

Optimum sowing time for horsegram (*Macrotyloma uniflorum*) varieties under dryland condition

S. K. SHINDE, C. B. GAIKWAD AND J. D. PATIL

Dry Farming Research Station, Mahatma Phule Krishi Vidyapeeth, Solapur,
Maharashtra 413 002

Received: February 1992

ABSTRACT

A rainfed experiment was conducted during 1983-87 to study the optimum sowing time for horsegram [*Macrotyloma uniflorum* (Lam.) Verd.] varieties on 30 cm-soil depth at Solapur. Horsegram varieties could be sown up to the second fortnight of July. The varietal differences between 'D 40-1' and 'K 42' were not observed. The interaction effects indicated that sowing of both the varieties could be undertaken from the second fortnight of June to first fortnight of July. 'K 42' horsegram performed better under late sowing condition up to first fortnight of August in the dryland conditions.

Horsegram [*Macrotyloma uniflorum* (Lam.) Verd.] is being grown on shallow soils with very poor management practice, resulting in the low productivity. Performance of this crop could be improved by proper management practices like timely seeding and by the use of improved varieties. The recent introduction of horsegram varieties 'D 40-1' ('Man') and 'K 42' ('Sina') helped in increasing the productivity up to 8-10 q/ha. Similarly, Patil *et al.* (1981) reported good performance of horsegram crop under delayed sowing as a contingent planning. (1981). Since it is necessary to identify the suitable sowing time for newly introduced horsegram varieties under

Table 1. Total rainfall (mm) received in different sowing dates and dry spells during crop-growth period of horsegram

Year	Sowing date						Dry spells	No. of days
	Second fortnight of Jun	First fortnight of Jun	Second fortnight of Jun	First fortnight of Aug	Second fortnight of Aug	First fortnight of Sep		
1983	733.3	678.2	543.9	428.1	415.3	349.0	17 Aug-11 Sep	26
1984	530.1	464.0	319.8	319.8	228.9	188.8	17 Jun-12 Jul	26
							10 Aug-10 Sep	32
1985	445.4	429.6	423.9	279.9	216.8	197.1	26 Jun-20 Jul	25
1987	744.4	679.3	629.6	527.2	421.6	415.3	6 Jun-24 Jun	19

Table 2. Grain yield of horsegram (q/ha) as affected by sowing dates and varieties

Sowing date	1983			1984			1985			1987			Pooled mean		
	'D 40-1'	'K 41'	Mean	'D 40-1'	'K 42'	Mean	'D 40-1'	'K 41'	Mean	'D 40-1'	'K 42'	Mean	'D 40-1'	'K 42'	Mean
II fortnight of Jun	8.15	8.45	8.30	11.11	14.13	12.77	9.36	9.06	9.21	11.54	5.88	8.71	10.04	9.38	9.71
I fortnight of Jul	8.29	8.72	8.51	8.87	13.28	11.07	9.06	8.18	8.62	12.56	8.36	10.46	9.69	9.63	9.66
II fortnight of Jul	5.46	4.59	5.02	5.01	8.99	7.00	7.97	9.11	8.54	10.35	9.90	10.12	7.19	8.14	7.66
I fortnight of Aug	1.77	4.37	3.07	1.93	2.35	2.14	5.31	6.16	5.73	6.64	8.29	7.47	3.91	5.29	4.60
II fortnight of Aug	0.38	1.27	0.82	1.27	1.81	1.54	2.29	3.26	2.77	4.15	6.63	5.39	2.02	2.62	2.32
I fortnight of Sep	0.24	6.36	0.30	0.27	0.72	1.15	1.03	2.39	1.71	2.60	5.08	3.84	1.03	2.12	1.58
Mean	4.05	4.62	4.32	4.79	6.88	5.83	5.83	6.36	6.09	7.97	7.36	7.67	5.64	6.19	5.92
CD (P=0.05)	S	V	S × V	S	V	S × V	S	V	S × V	S	V	S × V	S	V	S × V
	1.47			1.64	0.66	1.63	1.41	0.47	2.82	1.35		4.20	2.35		2.78

S, Sowing date; V, variety

dryland conditions, the present experiment was planned.

MATERIALS AND METHODS

The field study on optimum sowing time for horsegram varieties was undertaken at Solapur, during 1983–1987 on 30 cm-soil depth. Out of the 5 years, crop failed during 1986 due to 2 dry spells of 33 and 25 days (29 June–31 July, and 14 August–7 September) during the crop growth coupled with early withdrawal of monsoon on 28 September. The treatment consisted of 6 sowing dates, viz. second fortnight of June, first fortnight of July and second fortnight of July, first fortnight of August, Second fortnight of August and first fortnight of September, and 2 varieties, viz. 'D 40-1' ('Man') and 'K 42' ('Sina'). The crop was fertilized with 12.5 kg N and 25 kg P_2O_5 /ha. The experiment was conducted in randomized block design with 2 replications. The gross and net plot size was 2.40 m × 5.00 m and 1.80 m × 4.60 m respectively. The crop was sown at 30 cm apart as per the treatments. The details of rainfall at different sowing dates and dry spell during the crop-growth period are presented in Table 1 and year-wise grain yield of horsegram with pooled mean are presented in Table 2.

RESULTS AND DISCUSSION

Sowing date

Significant differences in grain yield were observed due to different sowing dates and when the data were pooled (Table 2). Sowing up to the second fortnight of July showed significantly higher grain yield than August and September sowings. This might be due to better rainfall received during the crop-growth period when the crop was sown up to the second fortnight of July (Table 1). Similarly, though the dry spells were

experienced during the crop growth, the drastic reduction in grain yield was not observed when the crop was sown up to the second fortnight of July. The crop sown in August showed reduction in the grain yield by 60% compared with the crops sown in June and July. Similarly, sowing at first fortnight of September reduced the grain yield by 75% over June and July sowings, indicating that the optimum yields could only be achieved by sowing the horsegram crop up to the end of July under the dryland conditions. The findings confirm the results of Patil *et al.* (1981).

Performance of varieties

The grain yield of 'K 42' was significantly increased compared with 'D 40-1' in 2 years. However, significant differences between varieties were not observed when the data were pooled. 'K 42' horsegram gave 11% higher grain yield than 'D 40-1'.

Effect of interaction

The interaction effects between sowing dates × varieties were observed in 3 out of 4 years and in pooled mean. Performance of both the varieties was found superior when they were sown up to the second fortnight of July. Similarly, better yield could be achieved by 'K 42' than by 'D 40-1' variety when sown even in the first fortnight of August, indicating that for late seeding of 'K 42' variety could be preferred under dryland conditions.

REFERENCE

- Patil, N. D., Umrani, N. K., Shende, S. A., Manke, B. S., Kale, S. P. and Shingte, A. K. 1981. Improved crop production technology for drought prone areas of Maharashtra. *Technical Bulletin*, Dry Farming Research Station, Mahatma Phule Krishi Vidyapeeth, Solapur.