

Adoption Constraints of Improved Crop Technologies by Farmers of Cluster Frontline Demonstration-Pulses

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ABSTRACT: To enhance the production and productivity of Pulses in the country, Ministry of Agriculture and Farmer's welfare, Government of India had initiated Cluster Frontline Demonstration– Pulses Programme under National Food Security Mission implemented through KVKs. Latest recommended package of practices are demonstrated on farmers field in a cluster approach under supervision of KVK scientists. The present study was conducted during 2021-22 in Central Telangana Zone at KVK Wyra and KVK Malyal. These KVKs were selected Purposively as they were performing CFLD Programme since 2015-16 under Pulses. From each KVK 50 respondents as beneficiaries were selected purposively. For the overall promotion of Pulse Production even the constraints faced by non-beneficiaries were also studied selecting 30 randomly. The study was conducted to know the farmer constraints (Both beneficiary and non-beneficiary) in adopting the recommended improved technologies. Garret ranking technique was used to rank the constraints in order of their influence on farmers adoption of latest technologies. Among all the constraints faced by the beneficiaries Occurrence of low yield due to adverse climatic conditions ranked (1st); Quantity and quality loss due to Storage Pests (2nd); Lack of Institutional support for Produce buy back (3rd); were found to be major and in non-beneficiaries Non-availability of HYV seed ranked (1st) followed by High cost of improved seed (2nd); Lack of skill in seed treatment (3rd) were found to be Major constraints.

Keywords: Cluster Frontline Demonstration, Constraints, Adoption, Telangana.

INTRODUCTION

India is the largest producer, consumer and importer of pulses in the world. Pulses which are known as “Poor man's meat” are the cheaper and most consuming protein diet among vegetarian population of the world (Singh *et al.*, 2015). Pulses also have the capacity of fixing atmospheric nitrogen through their root nodules and results in high B:C ratio with minimal input requirement. However the limited supply of pulses due to allocation of less area for cultivation makes it go out of reach from many poor households, indulging the country in socio-economic problems like malnourishment and poor growth in children. India has witnessed a fivefold increase in food grain production since 1950 to 2010. But this achievement in green revolution has not been sufficient to fulfill the increasing food grain demand in tune with growing population. Production of pulse has been stagnant at 4q/ac for over 30 years creating a huge gap between demand and supply. Therefore to shorten the demand -

supply gap of food grains and to make India self-sufficient, GOI launched National Food Security Mission (NFSM) with a broad objective of increasing production of Rice, Wheat, Pulses and oil seeds. CFLD-Pulse Programme under NFSM was taken up by Krishi Vigyan Kendra's to demonstrate latest technologies on Pulses and provide sequential inputs (Materialistic and Information) (Amit *et al.*, 2020).

In India as of 2020-21, an area of 28783.32 ('000 ha) was cultivated under Pulses with 25463.12 ('000 tonnes) Production and 885 (kg/ha) Productivity and in Telangana an area of 591 ('000ha) was cultivated with 589 ('000 tonnes) production and 997 (Kg/ha) productivity (Ministry of Agriculture and Farmers Welfare, Govt. of India).

METHODOLOGY

The study was conducted in two KVKs viz., KVK Wyra of Khammam district and KVK Malyal of Mahabubabad district. KVK Wyra and KVK Malyal

distributed Red gram variety WRG-65 and Green gram variety MGG-347 during 2018-19 under CFLD Programme. A total of 3 mandals were selected purposively from Khammam (KVK Wyra) district namely Kalluru and Mudigonda for beneficiaries and kamepalle for non-beneficiaries. Likewise 4 mandals were selected purposively from Mahabubabad (KVK Malyal) namely Bayyaram, Maripeda, Dornakal for beneficiaries and Kuravi for non-beneficiaries. A total of 100 beneficiaries (50 from each KVK) were selected and 60 non-beneficiaries (30 from each KVK) were selected for the study. The data was collected personally with help of an interview schedule. The constraints faced by beneficiaries in adopting improved technologies demonstrated by KVKs and in addition, constraints faced by non-beneficiary farmers were identified.

Constraints analysis. Garret's Ranking Technique was used to rank the constraints faced by the beneficiaries of CFLD-Pulses. The identified problems of beneficiaries in the adoption of recommended technologies in CFLD-Pulses disseminated by selected KVKs were personally collected through interview schedule. Garret's Ranking Technique was used to figure out what is the most influential factor/ constraint by considering responses of all the respondents (100) for CFLD-beneficiaries and (60) for non-beneficiaries. Accordingly, a total of 13 constraints were listed separately for each beneficiary and non-beneficiary farmers (Garrett & Woodworth 1966).

1. Respondents were asked to rank various constraints which were pre-listed in the schedule, based on their experience regarding adoption of technologies.

2. A frequency table was prepared to distribute all the respondents into respective rank positions they have assigned for each constraint and those ranks have been converted into score values with the help of Percent position formula.

Then Percent position was calculated

$$\text{Percent position} = \frac{(R_{ij} - 0.5)}{N_j} * 100$$

Where, R_{ij} = Rank given for the i^{th} variable by j^{th} respondents

N_j = Number of variables ranked by j^{th} respondents

3. The percent position scores were transformed into Garrett scores by referring to the table provided by Garrett and Woodworth (1969).

4. The Garrett scores of each rank were multiplied with frequencies in the table and then the summated score for each constraint and mean scores were calculated.

5. Mean values were determined by dividing total value for each constraint by number of respondents (100 for beneficiaries and 60 for non-beneficiaries).

6. The most important factor which has significant influence upon adoption of technologies was determined by the factor with the highest mean value.

Below is the tabular representation of the constraints faced by the beneficiaries and non-beneficiaries in adoption of technologies.

RESULTS AND DISCUSSION

The important problems expressed by the beneficiaries were tabulated and presented in Table 1, the results mainly illustrate the ranking of constraints by the beneficiaries *viz.*, Occurrence of low yield due to adverse climatic conditions (68.15%); Quantity and quality loss due to Storage Pests (64.21%); Lack of Institutional support for Produce buy back (62.74%); Lack of knowledge on new generation herbicide molecules (61.5%); Marketing problems (61.38%), Insufficient quantity of fertilizers and pesticides (60.48%); Collection of soil samples before CFLD programme (60.14%); Insufficient quantity of seed provided under the Programme (54.64%); Effect of monkey menace and pests (52.48%); Low yields in comparison with other crops (51.49%); Non-availability of Inputs at proper time (48.68%); Lack of proper follow up by KVK scientists (46.29%); Lack of proper monitoring and field visits by the implementing agency(45.13%). The constraint analysis revealed that the major problems were related to input availability and Institutional support for buy back arrangement.

Table 1: Constraints faced by the beneficiaries in adoption of Improved crop Technologies in Pulse crop (n=100).

Sr. No.	Constraints faced by Beneficiaries	Total Score	Mean score	Final Rank
1.	Lack of proper monitoring and field visits by the implementing agency	4513	45.13	XIII
2.	Marketing problem with introduced new variety	6138	61.38	V
3.	Lack of Institutional support for Produce buy back.	6274	62.74	III
4.	Collection of soil samples before CFLD programme	6014	60.14	VII
5.	Occurrence of low yield due to adverse climatic conditions	6815	68.15	I
6.	Quantity and quality loss due to Storage Pests	6421	64.21	II
7.	Lack of proper follow up by KVK scientists	4629	46.29	XII
8.	Insufficient quantity of fertilizers and pesticides	6048	60.48	VI
9.	Effect of monkey menace and pests	5248	52.48	IX
10.	Insufficient quantity of seed provided under the Programme	5464	54.64	VIII
11.	Low yields in comparison with other crops	5149	51.49	X
12.	Lack of knowledge on new generation herbicide molecules	6157	61.57	IV
13.	Non-availability of Inputs at proper time	4868	48.68	II

(Gaikwad *et al.*, 2000)

Table 2: Constraints faced by the non-beneficiaries in adoption of improved technologies in Pulse crop (n=60).

Sr. No.	Constraints of non-beneficiaries	Total Score	Mean score	Final Rank
1.	Lack of knowledge on improved agricultural technologies from time to time	3464	57.73	IV
2.	Non-availability of quality High yielding seed material	3981	66.35	I
3.	High cost of improved seed material	3764	62.73	II
4.	Non-availability of preferred seed by farmer	3374	56.23	VI
5.	Non-availability of required quantity of improved seed	2899	48.31	X
6.	Lack of skill in seed treatment with bio fertilizers	3534	58.9	III
7.	Non availability of suitable culture for seed treatment	2904	48.4	IX
8.	Effect of Pest and monkeys	2923	48.71	VIII
9.	Lack of knowledge about optimum seed rate	2104	35.06	XIII
10.	Low yields in comparison with other crops	2438	40.63	XI
11.	Quantity and quality loss due to Storage Pests	2320	38.66	XII
12.	Difficulty in adoption and adaptation to new production techniques due to aberrant weather conditions	3448	57.4	V
13.	Poor marketing skills in the form of seeds and low remunerative price	3062	51.03	VII

(Ajay *et al.*, 2021) (Ray *et al.*, 2013)

Insufficient quantity of inputs supplied by implementing institution may be due to deficit budget allotment in time to supply improved seed materials and pesticides to all beneficiaries in required quantity. To solve the problem of seed scarcity, farmer should be encouraged by the KVK scientists to go for quality seed production under their guidance by linking to seed production agencies. It will help the KVKs in turn to procure seed from the farmers and preserve for distributing to the farmers on to next season.

This is a strategy to bring the seed in to seed chain and for horizontal expansion. Quantity and quality loss of produce due to aberrant weather conditions may be reduced with proper sowing timings and proper guidance by scientists. Table 2 illustrates the ranking of constraints for the non-beneficiaries *viz.*, Non-availability of HY seed (66.35%), High cost of improved seed (62.73%), Lack of skill in seed treatment (58.9%), Lack of knowledge on improved Agricultural technologies (57.7%), Aberrant weather (57.466%), Non-availability of preferred seed (56.2%), Poor marketing skills (51%), effect of natural predators (48.71%), Non-availability of suitable culture (48.4%), non-availability of required quantity of seed (48.3%), Low yields (40%), storage pests (38%), Lack of knowledge on optimum seed rate (35%). Constraint analysis from the above table indicates that majority of the problems were input and personal constraints. These problems can be solved with proper training programmes and adequate institutional support by providing subsidies on inputs and information support through media.

With these constraints in view the following suggestions were made.

SUGGESTIONS

- Awareness programmes on improved seed should be given to farmers
- Improved seed should be made available easily to farmers by informing the source of availability
- Seed should be made available at subsidized rate

— Training programmes on seed treatment should be conducted to farmers

— Latest information on technologies should be made accessible to farmers through literature and mass media

— Extension personnel should guide the farmers to procure their required seed and other input materials

— Preparation of homemade bio- cultures should be encouraged and training should be imparted to farmers

— Government should take measures to initiate agro-forestry or reforestation with fruit crops to reduce monkey menace.

— Capacity building programmes and extension services on new herbicidal formulations should be organized

— Proper sowing window should be provided to farmers on basis of meteorological data

— Construction of storage structures or go-downs for produce storage is the need of hour

— Linking of farmers with seed procurement agencies, providing them information and proper access to market their produce should be prime focus.

— Government should increase the MSP(Minimum Support Price) on pulse crops to compensate the comparative advantage of other crops over pulses (Inbasekar 2014)

CONCLUSION

The various constraints faced by beneficiary farmers of CFLD programme may be technical, financial, personal and government related were definitely limiting the farming activities to proceed in a desired direction. Despite of all the efforts the KVKs have put in to help the farmers in a more advantageous way to diversify the farmers towards pulse production with good production techniques, the unforeseen natural calamities ruined the crops, as it ranked top among other constraints indicated in the study followed by lack of government support for the construction of storage godowns in villages and buy back arrangements to procure seed produced by farmers. Also lack of marketing infrastructure got enlisted as one of major constraints besides many other constraints as study indicated. The

investigator suggests for the quality seed production measures by the farmers as it assumes primary focus which enables the implementing institution to procure and distribute the seed to farmer community in ensuing cropping season as a buy back arrangement, which acts as a way of bringing seed into seed chain for horizontal expansion.

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