EUROPEAN JOURNAL OF BIOMEDICAL AND PHARMACEUTICAL SCIENCES
http://www.ejbps.com

ISSN 2349-8870
Volume: 2
Issue: 4
761-764
Year: 2015

STUDY OF CROP GROWTH RATE, YIELD ATTRIBUTE AND PRODUCTIVITY OF FENUGREEK

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Article Received on 21/06/2015 **Article Revised on 11/07/2015** **Article Accepted on 01/08/2015**

ABSTRACT

The current examination was embraced to assess the presentation of fenugreek cv. RMt-1 under various degrees of Phosphorus and biofertilizers for expansion of yield. The examination comprised of four degrees of Phosphorus (0, 35, 45, 55 kg/ha) alongside two biofertilizers (Rhizobium and PSB) and their blends were remembered for this examination. There were out and out 20 medicines spread out in Factorial Randomized Block Plan (FRBD) with three replications. Among various treatment mix, most extreme seed yield was kept in P2O5 45kg/ha (17.28 q/ha) which was at standard with P2O5 55kg/ha (16.88 q/ha). With respect to the biofertilizer treatment Rhizobium + PSB (16.12) was fundamentally better than rest of the treatment. Investigation of information on the communication impact demonstrated that treatment mix P2O5 45kg/ha + Rhizobium + PSB had the greatest seed yield (18.03q/ha) which were at standard with P2O5 45kg/ha, P2O5 55kg/ha + Rhizobium + PSB and P2O5 45kg/ha + Rhizobium with 17.87q/ha, 17.31 q/ha and 17.01 q/ha seed yield individually.

KEYWORDS: Among various treatment mix, most extreme seed yield was kept in P2O5 45kg/ha (17.28 q/ha) which was at standard with P2O5 55kg/ha (16.88 q/ha).

INTRODUCTION

Concerning the low yield probability of fenugreek, an examination was led to assess the ideal pace of nitrogen manure and dispersing on yield and seed yield credits of fenugreek. The two factorial examination were spread out in Randomized Total Block Plan (RCBD) with three replications. Various degrees of nitrogen and dispersing affected essentially on the majority of the boundaries. For nitrogen, N3; 120 kg Nha-1 played out the plant spread (26.14 cm), unit per plant (42.0), seed per unit (14.0), seed per plant (12.5 g) and seed yield (789 kg ha-1) .in the event of dispersing (s), plant spreading (22.65 cm), case per plant (36.2), seed per unit (13.5), seed per plant (9.2 g) and seed yield (663.3 kg ha-1) acquired from S3; 30 cm × 10 cm. For joined impact plant spreading (27.06 cm2), case plant-1 (43.3), seed unit 1 (15.1), weight of seed plant-1 (3.9 g), and seed yield (801.7 kg ha-1) were acquired from N3S3. In this way, it very well may be presumed that 120 kg Nha-1 with 30 cm × 10 cm was awesome for the development and yield ascribes of fenugreek. Its necessities to lead more analyses with Nitrogen and dividing whether can control the morphological characters, yield and seed yield ascribes of fenugreek.

Crop growth rate

The perusal of data in Table and Fig 10 & 11 reveals that crop growth rate was increased upto 80-95 DAS and declined thereafter, when the crop was sown on 1st Oct and 15th Nov. Whereas, the similar increasing trend was observed only upto 65-80 DAS period in the crop sown on 15th Oct., 1st Nov and 1st Dec during both the years of experimentation. In general, a rapid increase in crop growth rate was recorded between 35-50 DAS and 65-80 DAS period of ume. Delay in sowing from 15th Oct to 1st Dec resulted in decreased crop growth rate over the previous date of sowing at all the stages of crop growth during both the years except at the later stages: e 95-110 during 1995-96 where the differences were non-significant between 1st Nov and 15th Nov dates sowing The crop sown on 15th Oct grew significantly faster than the other planting dates under all the stages of crop growth during both the years except at harvesting during 1995-96 However, it grew very slowly in comparison to Ist Nov and 15 Nov sown crops. Delayed sowing (1st Dec) showed the minimum crop growth rate upto 80-95 DAS.

At early stage ie 0-20 DAS cultivar GC-77 was significantly superior to other cultivars for crop growth rate during both the years. At the later stages (20-35 DAS to 110-At harvest) there was not any significant variation

in crop growth rate among all the cultivars during both the year except 50-65 DAS and 65-80 DAS during 1995.96 and 50-65 DAS period during 1996-97 where significant differences were exhibited among the cultivars. At 50-65 DAS stage cultivar RMT-1 showed the maximum crop growth rate followed by PEB-1 and Prabha cultivar of fenugreek during both the years. However, at 65-80 DAS cultivar GC-77 had highest CGR followed by PEB-1 and EC-26177-3 during 1995-96.

YIELD ATTRIBUTES

Number of branches per plant

The data on number of branches per plant recorded at various stages of crop growth are presented in Table 15. The data shows that the number of branches per plant decreased significantly over the previous date of sowing with every delay in sowing from 1st Oct. to 1st Dec. at all the crop growth stages during both the years. However, the cultivars did not differ significantly with respect to number of branches per plant at all the stages of crop growth during both the years.

Number of pods per plant

It is evident from the data in Table 16 that crop sown on 1st Oct. 15th Oct and 1st Nov. remained at par and produced significantly more number of pods per plant than 15th Nov. and 1st Dec. sown crop during both the years. Maximum number of pods per plant were found in 15th Oct. sown crop.

The data further explained that cultivar PEB-1 produced maximum number of pods per plant followed by EC-26177-3 and RMT-1 during 1995-96. However, the differences were non-significant among these cultivars. During 1996-97, maximum number of pods per plant were recorded in cultivar GC-77 followed by HFM-65 and PEB-1. Similar to 1995-96, these first three cultivar produced statistically equal number of pods per plant Cultivar Lam Selection-1 produced least number of pods per plant during both the years.

Number of seeds per pod

The perusal of data in Table 16 indicates that sowing of crop on 15th Oct was found significantly better than the other planting dates for number of seeds per pod during both the years. The delay in sowing from 1st Nov to Ist Dec caused a reduction in number of seeds per pod. However, the differences between the two consecutive dates of sowing were non-significant for number of seeds per pod except between 15th Oct and 1st Nov dates of sowing during 1995- 96, whereas significant differences were observed among these three dates of planting during 1996-97.

The cultivar RMT-1 had maximum number of seeds per pod during 1995-96 and it was closely followed by cultivar PEB-1 and Lam Selection-1 During 1996-97, IL-326-1 performed better than the other cultivar and accompanied by RMT-1 and HFM-65 Cultivars CO-1 and HFM-65 had minimum number of seeds per pod during 1995-96, whereas, EC-26177-3 gave similar results during 1996-97.

1000 seed weight

An examination of data in Table 16 indicates that 15th Oct sown crop gave highest 1000 seed weight followed by 1st Oct. and 1st Nov. dates of sowing during both the years. However, the differences were only numerical for this trait Sowing after 15th Oct decreased the 1000 seed weight, lowest test weight was recorded in 1st Dec sown crop during both the seasons.

The test weight was found to differ among various fenugreek cultivars. Maximum 1000 seed weight was recorded in cultivar PEB-1 (10.6g) which was closely followed by Lam Selection-1, RMT-1 and EC-26177-3. However, these cultivars were statistically at par with respect to 1000 seed weight during both the years teed 1000 seed weight was observed in fenugreek HFM-65 during both the years.

Seed yield per plant

The perusal of data presented in Table 16 reveals that the highest seed per plant was obtained from 19th Oct sown crop. It gave significantly higher than the other dates of sowing except 1st Oct during both the years where the differences between 1st Oct, and 15 Oct, were found to be non-significant during 1996-97 only Delay in sowing from 15th Oct to 1st Dec caused a significant reduction in the seed yield per plant over the previous date of sowing Among the cultivars PEB-1 gave highest seed yield per plant during both the years of experimentation. The seed yield per plant was found in order with non-significant differences were PEB-1>EC-26177-3>RMT-1/ Lam Selection-1 Out of 10 tested cultivars HFM-65 gave the lowest seed yield per plant during both the years.

YIELD

Seed yield

The data presented in Table 17 and depicted in figure 12 indicate that the amp sown on 15th Oct gave significantly higher yield than the other dates of sowing during both the year The sowing of crop after 15th Oct. resulted into a significant reduction in seed yield up to 1st Dec sowing. A similar trend was observed during second year of study i e. 1996-97. The crop sown on 15th Oct. 98, 14.6, 34 9 and 67.0 per cent higher seed yield than 1st Oct, 1st Nov., 15th Nov and 1st Dec, respectively, during 1995-96. The magnitude of increase daring next year was in the same order to the tune of 8.3, 15.2, 36.1 and 70.9 per tested cultivar PEB-1 proved to be best during both the years It was closely It is also apparent from the data (Table 17) that out of the ten fenugreek followed by cultivars EC-26177-3, Lam Selection-1 and RMT-1 during 1995- 96. A similar trend was also observed in the next years The performance of the cultivars was in the order of PEB-1> EC-26177-3 Lam Selection-1 > RMT-1 > Prabha > IL-326-1> IC-

5487> Co-1> GC-77> HMF-65 during both the year of study.

Straw yield

A critical examination of data in Table 17 indicates that highest straw produced when the crop was sown on 1st Nov. which was found to be was statistically at par with the crop sown on 1st Oct and 15th Oct during 1995-96. Further delay in sowing after 1st November to 1st Dec. brought a significant reduction in straw yield during the same year However, during 1996-97, the maximum straw was produced by the crop sown on 1st Oct. and a decline in straw yield was observed thereafter with the delay in sowing till 1st Dec.

Fenugreek cultivar HFM-65 produced maximum straw during both the years. Which was closely followed by GC-77, CO-1, and Lam Selection-1. The lowest straw yield was obtained from cultivar PEB-1 during 1995-96 where as IL-326-1 and Lam Selection-1 gave similar results in 1996-97.

Biological yield

The perusal of data given in Table 17 reveals that maximum biological yield was produced by 15th Oct. sown crop and it was found significantly superior to the other dates of sowing during both the years except 15th Oct. during 1996- 97, where, the differences were observed to be non-significant. Delay in sowing from 1st Nov. to 1st Dec, resulted in significant decrease in biological yield of fenugreek. All the cultivars were statistically at par in producing the biological yield.

HARVEST INDEX

The data presented in Table 18 reveals that the harvest index remained unaffected due to various sowing times during 1995-96, whereas, non-significant differences were observed between the crop sown from 1st Oct to 1st Nov during 1996-97. But, significant reduction in harvest index was observed with the further delay in sowing from 15th Nov to 1st Dec during 1996-97 Significant variations were observed among the different cultivars for harvest index. The cultivars PEB- 1 remained superior for harvest index and it was closely followed by the cultivars RMT-1, EC-26177-3 and Lam Selection-1 during 1995-96. Whereas, highest harvest index was recorded in PEB-1 followed by EC-26177-3, Prabha and IL- 326-1 during 1996-97. The lowest harvest index was worked out for the cultivar HFM-65 during both the years of study.

PRODUCTIVITY

Biomass productivity

The data presented in the Table 19 reveals that the highest biomass was worked out in 1st Nov. sown crop and it remained statistically at productivity par with the sowing date of 15th Oct. during 1995-96. Whereas, non-significant difference between 1st Oct. and 15th Oct. date of sowing were observed during 1996-97. However, biomass productivity was found in decreasing order when the crop was planted after 15th Oct. during 1996-97.

The cultivar Lam Selection-1 proved its superiority over the other cultivars for biomass productivity during both the years of investigation. However, the cultivars namely CO-1, and IC-5487 were ranked 2nd and 3rd, respectively among the tested cultivars during both the years The minimum biomass productivity study y was recorded for the cultivar IL-326-1 during both the years under.

Seed productivity

Different sowing times had a significant impact on seed productivity in fenugreek. The crop sown on 15th Oct. recorded significantly higher seed productivity than the remaining dates of sowing (Table 19). The seed productivity was found to be decreased with the delay in sowing from 1st Nov. to 1st Dec. during both the years. A significant variation was observed among different cultivars of fenugreek for seed productivity. The cultivar Lam Selection-1 out yield the other cultivars in seed productivity during both the years. The minimum seed productivity was recorded by HFM-65 during both the years.

SEED CHARACTERS (QUALITY)

Germination percentage

The data pertaining to the seed germination percentage are given in Table. The critical perusal of the data reveals that no significant variation was observed in germination percentage among the crop sown from 1st Oct to 1st Nov. during both the years of experimentation. Further delay in sowing time brought a significant decline in germination percentage upto 1st Dec. during both the years. None of the cultivars differ significantly with respect to germination percentage during both the years.

Seedling length

The data recorded on seedling length are presented in Table 20 and it was revealed that the seedling length was found to decrease significantly when the cup was sown after 1st Nov. during both the years. However, non-significant differences were observed for seedling length for date of sowing from 1st Oct to 1st Nov. during both the years.

During 1995-96, the cultivars did not exhibit any significant differences for seedling length. However, contrary to the data of year 1995-96, a significant variation was observed among the various cultivars during 1996-97 The maximum seedling length was recorded in cultivar IL-326-1 followed by EC-26177-3 and RMT-1 Minimum seedling length was observed in the cultivar IC-5487 during 1996-97.

Seed vigour index

The data presented in Table 20 reveals that there was no significant difference in sowing time between 1st Oct and 15th Oct for seed vigour index during both the years.

However, the maximum seed vigour index was recorded in the crop sown on 15th Oct. The sowing after the 15th Oct resulted in significant decline in succeeding sowing dates in seed vigour index. Among the cultivars the highest seed vigour index was observed in cultivar EC-26177-3 followed by IL- 326-1 and HFM-65 during 1995-96. However, the following year i e. 1996-97 the trend was in order of IL-326-1 followed by EC-26177-3 and RMT-1 The minimum seed vigour index was observed in the cultivar IC-5487 during both the years of study.

CONCLUSION

From this examination, we draw that the double vaccination of biofertilizers specifically Rhizobium and PSB alongside the use of 45 Kg P2O5 could boost the seed yield in fenugreek. The improvement of generally plant development and advancement by the biofertilizers is all around seen in the article. The supplement accessibility in soil and supplement take-up by the plants were worked with by the biofertilizers that have advanced development, improvement and yield of fenugreek plants.

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