

Effect of Time of Sowing on the Quality of Sunflower Seeds*

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In a study on the effect of time of sowing on the quality of seeds of sunflower var. E C. 68413, 3.34% variation in the oil content was observed. Seed obtained from the crop sown in February had the highest oil and FFA content while that sown in September the lowest. Oil content was low in small sized seeds. April sown crop produced seeds with low protein content.

Sunflower (*Helianthus annuus L.*) is a recently introduced oil seed crop to our country. Of the several factors that influence the yield, quality of the seed is an important one. The amount of oil, free fatty acid (FFA) and protein in the seed are the essential quality traits. A study was taken up with sunflower var. EC 68413 to find out the influence of time of sowing on these quality traits.

MATERIAL AND METHODS

The seeds collected from the monthly sowing trials conducted from January, 1975 to December, 1975 formed the material. The bulk seed was graded with square mesh sieves with an aperture width of 3.35, 2.80 and 2.36 mm and those retained by the above sieves were designated as G₁, G₂, and G₃ while that passed through the last one as G₄, respectively. The ungraded bulk (UG) formed the control. The oil content of

the seed samples was estimated by the soxhlet extraction method.

The total FFA content in the oil was assessed by the volumetric method of Christansen and Moore (1961) and expressed as percent oleic acid (Karon and Altschul, 1944). The protein content of seeds was estimated by the colorimetric method suggested by Ali-Khan and Youngs (1973) utilising the meal of the ground material of the seeds used for oil analysis.

RESULTS AND DISCUSSION

The percentage of oil was maximum (57.05) in February and minimum (53.71) in September sown crops irrespective of the size of seeds. The oil content was the lowest in small seeds (Table). Lehman *et al.* (1973) reported variation in the oil content in sunflower seeds due to times of sowing.

The differences in the FFA content due to times of sowing and size grades of seeds were highly significant. The

*Part of M. Sc. (Ag) thesis submitted by the first author to Tamil Nadu Agricultural University, Coimbatore.

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FFA content was maximum in February and minimum in September sown crops. It was high in small sized seeds. FFA value has been used as an index of seed quality (Abdul-Baki and Anderson, 1972). A highly significant and negative correlation (-0.805**) was observed between FFA content and germination (Kathiresan, 1976).

Highly significant difference in protein content was observed due to times of sowing and size of seeds. A maximum of 28.08% and a minimum of 18.49% was recorded in June and April sown crops, respectively. The relationship between protein content of the seed and seed vigour has been well established (Ries and Everson, 1973). In the present study, protein content was high in seeds harvested from June and July sown crops while it was low in February and April sown crops.

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TABLE Quality of sunflower (EC 68413) seeds

Month of sowing	Oil content (%)					Free fatty acid (%)					Protein content (%)						
	G1	G2	G3	G4	Mean	G1	G2	G3	G4	Mean	G1	G2	G3	G4	Mean		
January	55.3	54.2	45.4	53.9	54.8	54.7	2.5	2.5	2.5	2.5	2.5	2.5	26.5	26.6	27.8	23.2	26.8
February	54.8	54.8	46.6	55.6	57.5	57.1	2.9	2.9	3.0	3.0	2.9	2.9	22.8	19.2	22.0	18.5	20.6
March	54.5	54.8	54.1	52.8	54.1	53.9	2.3	2.4	2.2	2.4	2.4	2.4	22.0	20.8	21.9	21.2	21.9
April	55.2	56.2	54.6	53.8	54.8	54.7	2.4	2.4	2.4	2.6	2.4	2.4	18.4	15.5	19.2	19.0	18.5
May	55.8	55.4	55.3	53.8	53.7	54.8	2.5	2.5	2.3	2.5	2.4	2.5	26.9	28.3	25.8	30.0	26.9
June	56.7	55.6	55.5	54.9	54.3	55.4	2.8	2.7	2.6	2.7	2.6	2.7	27.3	27.6	29.7	29.0	28.1
July	56.5	55.3	55.8	54.5	54.9	55.4	2.6	2.5	2.5	2.4	2.5	2.5	28.6	26.8	26.3	28.2	27.0
August	54.5	56.7	55.0	54.2	54.3	55.1	2.7	2.7	2.7	2.6	2.6	2.7	22.9	26.0	24.7	23.5	24.5
Sept.	54.9	53.9	53.6	53.6	53.6	53.7	1.8	1.8	1.9	2.0	1.9	1.9	25.3	25.0	25.0	23.8	24.9
Oct.	54.9	56.3	54.7	55.5	55.4	55.2	2.4	2.4	2.2	2.5	2.4	2.4	23.8	22.3	24.7	22.7	23.7
Nov.	54.2	54.3	54.6	53.9	54.5	54.3	2.4	2.4	2.5	2.5	2.4	2.4	22.6	22.3	23.2	21.3	22.5
Dec.	55.3	55.1	54.6	53.9	54.6	54.7	2.4	2.5	2.4	2.5	2.4	2.5	21.0	22.3	23.8	22.6	22.5
Mean	55.5	55.1	54.9	54.1	54.7		2.5	2.5	2.4	2.5	2.4		24.4	24.0	23.5	24.5	23.6