m^2 area of straight ideas and furrow irrigation. Single budded sugarcane setts were prepared for planting in polybags.

Polybags of 20 x 15cm were used. Farm Yard Manure and silt were mixed together 1:3. Required quantity of super phosphate (1 kg / m^3) was added in mixture. To control insects and diseases of seedling stage, thimet (19m/bag), malathion (1m/e) and bavisting (19m/e) were also used. For sett treatment before planting in polybags. Sugarcane setts were planted vertically in polybags on 20th April 2004. The additional cost to prepare the 2700 seedlings (2500 + 10% for gap filling) was Rs. 2381/- (Rs. 0.88/saplings) for 0.10 ha. area. Therefore cost of sugarcane sappling is Rs. 0.9 per sappling which can be reduced further by large scale production. Irrigations were given to sugarcane seedlings in nursery. Only 54 m^3 water was used for 2700 sapplings during nursery period at root zone. Sapling were transplanted in the regular field after preparatory tillage operation on 15th June 2004, with the spacing of 90 cm x 45 cm. After transplanting, all agronomic practices such as irrigation, nutrient supply, plant protection, intercultural operations were carried out as recommended by State Government measured quantity of irrigation water was applied as per climatic requirement.

RESULTS:

The results indicated (Table 1) that the yield of seasonal sugarcane was 132 tons per hectare which is more or less at par with the yield of conventionally planted seasonal sugarcane in similar situations. The irrigation water actually used before transplanting was 54 mm and after transplanting was 1540 mm. Total quantity of irrigation water was 1594 mm in polybag sapling method. In traditional method, irrigation requirement found over the past years was 1700 mm. This shows that saving of irrigation water was to the extent of only 110 mm.

The additional cost to raise the seedlings in the nursery was Rs. 2381 for 0.10 ha. area which is very high. The major cost was of polythene bag which can also reduced by planting sugarcane setts directly on the raised beds.

This technique may be useful under scarcity situation.

Table-1: Yield Performance of Sugarcane planted by polybag sapling method:

	Area (ha)	Yield (t)	Yield t/ha	Water used mm.	Remarks
1. Surface method	0.05	6.831	137	1640	-
2. Drip method	0.05	6.358	127	1451	This plot was slightly inferior due to land levelling operation
Total:	0.10	13.189	132	1540	

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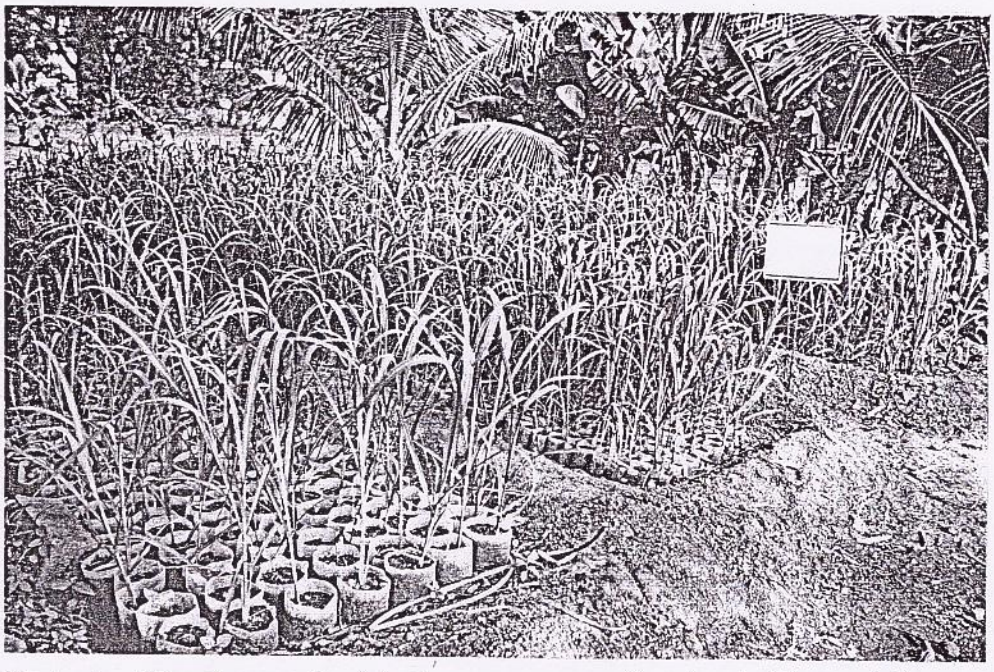

Plate 1 : Single eye budded sugarcane setts planted in polybag

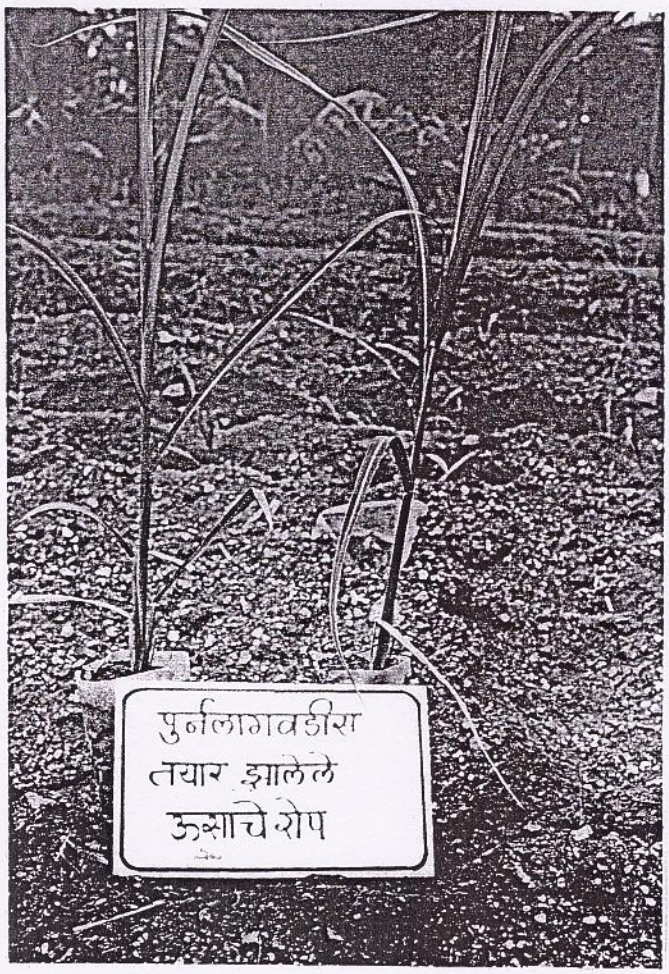

Plate 2 : Sugarcane seedling
ready for transplanting

Plate 3 : Straight furrows for transplanting of sugarcane saplings

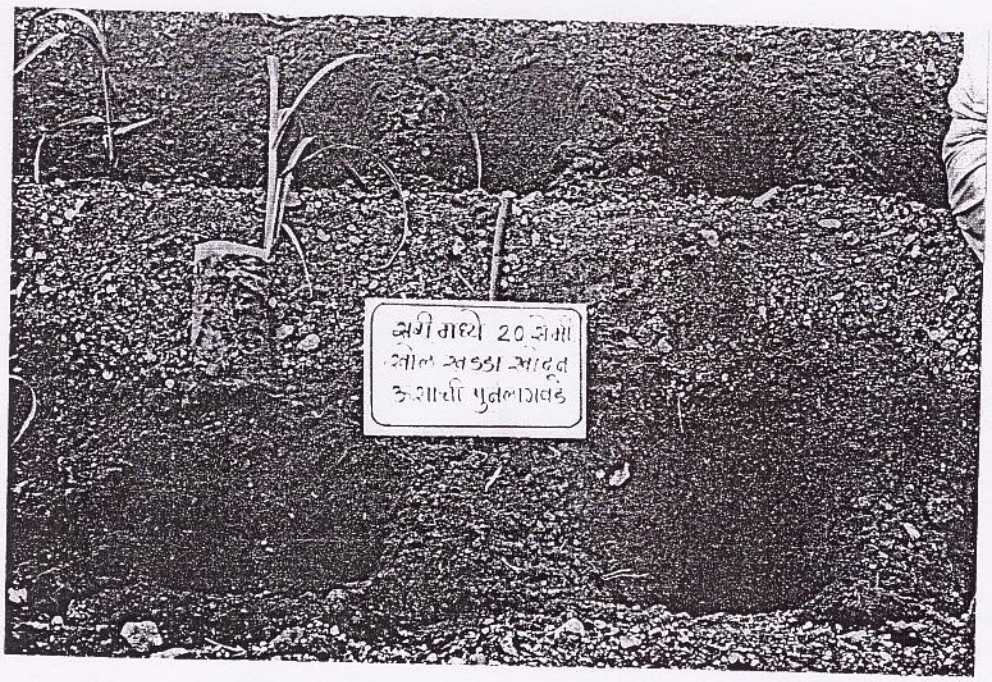

Plate 4 : Twenty cm deep pits at 45 cm spacing in furrow

Plate 5 : Sugarcane crop planted with saplings