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Assessment of Inclined Plate Planter for Line Sowing of Black Gram

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A B S T R A C T

The field investigation entitled assessment of inclined plate planter for line sowing of black gram [*Vigna mungo* (L.) Hepper] was carried out during kharif season 2019-20 on farmers field at Krishi Vigyan Kendra Kanker (CG) The experiment was conducted on an area of 5 ha by the active participation of farmers. The results indicated that the higher yield of black was obtained in the improved practices and per-cent change in yield was increased by 19.07 per cent as compared to farmers practices. The technological gap, extension gap and technology index were observed during the experiment and found satisfactory. This improved technology also gave higher gross return, net return with higher benefit-cost ratio than farmers' practices i.e. broad casting method. The productivity achieved under demonstration over farmer's practices created awareness and motivated the other farmers to adopt improved technology for blackgram cultivation.

Introduction

Black gram (*Vigna mungo L.*) is originated in India where it has been cultivated from ancient times and is one of the most highly priced pulses in India. Being a legume, it enriches soil N content and has relatively a short (90-120 days) life span. Although it has been introduced to other tropical areas mainly by Indian immigrants about 70% of the world's Black gram still comes from India. Black Gram is a perfect combination of all nutrients which include 20 to 25% of proteins, 40 to 47% of starch along with ash, fats, carbohydrates and essential vitamins. It is boiled and eaten directly or used after splitting into dhal. It is extensively used in various culinary preparations and recommended for diabetes. The green pods are eaten as a vegetable which is highly nutritious. The hulls or the outer covering of gram and straw are used as a cattle feed. Plant growth and development of black gram are greatly influenced by various environ-mental factors such as temperature, light, water and nutrient availability (Rajam, 1997). Under

abiotic stress conditions, where variations of above factors affect plant growth and development adversely resulting in a dramatic reduction of the crop yield.

In uttar bastar kanker district, black gram is the main pulse crop of kharif season and farmers sowing mainly by local practice i.e. broadcasting method because they emphasis only food grain (rice crop). Keeping this point in view the main objective of the study was to assess the performance of inclined plate planter for line sowing of black gram to create awareness as well as to increase yield of black gram in the district.

Materials and Methods

The study was done at Krishi Vigyan Kendra, Kanker, Chhattisgarh during Kharif Season 2019-20 in the farmers' fields. Field evaluation of TD inclined plate planter for sowing of black gram in 5 ha area were carried out in different villages of kanker district. Used Inclined plate planter having nine rows for sowing black gram with adjusting row spacing was 30 cm. It was also calibrated in laboratory before use on farmers field for proper seed rate .The sowing was done in month of july with seed rate of 25 kg ha^{-1}. Optimum plant population was maintained in the trails The organic fertilizers were applied as per improved practices as basal dose. Hand weeding within lines was done at 30-35 days after sowing (DAS). The crop was harvested at perfect maturity. Technology gap, extension gap and technology index were calculated as suggested by Samui *et al.,* (2000) as given below.

Technology gap= Potential yield – Demonstration yield

Extension gap= Demonstration yield – Farmers' yield

Technology index (%) = Technology gap/Potential yield x 100

Results and Discussion

Field capacity of inclined plate planter was recorded as 0.40 ha/h with change in yield was found increased by 19.07 per cent i.e. The average yield of black gram (924 kg/ha) was much higher by using this improved technology than average yield of farmers' practice i.e. 776 kg/ha (Table 1).

Technology gap: The technology gap between the demonstration yield and potential yield was 276 kg/ha for black gram.

Extension gap: The extension gap of 148 kg/ha was recorded. This emphasized the need to educate the farmers through various means for the adoption of improved agricultural machineries and implements for increasing production (Table 1). This finding is in accordance with the observation of Hiremath and Nagaraju (2010).

The technology index: The technology index was found to be 23 shows the feasibility of the evolved technology at the farmer's fields. The lower the value of technology index more is the feasibility of the technology.

Economic return: The cultivation of black gram under improved technologies gave higher net return of Rs 21036/ha as compared to farmers' practices i.e. Rs 14110. The benefit-cost ratio of green gram under improved technologies was 2.32 as compared to 1.83 under farmers' practices. This may be due to higher yield obtained using inclined plate planter for line sowing of black gram compared to local check (farmer's practice). With the adoption of improved technology recorded higher gross returns (Rs 36960 ha^{-1}) as compared to local practice (Rs 31040 ha^{-1}) (Table 2)

Table.1 Yield, technology gap, extension gap and technology index of black gram

Parameter	Observation
Crop	Black gram
Variety	Indira Urd Pratham
Area (ha)	5.00
Number of farmers	09
Yield (kg/ha)	
Potential yield	1200
Yield under improved technologies	924
Yield under local farmers' practices	776
Technology gap (kg/ha)	276
Extension gap (kg/ha)	148
Technology index (%)	23

Table.2 Economics of improved technologies and local farmer's practices

Parameter	Improved technologies	Local farmer's practices
Gross return (Rs/ha)	36960	31040
Cost of cultivation (Rs/ha)	15924	16930
Net return (Rs/ha)	21036	14110
B:C	2.32	1.83

Plate.1 Sowing of black gram by using inclined plate planter

Plate.2 Black gram sown in line using inclined plate planter

Reasons for low yield of black gram at farmers' fields: Lack of popularization of inclined plate planter/seed cum fertilizer drill for line sowing of black gram was found to be the main reason for low yield of green gram at farmers' fields. Also the farmers did not follow the optimum sowing time due to non-availability of quality seed. In addition to it the farmers had been sowing seed using broadcast method due to which the plant population sometimes was 2-3 times more than the recommended one. However inclined plate planter helped in sowing the seeds in rows (Plate 2).

Conclusion: By using inclined plate planer grain yield was increased over the local check. The extension gap and technology gap was found to be 148 kg/ha and 276 kg/ha respectively. .As found in the results the B-C ratio (2.32) was also sufficiently high. The productivity achieved by using improved technology i.e. inclined plate planter over farmer's practices created awareness and motivated the other farmers to adopt this technology for black gram cultivation.

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