

EFFECT OF PLANTING DATES ON THE PRODUCTIVITY OF SUNFLOWER

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Monthly sowing studies were conducted during 1978-81 at the Agricultural Research Station, Bhavanisagar to evaluate the influence of environmental factors on the seed yield, oil content and oil yield of sunflower with the Variety EC 68414 as test crop. Highest seed yield, oil percentage and oil yields were obtained with February sowing. Seed yield and oil content were positively correlated with maximum temperature and bright sunshine hours during the flowering phase.

Among the oilseed crops, sunflower is gaining popularity owing to its adaptability to varying agroclimatic conditions, highest oil production per unit area and short duration. Though it is photoinensitive and can be grown all round the year, its performance and quality of the produce are excellent when grown in specific periods of the year. Environmental factors have been reported to influence the yield and quality characters of oil in sunflower (Grindley, 1952; Robinson, 1970; Marton and Fakete, 1975; Smith et al 1978). Since little information is available in India concerning planting dates of sunflower, an experiment was conducted to determine the effect of planting dates on (1) seed yield (ii) oil percentage and (iii) oil yield.

MATERIAL AND METHODS :

The experiment with sunflower variety EC 68414 was laid out during 1978-79; 1979-80 and 1980-81 on a red sandy loam soil under irrigated condition at the Agricultural Research Station, Bhavanisagar. Commencing from October 1978 - sunflower seeds

were sown on 10th of every month in three beds of 4 x 5m. size adopting a spacing of 45 cm between rows and 30 cm in the row. Seeds were sown at the rate of three to four per hill and later thinned to single plants at third leaf stage. Optimum doses of NPK @ 60 : 90 : 60 kg/ha were applied to each plot. Recommended package of practices were followed to raise the crop. The crop was harvested at maturity and seed yield recorded. Seed samples from each plot were drawn and evaluated for oil content and the per hectare oil production computed. Weather parameters such as maximum and minimum temperature, rainfall, sunshine hours per day and relative humidity for the corresponding periods of crop growth were also recorded to determine their influence on the productivity and oil content.

RESULTS AND DISCUSSION :

Highest seed yields were obtained from February plantings consistently in all the three years (Table 1) followed by March sowing. June plantings resulted in significantly lower yields dur-

ing 1978-79 and 1979-80. As in the case of seed yield, the oil percentage and oil yield were the highest in February sown crop. Lowest percentage of oil was found in the July sown crops in 1978-79 and 1979-80. Higher seed yield, oil content and per hectare oil yield from February sown crop might be due to the highest maximum temperature (Table 2) and sunshine hours during the flowering phase of the crop (45th to 65th day after sowing) as there existed positive correlations between the maximum temperature ($r=0.70^{**}$) and hours ($r=0.37$)* at the flowering period and seed yield.

The oil percentage was also observed to be related to the maximum temperature during the flowering period. By virtue of high seed yields and oil content, the oil yield, was also the highest from February sown crop. Johnson and Jellum (1972) recorded the highest seed yields and oil content of sunflower planted from mid March through April. Chhabra *et al* (1982) observed that for summer season, March sowing is the best and the harvest index of the crop also was the highest.

The trend in the present investigation that the environmental factors have a significant influence on the seed and oil yield of sunflower is in line with the earlier reports.

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Table 1 : Effect of planting dates on seed yield, oil content and oil yield in sunflower.

Month	Seed Yield (Kg/ha)			Oil Content (%)			Oil Yield (Kg/ha)		
	1978-79	1979-80	1980-81	1978-79	1979-80	1980-81	1978-79	1979-80	1980-81
October	1438	1456	1382	37.3	33.0	37.3	536	539	515
November	1220	1320	1870	36.4	36.2	38.5	445	481	729
December	2211	2047	1812	35.4	35.1	39.2	774	719	710
January	1175	1252	2254	33.5	33.6	41.1	393	422	933
February	2774	3832	2736	41.2	41.4	44.6	1142	1173	1220
March	2434	2335	2551	39.6	39.6	39.6	862	914	1009
April	1557	1526	1918	38.5	38.4	43.5	599	586	857
May	1459	1469	1918	36.4	36.5	41.2	532	531	792
June	1107	1173	1752	41.6	41.0	39.6	461	485	694
July	1446	1531	1610	29.2	29.5	38.6	427	451	621
August	1409	1354	1428	33.9	34.5	38.4	479	467	549
September	1262	1202	1248	40.3	40.6	37.2	509	473	464
CD	86	76	151	0.8	0.6	4.2	199	30	63

Table 2 : Weather data for the period 1978-81 during the different phases of sunflower growth.

Month	1978-79			1979-80			1980-81		
	Maximum temperature	Rainfall mm.	Sunshine hours	Max. temp.	Rainfall mm.	Sunshine hours	Max. temp.	Rainfall mm.	Sunshine hours
October	28.7	46.6	5.0	30.0	35.2	7.4	30.6	19.0	7.5
November	30.5	—	9.1	30.0	—	9.4	31.2	—	8.2
December	31.4	80.8	7.7	32.3	—	9.6	32.4	—	9.9
January	34.4	18.8	9.5	33.9	221.8	8.7	34.5	9.5	9.0
February	37.0	39.4	11.4	35.9	27.6	8.8	36.9	91.1	8.8
March	37.2	27.8	8.3	36.3	118.4	7.5	37.4	83.4	8.1
April	34.4	88.8	6.6	35.5	5.8	3.6	32.8	7.8	4.7
May	32.6	—	3.8	33.1	2.0	3.7	34.6	7.2	6.0
June	32.8	50.4	6.4	32.9	9.2	9.1	32.9	24.5	5.8
July	32.0	202.3	5.8	35.4	42.5	7.7	32.5	115.7	6.9
August	32.1	101.2	7.2	32.1	139.0	6.7	31.2	166.1	5.1
September	29.4	337.4	3.9	30.9	102.3	7.6	30.4	47.6	6.9