



Research Note

Article history :

Received : 28.09.2012

Accepted : 26.11.2013

Balance nutrition management in potato under riverine soils of Uttar Pradesh

■ AMAR SINGH¹, R.A. SINGH AND DHARMENDRA YADAV²

Members of the Research Forum

Associated Authors:

¹Krishi Vigyan Kendra, Anogi,
Jalalabad, KANNAUJ (U.P.) INDIA

²C.S.A. University of Agriculture
and Technology, KANPUR (U.P.)
INDIA

Author for correspondence :

R.A. SINGH

FPARP on Water/Water Harvesting,
C.S.A. University of Agriculture
and Technology, KANPUR (U.P.)
INDIA

Email : rasingh_csau@yahoo.co.in

ABSTRACT : The on farm trail was conducted for three years, during winter season of 2007-08 to 2009-10 at farmers fields of Kannauj district. The pilot area situated in the catchments area of river Kali. For assessment of nutrients application on potato crop, the fertilizer-use-technology was refined with the inclusion of soil test base use of nutrients. Nutrients application on the soil test base *i.e.*, 203 kg N+65 kg P₂O₅ + 70 kg K₂O/ha declined 3.63 per cent and 3.79 per cent tuber yield only compared with farmers practice and R.D.F., which was negligible. The highest net return of Rs. 88527/ha was achieved from RDF closely followed by Rs. 84967/ha, available from soil test base use of fertilizer. The lowest net return of Rs. 72417/ha and BCR (1:2.64) were found in farmers practice. The B:C ratio in soil test base (1:3.05) and R.D.F. (1:3.07) was recorded similar.

KEY WORDS : Intensive cropping, Flexibility in planting, Ideal environment, Riverine soils, Telecounselling mode, Assessment and refinement.

HOW TO CITE THIS ARTICLE : Singh, Amar, Singh, R.A. and Yadav, Dharmendra (2013). Balance nutrition management in potato under riverine soils of Uttar Pradesh. *Asian J. Hort.*, 8(2) : 778-779.

Potato is one of the most important food crops both in developed as well as in developing countries. It can be grown in wide range of climatic conditions and soil types with wide flexibility in planting and harvesting time. It can be harvested while tubers are still immature and also if the tubers are left in harvested for sometime, they continue to increase in size and there by improve tubers yield. This flexibility make this crop most suitable for inclusion in intensive cropping systems. The area, production and productivity of potato in Uttar Pradesh are 5,40,797 ha, 1,34,47,272 M.T. and 248.65 q/ha, respectively during 2009-10 (Anonymous, 2010).

The ideal environment for potato production would be relatively higher temperature and long days early in the season to have enough haulm growth and then relatively lower temperature and short days to utilize the photosynthetic efficiency of haulms for the growth of tubers. This conducive condition is found in the area of riverine soils of U.P., Therefore, these soils are very much famous for higher production of potato tubers. Potato crop yielding 250-300 q/ha of tubers remove about 120-140 kg N/ha. Phosphorus and potassium are other two limiting elements in the production of potato. A crop of potato removes about 25-30

kg P₂O₅/ha. Similarly, potato crop also removes about 170-230 kg K₂O/ha. Therefore, in this paper an attempt was made to compare the application of RDF with soil test base use of plant nutrients on farmer's fields for eco-friendly management of environment without any loss of tubers production.

The on farm trial was conducted for three years, during winter season of 2007-08 to 2009-10 at farmer's fields of Pachpurwa, Digsara, Tikayapurwa, Jalalabad and Kannauj, situated in central plain zone of U.P. The soil of experimental site was sandy loam to loam having pH 8.0, organic carbon 0.23%, total nitrogen 0.02 per cent, available P 9.00 kg/ha and available K 273 kg/ha, therefore, the fertility status of experimental site was low. The problem of unbalanced use of fertilizers in the cultivation of potato, in its growing tract of Jalalabad block of Kannauj district was sought out. Generally farmers of pilot area use very heavy dose of phosphatic fertilizer, which is uneconomical and wastage of this nutrients. Therefore, for assessment of nutrients application, the fertilizer-use-technology was refined with the inclusion of soil test base use of nutrients in the study. Potato was grown with three nutrient doses *i.e.*, farmers practice (205 kg N+ 230 kg P₂O₅ + 75 kg K₂O/ha), soil test

Table 1 : Effect of nutrient management on yield, yield traits and economics of potato

Sr. No.	Treatments	Av. yield (q/ha)	Tubers/plant	Weight of tubers / plant	Cost of cultivation (Rs/ha)	Gross return (Rs/ha)	Net return (Rs/ha)	BCR
1.	Farmers practice (205 kg N + 230 kg P ₂ O ₅ + 75 kg K ₂ O/ha)	291.05	7.00	320.00	44003.00	116420.00	72417.00	1:2.64
2.	Soil test base (203 kg N+65 kg P ₂ O ₅ +70 kg K ₂ O/ha)	280.83	9.10	293.00	41406.00	126373.00	84967.00	1:3.05
3.	RDF(180 kg N + 80 kg P ₂ O ₅ + 100 kg K ₂ O/ha)	291.48	8.60	310.00	42641.00	131168.00	88527.00	1:3.07

Sale rate : - Farmers practices @ Rs 400/q
Soil test base and RDF @ Rs 450/q

base (203 kg N + 65 kg P₂O₅ + 70 kg K₂O/ha) and RDF (180 kg N + 80 kg P₂O₅ + 100 kg K₂O/ha). The cultivar Kufri Bahar (3797) was planted in second fortnight of October, during three experimental seasons. The farmers were advocated to use all other recommended agronomic practices. The plant protection measures were followed for the control of late and early blight of potato. The irrigations were given as and when required. The mature crop of potato was harvested between 100-110 days after planting during end of December and first week of January. The OFT was conducted on seven farmers fields.

Nutrients application on the soil test base *i.e.*, 203 kg N+65 kg P₂O₅ + 70 kg K₂O/ha reduced the tuber yield by 10.22 q/ha or 3.63% and 10.65 q/ha or 3.79% in comparison to farmers practice (205 kg+230 kg P₂O₅ + 100 kg K₂O/ha), respectively, which was negligible. The highest tubers/ plant (9.10) were recorded in soil test base use of nutrients over farmer's practice (7.00) and RDF (8.60). The export size tubers harvested under soil test base use of fertilizer, while above export size and below seed size tubers dug out from the farmers practice and recommended dose of fertilizer. The tuber weight/plant was weighed higher in farmers practice by 320 g/plant closely followed by 310 g/plant in RDF. The bold size tubers directly affected to the tuber yield/ha resulted in, higher yield of tuber/ha harvested in farmers practice and RDF over soil test base technique of fertilizer use.

The highest net return of Rs. 88527/ha was achieved

from RDF closely followed by Rs. 84967/ha, available from soil test base. The lowest net return of Rs. 72417/ha and BCR (1:2.64) were found in farmer's practice due to uneven and over size of tubers. The B:C ratio in soil test base (1:3.05) and RDF (1:3.07) was recorded similar. The good net return in soil test base nutrients application was due to equal size of tuber, which attracted to the consumers and purchasers and provided good market rate, resulted in, it gave higher net return over farmers practice and almost equal net return achieved to the RDF (Table 1).

Feed back :

- Farmers accepted the use of nutrients application through soil test base.
- Tubers production with soil test base provided good market rate.

Farmers reaction :

- Appreciated to the efforts of scientists.
- Nutrients use through soil test base transferred to other donor area.
- Farmers contacted to scientists vide tele-counselling mode regarding the use of nutrients on soil test base technology.

REFERENCES

Anonymous (2010). *Uttar Pradesh Kai Krishi Ankarai*. Bulletin of Department of Agriculture, Lucknow (U.P.) INDIA.

8th
Year
★★★★★ of Excellence★★★★★