Short Communication

Pak. j. sci. ind. res., vol. 34, nos. 7-8, July-August 1991

Growth and Yield of Sunflower Varieties as Influenced by Row Spacings

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(Received May 25, 1989; revised May 15, 1991)

Sunflower (*Helianthus annuus* L.) is an important oil seed crop and grown in an area of 7565 ha. with production of 6040 tonnes [1]. In Pakistan, the yield of sunflower head is quite low as compared to other sunflower growing countries of the world. Among cultural practices plant density is found to improve the yield potential of any crop. In sunflower, the yield greatly depends upon row spacing. According to Lopez [2], closer spacing recorded the highest yield. Some workers have recorded the greater yield under wider spacing [3-5]. Row distance and varieties are important for sunflower cultivation. This study was designed to determine the effect of different row spacings on the growth and yield of HO-1 and Hysun-33 sunflower varieties. The experiment was conducted at Sindh Agriculture University, Tandojam adopting a factorial randomized block design replicated four times. The treatments include two sunflower varieties *viz.* HO–1 and Hysun-33 and three row spacing of 45,60 and 75 cm. The plot size was 3.5 x 4.8 m. Basic doses of N and P fertilizers in the form of urea and single superphosphate were applied at the rate of 100-50 N and P kg/ha. The sowing of the seeds were done by means of single coulter drill in lines 45, 60 and 75 cm apart. The thinning of the plants were done before the first irrigation at 20 cm plant distance. The recommended cultural operations were carried out during the growth period. Observations on number and weight of seeds/head, 1000 seed weight, oil content and seed yield were recorded in randomly selected five sample plant at harvest.

The results revealed that Hysun-33 recorded more number of seeds/head than HO-1, but they did not differ significantly. The highest number of seeds/head was recorded at row spacing of 75 cm and row spacing differed significantly (Table 1). The weight of seeds/head and 1000 seed weight were the highest for Hysun-33 followed by variety HO-1. With regard to spacing, the weight of seeds/head and 1000 seed weight were the highest for 75 cm spacing. More oil content was recorded for variety HO-1than Hysun-33. Row spacing of 75 cm produced the maximum oil content followed by 60 cm. The results are similar to as reported by Cetiom *et al.* [6]. The interaction between varieties and row spacing was non-significant.

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The highest seed yield of 1866 kg/ha. was recorded for Hysun-33 compared to HO-1 (1789 kg/ha.). In case of row spacing, the seed yield was more at 75 cm spacing than 60 cm and 45 cm. It was thus observed that 75 cm row spacing resulted in bigger heads with heavier seeds because of lower populations and less competition. Increased within row spacing increased light penetration through the sunflower canopy and reduced within-row competition.

The results lead to conclusion that the plants grown at wider spacing had more area of land around them to draw their nutrition and more solar radiation to absorb for better photosynthetic process and had therefore, performed better as individual plants. On the other hand, a thickly populated crop may have limitation in the optimum availability of temperature, moisture, soil fertility and solar radiation. Thus in the present

Table 1. Effect of Row Spacings on the Number of Seeds Per Head of Sunflower Cultivars.

Row spacing (cm)	Varieties		Mean for row spacings
	HO-1	Hysun-33	
45	1156.25	1225.00	1190.62
60	1231.25	1266.25	1248.75
75	1341.25	1272.50	1306.87
Mean	1242.92	1254.58	

	Varieties	Row spacing	Interactions
Cd_1	NS	19.86	24.33
Cd_2	NS	37.50	33.70

Table 2. Effect of Row Spacing on Weight Seeds/Head, 1000 Seed Weight, Oil Content and Seed Yield/ha in Sunflower Varieites.

Treatments	Seeds head wt (gm)	1000 seed wt (gm)	Oil content (%)	Seed yield/ha (kg)
Spacing				
45	80.75	73.50	36.95	1755.90
60	85.12	77.17	37.95	1785.31
75	96.87	84.62	38.95	1892.03
CD_1	6.44	2.47	0.57	87.06
CD_2	8.92	3.43	0.78	120.06
Variety				
HO-1	85.00	77.67	38.68	1789.12
Hysun-33	90.17	79.17	37.17	1866.37
CD_1	5.25	NS	0.45	71.08
CD_2	NS	NS	0.62	NS

experiment a wider spacing of 75 cm is favourable for obtaining maximum seed yield of sunflower.

Key words: Row spacing, Sunflower, Yield.

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