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Growth and Yield of Safflower (*Carthamus tinctorius* L.) as Influenced by Irrigation, Nitrogen and Phosphorus

D. R. Makavana, S. G. Sadaria, V. D. Khanpara, B. B. Kaneria and R. K. Mathukia

Department of Agronomy, Gujarat Agricultural University, Junagadh-362 001

A field experiment was conducted at Agronomy Farm, Gujarat Agricultural University, Junagadh during *rabi* season of 1992-93. The soil was clayey in texture, medium in total nitrogen (0.07 %), medium in available phosphorus (34 kg/ha) and high in available potassium (303 kg/ha) and slightly alkaline in reaction (7.9 pH) with normal E. C. (0.30 dS/m). The treatments comprising three levels of irrigation (0.4, 0.6 and 0.8 IW/CPE) as main plots and three levels each of nitrogen (0, 25 and 50 kg N/ha) and phosphorus (0, 10 and 20 kg P_2O_5/ha) as sub-plots, were tried in split plot design with three replications. Half dose of N and full dose of P were applied in the forms of urea and single super phosphate, respectively at the time of sowing and remaining half dose of N was top-dressed at 40 days after sowing. The safflower variety 'Tara' was sown on October 17, 1992 at inter row spacing of 45 cm and harvested on February 9, 1993.

Different schedules of irrigation significantly influenced growth and yield of the crop, except seeds/head. Scheduling irrigation at 0.8 IW/CPE recorded significantly higher growth and yield attributes viz., plant height, primary and secondary branches/ plant, heads/plant, test weight and seed weight/plant which were ultimately reflected in significantly higher seed and stover yield over 0.4 IW/CPE ratio but 0.6 IW/CPE ratio was on par with 0.8 IW/CPE in respects of growth and yield of the crop, except test weight. The results are in accordance with the findings of Singh and Singh (1989).

Application of 50 kg N/ha significantly improved growth and yield attributes viz., plant height, primary and secondary branches/plant, heads/plant, test weight and seed weight/plant and seed and stover yields over no application of nitrogen. However, 25 kg N/ha was on par with 50 kg N/ha in respects of plant height, primary branches/plant and stover yield. The findings corroborates the report Bhanvadia (1993).

There was significant increase in growth and yield attributes as well as

TABLE 1
Effect of different treatments on growth, yield attributes and yields of safflower.

Treatment	Plant height (cm)	Branches/plant		Heads/ plant	Seeds/ head	1000-seed weight (g)	Seed weight plant (g)	Yield (q/ha)	
		Primary	Secondary					Seed	Stover
Irrigation (IW/CPE)									
0.4	87.11	4.67	6.13	11.78	18.68	43.05	9.64	12.61	37.82
0.6	91.89	5.08	7.56	13.81	17.53	44.19	10.65	14.05	44.50
0.8	94.51	5.46	8.01	14.01	17.46	45.36	11.24	14.80	48.12
C. D. at 5%	5.41	0.55	0.86	1.32	NS	1.02	0.97	1.35	5.53
Nitrogen (kg N/ha)									
0	87.63	4.51	6.37	11.95	18.64	43.36	9.89	12.99	39.38
25	91.98	5.18	7.22	13.25	17.74	44.06	10.53	13.81	44.07
50	93.90	5.52	8.11	14.10	17.29	45.18	11.12	14.66	46.99
C. D. at 5%	3.05	0.38	0.62	0.71	NS	0.61	0.50	0.65	3.39
Phosphorus (kg P_2O_5/ha)									
0	89.43	4.66	6.50	12.12	18.42	43.41	9.86	12.96	39.66
10	91.66	5.05	7.22	13.11	17.85	44.16	10.51	13.83	43.54
20	92.42	5.50	7.98	14.07	17.40	45.03	11.16	14.67	47.24
C. D. at 5%	NS	0.38	0.62	0.71	NS	0.61	0.50	0.65	3.39

yield of the crop with each increment in level of P. except plant height and seeds/head and 20 kg P_2O_5/ha significantly recorded higher values of growth and yield attributes viz., primary and secondary branches/plant, heads/plant, test weight and seed weight/plant and seed and stover yields. Similar results were also reported by Singh and Singh (1989) and Bhanvadia (1993).

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