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Impact of front-line demonstration in redgram under transplanting and dibbling method in rainfed situations of Vikarabad district

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Abstract

The Front-line demonstrations were conducted with dibbling and transplanting method crop establishments in Redgram in the villages of Vikarabad and Kulkacherla mandals of Vikarabad district during *kharif* 2017 to 2021. The treatments consisted of two methods of establishment *viz*; transplanting and dibbling method with plant geometry (11,11 and 13,888 plants per ha) and transplanting seedlings at 30-35 days old seedlings with a spacing of 150 x 60 cms and dibbling with a spacing of 120 cm x 60 cm. The results of the demonstrations indicated that there was 64% to 68% increase in yield in transplanting technology, while there was 18.45% to 17.15% increase in yield with dibbling method of establishment when compared to farmers' practice. Transplanting method of establishment with net benefit of Rs.118940/- and with B-C ratio of 3.65 found superior to farmers practice of Rs. 60,640/- and B-C ratio of 1.98 in black soils during *kharif* 2017 to 2019, while dibbling method of establishment was found superior to farmers practice in red soils during *kharif* 2019 to 2021.

Keywords: Redgram, transplanting and dibbling

Introduction

Redgram [*Cajanus cajan* (L.) Millsp.] is one of the major grain legume crops of the tropics and sub tropics, endowed with several unique characteristics cultivated in wide range of agro-ecological situations. It finds an important place in the cropping system adopted by small and marginal farmers in a number of developing countries. Thus, Redgram finds a promising place in crop rotations and crop mixtures. Being a leguminous plant, it is capable of fixing atmospheric nitrogen, and its deep rooting system helps in extracting nutrients and moisture from deeper soil layers, thus making it suitable for rainfed conditions. The deep root system of the crop also helps in breaking plough pans, thereby improving soil structure. In Telangana traditionally redgram is grown in an area of 7.60 lakh acres ^[1] during *kharif* 2021. The productivity in the state is low due erratic monsoons, delayed sowing. Majority of area is under rainfed situation and non adoption of agronomic interventions and biotic and abiotic stress.

To overcome these problem technologies like Transplanting method and dibbling method helps to maintain optimum plant population which will result in harnessing full potential. In transplanting method, Seedlings will be raised in polybags first and then transplant them in the main field at an age of 30-35 days thus getting a better yield. Major advantage is sowing can be done in the second week of May every year even if monsoons are delayed, This method avoids insect damage due to pod borer, drought resistance develops due to deep rooting, easy to spray insecticides as plants are at definite intervals, wider spacing allows enough sunlight to reach the leaves of each plant thus reducing competition for water, space and nutrients,. As established seedlings will pick up growth quickly under field condition which is more competitive. Moreover, raising red gram seedlings well in advance and transplanting in them in field later on receipt of good rains would help in reaping good yield. Dibbling at a recommended spacing of 120x60 helps in maintaining optimum plant population which helps in attaining good yield.

Materials and Methods

The Front-line demonstrations were conducted by DAATTC Rangareddy district in Vikarabad (Gotimukkala village) and Kulkacherla (Mujaidpur and Lingampally villages) mandals during

kharif 2017 to 2021. The treatments consisting of dibbling method with a planting geometry 120 X 60 cm in redsoils and transplanting at 150X60 cm in black soils. The seedlings were raised in polythene bags of 6 X 4 cm filled with sand, soil and compost in 1:1:1 ratio. The treated seeds were dibbled in polythene bags and grown for 30- 35 days. The raised seedlings will be ready for transplanting in main field on the onset of monsoon or irrigated condition. All the recommended agronomic practices were carried out to raise the healthy crop. The crop was harvested only when it reaches field maturity. The growth, yield and yield attributing parameters were recorded.

Results and Discussions

The results of transplanting method over two years (2017-2019) revealed that there was 64% to 68% increase in yield. The pooled data over two years indicated that there was 66.5 percent increase in yield. The results of dibbling method recorded an yield advantage of 17.1% to 18.5% increase in yield over farmers practice. The pooled analysis over two years (2019-2021) revealed that there was 17.8 % increase in yield over farmers practice. Due to this technology, red gram growing farmers expressed they have realized yield potential and maximum profit in red gram when compared to farmers practice.

Table 1: Average yield of Transplanting and dibbling method of establishment

Sl. No	Year	Method of establishment	Average yield recorded kg/ha		% Increase
			Demo	Farmers practice	
1.	2017-18	Transplanting	2501	1487	68.19
2.	2018-19	Transplanting	2548	1550	64.39
		Average	2524	1519	66.5
3.	2019-20	Dibbling	1348	1138	18.45
4.	2020-21	Dibbling	2015	1720	17.15
		Average	1682	1429	17.8

Table 2: Economic impact method of establishment in transplanting method over farmers practice during 2017-19

Parameter	Transplanting (Demo)	Farmers practice
Yield kg/ha	2524	1519
Gross income Rs. 60 per kg	151440	91,140
Cost of cultivation (Rs)	32500	30500
Net returns (Rs)	118940	60,640
CB ratio	3.65:1	1.98:1

The economic impact with transplanting method of establishment revealed that the farmers had a net benefit of

Rs.118940/- as against farmers practice of Rs. 60,640/- with B-C ratio of 3.65 as against the farmers method of 1.98

Table 3: Economic impact of dibbling method over farmers practice in Redgram during 2019-21

Parameter	Dibbling of seed Demo plot	Farmers practice
Yield kg/ha	1682	1429
Gross income Rs. 60 per kg	100,920	85740
Cost of cultivation (Rs)	21100	22490
Net returns (Rs)	80,820	63,250
CB ratio	3.38 :1	81.2:1

The economic benefits obtained by the farmers with dibbling method of establishment revealed that the farmers realized net returns of Rs. 80820/- and a B-C ratio of 3.38 as against farmers practice wherein they realized net profit of Rs. 63250/- and B-C ratio of 2.81.

These above results clearly indicated that transplanting method of establishment in black soils and dibbling method of establishment in red soils were found superior, recording the highest yields under both rain fed and irrigated condition over farmers practice. The increased yield may be due to advanced date of sowing to get optimum plant geometry in transplanting method. Similar findings were reported at ICAR-KVK, Bidar ^[2].

After introduction of transplanting / dibbling technology in red gram and constant efforts made by DAATTC Rangareddy, the area of adoption under this technology in Vikarabad district and neighbouring districts. It is one of the best examples for transfer of technology in recent years in Telangana State. Lot of new red gram processing units are establishing in Vikarabad district, simultaneously creating employment opportunities. Recently red gram growing farmers in the district started forming associations. In coming future, they are planning to export processed dal to neighbouring states as well as abroad. Further, due to these farmers is being changing slowly from subsistence farming to commercial pulse based farming system.

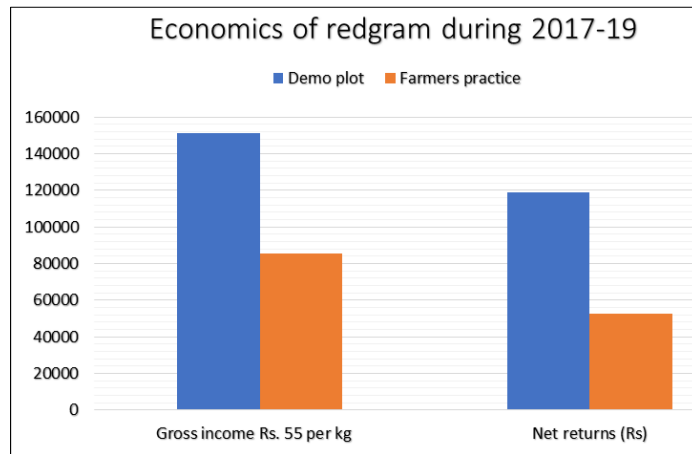


Fig 1: Economics of redgram during 2017-19

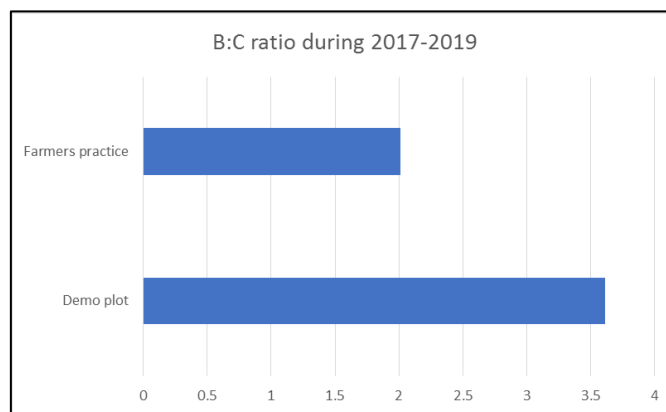


Fig 2: B:C ratio during 2017-2019

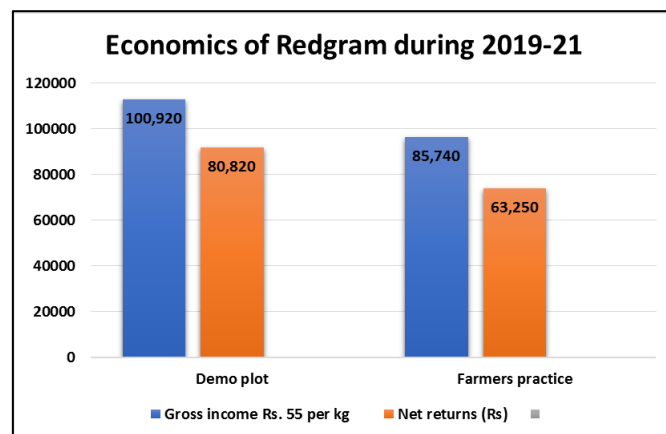


Fig 3: Economics of Redgram during 2019-21

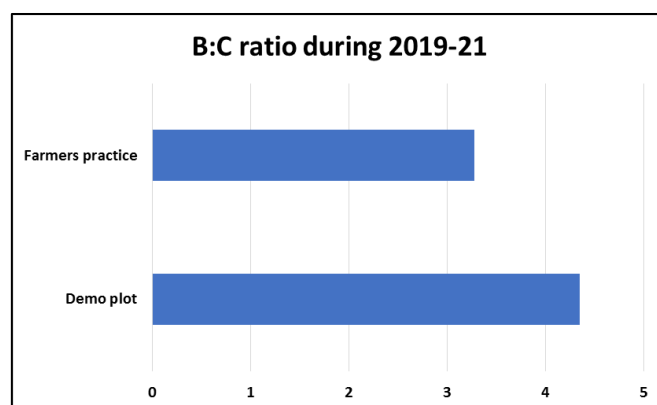


Fig 4: B:C ratio during 2019-21



Fig 5: Redgram nursery at Muzaidpur village, Kulkacharla Mandal, Vikarabad dist



Fig 6: Transplanted redgram field at Mujaidpur village, Kulkacharla Mandal, Vikarabad dist



Fig 7: Transplanted redgram farmer field at Lingampally village, Kulkacharla Mandal, Vikarabad dist



Fig 8: Dibbling redgram farmer field at Vikarabad

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