

Effect of sowing windows and cultivars on growth parameters of mungbean

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ABSTRACT

A field experiment entitled “Effect of sowing windows and cultivars on growth parameters of mungbean” was conducted during early summer 2023-24 at Agricultural College Farm, Bapatla. The experiment was laid out in split plot design concept with three replications and randomly allocated each treatment as per the design. The results of the investigation revealed that among the mungbean cultivars studied, the plant height was significantly influenced by the sowing dates at 30, 60 DAS and at maturity. The cultivar LGG-603 (V_3) significantly recorded highest plant height at all the above growth stages and was significantly superior over LGG-460 (V_1) and LGG-574 (V_2). The leaf area index data acquired from different cultivars LGG-460, LGG-574 and LGG-607 sown at different sowing windows studied at different growth stages (30, 60 DAS and at maturity) has shown non-significant difference between the main plots as sowing windows and sub plots as cultivars and that the interaction effect also found non-significant.

Keywords: *Cultivars, Dates of sowing and Performance.*

Recent trends and changes in the lifestyle have driven the mankind to seek new sources or substitutes of the protein. Among the food grains, legumes (pulses) act as supplementary sources of protein and also addresses the protein requirement for both the animal and human dietary (Bessada *et al.*, 2019). Mungbean is a powerhouse of nutrition, containing approximately 25 per cent protein, 4.1 per cent fibre, 56.7 per cent carbohydrates and low in fat (1.3 per cent) (Rekha *et al.*, 2018). Sowing time is one of the vital non-monetary agronomic factor for achieving yield potential in improved varieties, as it facilitates complete harmony between crop's vegetative and reproductive stages. The cultivation of mungbean during summer season gains wider acceptance for additional income with the availability of newly developed varieties and also in addition to the improvement of soil fertility, efficient utilization of land and its resources and its yield maximization. Summer mungbean cultivars enables the farmers to select the suitable cultivars which might be a key factor in influencing the yield considerably.

MATERIALS AND METHODS

A field experiment entitled “EFFECT OF SOWING WINDOWS AND CULTIVARS ON GROWTH PARAMETERS OF MUNGBEAN”

was conducted during early summer 2023-24 at Agricultural College Farm, Bapatla. During the crop growth period mean maximum temperature ranged from 29.76°C to 36.24°C with an average of 33.26°C and weekly mean minimum temperature ranged from 18.76°C to 28.19°C with an average of 22.70°C. The weekly mean morning relative humidity ranged from 77.71% to 87.0% and with mean evening relative humidity ranged from 64.0% to 75.0%. The total rainfall of 7.1 mm was received in 2 rainy days during the crop growth period. The mean weekly sunshine hours ranged from 6.9 to 9.2 hours day⁻¹ with an average of 7.52 hours day⁻¹ (Fig 3.3). The mean weekly day length ranged from 11.16 to 12.46 hours day⁻¹ with an average of 11.79 hours day⁻¹.

RESULTS AND DISCUSSION

The data pertaining to plant height at various growth stages of crop growth was influenced by sowing dates and cultivars were statistically analyzed and presented. It is apparent from the data that plant height increased with an advancement in the age of the plant, significant difference was noticed among sowing dates with respect to plant height at all the stages of observations. At 30 DAS, crop sown during 2nd fortnight of January (D_1) significantly recorded

higher plant height (20.57 cm) than that the crop sown on 1st fortnight of March (D₄) but it was on a par with that the crop sown on 1st fortnight of February (D₂) and 2nd fortnight of February (D₃).

At 60 DAS, significantly taller plants (25.70 cm) were found with that crop sown during 2nd fortnight of January (D₁) which was significantly superior over that the crop sown on 2nd fortnight of February (D₃) and 1st fortnight of March (D₄) but which was at a par with the crop sown during 1st fortnight of February (D₂) (24.95 cm) and that the similar trend was observed at maturity also. Whereas, the interaction effect between sowing dates and cultivars were found non-significant.

Among the mungbean cultivars studied, the plant height was significantly influenced by the sowing dates at 30, 60 DAS and at maturity the cultivar LGG-603 (V₃) significantly recorded highest plant height at all the above growth stages and was significantly superior over LGG-460 (V₁) and LGG-574 (V₂). Whereas, the interaction effect was found non-significant and that these finding was in conformation with Ali *et al.* (2021).

Plant height in mungbean is highly dependent on the existing environmental conditions. The plant height decreased gradually with the delay in sowing due to increased temperature and sunshine hours. (Gogoi *et al.* 2020). The variation in plant height might be attributed to the genetic characters and that the results are in close conformity with the findings of Miah *et al.* (2009) and Parvez *et al.* (2013) where as short statured plants under delayed sowing 2nd fortnight of February and first fortnight of March delayed sowing was mainly due to the exposure of crop to suboptimal thermal regime and reduced metabolic activities.

Leaf Area Index (LAI):

The leaf area index data acquired from different cultivars LGG-460, LGG-574 and LGG-607 sown at different sowing windows studied at different growth stages (30, 60 DAS and at maturity) has shown non-significant difference between the main plots as sowing windows and sub plots as cultivars and that the interaction effect also found non-significant. Our findings were in accordance with the results of Ali *et al.* (2021) .

Table 1. Effect of sowing windows on plant height of mungbean cultivars at various crop growth stages

Treatments	Plant height (cm)		
	30 DAS	60 DAS	At maturity
Sowing windows			
D ₁ : 2 nd fortnight of January	20.9	25.7	30.2
D ₂ : 1 st fortnight of February	20.1	25.2	29.9
D ₃ : 2 nd fortnight of February	18.9	22.5	26.7
D ₄ : 1 st fortnight of March	18.3	22.1	26
Sem+/-	0.49	0.22	0.97
CD (0.05%)	1.7	0.75	3.37
CV %	7.6	2.7	10.4
Cultivars			
V ₁ : LGG-460	18.7	23.2	26.8
V ₂ : LGG-574	16.2	20.7	26
V ₃ : LGG-607	23.8	27.7	31.9
Sem+/-	0.4	0.3	0.81
CD (0.05%)	1.21	0.89	2.44
CV %	7.13	4.31	10
Interaction (DxV)	NS	NS	NS
Interaction (VxD)	NS	NS	NS

Table 2. Effect of sowing windows on leaf area index of mungbean cultivars at various crop growth stages.

Treatments	Leaf area index		
	30 DAS	60 DAS	At maturity
Sowing windows			
D ₁ : 2 nd fortnight of January	1.03	1.09	1.23
D ₂ : 1 st fortnight of February	1.03	1.08	1.22
D ₃ : 2 nd fortnight of February	1.02	1.07	1.21
D ₄ : 1 st fortnight of March	1.01	1.06	1.15
SEm±	0.03	0.04	0.04
CD (P=0.05)	NS	NS	NS
CV (%)	7.9	11.7	10.5
Cultivars			
V ₁ : LGG-460	1.02	1.11	1.21
V ₂ : LGG-574	0.96	1.01	1.19
V ₃ : LGG-607	1.04	1.15	1.21
SEm±	0.03	0.05	0.03
CD (P=0.05)	NS	NS	NS
CV (%)	9.8	15	7.6
Interaction (D × V)	NS	NS	NS
Interaction (V × D)	NS	NS	NS

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