RESEARCH NOTE

Adoption Dynamics of Fertilizers and Manure in Potato Crop

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ABSTRACT

The study on extent of adoption of recommended fertilizers and manure in potato crop by farmers in sub-tropical zone of Jammu division was conducted during the year 2011-12 with a sample size of 225 potato growers selected randomly from 15 villages of three districts namely Jammu, Kathua and Samba,. purposively on the basis of maximum area under potato crop .The findings of the study revealed that 58.33 per cent of farmers had adopted recommended doses of Urea and Diammonium phosphate (DAP) (40.89% each) and Muriate of Potash (MOP) (8.89%). Only 32 per cent of the farmers had used recommended dosage of manure owing its non availability. Majority of the respondents had applied recommended dose of urea, but lesser dose of Muriate of potash and more dose of DAP to the crop. With regard to level of adoption, 45.33 per cent of the respondents had medium level of adoption about fertilizers. In case of constraints, 76.00 per cent of the respondents had reported non-availability of fertilizers in proper time.

***Key words**: Fertilizers, Manure, Dosage and Extent of adoption;*

Potato is the fourth most important food crop in the world after wheat, rice and maize. Potato is the king of all vegetables and is a major cash crop worldwide. In India, potato occupies an area of 1.786 thousand hectare with a production of 34462.5MT having a productivity of 19. 4 MT/ha (Anonymous, 2008). It is a highly remunerative crop of Jammu and Kashmir particularly in high altitude and cold arid areas. In Jammu division it is a leading cash crop and has the highest area cover after rice, wheat and maize. There has been 10 per cent increase in area from 4845 ha.in 2002-2003 to 5650 hectares in 2008-2009. Similarly, the production has gone up by nine per cent during the same period from 75485 MT to 89600 MT. The overall average productivity of potato is 15.3-16.0 MT/ha in Jammu division. Potato has 16 per cent share in area and 18 per cent share in production under vegetables in Jammu division. (*Anonymous, 2010*).

Soil fertility is one of the major factors that affect the yield and quality of the potato. Nutrient requirement of potato crop is quite high and the application of fertilizers and organic manures is considered essential to obtain economic and high yields. The optimum dose of fertilizer application varies greatly depending upon the soil type, soil fertility, climate, crop rotation, variety, length of growing season and moisture supply. In the present study nature of chemical fertilizer and manure use means the decision and choice of the respondent about types of nutrients (Urea, DAP, MOP and FYM) to be used. The extent of fertilizer and manure use conceived in this study was the degree to which a particular recommended dose was used by the respondents. Keeping the above facts in view the present study was taken up.

METHODOLOGY

The study was conducted in the sub-tropical zone of Jammu Division. Three districts namely Jammu, Kathua and Samba were selected purposively on the basis of maximum area under potato crop. Seven villages from sub-division Marh; namely Pinjore, Dabsudan, Kalyanpur,Gajansoo, Dubditta, Kanachak and Ganguchak, four villages from sub-division R S Pura; namely Makhanpur, Arnia, Mohanpur and Salahar, three villages from sub-division Dayalachak namely Marheen, Khokhyal and Bhajwal and one village from sub-division

Samba namely Prithipur were selected purposively on the basis of proportionality of area under potato cultivation. The villages with the highest area under potato crop in each of the three sub-divisions were selected for the present study. Fifteen respondents were selected randomly from each village, thus making a total sample size of 225. Data were collected through well-structured interview schedule and analyzed using statistical tools such as frequency, percentage, mean and standard deviation.

RESULTS AND DISCUSSION

Table 1. Extent of adoption of recommended fertilizer doses by potato growers (N=225)

Extent of adoption	Overall %
Urea	
Less than recommended dose	26.22
As per recommended dose (256-260 kg/ha)	57.33
More than recommended dose	16.45
DAP	
Less than recommended dose	07.11
As per recommended dose (140-142 kg/ha)	40.89
More than recommended dose	52.00
MOP	
Less than recommended dose	91.11
As per recommended dose (192-200 kg/ha)	08.89
More than recommended dose	00.00

It is evident from Table 1 that overall 57.33 per cent of respondents had used recommended dose of urea followed by 26.22 per cent of respondents who had used lesser than the recommended dose whereas 16.45 per cent of overall respondents had used more than the recommendation. With regard to the extent of adoption of DAP, 40.89% of total respondents had used recommended dose whereas 7.11 and 52.00 per cent of respondents had used lesser and more than the recommended doses, respectively.

Table 1 further reveals that 8.89 per cent of the total respondents had used recommended dose of MOP, whereas 91.11 per cent of overall respondents had used less than recommended dose and none of the respondents had applied more than recommended dose. Hence, the study reveals that the farmers had not applied balanced fertilizers in their potato fields. This may be due to their ignorance regarding balanced application of fertilizers that promote rapid growth of potato crop. Hence,efforts have to be made by extension agencies to educate farmers about the correct doses. The findings of the study are in line with the findings of *Sharma (2009)* and *Kumari (2010)* who had reported that farmers had applied lesser quantity of fertilizers to their crops.

Table 2. Extent of adoption of recommended dose of FYM by potato growers (N = 225)

Extent of adoption	Overall %
Less than recommended dose	68.00
As per recommended dose (75-100 t/ha)	32.00

Table 2 reveals that 32.00 per cent of respondents had used recommended dose of FYM followed by 68.00 per cent of respondents who had used lesser than recommended dose of FYM. The result also shows that very less percentage of potato growers had applied recommended quantity of FYM. It may due to the reason that they had little knowledge regarding recommended quantity of FYM. Besides, there is very limited availability of FYM. Also, during the study, it was found that some of the farmers purchased FYM at higher cost. The findings are similar to those of *Shivalingaiah et al. (2004)* who had reported that farmers had applied less amount of FYM to the crops.

Table 3.Adoption level of the respondents about fertilizer in potato crop (N=225)

Adoption level	No.	%
Low (<3.32)	51	22.67
Medium (3.32-4.82)	102	45.33
High (>4.82)	72	32.00
Mean = 4.07	SD = 0.75	

It is observed from Table 3 that 45.33% of the potato growers had medium level of adoption level towards fertilizers and manure which was followed by 32 per cent growers who had high adoption level. Only 22.67 per cent of farmers had low adoption level about fertilizers and manures in potato crop. The result of the study were in conformity with the findings of the (Thippeswamy et al. 2008), who expressed that the farmers had medium level of adoption with respect to plant protection measures in coconut crop.

Table 4. Impact of fertilizers on yield (q/ha) of potato crop (N=225)

Adoption of fertilizer	No.	%	Av. yield
Recommended dose of fert.	107	47.56	275
Non-Recommended dose of fert.	118	52.44	245

Table 5. Constraints faced by the respondents in adoption of recommended fertilizer application (N=225)

Constraints	No.*	%
High cost of fertilizers	139	61.77
Lack of labour	80	35.55
Non-availability of fertilizers at proper time	171	76.00
Lack of knowledge about dose and time of application	84	37.33

*Multiple Responses

The data revealed in Table 4 that 47.56 per cent of respondents had used recommended dose of fertilizers and reported that by the use of recommended dosage of fertilizers the potato crop they could get an average total yield of 275 quintal/ha whereas, 52.44 per cent of respondents had applied non-recommended dosage of fertilizers and reported that average total yield obtained from potato crop was 245 q/ha. The result showed that the majority of farmers had not applied balanced fertilizers in their potato fields and the probable reason is the partial adoption of improved technologies leading to low yields.

It is clear from Table 5 that overall, majority of the respondents (76.00 per cent) reported non-availability of fertilizers at proper time followed by61.77 per cent with high cost of fertilizers as the main reasons of non-adoption of recommended fertilization application.. The other constraints that hinder adoption of recommended technology was lack of labour (35.55%) and lack of knowledge about dose and time of application (37.33%).

CONCLUSION

The study indicated that majority of respondents had applied recommended dose of urea, but more dose of DAP and lesser dose of MOP to the crop. Few respondents had applied recommended quantity of FYM, but had applied FYM at the recommended time. Majority of the farmers had medium to high level of adoption towards fertilizers in potato crop wherein 52.44 per cent of respondents had obtained total yield from potato crop as 245 quintal/ha and 76.00 per cent of the respondents had reported non-availability of fertilizers at proper time.

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