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Use of Broad Bed Furrow Planter to Enhance Productivity of Soybean Crop

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Abstract - *To enhance productivity of rainfed farming system, it should be accompanied by suitable soil and water conservation practices to mitigate moisture demand when needed. Rainfed Farming system has to eliminate two major rainfall conditions of dry spell which creates moisture stress and heavy rains which creates water logged condition hence there is a vast scope for broad bed furrow planting technique. An intervention has been taken and assessment has been conducted at KVK Sagroli District Nanded to compare improved technology of BBF Plantar with local farmer's practice of seed drill and study results revealed that increase in yield of soybean crop by 14.52 percent, additional net return of the farmers have been increased by 7420 rupees per hectare.*

Key Words*: *BBF Plantar, dry spell, rainfed, soybean, productivity

1. INTRODUCTION

As the agriculture depends heavily on rains, therefore risk is increasing. Erratic rains increases risk in rainfed areas. One of the biggest challenges in rain fed agriculture is crust formation. As there is little or no moisture in the soil coupled with low organic carbon make the top soil become hard for cultivation. Wind and water are the common factors contributing for soil erosion. Lack of proper erosion control measures leads to loss of top soil. All most all rainfed soils are poor in organic carbon content, which is the important factor minimizing the productivity. Over exploitation of ground water to irrigate crops is another problem. Absence of ground water recharging aggravates the problem. Salinity and alkalinity due to accumulation of salts is another factor limiting the productivity levels. To enhance productivity of rainfed farming system, it should be accompanied by suitable soil and water conservation practices to mitigate moisture demand when needed. Rainfed Farming system has to eliminate two major rainfall conditions of dry spell which creates moisture stress and heavy rains which creates water logged condition hence there is a vast scope for broad bed furrow planting technique. Broad bed furrow planting is a new idea developed for conservation of water for dry land farming. The placement of seed at correct depth is very important for proper germination and for obtaining optimum plant population per unit area of the crop. Especially under dry land farming where soil moisture is at greater depth rainfed farming is often reduced due to the lack of soil moisture. It is necessary to adopt suitable technology to conserve the rain water in-situ to ensure adequate moisture during the various growing stags of the crop in rainfed farming.

2. METHODOLOGY

Considering the gaps in adoption of improved technology and reasons of low productivity of the district, Krishi Vigyan Kendra Sagroli has taken assessment to increase the production and productivities of major crops of this District. Krishi Vigyan Kendra Sagroli has adopted the Technology of sowing of soybean crop on Broad Bed Furrow planter developed by Dr. PDKV Akola. Technical Information about the Implements: Dr. PDKV Akola developed BBF Plantar is made of following components

1) Seed cum Fertilizer Box
2) Seed plate
3) Seed tubes
4) Furrow openers
5) Tines
6) Frame
7) Ground Wheel

2.1 Mechanism:

Ground wheel drives chain drive connected to gear mechanism which rotates seed plates and assures continuous of seed maintaining plant to plant distance dropping through seed tubes and fertilizer through fertilizer mechanism.

Fig -1: BBF Planter

2.2 Advantages of BBF Method

1. BBF method improves soil and water conservation of the field.
2. BBF method works well in dry and wet spell. In dry spell it increases period of wilting of crop by making available conserved moisture and in wet spell it protect crops by draining excess water through furrows maintain proper soil water ratio.
3. It enhances fast rootlet growth as crop is being planted on bed, increasing number of pod which ultimately results in increased crop production.
4. It improves crop aeration and sunlight results reduce insect pest attack on crops.
5. Inter row cultivator have an added advantage of mechanized intercultural operation, thus reducing time of operation cost and labor.
6. Reduces labour cost of thinning and gap filling.
7. Open furrow can be well utilized for installation of sprinkler set.

3. RESULTS

KVK Sagroli has Conducted 40 on farm testing on 40 farmer's fields of this district in 5 various villages of the district during 2016 to 2018 covering 16 ha of area as given in Table -1 as under

Table -1: Year wise on farm Testing conducted on Soybean crop by KVK Sagroli

Sr.No.	Year	No of Demonstration	No of farmers	Area in Ha
1	2017-18	10	10	4
2	2018-19	15	15	6
3	2019-20	15	15	6
		40	40	16

Kharif soybean was planted on BBF technique under rainfed farming condition on 16 hector on 40 farmer's field and average data of different parameter was presented as below

Table -2: Results of demonstration of broad bed furrow planter for soybean crop

Parameter	Farmer Practice (Tractor Drawn Seed Drill)	Improved Practice (BBF Planter Method)	Increase /Remark
Yield (qt/ha)	12.10	14.22	Increase by 17.52 %
Seed Rate (kg/ha)	72.5	58.9	Saving of seed 13.6 kg per hectare
Net Return (Rs)	42350	49770	Net return was higher than farmers practice Rs.7420 per ha
Gross return (Rs)	9850	17270	Higher than Farmer Practice
Field efficiency (%)	72.85	68.25	Need to increase

Result revealed that, yield of soybean crop increased by 17.52 percent by intervention of PKV BBF planter practice as compared with farmers practice by net return of Rs. 7420 per hectare. Seed saving of 18.75 percent per hectare was also achieved

4. CONCLUSIONS

• The broad bed and furrow planter developed by Dr. PDKV increases crop Yield of soybean 17.52 per cent.

• Farmer's additional net return gained for soybean crop is increased by rupees 7420 per hectare.

• Seed saving of soybean crop is 13.6 kilograms per hectare respectively.

• Field efficiency of BBF planter was found lower as compared to indigenous farmers practice

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