

## STUDY ON PHONOLOGICAL DEVELOPMENT OF FENUGREEK

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### ABSTRACT

Fenugreek (*Trigonella foenum-graecum*) is a vegetable and it has been utilized as a flavor all through the world to upgrade the tactile nature of food sources. It is referred to for its restorative characteristics like antidiabetic, anticarcinogenic, hypocholesterolemic, cell reinforcement, and immunological exercises. Close to its therapeutic worth, it is likewise utilized as a piece of different food item improvements as food stabilizer, cement, and emulsifying specialist. All the more critically it is utilized for the improvement of solid and nutritious expelled and bread kitchen item. The current paper audits about phenological development of fenugreek and its usage in different item improvements.

**KEYWORDS:** Fenugreek, phenological development, vegetative growth, seed maturity, cultivators.

### INTRODUCTION

The studies on the Phenological development of various phases i.e., emergence, initiation of flowering, completion of pod development, and physiological maturity of the crop in different treatments were observed on the 5 selected tagged plants in each plot.

#### Seedling emergence

The critical perusal of data indicates that all the planting dates differed significantly with respect to time taken for seedling emergence. The delay in sowing significantly increased the time of emergence during both the year. The cultivars did not exhibit any significant variation in seedling emergence during both the years.

#### Vegetative growth

The duration of vegetative growth reduced with delayed planting but the duration of first two sowing dates were statistically at par, which were significantly longer than proceeding other three dates of sowing. The duration of vegetative phase was shortest sown crop which was significantly shorter than all other sowing dates. However, the crop sown on 1st November and 15th

November took 52 and 51 days, during 1995-96 and 55 and 54 days during 1996-97, respectively. The duration of vegetative stage on these sowing dates did not differ significantly. But, the duration was significantly shorter sown crop. Fenugreek cultivar IL- 326-1 had longest vegetative growth period followed by RMT-1 and HFM-65 during both the years. The duration of vegetative phase among these three cultivars were statistically at par. Whereas, the minimum time was recorded for vegetative growth by Lam selection-1 (39 and 43 days) during both the years respectively This cultivar had significantly shorter vegetative phase than all other cultivars.

#### Fruit formation

The fruit formation stage was found to be affected due to different planting dates. The delayed sowings resulted in the reduction in the time taken for fruit formation during both the years. However, the reduction in time to fruit formation during 1995- 96 were non -significant. But the first three dates of sowing took significantly longer duration for fruit formation.

Treatment	Day after sowing			
	Emergence	Duration of vegetative growth (day)	Fruit formation (day)	Filling of fruit (day)
<b>Sowing time</b>				
1st October	4.3	54.9	66.4	79.2
15th October	5.3	54.4	66.2	78.6
1st November	6.4	52.0	65.7	78.6
15th November	7.2	51.0	64.0	79.6
1st December	9.2	49.0	62.6	72.5
C.D. at 5%	0.4	1.1	1.5	1.7
<b>Genotypes</b>				
Lam Selection -1	6.5	39.2	51.2	64.8
CO -1	6.5	42.3	53.9	68.4
GC -77	6.5	55.2	68.3	80.8
HFM -65	6.2	57.8	71.6	84.5
EC -26177 -3	6.4	51.9	63.6	75.8
IC-5487	6.5	48.8	61.8	75.2
IL-326-1	6.5	59.1	72.8	84.3
PEB-1	6.7	56.3	69.1	82.3
Prabha (NLM)	6.5	53.2	65.5	78.9
RMT-1	6.5	58.8	72.0	81.9
C.D. at 5%	NS	1.5	2.1	2.4

Like vegetative growth cultivar IL-326-I took maximum time (72 days) for fruit formation followed by RMT-1 and HFM-65. These three cultivars took significantly longer time for fruit formation than all other tested cultivars with shortest duration of 51 and 55 days by Lam selection -1 during 1995-96 and 1996-97 respectively.

#### Filling of fruit

The data on filling of fruit presented indicates that the time taken for filling of fruits was significantly reduced with the delay in sowing of crop. However non-significant differences were observed between the sowing dates. Fenugreek cultivars HFM-65 remained at par with IL-326-I and PEB-1 took significantly most number of days for filling of fruits than the other cultivars during 1995-96. In the next year, cultivars RMT-I, HFM-65, IL-326-1 remained statistically at par for the time taken to fill the pods and took significantly longer period of time than the remaining cultivars.

#### Maturity of seed

The significant reduction in the days taken for maturity was observed with the delay in sowing. Similar non-significant differences were also noticed. During the same year. However, differences in maturity sown crop were significant during both the years. The sown crop took minimum time (119 & 12 days) during 1995-96 and 1996-97, respectively. The significant variation was observed among the fenugreek cultivars with regard to the maturity duration cultivars remained statistically at par and took significantly longer duration for maturity than the remaining cultivars during both the years. Fenugreek cultivar Lam selection-1 proved to be earliest

(102 and 104 days 1995-96 and 1996-97, respectively in maturity than all other cultivars.

### GROWTH STUDIES

#### Plant stand

It indicates that sowing time had no significant effect on plant stand of fenugreek at harvest during both the years similarly different cultivars did not cause any significant effect on plant stand.

#### Periodic shoot length

It indicates that the periodic shoot length recorded at successive crop growth stages are observed. The data reveals that the shoot length of crop was observed to be more during 1995-96 as compared to 1996-97. There was a progressive increase in shoot length upto harvest during both the years. The shoot length of the crop sown on different dates differed significantly at various crop growth stages. The shoot length was found to be decreased significantly with the delay in sowing of the crop at all the stages of the crop growth i.e. from 20 DAS to the harvest.

This further shows that non-significant differences were observed among the cultivars at all the stages of crop growth starting from 20 DAS till the harvest during both the years except the early stages i.e. 35 and 50 DAS during 1995-96. However, cultivars GC-77, PEB-I and EC-26177-3 remained statistical at par and produced significantly taller plants in comparison to other cultivars.

#### Periodic root length

A critical examination was being conducted which reveals that periodic root length was found to increase up

to 80 DAS and declined thereafter till the harvest. Similar to the shoot-length, delay in sowing caused a reduction in periodic root length of the crop during both the years. Among different cultivars a significant difference was noticed for periodic root length at early stages of crop growth i.e. 20 DAS to 50 DAS as well as at harvest during 1995-96. Non-significant difference were observed among the cultivars at 65, 90 and 95 DAS. The maximum root length was recorded in cultivar RMT-1 followed by EC-26177-3 and GC-77 which were significantly superior to the other cultivars, minimum root length was recorded in cultivar IC-326-1 at early as well as later stages of crop growth. Almost similar trend was observed during 1996-97 except at 50 DAS stage where the differences among the cultivars were non-significant.

#### Periodic dry matter accumulation per plant

The data on dry matter accumulation per plant at successive stages of crop growth presented which indicates that with the advancement of the plant age, there was the corresponding increase in dry matter accumulation upto harvest irrespective of the treatment. The increase in dry matter accumulation was maximum between 50 and 95 DAS and a slow increase was

observed thereafter upto harvesting during both the years of study. Different planting dates exhibited significant impact on dry matter accumulation at all the stages of crop growth. The crop sown accumulated significantly higher dry matter than all other sowing dates. Sowing after the advised time caused a significant reduction in dry matter accumulation per plant at all the stages of crop growth i.e. from 20 DAS to harvest during the both the years. Moreover, an abrupt decline in dry matter accumulation was observed in the crop sown.

Dry matter accumulation was found to be significantly influenced by different cultivars at various crop growth stages during both years except at 80 and 110 DAS during 1995-96 and at harvest during 1996-97 where all the cultivars remained statistically at par. Cultivar RMT-1 accumulated maximum dry matter in the early stages of crop growth and surpassed the other cultivars at later stages of crop growth i.e. from 80 DAS to 110 DAS during the year 1995-96. However, EC-26177-3 produced maximum dry matter at harvest. During 1996-97, RMT-1 behaved in the same fashion as that of 1995-96 upto the 110 DAS stage of crop growth except at 80 DAS where PEB-1 ranked first for dry matter accumulation per plant.

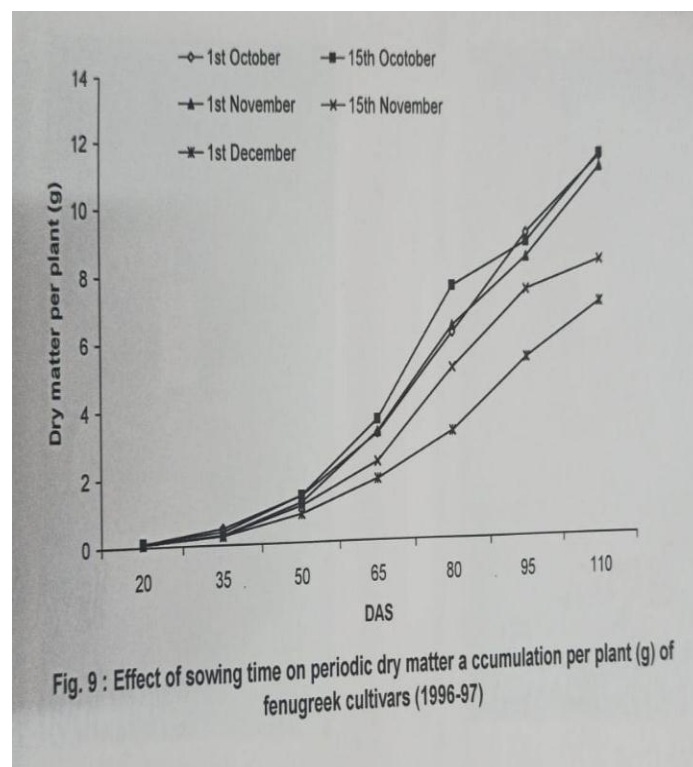


Fig. 9 : Effect of sowing time on periodic dry matter accumulation per plant (g) of fenugreek cultivars (1996-97)

#### CONCLUSION

Out of twenty assortments, the most noteworthy seed yield, new weight, crop development rate and relative development rate were kept in AFG-2 followed by PEB comparable to leaf region, leaf region file, leaf region term and chlorophyll content. Based on one year research, it very well may be presumed that AFG-2 and

PEB are the exceptional presentation and ought to be utilized for additional rearing system in fenugreek.

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