

THE INFLUENCE OF SOWING DATES AND SOWING RATES ON THE
DEVELOPMENT AND YIELD OF WINTER RAPE VARIETIES

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The sowing date and sowing rate determine on the wintering and the yielding of winter rape varieties. The variability of the climatic conditions of Poland justifies the usefulness of taking up research work within this scope. Studies were conducted in the years 1984/85 - 1985/86 in the region of Wrocław/ Experimental Station Pawłowice/, that of Poznań/ Experimental Station Przybroda and Wielichowo-Zielęcin/ and Olsztyn /Experimental Station Łęczany/. In the region of Wrocław and Poznań varieties Beryl, Jet Neuf and Janter were compared at the sowing dates of 15 and 25 August, and 4 September. In the region of Olsztyn varieties Tomek, Herkules and Janter, sown on 8, 18 and 28 August, were studied. A sowing rate was a third factor in all the regions - 90, 180 and 360 seeds per 1 m².

Soil conditions were good for rape, and all the agrotechny elements were consistent with rules generally admitted. Meteorological conditions in autumn time turned out fa-

vourably for rape development in two years of the research work. In winter, however, especially in February, a variable snow cover and temperature drops at soil to about -28°C in the Wrocław and Poznań regions, and down -34°C in the Olsztyn region were observed. The lay-out of meteorological conditions from spring till the rape harvest was advantageous and favoured the vegetation period prolongation, thus a higher crop yielding. The ripening time of Jantar variety in the Olsztyn region was by 7 - 10 days later than in the Wrocław and Poznań regions. A delay in development of Jantar variety, as compared with the earliest Jet Neuf variety, amounted in the Wrocław and Poznań regions to 2 - 5 days, and as compared with Herkules variety in the Olsztyn region, to 5 - 9 days. This difference increased due to a delay in the sowing date.

The sowing of rape at an earlier date and an optimal date did not differentiate fundamentally the degree of plant wintering, it was only a delay in sowing by 20 days that made difference. Depending upon the variety, weather conditions and a delay in the sowing date, a percentage of wintering plants ranged from 64 to 93 in the Wrocław region, from 46 to 99 in the Poznań region and from 9 to 92 in the Olsztyn region. An unfavourable feature of a weaker wintering of Jantar variety became evident in the year 1984/1985 in the Olsztyn region, especially due to a delay in the sowing date, which was not at all found in the Poznań region. As the sowing rate increased, especially at a delayed sowing date, a percentage of wintering plants decreased in all the regions.

The results concerning morphological features of plants,

as determined in autumn, are convergent in all the regions. Due to the delay in the sowing date and an increase in the sowing rate, the number of leaves and the weight of overground portions as well as the thickness of the root neck decreased. The height of the conical growing point became, however, shorter as a result of the delay in the sowing date, and it became longer due to the increased sowing rate. The action of both the factors was particularly marked after sowing 360 seeds per 1 m^2 and by the delay in sowing by 20 days.

The seeds yield was essentially differentiated due to all the factors studied. A delay in sowing by 10 days decreased only the seeds yield of Jantar variety by 3-15 % in the Poznań region, by 10 - 25 % in the Wrocław region, and by 17 - 29 % in the Olsztyn region. The seeds yield reduction resulting from a delay in sowing by 20 days amounted for Tomek variety and zero-erucic varieties on the average from 10 to 14%, and for Jantar variety up to 15 % in the Poznań region, up to 33 % in the Wrocław region, and up to 56 % in the Olsztyn region. At the same time, there was a reduction in fat content and fat yield of all varieties.

The highest seeds yield were obtained after sowing 90 seeds per 1 m^2 . A sowing of 180 seeds per 1 m^2 turned out justified only for Jantar variety at the first sowing date, irrespective of the region. An increase in the sowing rate up to 360 seeds per 1 m^2 substantially decreased the yield of all the varieties in all the regions.

From among the varieties studied, Jet Neuf was at the top place as regards crop yielding in the Poznań and Wrocław regions, and so was Herkules variety in the Olsztyn region. Jantar variety yielded by 17 - 20 % lower than Jet Neuf var-

ity and by 35 - 64 % lower than Herkules variety. This difference increased when the sowing date was delayed.

The fat content depended, first of all, on climatic conditions, varieties and the sowing date. In all the regions, there was the lowest fat content in Jet Neuf variety /45,5 % on the average/, and the highest one in Jantar variety /48,1% on the average/. The latter contained about 2,1% less fat in the Olsztyn region than in the Poznań and Wrocław regions. A delay in the sowing date by 20 days resulted in lowering the fat content by 0,7% on the average in the Wrocław and Poznań regions and by 0,9 % in the Olsztyn region.

The fat yield is similar to that of seeds. However, a disadvantageous influence of the delayed sowing date and the increased sowing rate is greater than in the yield of seeds due to differences in fat content percentage.

Conclusions

1. Zero-erucic varieties studied should be sown at the date since 10 till 20 August in the Olsztyn region and since 15 till 25 August in the Wrocław and Poznań regions, sowing 90 seeds per 1 m².
2. The double-low Jantar variety requires the earliest sowing date and a sowing rate of 180 seeds per 1 m². When sowing this variety 10 - 20 days later, 90 seeds per 1 m² should be sown.
3. A delay in the sowing date by 20 days and an increase in the sowing rate up to 360 seeds per 1 m² bring about negative results of the plant development, wintering, yielding and fat content in seeds of all the varieties.
4. From among the varieties studied, Jet Neuf variety turned

out the most suitable for the Wrocław and Poznań regions, and so was Herkules variety for the Olsztyn region. Jantar variety yields on the average by 20 % lower than Jet Neuf variety and it is less winter-resistant. On the other hand, it contains 2,6 % more fat than Jet Neuf variety.

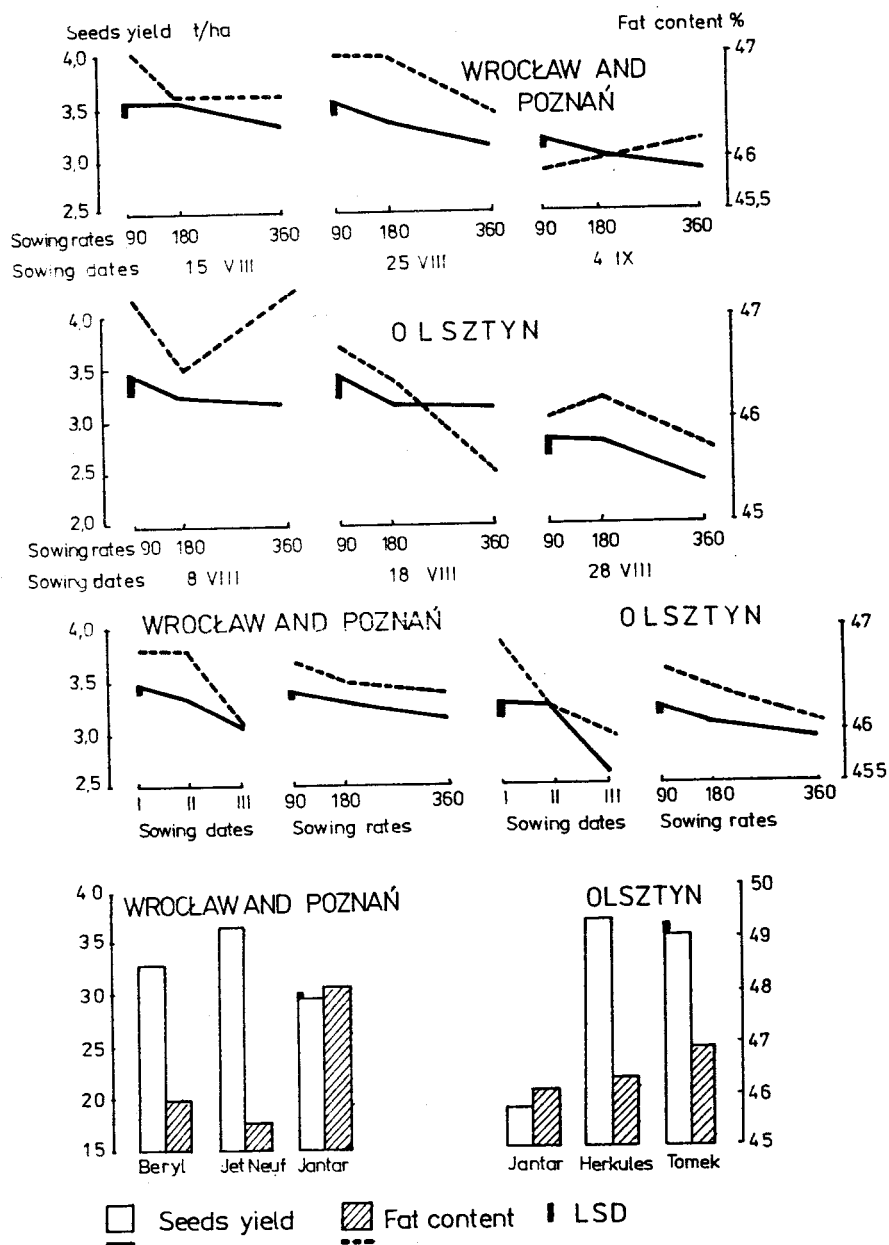


Fig 1 Seeds yield and fat content
Means for factors

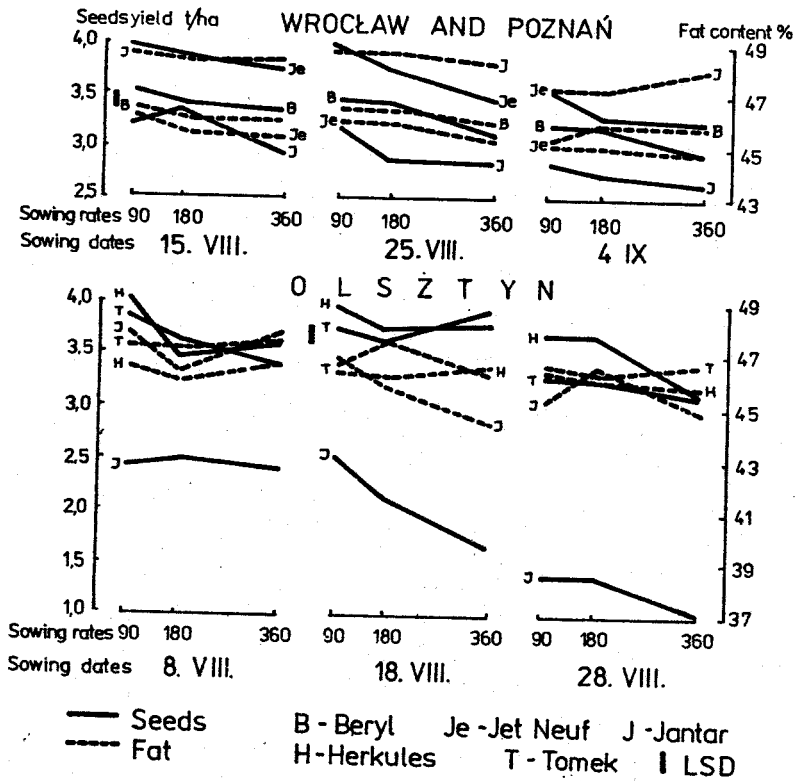


Fig.2. Seeds yield and fat content