International Journal of Agriculture Sciences
ISSN: 0975-3710 & E-ISSN: 0975-9107, Volume 14, Issue 11, 2022, pp.-11890-11892.
Available online at https://bioinfopublication.org/pages/jouarchive.php?id=BPJ0000217

Research Article

IMPACT OF FRONT-LINE DEMONSTRATION ON ADOPTION OF NEW TECHNOLOGY IN GROUNDNUT GROWING AREA OF GIR SOMNATH DISTRICT

BALDANIYA M.J.[1]*, JAVIYA P.P.[2], PARMAR P.V.[3] AND RATHOD R.T.[4]
[1]Subject Matter Specialist, ICAR-Krishi Vigyan Kendra, Gir Somnath, 362725, Gujarat, India
[2]Scientist (Agronomy), ICAR-Krishi Vigyan Kendra, Dang, 394730, Gujarat, India
[3]Anand Agricultural University, Anand, 388110, Gujarat, India
[4]Subject Matter Specialist (Plant Protection), ICAR-Krishi Vigyan Kendra, Gir Somnath, 362725, Gujarat, India
*Corresponding Author: Email - manishbaldaniya08@gmail.com

Received: November 05, 2022; Revised: November 26, 2022; Accepted: November 27, 2022; Published: November 30, 2022

Abstract: The front line demonstration study was carried out based on objectively to newly released crop production technology and its management practices on the farmer's field by the scientist themself before taking main extension system of different agro climatic zone. This study was conducted during year 2019-20, 2020-21 and 2021-22 in *kharif* season. In this study considered improved technology especially like new variety (GJG-22) of groundnut crop, balance application of fertilizer (based on soil test report), Integrated management of pest, disease and weed. In this demonstrated field recorded an average yield ranging from 21.87 q/ha to 25.78 q/ha with mean value 24.56 q/ha. Yield increasing percentage is 14.5 %, 13.08 % and 13.22 % respectively in sequence of year as compared to locally farming practices. The maximum gross (129626 Rs./ha) and net return (90551 Rs./ha) value was obtained under demo plot with average benefit: cost ratio (1:3.30) as compared to local check. In present study result reflected that the yield and economics of groundnut can bust up recommended technology.

Keywords: *Groundnut, Demonstration, Technology Gap, Groundnut*

Citation: Baldaniya M.J., *et al*., (2022) Impact of Front-line Demonstration on Adoption of New Technology in Groundnut Growing Area of Gir Somnath District. International Journal of Agriculture Sciences, ISSN: 0975-3710 & E-ISSN: 0975-9107, Volume 14, Issue 11, pp.- 11890-11892.

Academic Editor / Reviewer: Himadri Roy, Dr Vijaya Lakshmi V

Introduction

In India scenario of oilseed crop has drastically changes in last two decades. The demand of vegetable oil, edible and non-edible oil is continually raising with fast rate. India is reflected to be a glory of oilseed crops having 19 and 10 per cent of total world's oilseed area and production, respectively. Oil seed crop is the second most important in agriculture commodity in India after cereals within the segment of field crop. India is the major producer and consumer of oilseeds, based on world data about 14 per cent of the global oilseeds area, 7 per cent of the total vegetable oil production and 10 per cent of the total edible oil consumption [1].

Groundnut is most cultivated and major oil seed crop of India, also known as king of oilseed crop. It is a self-pollinated legume crop which is belong to Fabaceae family. Groundnut is recognized as golden or miracle bean due to their high nutritive value and various uses, it is source of protein, calories, essential fatty acids, vitamins, and minerals for human nutrition [2]. Groundnut is very important source of protein (26%) and oil 45-50% with higher proportion of unsaturated fatty acid including linolenic and linoleic acids. Groundnut is a number one oilseed crop in India with occupying 04.91 million ha area with production of 9.18 million ton with productivity 1869 kg/ha. Out of this largest area Gujarat occupied 21.63 lakh hector with production 41.27 lakh tone with productivity 1908 kg/ha. Gir Somnath district has greater potential of groundnut production due to favourable climatic condition as well as very well fertility status of soil. The adoption of recommended production technology for farmers is not very hopeful. The reason may be that either the no more knowledge about promising technologies or farmers are unable to use improved technology due to various socioeconomic constrain. Hence, an effective transfer system of agricultural technology, front line demonstration is most appropriate tools to proven an effective for awareness and acceptance of improved technology.

Keeping this point in mind, the present study was carried out to find Impact of front line demonstration on yield and economics of groundnut growing area of Gir Somnath district.

Materials and Method

The present study was carried out in operational area of Krishi Vigyan Kendra- Gir Somnath (Gujarat) during *kharif* season of 2019-20, 2020-21 and 2021-22. Total 15 number of demonstration on groundnut variety GJG-22 was conducted at tree village (Kadvasan, Bosan and Moti Fafni) of Gir Somnath. Each demonstration plot size is 0.4 ha (1 Acre) area. Before sowing of ground nut crop soil sample were collected from field and analyse. After soil test report farmer apply FYM and soil test base recommended fertilizer dose of NPK. Soil of experimental area is medium black with containing medium to high amount of NPK (kg/ha). The groundnut crop was sown at 60 cm between two row and 10 cm between two plants with 120 kg of seed per ha during first to third week of June month.

In demonstration, farmer was selected based on frequently group meeting and group discussion in each tree village. After finally selected farmer prior to conduction FLD's, farmer group meeting and specific skill training was given to selected farmer regarding full package of practices about groundnut cultivation. Other technological information regarding weed management, pest and disease management, harvesting, threshing information given time to time and KVK scientist regularly visited demonstration plot and guide to farmer at each and every problem. Further, some awareness program as like filed day, group meeting organize were demonstration sites to provide the opportunity for other farmer to witness the benefit of such demonstrated technology.

In demonstration plot, farmer practices were counted as control plot. Data were collected with help of personal contact and observation taken personally.

Table-1 Effect on New Technology on Average Pod Yield, Pod Yield Increasing Percentage, Extension Gap, Technology Gap and Technology Index all in all Three Year of Experiment

Year	Area (ha)	No of Demo	Potential yield (q/ha)	Average pod yield		% Pod yield increase over FP	Extension gap (q/ha)	Technology gap (q/ha)	Technology Index
				Demo	FP				
2019-20	2	5	27.26	27.18	23.74	14.50	3.44	0.08	0.29
2020-21	2	5	27.26	21.85	19.20	13.08	2.65	5.41	19.84
2021-22	2	5	27.26	24.66	21.78	13.22	2.88	2.60	9.53
Mean value			27.26	24.56	21.57	13.60	2.99	2.69	9.88

Table-2 Effect on New Technology on Economics of the different experimental year

Year	Cost of cultivation (Rs./ha)		Gross return (Rs./ha)		Net return (Rs/ha)		B:C Ratio		Net return increased over FP (%)
	Demo	FP	Demo	FP	Demo	FP	Demo	FB	
2019-20	36795	39245	137802	120361	101007	81116	3.74	3.06	22.3
2020-21	38175	40445	114712	100800	76537	60355	3	2.49	21.1
2021-22	42755	47750	136863	120879	94108	73129	3.2	2.53	19.7
Mean	39241	42480	129792	114013	90550	71533	3.31	2.69	21.0

The yield data was recorded by separate threshing. The yield of both demonstration and control plot was recorded by same procedure. Those collected data was use to analysed for extension gap, technology gap and technological index study [3] as given below.

Extension gap = Demonstration yield - Farmer's yield
Technology gap = Potential yield - Demonstration yield
Technology index (%) = [Potential yield – Demo yield / Potential yield] x 100

Economical parameter (Gross return, Net Return, BCR) was work out based on current market price of all input parameter and Minimum Support price of farm output.

Results and Discussion

The data on groundnut yield indicated that the FLDs give good impact on the farming community of the Gir Somnath district as they were motivated by the new agricultural technology adopted in the demonstration. Results of all front-line demonstration on farmer field indicates comparatively higher yield obtained under demonstration plot as compared to locally farmer practices. Thus, due to under FLD manage proper seed rate, seed treatment and integrated approach for nutrient, weed, pest and disease management. Moreover, demonstration plot recorded higher average pod yield (24.56 q/ha) and haulm yield (19.24 q/ha). While farmer practices recorded 21.57 q/ha and 18.20 q/ha pod and haulm yield. The results are clearly reflected that the average pod yield of groundnut could be increased by 12.2 % over locally farmer practices. It is due to adoption of improved variety GJG-22 with full scientific package of practices. It's confirmed with Pawar *et al.,* (2017) [4] and Undhad *et al.,* (2019) [5].

Extension Gap

Continuously using recent and latest production technology with high yielding varieties was subsequently changes in different this is alarming trend of galloping extension gap. The new technological tools can eventually lead to the farmers to discontinuance of old varieties with the new technology. An experiment results reflected that average extension gap 344 kg/ha in year 2019-20, 265 kg/ha in year 2020-21, 288 kg/ha in year 2021-22 and average gap is 299 kg/ha was recorded during all three years of investigation. During the period of study to find the region of this gap is mainly due to illiteracy of farmer so adoption of new agricultural technology is time taking process. Gap observed between in different year is due to may be attributed to the dissimilarity in the soil fertility status and weather conditions.

Technology Gap

The yield of front line demonstration trials and potential yield of the crop was compared to estimate the yield gap is categorised into technology gap. The data reviled that the maximum technology gap was found in year 2020-21 is 541 kg/ha, whereas minimum gap was noted in year 2019-20 is 8 kg/ha. The technology gap was observed due to dissimilarity in the soil fertility status and weather conditions *i.e.*, rainfall and temperature as well as local climate conditions, rainfed agriculture and timeliness of availability of inputs. Hence, variety wise location specific recommendation was appearing to be necessary to minimize the technology gap for yield level in different situations. These finding of studies agreed with Singh *et al.*, (2014) [6] and Solanki *et al.,* (2013) [7].

Technology Index

Technology index is indicated that feasibility of technology at farmer's field. The lover value of feasibility index was indicated that the technology is more feasible at field level. Results was indicated that the lower value of TI is 0.29 % in the year of 2019-20. While maximum value of technology index 19.84 in the year 2020-21. Hence, it can be incidental that awareness and adoption of improved varieties with the recommended scientific package of practices have increased during the advancement of the study period. These results are verifying with the findings of Solanki *et al.,* (2013) and Sharma *et al.,* (2016) [8].

Economics

The economics of demonstration and farmer practices has been presented in table given below table. The average value of gross cost (42480 Rs./ha) is found higher in framer practices as compared to demonstration plot. The average net return 21% is higher than the farmer practices. The FLDs plot fetched higher mean gross return (129792 Rs./ha) and net return (90550 Rs./ha) value with higher benefit: cost ratio (1:3.31) compared to gross return (114013 Rs./ha), Net return (71533 Rs./ha) and benefit: cost ratio (1:2.69) of farmer practices. It was confirmed with Sharma *et al*., (2016) [9] and Solanki *et. al*. (2020) [10].

Conclusion

From forgoing discussion, it can be concluded that by conducting frontline demonstrations of improved variety with intervention practices of proven technologies in farmer's field, groundnut productivity enhanced to a great extent which increased in the income level of farmers and improved livelihood of farming community.

Application of research: Farmers were motivated by frontline demonstrations in groundnut crop and they would adopt these technology in the coming years.

Research Category: Front line Demonstration

Acknowledgement / Funding: Authors are thankful to ICAR-Krishi Vigyan Kendra, Gir Somnath, 362725, Gujarat, India; ICAR-Krishi Vigyan Kendra, Dang, 394730, Gujarat, India and Anand Agricultural University, Anand, 388110, Gujarat, India

****Research Guide or Chairperson of research: Manish Baldaniya**
University: ICAR-Krishi Vigyan Kendra, Gir Somnath, 362725, Gujarat, India
Research project name or number: PhD Thesis

Application of research: Farmers were motivated by frontline demonstrations in groundnut crop and they would adopt this technology in the coming years.

Research Category: Front line Demonstration

Acknowledgement / Funding: Authors are thankful to ICAR-Krishi Vigyan Kendra, Gir Somnath, 362725, Gujarat, India; ICAR-Krishi Vigyan Kendra, Dang, 394730, Gujarat, India and Anand Agricultural University, Anand, 388110, Gujarat, India

****Research Guide or Chairperson of research: Manish Baldaniya**
University: ICAR-Krishi Vigyan Kendra, Gir Somnath, 362725, Gujarat, India
Research project name or number: PhD Thesis

Author Contributions: All authors equally contributed

Author statement: All authors read, reviewed, agreed and approved the final manuscript. Note-All authors agreed that- Written informed consent was obtained from all participants prior to publish / enrolment

Study area / Sample Collection: ICAR-Krishi Vigyan Kendra, Gir Somnath, 362725, Gujarat, India

Cultivar / Variety / Breed name: Groundnut

Conflict of Interest: None declared

Ethical approval: This article does not contain any studies with human participants or animals performed by any of the authors.
Ethical Committee Approval Number: Nil

References

[1] Anonymous (2020) *Gujarat state area, production and productivity data of groundnut crop*.
[2] Willett W., Rockstrom J., Loken B., Springmann M., Lang T. and Vermeulen S. (2019) *Lancet*, 393(10170), 447–492.
[3] Samui S.K., Maitra S., Roy D.K., Mandal A.K. and Saha D. (2000) *Journal of the Indian Society Coastal Agricultural Research*, 18(2), 180-183.
[4] Pawar Y., Malve S.H. and Patel G.J. (2017) *Gujarat Journal of Extension Education, Special Issue*, 32-35.
[5] Undhad S.V., Prajapati V.S., Sharma P.S., Jadav N.B. and Parmar A.R. (2019) *Journal of Pharmacognosy and Phytochemistry*, 8(4), 1862-1863.
[6] Singh S.R.K., Mishra A., Gautam U.S., Dwivedi A.P. and Chand P. (2014) *Indian Res. J. Ext. Edu*., 14 (2).
[7] Solanki R.L. and Khatik C.L. (2013) *International Journal of plant Science*, 8(2), 466-467.
[8] Sharma V., Kumar V., Sharma S.C. and Singh S. (2016) *Journal of Applied and Natural Science*, 8(1), 423-428.
[9] Sharma R., Sarita J., Bamboriya S. and Yadav S.S. (2020) *Int. J. Curr. Microbiol. App. Sci.*, 9(4), 1079-1088.
[10] Solanki R.L. and Nagar K.C. (2020) *Int. J. Curr. Microbiol. App. Sci.*, 9(06), 4119-4125.