OP-267 [Pollination and Bee Flora]
Honey efficiency of currently cultivated winter oilseed rape cultivars in Poland

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Beekeepers in the case of poor rapeseed honey harvests, most often give the reasons as the poor nectar production of currently rapeseed cultivars. There is an urgent need to provide reliable information on currently cultivated oilseed rape cultivars, based on detailed studies of the intensity of nectar production.

The research was carried out in 2024 in the winter rapeseed collection maintained at the central Poland. The research material consisted of 46 cultivars and 10 breeding lines included in national comparative studies. The observations concerned the plant population density, and the beginning and the end of flowering. The amount of nectar per 10 flowers using the pipette method, the concentration of sugars in the nectar and the number of flowers per plant and unit area were measured. Nectar was collected six times between April 30 and May 8. Collecting nectar from 56 varieties took the whole day from 8:00 to 19:00, therefore, the order analyzed cultivars was changed each day. After weighing the amount of nectar/10 flowers and determining the concentration of sugars, the mass of sugars/10 flowers was calculated. Knowing the number of flowers/m² and the mass of sugars/10 flowers, the amount of sugars secreted by flowers of each cultivar was calculated.

It was found that flowering length average of all varieties was 28 days. There were no varieties with flowers without nectar. Ten flowers secreted an average for all varieties of 32.64 mg of nectar, with sugar concentration of 27.49%, and the calculated mass of sugars/10 flowers was 8.62 mg. The lowest result was obtained for the Scorpion cultivar - 5.85 mg of sugars/10 flowers, while the highest for the Debussy - 12.48 mg. The Ilona had the fewest flowers per plant - 307, while the Armada had 927. The tested cultivars produced an average of 620 flowers/plant. With an average number of plants in the maturity phase of 21/m², an average of 12,849 flowers/m² were obtained. The lowest sugars yield, approximately 50 kg/ha, were obtained for the Ilona and Scorpion, while the highest, over 150 kg/ha for the Temptation, Typos, Debussy, Azzurite, Aviron and Dominator.

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Introduction

- Beekeepers in the case of poor rapeseed honey harvests, most often give the reasons as the poor nectar production of currently rapeseed cultivars.

- There is an urgent need to provide reliable information on currently cultivated oilseed rape cultivars, based on detailed studies of the intensity of nectar production.

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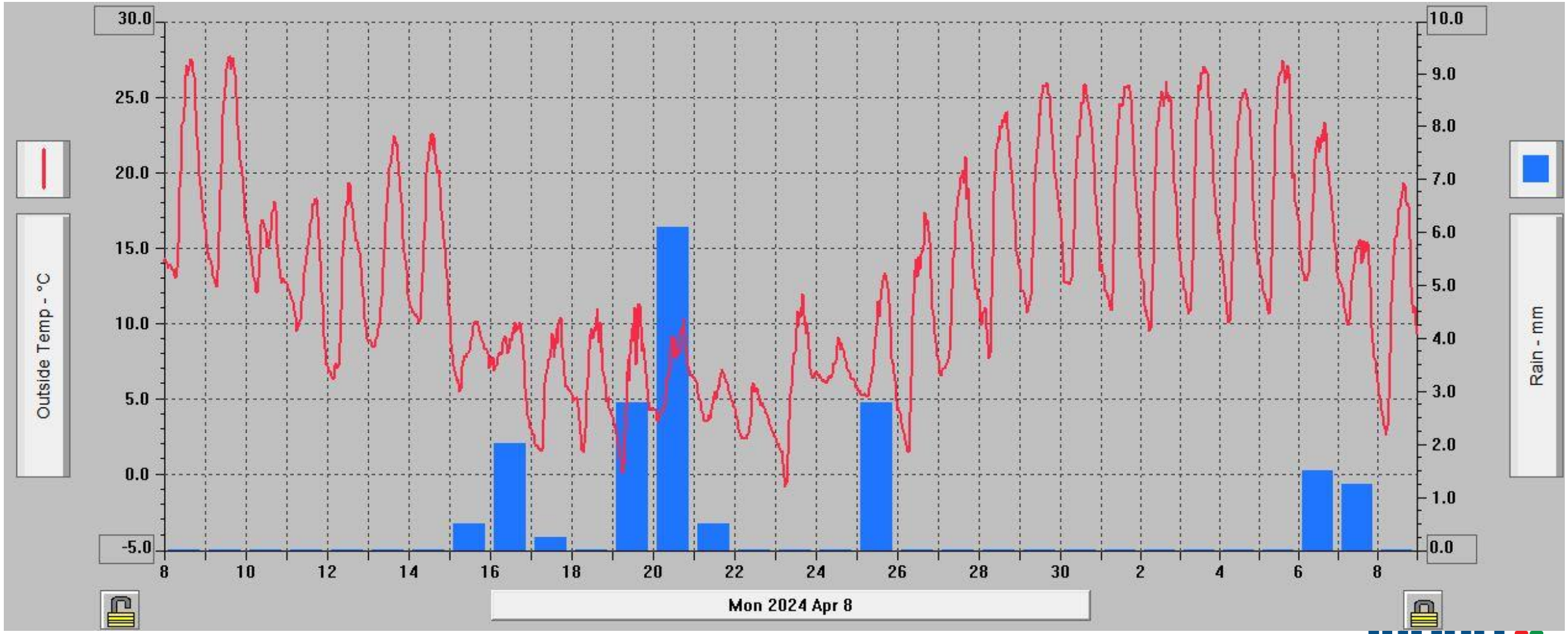
Material and Methods

- The research was carried out in 2024 in the winter rapeseed collection maintained at the central Poland.
- The research material consisted of 46 cultivars and 10 breeding lines included in national comparative studies.
- The observations concerned the plant population density, and the beginning and the end of flowering.

Weather conditions during the experiment



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Blooming winter oilseed rape cultivars

- Seventeen cultivars started flowering on April 12, and seven cultivars on April 20–21.
- Eleven cultivars finished flowering on May 9-10, while six cultivars on May 16.
- The average flowering length of all cultivars was 28 days (23-33).

Nectar collection methodology

- A dozen or so isolated flowers were collected from each cultivar.
- Nectar was collected six times between April 30 and May 8.
- Collecting nectar from 56 varieties took the whole day from 8:00 to 19:00, therefore, the order analyzed cultivars was changed each day.

Results – nectar secretion by flowers in following days – average for 56 winter oilseed rape cultivars

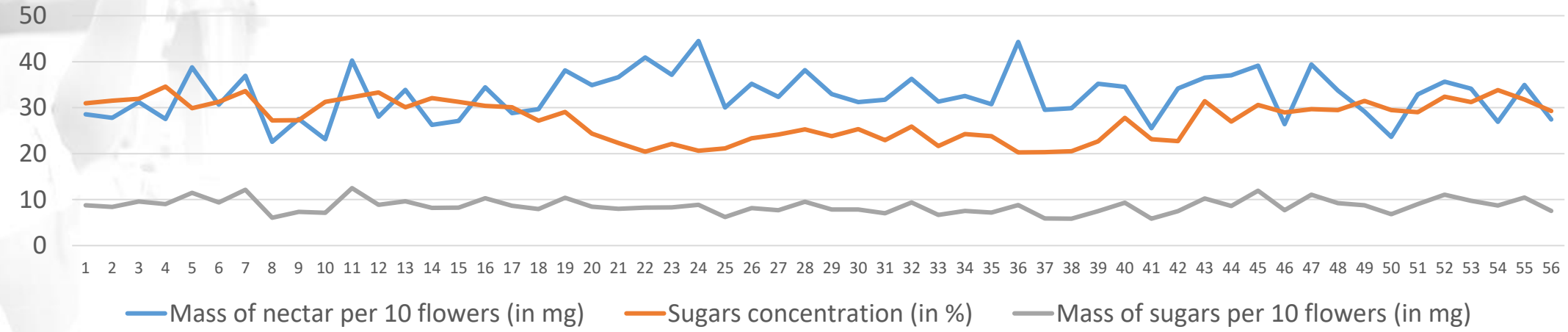
There were no cultivars with flowers without the nectar.

Days of nectar collection	30. April	1. May	3. May	4. May	5. May	8. May	Average
Mass of nectar per 10 flowers in mg	38.21	34.46	36.88	34.45	28.35	23.48	32.64
Sugars concenration in %	25.86	26.38	22.23	22.66	27.74	40.08	27.49
Mass of sugars per 10 flowers in mg	9.90	9.16	8.12	7.73	7.63	9.15	8.62

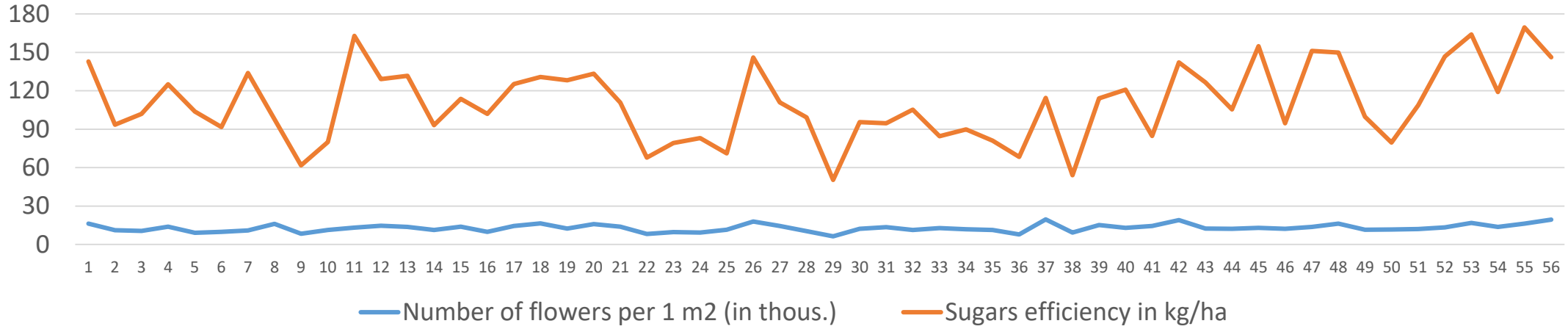
Flowering intensity

- After flowering, in June, three plants of each cultivar were harvested.
- The number of branches, the number of siliques formed and the number of flower stalks that did not form siliques were counted.
- The sum of the siliques and flower stalks constituted the number of flowers per plant.
- The number of flowers per plant was multiplied by the plant density at the seed maturity stage to obtain the number of flowers per 1 m^2.

Nectar secretion of 56 winter oilseed rape cultivars in Poland



Number of flowers per 1 m^2 and sugars efficiency



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Summary

- It was found that there were no varieties with flowers without nectar.
- Ten flowers secreted an average for all varieties of 32.64 mg of nectar, with sugar concentration of 27.49%, and the calculated mass of sugars per 10 flowers was 8.62 mg.
- The lowest result was obtained for the Scorpion cultivar - 5.85 mg of sugars per 10 flowers, while the highest for the Debussy - 12.48 mg.
- The Ilona had the fewest flowers per plant - 307, while the Armada had 927.
- The tested cultivars produced an average of 620 flowers per plant. With an average number of plants in the maturity phase of 21 per m^2, an average of 12,849 flowers per m^2 were obtained.
- The lowest sugar yields, approximately 50 kg/ha, were obtained for the Ilona and Scorpion, while the highest, over 150 kg/ha for the Temptation, Typos, Debussy, Azzurite, Aviron and Dominator.

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for your attention

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