The Pharma Innovation Journal 2023; 12(6): 900-902

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2023; 12(6): 900-902

www.thepharmajournal.com
Received: 24-03-2023
Accepted: 29-04-2023

Vikas Singh Sengar
Assistant Professor, Agriculture, Shivalik Institute of Professional Studies, Dehradun, Uttarakhand, India

Shivam Parashar
B.Sc. (Hons.) Agriculture, 3rd Year, Agriculture, Shivalik Institute of Professional Studies, Dehradun, Uttarakhand, India

Akash Mehrotra
B.Sc. (Hons.) Agriculture, 3rd Year, Agriculture, Shivalik Institute of Professional Studies, Dehradun, Uttarakhand, India

Sunny Kumar
B.Sc. (Hons.) Agriculture, 3rd Year, Agriculture, Shivalik Institute of Professional Studies, Dehradun, Uttarakhand, India

Arav Raj
B.Sc. (Hons.) Agriculture, 3rd Year, Agriculture, Shivalik Institute of Professional Studies, Dehradun, Uttarakhand, India

Corresponding Author:
Vikas Singh Sengar
Assistant Professor, Agriculture, Shivalik Institute of Professional Studies, Dehradun, Uttarakhand, India

Effects of various doses of nutrients/ fertilizer on economics of chickpea (*Cicer arietinum* L.) under late sown condition

Vikas Singh Sengar, Shivam Parashar, Akash Mehrotra, Sunny Kumar and Arav Raj

Abstract
Grain legumes play an important nutritional role in the diet of millions of people in the developing countries and are thus sometimes referred to as the poor man's meat. Since legumes are vital sources of protein, calcium, iron, phosphorus, and other minerals, they form a significant part of the diet of vegetarians since the other food items they consume do not contain much protein. The chickpea (*Cicer arietinum*) is an edible legume of the family Leguminose. Chickpeas are a helpful source of zinc, folate and protein. A field experiment conducted entitled, "Effects of Different doses of fertilizer on growth and yield of chickpea under late sown condition" during 2022-23 at Shivalik Agriculture Farm, SIPS, Dehradun. Experiment was layout in RBD with 9 treatments and 3 replications. Results revealed that maximum cost of cultivation (49062 Rs./ha), maximum gross income (97017Rs. /ha), maximum net return/ net profit (47955 Rs. /ha) and maximum B:C ratio obtained (1:1.98) in 75% RDF + vermicompost 1o tonnes/ha (T_8). It revealed from field experiments that in 75% RDF + vermicompost 10 tonnes/ha (T_8) superior over rest of all treatment. Therefore, recommended that if farmers used the 75% RDF along with 10 tonnes vermicompost/ha given the better results. If farmer adopted above mentioned combination of INM then he can increase his production as well as income.

Keywords: Cost of cultivation, gross income, net profit, B:C ratio, grain yield, straw yield etc.

Introduction
Grain legumes play an important nutritional role in the diet of millions of people in the developing countries and are thus sometimes referred to as the poor man's meat. Since legumes are vital sources of protein, calcium, iron, phosphorus, and other minerals, they form a significant part of the diet of vegetarians since the other food items they consume do not contain much protein. The chickpea (*Cicer arietinum*) is an edible legume of the family Leguminose. Chickpeas are a helpful source of zinc, folate and protein. They are also very high in dietary fibre and hence a healthy source of carbohydrates for persons with insulin sensitivity or diabetes. According to the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) chickpea seeds contain on average- 21.1% protein, 64% total carbohydrates (47% starch, 6% soluble sugar), 5% fat, 6% crude fiber and 3% ash. High mineral content has been reported for phosphorus (340 mg per 100 g), calcium (190 mg per 100 g) and magnesium (140 mg per 100 g), iron (7 mg per 100 g) and zinc (3 mg per 100 g). Balanced fertilizer application in a cropping system is very necessary for a sustainable production system as well as appropriate soil nutrient flexibility. Increasing the level of NPK up to 100% RDF significantly improved growth parameters, yield attributes, grain and straw yield. Application of fertilizers correlated with requirement of plant and availability nutrients in soil. In precision agriculture excess use of fertilizers are not recommendable. The excessive and unbalance application of fertilizers increases cost of production without increasing production.

Material and Method
A field experiment conducted entitled, "Effects of Different doses of fertilizer on growth and yield of chickpea under late sown condition" at Shivalik Agriculture Farm, SIPS, Dehradun. Experiment was layout in RBD with 9 treatments and 3 replications. Details of experiments depicted in table-1. Five plants were selected at random from each net plot for recording observation.

Table 1: Treatment combination and symbols

Symbol	Treatment combination
T_1	Control
T_2	100% RDF
T_3	75% RDF
T_4	100 RDF+ Sulphur 20 Kg/ha
T_5	100 RDF+ Zinc 15 Kg/ha
T_6	50% RDF + Sulphur 10 kg/ha + Zinc 5 Kg/ha
T_7	75% RDF + FYM 1o tonnes/ha
T_8	75% RDF + vermicompost 1o tonnes/ha
T_9	50% RDF + FYM 5 tonnes/ha + vermicompost 5 tonnes/ha

Economics

The economics regarding the cultivation of crop was calculated separately for all the treatment combinations on per hectare basis.

Cost of cultivation

Cost of cultivation (Rs/ha) for each treatment combination was calculated separately taking into consideration of all cultural practices followed in the cultivation.

Gross return

The gross return (Rs/ha) for each treatment combination was calculated taking into consideration the yield and market price of produce.

Net Profit

The net profit (Rs/ha) was calculated for each treatment combination separately by using the following expression:

Net Profit (Rs/ha) = Gross return (Rs/ha) – Cost of cultivation (Rs/ha)

Cost Benefit ratio

Cost: Benefit ratio = Gross Return (Rs/ha) / Cost of Cultivation (Rs/ha)

Result and Discussion

It was depicted from table-4 that 50% flowering, No. of pods/plant, Pod length (cm), number of Seed/plant, Grain yield (q/ha) and Straw yield (q/ha) significantly affected by different doses of fertilizer.

Table-1 was revealed that maximum grain yield 15.24 (q/ha) observed in in75% RDF + vermicompost 1o tonnes/ha (T_8) followed by treatment T_6 and T_7. While Minimum grain yield observed in treatment T_3. It was revealed from table-1 that maximum straw yield 18.59 (q/ha) observed in in75% RDF + vermicompost 1o tonnes/ha (T_8) followed by treatment T_6 and T_7. While Minimum straw yield observed in treatment T_3.

Table-1 was revealed that maximum cost of cultivation (49062 Rs./ha) observed in in75% RDF + vermicompost 1o tonnes/ha (T_8) followed by treatment T_6 and T_9 while minimum observed in treatment T_1. It was revealed from table-1 that maximum gross income (97017Rs. /ha) observed in 75% RDF + vermicompost 1o tonnes/ha (T_8) followed by treatment T_6 and T_7 while minimum observed in treatment T_5.

It depicted from table -1 that that maximum net return/ net profit (47955 Rs. /ha) obtained in75% RDF + vermicompost 1o tonnes/ha (T_8) followed by treatment $T_6$1and T_1while minimum observed in treatment T_4. Table-1 clearly stated that maximum B:C ratio obtained (1:1.98) in 75% RDF + vermicompost 1o tonnes/ha (T_8) followed by treatment T_6 and T_1. While Minimum straw yield observed in treatment T_2 (1:1.05).

Table 4: Effect of different doses of fertilizer on yield and yield attributes of chickpea

Treatment	Grain yield (q/ha)	Straw yield (q/ha)	Cost of cultivation (Rs/ha)	Gross return (Rs/ha)	Net return or net profit (Rs/ha)	Cost Benefit ratio
T_1	10.79	13.16	45988	68688	22700	1:1.49
T_2	10.10	12.32	46964	64296	17332	1:1.37
T_3	9.68	11.81	47906	61623	13717	1:1.29
T_4	7.83	9.55	47654	49845	2191	1:1.05
T_5	10.91	13.31	48615	69453	20838	1:1.43
T_6	11.93	14.55	48942	75945	27003	1:1.55
T_7	11.24	13.71	49004	71553	22549	1:1.46
T_8	15.24	18.59	49062	97017	47955	1:1.98
T_9	10.94	13.34	48941	69642	20701	1:1.42

Summary and Conclusion

A field experiment conducted entitled, “Effects of Different doses of fertilizer on growth and yield of chickpea under late sown condition” at Shivalik Agriculture Farm, SIPS, Dehradun. Experiment was layout in RBD with 9 treatments and 3 replications. Results clearly depicted that Grain yield (q/ha) and Straw yield (q/ha) recorded in75% RDF + vermicompost 1o tonnes/ha (T_8).

Results revealed that maximum cost of cultivation (49062 Rs./ha), maximum gross income (97017Rs. /ha), maximum net return/ net profit (47955 Rs. /ha) and maximum B:C ratio obtained (1:1.98) in 75% RDF + vermicompost 1o tonnes/ha (T_8).

It concluded from field experiments that in75% RDF + vermicompost 10 tonnes/ha (T_8) superior over rest of all treatment. Therefore, recommended that if farmers used the 75% RDF along with 10 tonnes vermicompost/ha given the better results. If farmer adopted above mentioned combination of INM then he can increase his production as well as income.

Reference

1. Akibode CS, Maredia MK. Global and regional trends in production, trade and consumption of food legume crops (No. 1099-2016-89132)
2. Sengar VS, Verma RR, Singh KK, Ahmad R, Singh GP, Singh A. Chickpea: Economic study on measuring efficiency of used resource in Auraiya dist. Of U.P, Journal of Pharmacognosy and Phytochemistry; c2019. p.

617-619.
3. Sengar VS, Verma RR, Ahmad R, Singh KK, Kumar N, Singh RA, *et al*. Chickpea: Study on cost of cultivation and profit measures in Auraiya Dist. of western U.P., Journal of Pharmacognosy and Phytochemistr Y; c2018. p. 629-631.
4. Merga B, Haji J. Economic importance of chickpea: Production, value, and world trade, Merga & Haji, Cogent Food & Agriculture. 2019;5:1615718.
5. Mauriya AK, Kumar V, Kumari A, Kumar P, Kumari M, Hoda MZ. Impact of cluster front line demonstrations on productivity and profitability of chickpea (*Cicer arietinum* L.), J Food Leg. 2017;30(1):57-60.
6. Tomar RKS. Maximization of productivity for chickpea (*Cicer arietinum* L.) through improved technologies in farmer's field, Indian J Natural Products and Res. 2010;1:515- 517.