



Evaluation of Potato (*Solanum tuberosum* L.) Varieties in Surguja District of Chhattisgarh

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ABSTRACT

Potato is one of the basic vegetable of mass consumption in world and become 4th important staple food crop after rice, wheat and maize. Potato is one of the important crops for tribal farmers of Surguja district but farmers use uncertified seed of potato for cultivation resulting in lower yields. An on farm trial was conducted during rabi season of 2015-16 and 2016-17 at five farmers' field. The trial was laid out with three treatments i.e., T1-Farmers' practice (uncertified potato seed) and T2-Recommended practice (certified seed of potato- Kufri khayati) and T3-Recommended practice (certified seed of potato- Kufri pukhraj). Yield attributes, yield, gross return and B:C ratio were recorded and found that significantly higher yields were obtained under T3 during both the years as compared to farmers' practice.

Key Words: Economics, Kufri khayati, Kufri Pukhraj, Potato, Yield.

INTRODUCTION-

Potato (*Solanum tuberosum* L.) is the fourth most important food crop in the world (Razdan and Mattoo, 2005). It can be compared with rice, wheat and maize for its contribution towards securing the food and nutrition, and eradicating malnutrition and hunger, especially in developing world. India is likely to have the highest growth rates in potato production and productivity worldwide (Naik and Thakur, 2007). Further, there is scope to substantially improve the production and productivity of potato in Chhattisgarh, especially in Surguja district. Potato having high productivity per unit area and it can substitute the cereals for human consumption to a greater extent. In Chhattisgarh state, it is mainly cultivated in Surguja, Korea Raigarh and Jashpur districts. In surguja district, farmers used uncertified potato seed for sowing purchased from local market having low productivity and sometimes lead to severe infestation of early and late blight disease resulting poor yield. The losses caused by late blight have been reported (Kumar *et al*, 2003) in the range between 77 to 125 percent in

terms of yield. Therefore, the present investigation was undertaken for the varietal evaluation of Potato (*Solanum tuberosum* L.) through on farm trial in Northern hill region of Surguja dist.

MATERIALS AND METHODS

An experiment was conducted during rabi season 2015-16 and 2016-17 in different villages. The soil of experimental field was sandy to sandy loam in texture, low in available N, P₂O₅ and high in K₂O with acidic in reaction. The treatments included farmers' practice (T1) i.e. use of uncertified potato seed purchased from local market, (T2)-recommended practice i.e. improved variety of potato Kufri khayati and recommended practice (T3) i.e. improved variety of potato Kufri pukhraj. The recommended package of practices given by the Indira Gandhi Krishi Vishwa Vidyalaya, Raipur was followed in conducting the trial. The data regarding average number of tubers/plant, Average weight of tubers/plant and yield (t/ha) were recorded under both the treatments. The cost of cultivation and gross returns were worked out by

Table 1. Effect on yield attributes and yield of Potato.

Treatment	Average number of Tuber/plant		Average weight of Tuber/plant (g)		Yield (t/ha)	
	2015-16	2016-17	2015-16	2016-17	2015-16	2016-17
T1 – Farmers Practice	4.97	5.10	222.10	243.24	15.26	15.86
T2 – Kufri Khyati	7.34	7.82	340.03	365.17	20.76	21.19
T3 – Kufri Pukhraj	8.20	8.49	438.21	489.64	22.00	23.26
cd	0.64	0.63	93.40	103.64	1.20	2.58
sem	0.22	0.21	31.84	35.34	0.41	0.88
cv	5.29	5.32	16.48	16.72	3.53	7.97

using prevailing market prices of inputs during the period of investigation. Benefit-cost ratio (BCR) was worked out by using the following formula-

Benefit: Cost ratio (BCR) = Gross return (Rs/ha)/ Total cost of cultivation (Rs/ha)

RESULTS AND DISCUSSION

Number of tubers/plant

The perusal of data (Table1) revealed that number of tubers/plant were recorded significantly higher under T3 during both the years than rest of the treatments which might be due to the morphological characteristics of Kufri pukhraj having tall plant and more vigorous growth than local seed. Likewise, the average weight of tuber/plant was also found significantly higher in T3 as compared to other two treatments during 2015 and 2016 and recorded 438.21g and 489.64g, respectively. This was probably due to peculiar characteristics of Kufri pukhraj i.e. vigorous growth, large tuber size and resistant to certain diseases. (Tabatabaefar, 2002)

Yield

At the different locations, the potato yield recorded was significantly higher in T3 (Kufri pukhraj) over T2 (Kufri khayati) and T1 (farmers' practice). These results were in conformity with the findings of Tomar *et al* (2003) of front line demonstrations on potato. The higher yields of kufri pukhraj was primarily due to variety having more vigorous growth, produced more number of tubers with heavier weight/plant.

ECONOMICS

The economic analysis (Table2) revealed that the higher economic benefits were recorded under T3 which registered highest gross return Rs.176000/ha- and Rs.186080/ha-, highest B:C ratio 3.06 and 3.16 during 2015-16 and 2016-17, respectively compared to rest of the treatments.

CONCLUSION

The results of present investigation revealed that use of potato variety Kufri pukhraj is most

Table 2. Economic returns from different varieties of Potato.

Treatment	Cost of cultivation (Rs/ha.)		Gross Return (Rs/ha)		B:C ratio	
	2015-16	2016-17	2015-16	2016-17	2015-16	2016-17
T1 – Farmers' Practice	48500	49300	122080	126880	2.52	2.57
T2 – Kufri khyati	57600	58900	166080	169520	2.88	2.89
T3 – Kufri pukhraj	57600	58900	176000	186080	3.06	3.16

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suitable for cultivation in the Surguja district of Chhattisgarh as it gave highest returns per unit area as compared to the local varieties being grown by the farmers in the district.

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