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Improved Chickpea Variety JG-11 under FLDs : Towards Yield Maximization through improved Variety with Drip Irrigation

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Abstract

Front Line demonstrations (FLDs) is a very popular and unique approach to disseminate the improved agricultural technologies through an direct interface between researcher and farmers. The scientist of Krishi Vigyan Kendra are directly involved in planning, execution and monitoring of the demonstrations for the technologies developed by different ICAR-Institutes, State Agricultural Universities in India. Direct feedback from the beneficiaries is also an important part of this technique. In the response of transfer of technology the recommendation of modern (improved) chickpea production technology a great emphasis was being paid by both the scientist and extension functionaries to increase the productivity of chickpea in the selected area. The present study was carried out to explore the possibilities of yield maximization through micro-drip Irrigation in Chickpea during *rabi* season of the year 2016-17 at Krishi Vigyan Kendra, Bajatta Farm Barwani and at farmers field in villages *Balkuwan and Kalibedi* in Barwani district under Cluster Front Line Demonstrations (CFLDs). KVK demonstrated the technologies- Scientific field preparation+ improved variety JG-11+Seed treatment with *Trichoderma viridae* and Vitavex power+ Line sowing+ application of liquid Bio fertlilzers and balanced dose of fertilizers. FLDs were conducted during 2016-17 in total of 25 demonstrations with evaluation of the performance of JG-11, variety of chickpea and recorded observations and the feedback information from farmers about performance of demonstrated technology. The results revealed that average yield of chick pea under FLDs were found 2160 Kgha-1 (under improved practice with variety JG-11) as compare to 1080 Kgha-1 (under farmers practice locally available self- produced degenerated seed material of *Desi* gram with no drip irrigtaion) recorded in farmer's practice in 2016-17. It was observed that the gross return Rs. 105300 per ha and net return Rs. 82900 per ha against farmers practice gross return Rs. 52650 per ha and net return Rs. 35450 per ha, respectively. The C:B ratio under improved practice was 1: 4.70 as compare to farmers practice 1:3.06. Therefore, the result clearly indicates that the use of improved varieties with drip irrigation and scientific crop management resulted yield maximization.

Introduction

Chickpea is commonly known as gram which is one of the important pulse crops of India. About 65% of global area with 68% of Global chickpea is contributed by India. It is important point to note that chickpea continues to be the largest consumed pulse in home as well as industrial purpose comprising of about 50 per cent of total pulse production in India. Madhya Pradesh is one of the major chickpea producing states in India. The area of chickpea crop was 3482.24 thousand hectares with the production and productivity of 3820 thousand tonnes and 1096 kg/ha, respectively in the year 2013. (Source-Agri. Statistic at Glance 2014). Pulses are playing a significant role in existing farm production systems by enriching soil health. Pulses are also providing food & nutritional security and ensuring agro-ecological sustainability to country's ever-growing population. Pulses are an important source of plant based protein for livestock. By products of pulses like leaves, pod coats and bran are fed to animals in the form of dry fodder. Pulses help in nitrogen cycling with their ability to fix the atmospheric nitrogen in the soil, thus help in improving soil health. Chickpea contributes in India's export basket of pulses registering 64.10 and 62.64% (April to November, 2017) reported Annual report, ATARI-II (2017-18) share in the total pulses export during 2016-17 and 2017-18. Following points need to be emphasized. ·Raise awareness about the vital role of pulses in sustainable food production and healthy diets and their contribution to food security and nutrition; ·Promote the value and utilization of pulses throughout the food system, their benefits for soil fertility and climate change and for combating malnutrition.

Review of Literature

Singh et al. (2004) studied the impact of front line demonstration in oilseed and impact study indicate that due to adoption of recommended scientific package, yields in oilseed crops under FLD were higher and superior in demonstration plots compared to local ones (farmers practice).

Kirar et al. (2006) reported that frontline demonstration programme was effective in changing attitude, skill and knowledge of improved practices of HYV of urd including adoption this also improved the relationship between farmers and scientist and built confidence between them. The farmers who adopted demonstration acted also as source of information and pure seed for wider dissemination of HYV of urd for the farmers.

Kangali (2012) revealed that in case of level of adoption, as observed in low category, 25.00 per cent farmers decreased in adopter condition over non adopter condition. On the other hand, in partial and full adoption

condition 17.50 and 7.50 per cent farmers increased in adopter condition over non adopter condition respectively.

Verma (2013) shows the distribution of Impact of Frontline Demonstration in Adoption of Chickpea Production Technology by the Farmers DOI: 10.9790/2380-1006017680 www.iosrjournals.org 77 | Page beneficiaries according to their change of area after conducting the FLD on their field. The data reveals that of the total, 76 per cent were having low (up to 0.4 ha) area change, 16 per cent medium (0.41 – 0.6 ha) and 8 per cent high (0.61 - 0.8 ha) area change of pulses the new production technologies through FLD.

Teggelli et al. (2015) reported that The FLD produces a significant positive result and provided the researcher an opportunity to demonstrate the productivity potential and profitability of the latest technology, The productivity gain under FLD over existing practices of pigeon pea cultivation created greater knowledge, awareness and motivated the other farmers to adopt suitable production technology of pigeon pea in the district.

Material and Method

The s FLDs have been laid out at farmer's field after the selection of the beneficiaries as well as field and soil samples were collected from their fields before the sowing of chickpea. After that on campus training organized at KVK Barwani and selected villages for skill and knowledge updation about JG-11 chickpea production technology with weed and Nutrient management. IPM techniques applied for insect-pest management during the crop period. Irrigation management was done by Drip irrigation. Scientist visit to farmer's field during the crop period for technical advice as per crop condition.

Summarize results of FLDs as Success Story

The results of FLDs are given in table no. 1 in summarize form as representative of Mr. Santosh S/O shri Mangilal Village –Balkuwan,Dist. Barwani are as follows:

Chickpea Success Story under TSP Programme 2016-17

KVK/Districts	:	Barwani	
Farmers Name	:	Mr. Santosh S/O Shri Mangilal	
Address	:	Village Balkuwa, Block Barwani Dist.Barwani Pin 451551	
Farmers Background information	:	Farmer was growing traditional local variety-*Desi of* chickpea with low quality degenerated seeds material of Chickpea.	
Name of Crop	:	Chickpea	
Variety	:	JG-11	
Area (Acre)	:	1.00 Acre in Each Trial (Total no. of Trials -10)	
Institutional Involvement	:	Capacity Building Training, Field visit and Demonstration	
yield (q/ha)	:	17.80	
Important Parameters	:	**Findings/results**	
	:	**Varity/ Practice/Intervention**	**Local/control**
Germination	:	**86%**	69%
Plant population (per m^2)	:	**30.00**	25.00
Weed count (per m^2)	:	**1.1**	3-5
Plant height (per cm)	:	**32.5**	30.50
Pods/ plant (No.)	:	**110.50**	68-72
Yield (q/ha)	:	**17.80**	12.80
Technology Demonstrated under FLDs	:	✓ Technology Improved variety JG-11 ✓ Technology 2 Seed treatment with *Trichoderma viridae* 5 gm/kg seed, *Rhizobium* culture 3 gm/kg+Vitavex power 1.5 gm /kg seed material. ✓ Technology- Drip Irrigation + Use (soil application) of liquid bio-fertilizers NPK-3 (Rhizobium+PSB+KMB-Potassium Mobilizing Bacteria) @ 5 ml / litre of water.	
Yield Performance (q/ha)	:	**17.80**	
Potential yield of variety		20-22.00 qt/ha	
District average (Previous year)		10.30 qt/ha	
State average (Previous year)		9.50	
Success Point	:	Improved variety with very good yield	
Farmer's Feedback	:	Farmers are convinced with the performance of variety.	

Economic Performance

Used Practice	Cost of Cultivation (Rs.)	Yield (q/ha)	Gross income (Rs/ha)	Net income (Rs/ha	B:C ratio
Farmer practices	17200.00	10.80	52650	35450	3.06
Demonstration	22400.00	21.60	105300	82900	4.70

Fig 1- View of SVF of Farmers Practice flood irrigation without drIp

Fig (a & b) - View of Drip irrigation under recommended practice at Farmers Field under FLDs

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A SUCCESS STORY