

Assessment of TPS populations as transplants in the field

Vidya Verma¹, Annu Verma* and D.A.Sarnaik¹

Indira Gandhi Agricultural University, Krishi Vigyan Kendra, Anjora, Durg, RAIPUR (CHHATTISGARH) INDIA

ABSTRACT

Field experiment was conducted at College of Agriculture, Indira Gandhi Agricultural University, Raipur to assess the TPS populations as transplants in the field in rabi during 1999. The results of the study revealed that the tuber yield was positively correlated with marketable tubers per plot, dry weight of shoots per plant, fresh weight of roots per plant, dry weight of roots per plant, dry matter percentage in tubers, weight of unmarketable tubers per plot and root length. The highest net income was recorded under TPS populations HPS I/13 but standard variety Kufri Badshah was also found very close to it (HPS I/13). However, use of true potato seed as transplanted seedlings may enhance the area under potato cultivation, as small and marginal farmers who could not afford the cost of seed tubers may also be encouraged to grow potato on their field by spending only Rs. 1500/ha towards seed cost of HPS I/13.

Key words : TPS Population, Kufri Badshah.

INTRODUCTION

Potato (*Solanum tuberosum* L.) is a unique crop, which is being used extensively in the diet of almost all human beings in most of the countries including India. The history of potato is a testimony of the fact that whenever there has been scarcity of food grains, the potato has come to the rescue of people. One can harvest yield of potato upto 40-50 tonnes per hectare by adopting improved technology. It contains substantial energy of carbohydrates (22.6-g/100 g.) as well as starch (16.3 g./100 g.) and thus provides more calories per unit area and per unit time than any other major food crops, which makes it the most suitable non-traditional crop towards off-hunger.

Chhattisgarh is primarily rice growing region. The average farmer is poor with the tribal constituting a major part of the population. They cultivated only rice and hardly grow any vegetable. As far as potato is concerned the high cost of seed tubers (planting material) makes it difficult for them to cultivate this crop. If the farmers of this region were trained to grow potato through *True Potato Seeds* even small farmers would be able to raise this crop.

Besides, the technology of using TPS as planting material for potato production is labour intensive and is most suitable for home gardens as all family members can work during their leisure time in it (home garden).

MATERIALS AND METHODS

This investigation was carried out in Horticultural Research Farm, Indira Gandhi Agricultural University, Raipur, during Rabi season 1997-98. Four treatments comprised of three TPS populations (HPS I/13, II/13, HPS 7/67) with one standard variety (Kufri Badshah) were replicated eight times in Randomized Block Design. In well-prepared nursery beds furrows of 0.5 cm depth and drawn 10 cm apart were made across the width of the bed, the TPS was sown in these furrows thinly. Field was prepared by two ploughings followed by two cross harrowing and it was levelled with the help of soil leveller (pata). Half dose

of nitrogen (@ 75 kg/ha) was applied through ammonium sulphate and full dose of phosphorus and potassium (@ 100 kg/ha each) was applied through single super phosphate and murate of potash respectively as basal dressing. The seedlings were transplanted (one seedling per hill) in the field in such a way so that row-to-row spacing of 50 cm and plant-to-plant spacing of 10 cm may be maintained. Earthing up was also done twice i.e. 30 and 60 days after transplanting.

Remaining half dose of nitrogen was applied at 30 days after planting through urea and it was applied in the furrows just before earthing up. Spraying with 0.25% Dithane M-45 was done twice at 15 days interval to protect crop from blight disease. Spraying with 0.05% Malathion was also done to protect crop from aphids. Digging of the crop was done 90 days after planting. The observations on different growth parameters were recorded.

RESULTS AND DISCUSSION

The data indicate that the percentage survival of plants ranged from 46-70. The survival percentage recorded in TPS populations studied in this investigation found significantly higher than standard variety (Kufri Badshah). The highest survival percentage was noted in TPS population HPS 7/67 (69.7%) Similar findings have also been reported by Kadian et al. (1987) & Sangar and Upadhyay (1994).

The data presented in the table indicate that the total number of tubers per plot varies from 163.63 to 530.25. The highest number of tubers per plot was recorded in HPS 7/67 (530.25), which was found significantly superior to all the treatments studied in this investigation except HPS I/13 (488.75). The lowest number of tubers per plot was found in Kufri Badshah (163.63). No significant difference was observed in between check variety Kufri Badshah (169.61) and HPS II/13 (364.88). These findings are also supported by Verma and Singh (1996) as well as Kadian et al. (1996) who also noted maximum number of tubers per square meter in TPS population HPS 7/67.

* Author for correspondence.

¹ Department of Horticulture, Indira Gandhi Agricultural University Raipur (Chhattisgarh)

Table: yield performance of different population of TPS.

S.No.	Population	Survival percentage%	Number of tuber per plot	% Dry weight of tubers %	Yield (kg/plot)	Marketable yield (Kg/plot)
1.	HPS I/13	65.9	488.75	23.00	6.94	2.29
2.	HPS II/13	64.8	364.87	20.56	4.69	1.85
3.	HPS 7/67	69.7	530.25	21.25	5.13	2.14
4.	Kufri Badshah	45.54	163.63	17.38	6.48	4.45
	SE+(m)	3.69	35.67	0.61	0.78	0.17
	CD at 5%	10.85	104.92	1.79	NS	NS

Data regarding per cent dry weight of tubers indicate that the maximum per cent dry weight was found in HPS I/13 (23%) which was found statistically better than HPS II/13 (20.86%) and check variety Kufri Badshah (17.37%) but it was statistically similar to HPS 7/67 (21.25%). Similar results are also recorded by Suhas et al. (1990) who found 20% dry matter content in TPS families HPS I/13 and HPS 7/67.

The highest yield was recorded in TPS population HPS I/13 (6.94 kg). Significant difference was not observed between TPS populations and standard variety Kufri Badshah. All the TPS populations were also found statistically similar with each other for total yield of tubers from unit area (kg/plot or q/ha). Thus it is clear from the above findings that we can obtain the desirable yield of potato tubers with the use of transplanted seedlings of any of the three TPS populations.

Data regarding marketable yield in kg/plot indicate that the maximum marketable yield per plot was noted in check variety Kufri Badshah (4.45 kg/plot). No significant difference was observed among all the treatments for this attribute. Khurana and Bhatia (1994) also reported that marketable tuber yield was higher in check variety Kufri Badshah (326.2 t/ha) compared to 7 TPS progenies grown through seedling tubers (HPS I/13, HPS I/67, HPS 7/13, HPS 7/67, HPS 25/13, HPS C-3, TPS C-17).

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