

Effect of sowing dates and herb-cutting management on growth and yield of fenugreek (*Trigonella foenum-graecum*)

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ABSTRACT

A field experiment was conducted during 1995–96 and 1997–98 to evaluate the performance of fenugreek (*Trigonella foenum-graecum* L.) under different sowing dates and herb-cutting management. Differences in seed yield due to different sowing dates were not significant. Fresh herb yield of earlier sowing dates (1 and 15 October) was significantly better than later sowing dates (30 October and 15 November). Gross returns and benefit : cost ratio were also higher in earlier sowing dates. Seed yield and yield-attributing characters were significantly more in pure seed crop than all other herb-cutting treatments. The herb-cutting treatments had significant effect on fresh herb yield and each delay in removal of herb increased the fresh herb yield significantly.

Key words : Fenugreek, Sowing date, Herb cutting management, Yield

Fenugreek leaves are cut arbitrarily several times. Though the removal of herb adds to the total income obtained from the crop, it may adversely affect the seed yield. Moreover, the same time of removal of herb may not be suitable to the crops sown on different dates. The present study was therefore conducted to study the effect of different sowing dates and the time of removal of green herb on the growth and seed yield of fenugreek.

MATERIALS AND METHODS

A study was conducted at the Students' Farm, Department of Agronomy, Punjab Agricultural University, Ludhiana, during

winter (*rabi*) seasons of 1995–96 and 1997–98. The soil of the experimental field was sandy loam in texture, normal in respect of pH and electrical conductivity, low in organic carbon and available nitrogen (9.2 kg/ha) and medium in available phosphorus (34.0 kg/ha) and potassium (154.0 kg/ha). The experiment was laid out in split-plot design with 4 sowing dates (1, 15 and 30 October and 15 November as main-plot treatment and 5 herb-cutting treatments [removal of herb at 50, 60, 70 days after sowing (DAS) sole herb and sole seed crop] as subplot treatments with 4 replications. The crop (cv. 'M 150') was sown in lines 30 cm

apart using 30 kg/ha seed. The crop received 25 kg N/ha in 2 equal splits, half dose was applied basal and the remaining half was top-dressed at 30–35 days after sowing. A uniform dose of 30 kg/ha each of P_2O_5 and K_2O was applied at sowing. The crop was harvested for removing fresh herb as per treatment 5 cm above-ground level and then the crop was raised for seed production. In sole herb the crop was harvested repeatedly when plants attained height of 30 cm. The crop matured in the last week of April and was harvested.

RESULTS AND DISCUSSION

Sowing date

The effect of different sowing dates on seed yield of fenugreek was not significant

during both the years (Table 1). During 1995–96 the plant height and pods/plant decreased significantly with delay in sowing and the similar trend was observed during 1997–98, though differences were not significant (Table 2). But these characters were not reflected in seed yield and this might be due to the reason that pod-bearing shoots decreased with delay in sowing during 1995–96.

The fresh herb yield of fenugreek was statistically at par when crop was sown on 1 and 15 October, but each delay in sowing from 15 October to 15 November decreased the herb yield significantly (Table 1). This might be due to overall poor development of the plant, as is evident from the plant height (Table 2). The height of the plant at

Table 1. Effect of different sowing dates and cutting management on seed and herb yield, gross returns and benefit : cost ratio of fenugreek

Treatment	Seed yield (q/ha)		Herb yield (q/ha)		Gross returns (Rs/ha)*		Net returns (Rs/ha)**	Benefit : cost ratio**
	1995-96	1997-98	1995-96	1997-98	1995-96	1997-98		
<i>Sowing date</i>								
1 October	9.32	6.59	83.00	112.08	15,334	13,512	6,903	0.91
15 October	8.58	7.61	83.61	113.02	14,476	14,783	7,107	0.94
30 October	7.98	8.10	57.50	68.41	12,451	13,140	5,266	0.70
15 November	9.35	6.86	23.22	44.22	12,381	10,443	3,890	0.51
CD (P = 0.05)	NS	NS	13.05	22.56				
<i>Cutting management</i>								
50 DAS	8.65	8.03	18.28	33.74	11,294	11,323	3,671	0.48
60 DAS	8.23	6.47	38.00	54.74	11,776	10,501	3,498	0.45
70 DAS	6.20	5.58	57.89	74.51	10,334	10,421	2,740	0.36
Sole herb			133.11	174.73	6,656	8,837	2,697	0.54
Sole seed	12.15	9.06			14,580	10,872	5,090	0.66
CD (P = 0.05)	1.34	0.90	12.78	13.42				

DAS Days after sowing

*Market rates of fenugreek seed (Rs/q) and herb (Rs/q) were Rs 1,200 and Rs 50 respectively;

**Mean data of 2 years

Table 2. Effect of different sowing dates and herbs cutting management on yield attributes of fenugreek

Treatment	Plant height (cm)		Herb plant height (cm)		Pod-bearing shoots/ metre row length		Pods/ plant		Seeds pod		1,000-seed weight (g)
	1995– 96	1997– 98	1995– 96	1997– 98	1995– 96	1997– 98	1995– 96	1996– 97	1995– 96	1996– 97	
<i>Sowing date</i>											
1 October		94.44	29.2	26.3		75.75		40.01	12.01	12.70	9.841
15 October	96.70	82.48	33.9	26.2	90.28	78.83	35.60	34.67	11.80	12.80	9.361
30 October	95.65	73.39	24.4	23.7	84.90	85.25	26.80	26.72	12.51	12.20	8.287
15 November	91.41	64.87	40.3	16.9	79.78	80.66	26.50	19.30	12.90	12.70	8.913
CD (P = 0.05)	NS	18.70	3.21	3.68	2.44	NS	6.73	5.20	NS	NS	NS
<i>Cutting management</i>											
50 DAS*	94.55	84.52	18.8	14.5	87.29	82.08	30.81	33.41	12.01	12.60	8.515
60 DAS	93.51	78.37	21.3	23.0	86.95	77.58	29.90	30.68	11.61	12.00	8.635
70 DAS	85.05	65.87	33.2	32.3	77.54	73.33	26.21	19.47	11.60	12.30	8.913
<i>Sole herb</i>											
Sole seed	105.23	86.16			88.17	87.50	31.67	38.13	14.0	12.50	10.339
CD (P = 0.05)	6.50	5.37	2.03	3.13	2.67	7.69	3.25	5.09	0.98	NS	1.308

the time of harvesting for fresh herb decreased significantly with delay in sowing from 15 October to 15 November.

Average gross returns of Rs 14,423 and Rs 14,630 were recorded from 1 October and 15 October sowing date and the delay in sowing decreased the gross returns. A decrease of 13 and 22% in gross returns was observed with 30 October and 15 November sowing date over 15 October respectively. Sowing on 15 October proved more profitable with net returns of Rs 7,107 and benefit: cost ratio of 0.94 (Table 1) than all the treatments.

Cutting management

The removal of herb had significant effect on seed yield and yield attributes (Tables 1 and 2). The seed yield was maximum when crop was not harvested for fresh herb and it was significantly better than all other cutting treatments during both the years. The gross returns, net returns and benefit: cost ratio were also maximum when crop was raised as sole seed crop. The seed yield decreased significantly when crop was harvested for green herb. The crop left for seed production after 1 cut for herb at 50, 60 and 70 DAS produced 28, 32 and 49% less seed than sole seed crop during 1995–96. The corresponding figures were 11, 28 and 38% during 1997–98. The

highest seed yield in sole seed crop was due to more plant height, more pods/plant, pod-bearing shoots/m row length, seeds/pod and 1,000-seed weight (Table 2). Thakuria and Rafique (1993) reported reduction in grain and straw yield of oats with cutting treatments compared to no cutting.

The herb-cutting treatments had significant effect on fresh herb yield. Each delay in removal of herb from 50 days to 70 days after sowing increased herb yield significantly. Maximum fresh herb yield was obtained from sole herb treatment but crop did not sprout after second cutting during both the years. The increased herb yield under delayed harvesting was owing to better development of the plant, as indicated by the significant increase in plant height with each delay in harvesting. Purushotham *et al.* (1995) also reported that late cut increased green fodder yield of oats significantly than early cuttings.

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