THE EFFECT OF THE NEW EUROPEAN RAPESEED VARIETIES (BRASSICA NAPUS SSP.OLEIFERA) ON BETTER RAPESEED YIELDING IN YUGOSLAVIA

By Vladimir Hrust
Agricultural Center of Croatia, Zagreb, Yugoslavia

and Djurdja Šehović, Karmela Jovanović,
Ljubica Stojak and Jelena Dominez
Institute of Food Science and Technology,
Zagreb, Yugoslavia

The results of large plots trials of rapeseed varieties Elvira, Corina and Jet Neuf, performed from 1980 to 1982, and the results of new rapeseed varieties experimentation in 1982 are presentet in this paper. As the standard variety for the comparison was used the old variety Gorczansky, and for trials in 1982 new variety Jet Neuf.

INTRODUCTION

Rapeseed as an oilseed plants was cultivated in Yugoslavia before the second world war. From 1930 to 1939 it was producet 7.700 tons of grain of rapeseed a year. Since that period the production of rapeseed declined because of the production of the other oilseeds (1). In the last 20 years the growing area of rapeseed has been constantly increasing. Figure 1.
The rush rise of rapeseed production is due to the introduction of the new european varieties posessing the improved agronomic characteristics and oil quality.
From 1976/1977 to now about 40 varieties imported from Poland, France, West Germany and Sweden have been experimented in large plots trials.

For the commercial production the varieties Elvira, Corina and Jet Neuf were mostly seeded in 1981.

METHODS

The introduced seed of the european rapeseed varieties was cultivated in the large experimentation plots in the various regions of Yugoslavia.

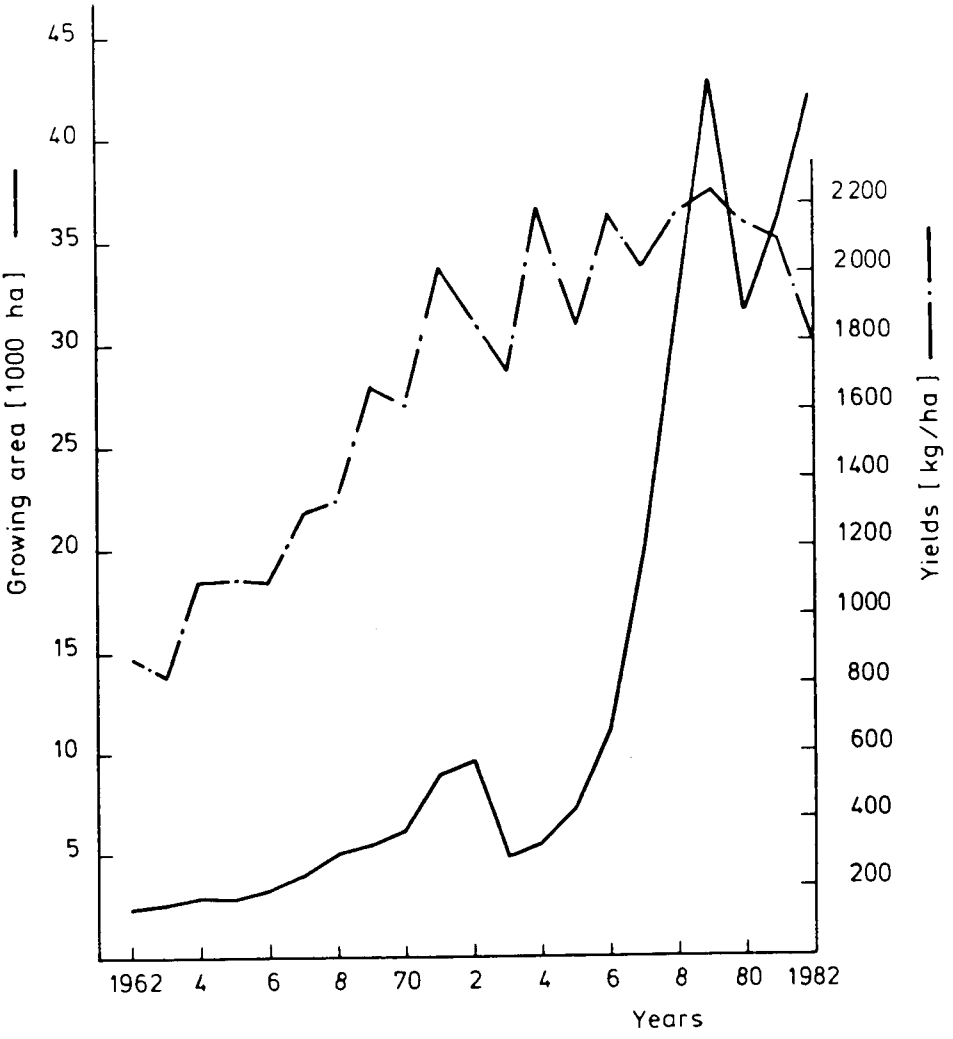

Figure 1 Growing area and yields of rapeseed in Yugoslavia 1962 - 1982 (2)

The agronomic measures fitted to the soil and climate conditions of each experimentation locality and the uniform seeding norms such as the date of seeding, rows distance and others were strictly considered.
During vegetation the counting of plants per square meter, evaluation of flowering, measuring of plant height, lodging and diseases inspections were done.
Tilling and plant protections from pests and diseases were applied according to the necessity.
The mean samples for the chemical analysis were taken at harvest. Water content, impurities and oil analysis were measured by standard method (3). Fatty acids contents in the oil were analysed by gas-chromatography (4), and total glucosinolates were measured by enzymatic method (5).

RESULTS AND DISCUSSION

TABLE 1. Varieties trials - yield of grains and oil

Variety	Grain yield dt/ha	Oil % D.M.	Oil yield dt/ha	Relative yield	
				grains	oil
1. Gorczansky	25,11	46,18	10,55	100	100
2. Jet Neuf	28,62	44,26	11,53	114	109
3. Corina	30,09	44,28	12,12	120	115
4. Elvira	29,93	43,69	11,90	119	113

Grain yield dt/ha, 7% moisture, 2% impurities

Variety 1 was tested in 1979, 1980 and 1981 on 5 different localities (Croatia)
Varieties 2, 3 and 4 were tested in 1980, 1981 and 1982 on the same localities.

Varieties Jet Neuf, Corina and Elvira have shown in 3-years trials the better potentials in grain and oil yield as compaired to the variety Gorczansky. The three varieties are earlier, shorter and better resistant to lodging.
Oil quality in the experimented varieties is improved due to the interrelation of fatty acids. Erucic acid is minimised, the concentration of saturated fatty acids and linolic acid is considerably increased, oleic and linoleic acid content decreased.
Figure 3. and 4.

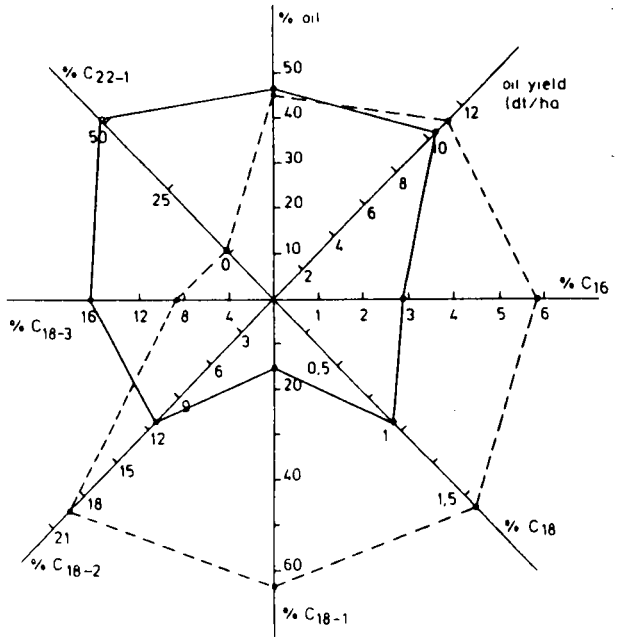

Figure 2 Relation of oil, oil yield and fatty acids between varieties Gorczansky and Jet Neuf

Gorczansky ——
Jet Neuf —·—

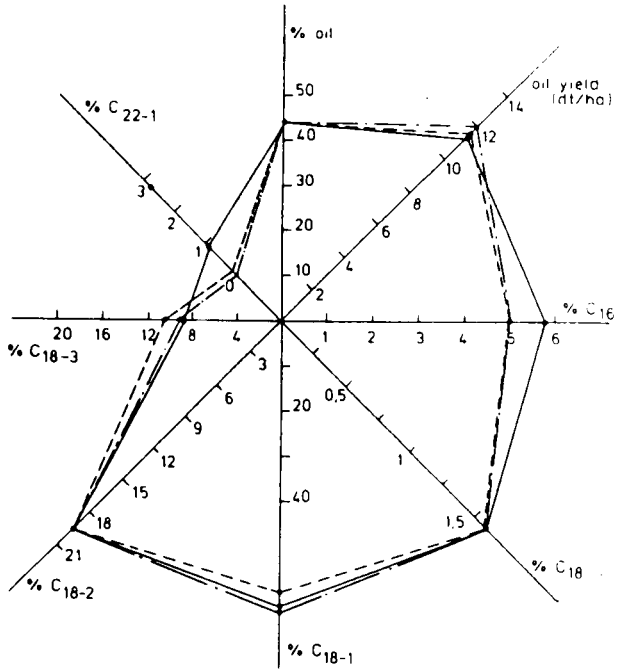

Figure 3 Relation of oil, oil yield and fatty acids between varieties Jet Neuf, Elvira and Corina

Jet Neuf ——
Elvira – – –
Corina —·—

In 1981/82 the experimentation of the new varieties in large plots trials started.

TABLE 2. Varieties trial - 1982 - yield of grains and oil

Variety	Grain yield dt/ha	Oil % D.M.	Oil yield dt/ha	Relative yield grains	Relative yield oil
1. Jet Neuf	29,33	44,27	11,82	100	100
2. R-51	29,35	46,88	12,52	100,1	105,9
3. Lingot	25,57	45,29	10,54	87,2	89,2
4. Kid	29,63	44,00	11,86	101,0	100,3
5. Herkules	28,28	45,79	11,78	96,4	99,7
6. WW 843	25,04	44,67	10,18	85,4	86,1

Grain yield dt/ha, 7% moisture, 2% impurities
Macro trials from 5 localities (Croatia, Serbia, Macedonia)

The variety Jet Neuf was used as a standard for the comparision of varieties experimentation. The grain yields of the tested varieties are 85,4% (WW 843) - 100,1% (R-51) and their oil yield are 86,1% (WW 843) - 105,9% (R-51) as compaired to Jet Neuf (Table 2.).

In the oil of the cited varieties (the samples taken from 2 localities), the content of fatty acids and of glucosinolates in meal were analysed. The concentration of each fatty acid ranged with in the same limits like in the varieties (Elvira, Corina, Jet Neuf) (Table 3.).

TABLE 3. Fatty acid composition of the seed oils from new varieties cultivated 1982.

Variety	C_{16}	C_{18}	C_{18-1}	C_{18-2}	C_{18-3}	C_{22-1}
1. Emil	5,45	1,40	61,75	20,10	11,30	-
2. Herkules	5,00	1,60	65,40	17,60	10,05	0,35
3. R-51	5,35	1,75	62,40	20,05	10,45	-
4. WW 843	5,20	1,60	62,30	18,75	11,65	0,50
5. Kid	5,65	1,65	64,55	18,80	9,35	-
6. Lingot	5,70	1,55	63,05	19,05	10,65	-
7. Jet Neuf	5,45	1,70	64,60	19,05	8,85	0,35

The content of erucic acid is below 1%. Total glucosinolates in rapeseed meal ranged from 1,54 - 3,65%.

CONCLUSION

The production of rapeseed in Yugoslavia is increasing especially after the new european "0" varieties were introduced.

In 1982 the varieties Jet Neuf, Corina and Elvira were mostly produced varieties in commercial production in Yugoslavia as they showed the good agronomic advantages and good quality in 3-years experimentation.

In 1981/82 the experimentation of the new varieties started, and the results were compaired to the variety Jet Neuf.

LITERATURE

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