

# Residual effect of organic manures and inorganic fertilizers on succeeding crop pea (*Pisum sativum* L.) cv. BONNEVILLA

M.A. CHATTOO, N. AHMAD, S.H. KHAN, S.H. SIDIQUE AND K. HUSSAIN

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See end of the article for authors' affiliations

Correspondence to:

**M. A. CHATTOO**

Division of Olericulture,  
Sher-e-Kashmir University  
of Agriculture Sciences  
and Technology of  
Kashmir, Shalimar,  
SRINAGAR (J&K) INDIA

## ABSTRACT

A field experiment was conducted in the experimental fields of Division of Olericulture, SKUAST-K, Shalimar to assess the residual effect of organic manures and inorganic fertilizers on succeeding crop pea in okra-pea rotation. The experiment comprised of 25 treatments including sole application of organics and inorganics, integration of organics and inorganic fertilizers. The present investigation revealed significant variations for various attributes under study in pea due to residual effect of various treatments. Maximum values of plant height (44.43 cm), pod number plant<sup>-1</sup> (23.22), pod yield plant<sup>-1</sup> (37.07 g), pod yield ha<sup>-1</sup> (123.56 q) and nodule number plant<sup>-1</sup> (46.39) were observed in treatment T<sub>24</sub> (FYM 3t + SM 2t + PM 0.5t + VC 0.6t + BF 7 kg ha<sup>-1</sup> + 60:30:30 N: P<sub>2</sub>O<sub>5</sub>: K<sub>2</sub>O kg ha<sup>-1</sup>). Among sole application of organics, T<sub>4</sub> (PM 6 t ha<sup>-1</sup>) registered higher values of 40.57 cm, 16.89, 26.23 g, 87.43 q and 33.35 for plant height, pod number, pod yield plant<sup>-1</sup>, pod yield ha<sup>-1</sup> and nodule number plant<sup>-1</sup>, respectively. Organic integration recorded higher values of plant height (43.38 cm), pod number plant<sup>-1</sup> (21.75), pod yield plant<sup>-1</sup> (34.74 g), pod yield ha<sup>-1</sup> (115.80 q) and nodule number plant<sup>-1</sup> (43.92) with treatment T<sub>7</sub> (FYM 6t + SM 4t + PM 1t + VC 1t + BF 7 kg ha<sup>-1</sup>). Integration among organic with inorganic sources in equal proportion (50:50) registered higher values of 44.27 cm, 22.35, 35.65 g, 118.84 q and 45.55 for plant height, pod number plant<sup>-1</sup>, pod yield plant<sup>-1</sup>, pod yield ha<sup>-1</sup> and nodule number plant<sup>-1</sup> with treatment T<sub>21</sub> (PM 3t + 60:30:30 N: P<sub>2</sub>O<sub>5</sub>: K<sub>2</sub>O kg ha<sup>-1</sup>). Maximum net income (Rs. 22,944.30) and returns Re<sup>-1</sup> (1.59) invested was recorded with treatment T<sub>24</sub>.

**Key words :** Residual effect, Organic manure, Inorganic fertilizers, Okra-pea rotation

In recent years emphasis has been shifted from individual crop to cropping system as a whole, since the responses in component crops of the cropping system are influenced by the nutrient application to preceeding crops by leaving substantial effect on the succeeding crops by what is known as carry over benefit. The classical proof being slow nutrient release of traditional organic manures having effect thus both on the instant crop as well as performance of succeeding crops. Also, alarmed with the decline in soil health and chemicalization of the modern day farming, greater emphasis on the integrated nutrient management system is being given now a days. The INM approach is economically cheap, technologically sound, practically feasible and above all capable of maintaining the sustainability in the production. The vegetables which are rich sources of minerals and possess higher yield potential need balanced use of organic manures and inorganic fertilizers to produce desired yield of higher quality. Pea (*Pisum sativum* L.) is an important vegetable crop grown throughout the world. Peas are utilized mainly as a vegetable. In Kashmir valley it is grown as a *Rabi* vegetable. It has been suggested that there is no need to apply fertilizers if moderate nutrient removal

crops like pea succeeds low nutrient removal crops like okra. Therefore, the present investigation was undertaken to assess the residual effect of various organic and inorganic fertilizers applied to the previous crop (okra) on growth and yield of succeeding crop 'pea' in okra-pea rotation which suits well under Kashmir condition.

## MATERIALS AND METHODS

The present investigation was carried out at experimental fields of Division of Olericulture, Sher-e-Kashmir University of Agricultural Sciences and Technology, Shalimar, Srinagar. The experiment was laid in simple square lattice design with two replications. The main crop okra was raised during *Kharif* 2004 and 2005 while residual crop 'pea' was raised immediately after the harvest of okra during *Rabi* 2004-05 and *Rabi* 2005-06 on the same experimental plot. The plot size for residual crop pea cv. BONEVILLA was 3x3m<sup>2</sup> with spacing of 30x10 cm, thus accommodating 300 plants per plot. The experiment comprised of 25 treatments viz., T<sub>1</sub> Recommended fertilizer dose (RFD) 120:60:60 N:P<sub>2</sub>O<sub>5</sub>:K<sub>2</sub>O kg ha<sup>-1</sup>, T<sub>2</sub> Farm yard manure (FYM) 30 t ha<sup>-1</sup>, T<sub>3</sub> Sheep manure (SM) 20 t ha<sup>-1</sup>, T<sub>4</sub> Poultry manure