

Economic analysis of frenchbean + potato inter cropping and uptake of nutrient by different crops as influenced by nitrogen and potassium application

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ABSTRACT

An experiment was conducted at J.V. College, Baraut, Baghpat during *rabi* 2003-04 and 204-05 on inter cropping of french bean + potato intercropping with deferent rates of N and K application. The economic analysis of results indicated that intercropping system earned maximum of Rs. 55803/ha net profit which was found Rs. 18949 and Rs. 11014/ha more than net from potato pure and french bean pure, respectively. The application of 60 K₂O/ha earned Rs. 49819/ha maximum profit which has Rs. 8406/ha more over control. As application of 120 kgN/ha earned Rs. 54328/ha net profit and it was found Rs. 23149/ha more over control. The uptake of N was recorded maximum in intercropping system while K – uptake was maximum is sole potato and P-uptake was higher in sole French-bean and intercropping. Uptake of nutrients increased with increasing doses of fertilizers application up to highest does of application.

Key words : French bean, Potato-french bean equivalent yield, Gross net income and nutrient uptake.

INTRODUCTION

French bean (*Phaseolus vulgaris* Linn) is a new introduction in northern plains as grain legume for *rabi* season growing. Unlike other pulses, it responds well to higher inputs, particularly irrigation and nitrogen. It has been found quite competitive for intercropping in high input *rabi* crops like potato. At-IARI, New Delhi, intercropping of french bean and potato in 3:2 row ratio gave highest french bean equivalent yield per hectare (Ahalawat, 1998). Keeping these facts in view, the present investigation was carried out in western part of Uttar Pradesh to find-out the optimum requirement of nitrogen and potassium for french bean and Potato intercropping system.

MATERIALS AND METHODS

A field experiment was carried out during the winter season of 2003-04 and 2004-05 at Janta Vedic Post Graduate College, Baraut (Baghpat) Uttar Pradesh. The experimental soil was silt loam, having 0.30 and 0.36% organic carbon, 14.50 and 15.00 Kg/ha available P and 275 and 263 Kg/ha available K with pH 7.5 and 7.40 in two years. The treatments consisted of three cropping system *viz.* sole french bean, sole potato and french bean + potato in 3:2 row ratio, three K-Levels (0, 30 and 60 kg K₂O/ha), and four levels of nitrogen (0, 60, 120 and 180 Kg N/ha). The combination of cropping systems and K levels were kept in main plot and N-levels in sub plots of split plot design replicated thrice. French bean variety 'Amber', and potato variety 'Khufri chandra mukhi' were sown on 26 October and 30 October with 125 kg/ha. French bean seed and 25q/ha potato seed tuber. A uniform

basal dose of 80 kg P₂O₅/ha through single super phosphate was applied as basal. Seeds and N, K fertilizers were used on row basis sown in different treatment plots. Potato crop was dugged on 16.02.2004 and 18.02.2005 while French bean was harvested on 10.03.2004 and 15.03.2005 during two years.

RESULTS AND DISCUSSION

The economics of intercropping was analysed in term of gross income, net profit and cost : bene ratio, while uptake of N, P and K as estimated in whole system.

Economics of treatments :

Cropping system :

Intercropping system has earned significantly maximum income, while sole french bean earned minimum. In pooled mean, inter cropping system earned Rs. 11024 or 20.7% and Rs. 18949/ha or 37.3% higher than the gross income earned by sole potato and french bean, respectively (Table 1). Net profit was also obtained maximum from intercropping system, while significantly minimum from sole potato. Pooled data show that inter cropping earned maximum of Rs. 55803/ha higher than the profit earned by sole french bean and potato, respectively. These results are in conformity to those of Sinha *et al.* (1999) and Jha *et al.* (2000).

K levels :

Application of K at increased rates caused significant increase in comes which maximized at K₆₀ dose with Rs. 75281/ha. It was found 5.3% and 15% higher than income at K₃₀ and K₀ levels, respectively. Net profit was also maximized at K₆₀ level with Rs. 49819/ha which was