

PLANT POPULATIONS FOR OILSEED SUNFLOWERS

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With the introduction of Russian varieties to Canada, it seemed desirable to check their performance at currently recommended populations. In addition, wide row spacings have been used in Saskatchewan and Alberta in lieu of summerfallow. It also appeared worthwhile to test narrow row spacings since farmers occasionally "solid seed" with varying degrees of success.

In 1965, two trials were started at Morden to check the performance of the Russian varieties at various populations and row spacings. One test compared Armavirec and Peredovik at 3 ft. and 12 ft. spacings at five seeding rates. The other test compared the same varieties at 3 ft. and 1 ft. row spacings with two seeding rates at 3 ft. and 5 rates at 1 ft. spacing. The tests were conducted at Morden on stubble land which was high in N₂, phosphate and potassium. No additional fertilizer was added, and weeds were controlled by harrowing up to six times both before and after emergence. Plot sizes were 40 ft. in length and one or several rows depending on spacing. Adequate checks and guard rows were used. The tests contained six replications and were growing in 1965, 1966, and 1967.

The data from the 3 and 12 ft. row test is shown in Table 1. Using 3 ft. rows, the higher seeding rates are much too high for optimum seed yields for both varieties. With rows 12 ft. apart, the best yields were obtained at closer spacings within the row for both varieties.

The percentage of oil for both varieties increased as the seeding rate is increased even though both are high oil varieties. The increase in percentage of oil is more pronounced for Peredovik than for Armavirec. However, in spite of the increased oil percentage, the highest yields of oil per acre were obtained at the low to medium seeding rates except for Armavirec at 12 ft. spacings.

The last columns in Table 1 show the importance of actually counting plants per plot rather than relying on the number of seeds planted. Instead of being able to correct for lack of germination, emergence and competition using a constant percentage, it must be varied as the seeding rate changes. The percentage is also different for varieties. This

difference can probably be accounted for by the larger plant type of the Peredovik variety.

Table 2 shows the results from the trial with 1 and 3 ft. row spacing. With the standard 3 ft. rows, both varieties yielded best at a seeding rate of 3 seeds per foot which resulted in a population slightly higher than presently recommended. Using 1 ft. rows, both varieties yielded best at the lower seeding rates which also resulted in the best oil yields per acre. In the 1 ft. rows, the percentage of oil in the seeds increased slightly with increasing seeding rates, but was not as pronounced as with higher rates in 3 ft. and 12 ft. spacings.

Based on seed yield, oil yield and % oil, the recommended populations per acre for Armavirec and Peredovik are as shown in Table 3. Instead of having 1 ft. rows and 20 - 24 inch plant spacing, it would make more sense to leave the rows 20 - 24 inches apart, or solid seeding could be tried if weeds can be controlled. It was also observed that increasing the number of plants per acre tended to delay flowering slightly but hastened maturity by up to four days. Lodging also increased with the higher populations. This was more serious in Peredovik than in Armavirec.

In general, the best populations per acre for these varieties was only slightly higher than the current recommendations. With narrower rows, the optimum populations tend to be slightly higher than with conventional row spacings. The narrow rows resulted in higher yields with both varieties.

Table 1. Agronomic data of Armavirec and Peredovik grown at various populations in 3 and 12 foot rows in the years, 1965, '66, and '67.

	Seeds per ft.	Seed		Oil		% oil**		Plants/ft. in % of seeds/ft.**	
		lbs. per acre 3 ft.	lbs. per acre 12 ft.	lbs. per acre* 3 ft.	lbs. per acre* 12 ft.	3 ft.	12 ft.	3 ft.	12 ft.
Armavirec	1.5	1652	591	760	245	45.6	47.5	67	67
	3	1742	740	868	326	46.9	48.2	63	70
	6	1427	803	734	370	48.2	49.2	57	62
	9	1428	796	762	386	48.7	49.7	43	49
	12	1074	807	<u>561</u>	<u>440</u>	48.2	49.5	45	48
Peredovik	1.5	1786	710	870	310	40.7	41.2	53	60
	3	1712	870	891	394	42.6	43.4	40	50
	6	1430	984	800	494	44.2	46.7	38	43
	9	1218	924	698	470	45.2	46.8	32	39
	12	1081	970	<u>671</u>	<u>537</u>	46.0	48.0	28	33

* 1966 & 1967 data.

** 1967 data.

Note - underlined figures are for 1967 only.

Table 2. Agronomic data of Armavirec and Peredovik grown at various populations in 1 and 3 foot rows in the years 1965, '66 and '67.

Row Spacing	Seeds per ft.	Seed lbs / ac	Oil lbs / ac	Oil %*	Plants/ft. in % of seeds / ft**
<i>Armavirec</i> 1 ft.	0.75	1756	834	47.0	71
	1.0	1673	810	47.7	70
	1.5	1554	748	48.0	61
	2.0	1484	716	47.5	60
	3.0	1228	<u>596</u>	48.5	56
<i>Armavirec</i> 3 ft.	3.0	1512	726	47.4	64
	6.0	1327	644	48.1	57
<i>Peredovik</i> 1 ft.	0.75	1762	882	50.1	60
	1.0	1987	1014	50.4	61
	1.5	1724	846	51.2	52
	2.0	1675	898	50.9	48
	3.0	1552	<u>1051</u>	51.2	38
<i>Peredovik</i> 3 ft.	3.0	1655	821	49.8	52
	6.0	1466	766	50.0	40

* 1967 data.

** 1966 and 1967 data.

Note - Underlined figures are for 1967 only.

Table 3. Summary of recommended population per acre for the varieties Peredovik and Armavirec with varying row widths.

Variety	Row width in feet	Population per acre	Plant spacing in inches
Peredovik	1	23,000	22 - 24
	3	20,000	8 - 9
	12	11,000	4
Armavirec	1	26,000	20
	3	22,000	6 - 7
	12	14,000	3

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