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**“Effect of dates of sowing and mulching on number of
branches per plant, plant height, number of pods per
plant, pod length and number of seeds per of Summer
Mash (*Vigna Mungo*)”**

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Abstract

The present investigation entitled, “Effect of dates of sowing and mulching on number of branches per plant, plant height, number of pods per plant, pod length and number of seeds per of Summer Mash (*Vigna Mungo*)” was carried out at Experimental Farm, Mr Yadvinder Singh at VPO-Bhangala Tehsil Abohar District Fazilka - Punjab during kharif 2014. The experiment comprising of two sowing dates (5th and 25th April) in main plot, three mulch levels (0, 3 and 6 t/ha) in sub plot was laid out in split plot design. The treatment combinations were replicated four times. The date of sowing showed beneficial effect on number of branches per plant as well as plant height and were 8.5 and 52.9 cm respectively. The date of sowing also significantly increased effect on number of pods/plant (13.3), length of pod (4.8 cm) and number of seeds/pod (6). However, the interaction effect between dates of sowing and mulch levels was non-significant. On the basis of present investigation, it is concluded that sowing of summer mash on 5th April with mulch 6 t/ha best results. The findings can be useful for improving productivity and profitability of summer mash.

Keywords: sowing and mulching, branches per plant, plant height, number of pods per plant.

Introduction

Pulses a poor man’s meat in developing world provide a balance diet for the people when taken in combination with wheat, rice and other cereals. They are also used as feed to animal in the form of hay and straw (Maqsood *et al.* 2001) [2]. In addition, the legumes also included in cropping system and have the ability to provide nitrogen through nitrogen fixing rhizobacteria and increasing soil fertility. The legume crop partially replaces expensive nitrogenous fertilizers.

Vigna mungo commonly referred to as urd bean, urd black gram, black lentil is grown in southern Asia. Black gram is originated from central Asia and India. It is grown worldwide as a pulse crop and India tops in production. In Punjab, it is cultivated in 2.2 thousand hectares with an average grain yield of 464 Kg/ha during 2012-13. Mash bean is one of the commonly grown pulse crop in many countries of the world. The importance of Mash is based on its high protein content (24%), carbohydrates (66%) and fats (Ali *et al.* 2002) [1]. Moreover, it is also recommended for diabetics.

Out of several factors time of sowing and mulching are crucial and assumes greater importance in cultivation of mash. Timely sown crop has mark able effect on growth as well as yield and delay in sowing beyond optimum, usually result reduction in yield (Vange and Obi. 2006) [6].

The application of mulch effects the absorption of solar radiation and decrease the thermal admittance of the surface relative to that of bare soil (Tanner *et al.* 1987) [4]. Application of sugarcane trash in summer mungbean (Trivadi *et al.* 1994) and use of water hyacinth in tomato (Rehman *et al.* 2006) [3] increased the plant growth.

2. Material and Methods

The present investigation was carried out at experimental farm, Mr Yadvinder Singh VPO-

Bhangala Tehsil Abohar District fazilka - Punjab. during kharif 2014. The experiment comprised of two dates of sowing (5th April and 25th April) and three straw mulch levels (0, 3 & 6 t/ha) in Summer mash-1008. The details of the experiment are described below.

2.1 Observation recorded

2.1.1 Number of branches

Five plants from each plot were selected randomly to count number of branches per plant.

2.1.2 Plant height (cm)

The plant height of five randomly selected from each plot was measured at maturity.

2.1.3 Number of pods per plant

Total numbers of pods per plant were counted from randomly selected five plants in each treatment plot at maturity.

2.1.4 Length of pod (cm)

The average length of pod was measured from randomly selected five plants was measured in each treatment.

2.1.5 Number of seeds per pod

The data on number of seeds per pod was collected from randomly selected five plants in each treatment plot

2.1.6 Statistical analysis

The statistical analysis of calculated data was done by using EDA (Electronic design automation), software in statistical package. The treatment comparisons were made at 5 per cent

level of significance.

3. Results and Discussion

The results of the experiment found clear support for effect of dates of sowing and mulching on growth parameters

3.1 Number of Branches

The data on number of branches as affected by date of sowing and mulch levels is given 3.1. The data showed early sowing significantly increased the number of branches and the maximum number of branches i.e. 8.5 per plant were observed in 5th April sown crop. The data further revealed that mulching level also significantly increased the number of branches per plant as compared to control. The maximum number of branches was recorded under mulch application @ 6 t/ha followed by 3 t/ha mulching levels and was 8.3 and 7.9 per plant respectively.

3.2 Plant Height (cm)

The data (Table 3.1) showed that plant height was significantly affected by date of sowing and mulching levels. Sowing of crop on 5th April resulted in higher plant height (52.9 cm) as compared to 25th April sown crop. Similarly, the increase in mulch level significantly increased the plant height as compared to no mulch application. The maximum plant height (54.2 cm) was observed at 6 t/ha mulch application followed 50.6 cm plant height at 3 t/ha mulch application. The increase in plant height may be due to better plant establishment in timely sown crop and also effect of mulch application on soil moisture conservation.

Table 3.1: Effect of date of sowing and mulch levels on number of branches per plant and plant height

Effect on number of branches per plant				Effect on plant height (cm)					
Sowing date	Mulch level (t/ha)			Mean	Sowing date	Mulch level (t/ha)			Mean
	0	3	6			0	3	6	
5 th April	7.3	8.3	8.6	8.5	5 th April	48.4	53.7	56.5	52.9
25 th April	6.7	7.5	8.0	7.4	25 th April	43.8	49.4	51.9	47.7
Mean	7.0	7.9	8.3		Mean	46.1	50.6	54.2	
CD at 5%	Sowing date = 0.1; Mulch level = 0.3; Sowing date * Mulch level = NS				CD at 5%	Sowing date = 3.4; Mulch level = 2.0; Sowing date * Mulch level = NS			

Table 3.2: Effect of date of sowing and mulch levels on number of pods per plant and length of pod

Effect on number of pods per plant				Effect on length of pod (cm)					
Sowing date	Mulch level (t/ha)			Mean	Sowing date	Mulch level (t/ha)			Mean
	0	3	6			0	3	6	
5 th April	12.6	13.4	13.8	13.3	5 th April	4.7	4.8	5.0	4.8
25 th April	11.7	11.7	12.4	11.9	25 th April	3.1	3.7	4.4	3.7
Mean	12.2	12.6	13.1		Mean	3.9	4.3	4.7	
CD at 5%	Sowing date = 0.3; Mulch level = 0.3; Sowing date * Mulch level = NS				CD at 5%	Sowing date = 0.6; Mulch level = 0.3; Sowing date * Mulch level = NS			

3.3 Number of pods per plant

The numbers of pods per plant were counted from randomly selected five plants at maturity in each treatment and the data is depicted in table 3.2. The data indicated that sowing of Summer mash on 5th April significantly increased number of pods per plant. The maximum number of pods per plant recorded were 13.3 in case of 5th April sown crop as compared to 25th April sown crop. The increase in number of pod per plant may be due to better plant growth in 5th April sown crop

The further data revealed that increased level of mulch

application significantly increased number of pods per plant as compared to no mulching. The maximum number of pod 13.1 under 6 t/ha mulch application and minimum number of pods per plant was 12.2 in control plot. The higher number of pod may be attributed due to better plant growth.

3.4 Length of Pod (cm)

The data (Table 3.2) showed that the length of the pod was significantly higher in 5th April sown crop. The maximum pod length (4.8 cm) was measured in plots sown on 5th April and minimum pod length (3.7 cm) was observed in plots sown on

25th April. The data further indicated that increasing level of straw mulch significantly increased the length of pod as compared to no mulch application. The maximum pod length (4.7cm) was noted at 6t/ha mulch application and the minimum pod length (3.9 cm) was recorded in no mulch application. The increased pod length may be attributed due to timely sowing and better plant growth. The interaction effect between date of sowing and mulching level on length of pod was non-significant

3.5 Number of seeds per pod

The number of seeds is an important yield attribute. Five pods each from randomly selected five plants and the number of seeds per pod were counted.

The data presented in table 3.3 showed significantly higher number of seeds per pod in 5th April sown crop. The maximum numbers of seeds per pod counted were 6.0 in 5th April sown crop as compared 5.2 in case of 25th April sown crop.

Similarly, the mulching levels resulted significantly more number of seeds per pod. The maximum number of seeds per pod were observed at 6t/ha mulch application. However, effect was non-significant between 0 and 3 t/ha mulch application. The higher number of seed per pod maybe attributed due to increase in length of pod. The interaction effect between different dates of sowing and mulch levels on number of seeds/pod was non-significant.

Table 3.3: Effect of date of sowing and mulch levels on number of seeds per pod

Sowing date	Mulch level (t/ha)			Mean
	0	3	6	
5 th April	5.7	6.0	6.3	6.0
25 th April	5.0	5.0	5.4	5.2
Mean	5.3	5.5	5.8	
CD at 5%	Sowing date = 0.4; Mulch level = 0.3; Sowing date * Mulch level = NS			

Conclusion

Present investigations concluded that with recommended seed rate i.e. 20 kg/ha and Kera method at 22.5 cm row spacing. The salient findings of the investigation are summarized that the The sowing of Summer mash on 5th April significantly increased branches, plant height to the extent of 8.5 and 52.9 respectively. The number of pod per plant, number of seeds per pod and length of pod were also significantly increased as compared to 25th April sown crop and were 13.3, 6.0 and 4.8 cm respectively. Similarly, the increased level of mulch application increased the number of branches per plant, plant height and were 8.3 and 54.2 cm respectively. The mulch application also beneficially effected the number of pods per plant, number of seeds per pod and length of pod as compared to no mulch and 3 t/ha mulch application and were 13.1, 5.8 and 4.7 cm respectively.

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