Research Note

Indian Journal of Extension Education
Vol. 58, No. 2 (April–June), 2022, (195-197)

ISSN 0537-1996 (Print)
ISSN 2454-552X (Online)

Impact of Cluster Front Line Demonstrations on Field Pea (*Pisum sativum* L.) in valley areas of Manipur

Laishram Kanta Singh[1]*, Lydia Zimik[2] and S. Roma Devi[3]

[1]SMS (SWCE), [2]SMS (Agronomy), ICAR-KVK Imphal West, ICAR Research Complex for NEH Region, Manipur Centre, Manipur-795004, Imphal, India
[3]SMS (Home Science), ICAR-KVK Churachandpur, ICAR Research Complex for NEH Region, Manipur Centre, Manipur-795004, Imphal, India
*Correspondence author email id: kanta_lai@yahoo.co.in

ARTICLE INFO

Keywords: Cluster front line demonstrations (CFLD), Yield, Extension gap index, Technology gap index

http://doi.org/10.48165/IJEE.2022.58228

ABSTRACT

In Imphal district of Manipur, the field pea (*Pisum sativum* L.) is a prominent rabi season pulse crop. In comparison to other sections of the country, however, its output is quite poor. The productivity and economics of cluster front line demonstrations, as well as the adoption of newest production technologies including technology and extension gap by 50 Cluster Front Line Demonstrations (CFLD) farmers and 50 non-CFLD farmers were investigated during 2018-19 to 2020-21. The results revealed that average yield of the demonstration were 15.33 q/ha against the potential yield of 22 q/ha. The yield gap of 6.67 q/ha indicates that there still a technology gap and still there is big scope for increasing the yield. The percentage of increase in yield in CFLD ranged from 38.43 to 40.17 per cent with an average increase of 39.57 per cent over the farmers practice in local check plots. The extension yield gap fluctuated between 27.97 and 28.64 per cent. Overall it is concluded that cluster frontline demonstrations (CFLD) proved an effective tool for increasing the productivity of field pea.

INTRODUCTION

India has long been the world's leading pulse producer, consumer, and importer. Pulses are responsible for 11 per cent of India's entire protein consumption (Reddy, 2010) and are taken considerably more frequently than any other form of protein in India, showing their importance in people's daily diets (Raj et al., 2013). In India, the pea is a common legume and the Indian Council of Agricultural Research (ICAR), New Delhi, held a field demonstration on field peas in the mid-1980s as part of a pulse and oilseed technology mission. Pulses also provide green pods for vegetables and healthy fodder for cattle, as well as increasing soil fertility and physical structure, being compatible with mixed/intercropping systems, crop rotations, and dry farming (Naik and Nethrayini, 2019). Bridging the yield gap by increasing pulses in new positions, soil test-based INM, high-quality inputs, precision farming and mechanised pulse cultivation, all of which are complemented by generous government policies and funding support for implementing states/stakeholders, can result in targeted production and productivity (Tiwari and Shivhare, 2017). According to the ICAR-Indian Institute of Pulses Research (IIPR), Kanpur's Vision-2030 document, a 4.2 per cent growth rate is needed to fulfil the proposed demand for 32 million tonnes of pulses by 2030, but this will necessitate a paradigm change in research, technology invention and diffusion, popularisation of improved crop management practises and commercialization, as well as capacity building. The Department of Agriculture and Farmers Welfare, Govt. of India, has taken steps to address this critical issue since 2015-16, as part of the National Food Security Mission-Pulses (NFSM-Pulses), India has been implementing a countrywide Cluster Frontline Demonstration Program (CFLD) on pulses. Peas are a significant source of income for many valley farmers of Imphal West

Received 17-12-2021; Accepted 10-02-2022

District, Manipur, although profit margins are still challenging. An extensive fast investigation of the rural area and several group meetings of pea growers were organised to examine the causes of the poor output. A number of gaps in technology introduction surfaced as a consequence of the sessions. With the aid of farmers, the production limitations were ranked in a matrix. In the years 2018-19, 50 pea producers were enrolled in the CFLD programme, which included a comprehensive practice package. Individual demonstration areas varied in size from 0.25 to 1 hectare, with a total area of 20 hectares. The foremost goal of these demonstrations was to improve field pea productivity, which would augment farmer revenue, as well as to disseminate the most up-to-date production technologies to farmers in the region.

METHODOLOGY

The research was carried out in Manipur's Imphal West area in north-east India During the three years (2018-19 to 2020-21), only one selected variety of field pea was evaluated for the study, which was of crucial importance in terms of production potential and wide acceptability by farmers in their local agricultural systems. All the technological interventions were taken as per prescribed packages of practices for field pea. The farmer practice was considered as control plot/local check. The KVK provided critical inputs to the farmers for demonstration plots with technical support.

During the years 2018-2021, ICAR-Krishi Vigyan Kendra (KVK) Imphal West conducted training and demonstration to different villages of Haorang Sabal and Wangoi blocks of Imphal West valley district of Manipur. The percent increase in yield, technology gap and extension gap were evaluated following norms given by Samui et al., (2000).

RESULTS AND DISCUSSION

The average yield of cluster front line demonstration (CFLD) field pea (var. Prakash) was documented at 15.31 q/ha, 15.25 q/ha and 15.44 q/ha during the year 2018-19, 2019-20 and 2020-21, respectively (Table 1). The year 2019-20 had lowest yield and this was due to the erratic rainfall during the period. The better soil moisture conservation acquired during the year 2020-21 had performed better in production among the three study years. Similarly, farmers' practice also performed at 11.06 q/ha, 10.88 q/ha and 11.02 q/h during the year 2018-19, 2019-20 and 2020-21, respectively. The percent of standard deviation (SD) of yield ranged from 1.4 to 2.74, while SD of farmers' practice ranges from 0.21 to 0.42. The average percentage increased in the yield over farmers' practices was 38, 40 and 40 for the year 2018-19, 2019-2020 and 2020-21, respectively. The performances of CFLD yields were much higher as compared to average yield of farmers' practices. The percent of coefficient of variation (CV) of yield ranged from 1.4 to 2.74, while CV of farmers' practice ranged from 5.04 to 5.87. Although there was decline in yield during the year 2019-20 for CFLD and farmers' practice the increased yield was similar to the year 2020-21. The results indicated that the CFLD have given a good impact over the farming community of valley areas of Manipur as they were motivated by the new agricultural technologies applied in the CFLD plots. This finding demonstrated that the better average grain yield in demonstration plots over time relative to farmer practices was attained due to knowledge and implementation of the entire package of methods. The findings are comparable to those of a previous study of Poonia & Pithia (2011); Kumbhare et al., (2014); Nain et al., (2014); Dhaka et al., (2015); Nain et al., (2015); Kalita et al., (2019); Singh et al., (2019) & Sangwan et al., (2021).

The maximum technological gap was in the year 2019-20 and 2020-21 at 33.95 per cent, followed by the year 2018-19 at 31.64 per cent. The minimum technological gap was obtained in the year 2018-19 at 27.86 per cent and followed by the year 2020-21 and 2019-20 at 28.55 per cent and 27.86 per cent, respectively. It may be stated that there was a technological yield gap in crops due to variations in soil fertility and meteorological conditions (Mukherjee, 2003; Raj et al., 2013). The percent of standard deviation (SD) of technological gap ranged from 0.98 to 1.90, while coefficient of variation (CV) ranged from 3.21 to 6.19. It is clear from the findings that using various inputs, such as better variety, excellent seed, and seed treatment with fungicides and bio fertilizers resulted in a considerable improvement in field pea growth and production (Table 2). Similar findings were reported by Kirar et al., (2006) & Singh et al., (2014).

The minimum extension gap was obtained in the year 2018-19 at 16.86 per cent and followed by 22.48 per cent and 23.22 per cent in the year 2020-21 and 2019-20, respectively. While the

Table 1. The year-wise average yield, standard deviation, coefficient of variation and increased yield of field pea

S.No.	Year	CFLD			Farmers' Practice			Increased yield (%)
		Average yield (q/ha)	SD (q/ha)	CV (%)	Average yield (q/ha)	SD (q/ha)	CV (%)	
1	2018-19	15.31	0.21	1.40	11.06	0.58	5.27	38.43
2	2019-20	15.25	0.42	2.74	10.88	0.55	5.04	40.17
3	2020-21	15.44	0.26	1.70	11.02	0.65	5.87	40.11

Table 2. The detail statistical analysis of extension gap for the field pea

S.No.	Year	Range* (%)	n	Min (%)	Max (%)	SD (%)	CV (%)	Overall Technological Gap Index (%)
1	2018-19	27.86-31.64	57	27.86	31.64	0.98	3.21	30.41
2	2019-20	28.18-33.95	40	28.18	33.95	1.90	6.19	30.67
3	2020-21	28.55-33.95	36	28.55	33.95	1.19	3.99	29.84

*Ranges at 5 and 95 percentiles of the entire data; n number of data used in the analysis

Table 3. Statistical analysis of extension gap for the field pea

S.No.	Year	Range* (%)	n	Min (%)	Max (%)	SD (%)	CV (%)	Overall Technological Gap Index (%)
1	2018-19	21.95-34.25	57	16.86	34.71	4.51	16.11	27.97
2	2019-20	24.16-34.16	40	23.22	35.95	3.24	11.32	28.64
3	2020-21	23.22-33.87	36	22.48	35.38	3.85	13.59	28.35

*Ranges at 5 and 95 percentiles of the entire data; n number of data used in the analysis

maximum extension gap was obtained in the year 2019-20 at 35.95 per cent and followed by 35.38 per cent and 34.71 per cent in the year 2020-21 and 2018-19, respectively. The percent of standard deviation (SD) of extension gap ranges from 3.24 to 4.51, while coefficient of variation (CV) ranged from 11.32 to 16.11. The overall extension gap was highest in the in the year 2019-20 at 28.64 per cent, followed by the year 2020-21 at 20.35 per cent and lowest at 27.97 per cent for the year 2018-19 (Table 3). Kumar et al., (2010) & Singh et al., (2017) agreed that there exist extension gap in frontline demonstration. This highlights the necessity for field agricultural extension personnel to be technologically upgraded in their understanding of field pea production technology, either through specialised field training or brief in-service training and visits to research stations.

CONCLUSION

Prakash variety of field pea is developed for fertile and irrigated regions of north India while the demonstrations were conducted in north eastern India, Manipur agro-climatic region. Therefore, the yield gap should not surprise to the farmers and agriculturist. However, there should be an effort to increase the yield near to the potential yield or reduce the present technology gap. This further necessitate field agricultural extension personnel to be technologically upgraded in their understanding of field pea production technology, either through skills based field training or short-term field training. Field agricultural extension personnel must also be trained in technology transfer abilities in order to effectively translate information into crop production potential. It is concluded that cluster frontline demonstrations (CFLD) was an effective tool for increasing the productivity of field pea, building the relationship and confidence between farmers and scientists of KVK.

REFERENCES

Dhaka, B. L., Poonia, M. K., Meena, B. S., & Bairwa, R. K. (2015). Yield and economic viability of coriander under front line demonstrations in Bundi district of Rajasthan. *Journal of Horticultural Science*, *10*(2), 226-228.

Kalita, S. K., Chhonkar, D. S., & Kanwat, M. (2019). Assessment of cluster front line demonstrations on rapeseed (*Brassica campestris* L.) in Tirap district of Arunachal Pradesh. *Indian Journal of Extension Education*, *55*(3), 17-22.

Kirar, B. S., Narshine, R., Gupta, A. K., & Mukherji, S. C. (2006). Demonstration: An effective tool for increasing the productivity of Urd. *Indian Research Journal of Extension Education*, *6*(3), 47-48.

Kumar, P., Peshin, R., Nain, M. S., & Kumar, V. (2010). Constraints in pulses cultivation as perceived by the farmers. *Green Farming-International Journal of Applied Agriculture and Horticulture Science*, *1*(5), 497-498.

Kumbhare, N. V., Dubey, S. K., Nain, M. S., & Bahal, R. (2014). Micro analysis of yield gap and profitability in pulses and cereals. *Legume Research-An International Journal*, *37*(5), 532-536.

Mukherjee, N. (2003) Participatory, learning and action. Concept, Publishing Company, New Delhi, pp. 63-65.

Naik, V. R., & Nethrayini, K. R. (2019). Impact assessment of national food security mission (NFSM) on pulses production in Karnataka, India - An economic analysis. *Asian Journal of Agricultural Extension, Economics & Sociology*, *33*(1), 1-12.

Nain, M. S., Bahal, R., Dubey, S. K., & Kumbhare, N. V. (2014). Adoption gap as the determinant of instability in Indian legume production: Perspective and implications. *Journal of Food Legumes*, *27*(2), 146-150.

Nain, M. S., Kumbhare, N. V., Sharma, J. P., Chahal, V. P., & Bahal, R. (2015). Status, adoption gap and way forward of pulse production in India. *Indian Journal of Agricultural Science, 85*(8), 1017-1025.

Poonia, T. C., & Pithia, M. S. (2011). Impact of front line demonstrations of chickpea in Gujarat. *Legume Research*, *34*(4), 304-307.

Raj, A. D., Yadav, V., & Rathod, J. H. (2013). Impact of front line demonstrations (FLD) on the yield of pulses. *International Journal of Scientific and Research Publications*, *3*(9), 1-4.

Reddy, A. A. (2010). Regional disparities in food habits and nutritional intake in Andhra Pradesh, India. *Regional and Sectoral Economic Studies*, *10*(2), 125-134.

Samui, S. K., Maitra, S., Roy, D. K., Mondal, A. K., & Sahan, D. (2000). Evaluation on front line demonstration on groundnut (*Arachis hypogea* L.) in Sundarbans. *Indian Society of Coastal Agricultural Research*, *18*(2), 180-183.

Sangwan, M., Singh, J., Pawar, N., Siwach, M., Solanki, Y. P., & Ramkaran (2021). Evaluation of front line demonstration on mustard crop in Rohtak district of Haryana. *Indian Journal of Extension Education*, *57*(2), 6-10.

Singh, A., Singh, B., Jaiswal, M., & Singh, K. (2019). Impact of front line demonstrations on the yield and economics of pulse crops in Burhanpur district of Madhya Pradesh. *Indian Journal of Extension Education*, *55*(1), 43-46.

Singh, D., Patel, A. K., Baghel, M. S., Singh, A., & Singh, A. K. (2014). Technological intervention for reducing the yield gap of chickpea (*Cicer arietinum* L.) in Sidhi District of M.P. *International Journal of Advanced Research in Management and Social Sciences*, *3*(3), 117-122.

Singh, R. K., Jaiswal, R. K., Kirar, B. S., & Mishra, P. K. (2017). Performance of improved varieties of pulse crops at farmers' field in Kymore plateau and Satpura hills zone of Madhya Pradesh. *Indian Journal of Extension Education*, *53*(4), 136-139.

Tiwari, A. K., & Shivhare, A. K. (2017). Pulses in India Retrospect and Prospects. Technical Report No. DPD/Pub.1/Vol. 2/2016. Ministry of Agri. & Farmers Welfare (DAC&FW), Govt. of India and Directorate of Pulses Development, Vindhyachal Bhavan, Bhopal, M.P.