

Growth vigour and fruit yield of new sharka-resistant plum (*Prunus domestica* L.) genotypes bred at the National Institute of Horticultural Research in Skierniewice, Poland

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A very important aim of our plum breeding is to obtain new varieties resistant to the Plum pox virus. As a result of the breeding works conducted at the National Institute of Horticultural Research some hypersensitive (resistant) genotypes were selected.

The aim of the study was to evaluate the productive value of 14 clones hypersensitive (resistant) to the Plum pox virus.



2. Material and Methods

Control cultivars:

- Common Prune
- Jojo

Evaluated clones:

- S-4 ('Common Prune' × 'Jojo')
- S-14 ('Jojo' × 'Čačanska Rana')
- S-24 ('Jojo' × 'Čačanska Rana')
- S-39 ('Jojo' × 'Čačanska Rana')
- S-48 ('Jojo' × 'Čačanska Rana')
- S-72 ('Jojo' × 'Čačanska Rana')
- S-77 ('Jojo' × 'Čačanska Rana')
- S-84 ('Jojo' × 'Čačanska Rana')
- S-100 ('Jojo' × 'Čačanska Rana')
- S-107 ('Jojo' × 'Čačanska Rana')
- S-109 ('Jojo' × 'Čačanska Rana')
- S-123 ('Jojo' × 'Čačanska Rana')
- S-157 ('Jojo' × 'Čačanska Rana')
- S-186 ('Jojo' × 'SPJ')

The field trial in which the clones were evaluated was established in the Experimental Orchard in Dąbrowice (central Poland) in autumn 2014. 'Common Prune' and 'Jojo' were used as control cultivars.

The trees of the tested clones and standard cultivars were grafted on generative rootstocks - *Prunus cerasifera* seedlings.

Assessment of growth and fruiting of trees was conducted in 2017-2023.



3. Results and Discussion

Tree growth and fruiting of the tested plum clones (Dąbrowice, 2017–2023)

Cultivar/clones	Date of full bloom	Date of harvesting	Flowering intensity (1–9) ^y	Total fruit yield 2017-2023 (kg·tree ⁻¹)	Trunk cross-sectional area in 2023 (cm ²)	Productivity index 2023 (kg·cm ⁻²)	Fruit weight (g)
Common Prune	27.04	04.09	6.5 a-e	30.3 c-g	89.9 abc	0.36 cde	21.1 hi
Jojo	21.04	30.08	6.7 a-d	58.5 ab	147.6 e	0.41 bc	52.8 abc
S-4	24.04	26.08	6.0 c-f	30.6 c-g	95.3 abc	0.35 cde	35.8 fg
S-14	23.04	21.08	5.8 d-g	42.6 bc	112.0 a-d	0.38 cd	41.1 d-f
S-24	24.04	17.08	5.0 fg	40.1 cd	81.0 ab	0.53 b	33.0 g
S-39	22.04	13.08	5.3 efg	12.5 gh	73.7 a	0.17 fg	49.2 a-e
S-48	21.04	19.08	6.6 a-d	36.7 cde	133.4 de	0.27 c-f	58.3 a
S-72	23.04	08.08	5.9 d-g	29.5 c-h	105.4 a-d	0.28 c-f	34.3 g
S-77	23.04	09.08	7.3 abc	19.2 e-h	88.3 abc	0.22 efg	31.7 gh
S-84	24.04	11.08	7.5 a	30.7 c-g	108.1 a-d	0.30 c-f	38.4 efg
S-100	23.04	20.08	3.6 h	31.1 c-f	150.7 e	0.25 d-g	54.3 ab
S-107	22.04	16.08	7.4 ab	22.7 d-h	130.8 cde	0.17 fg	41.9 c-f
S-109	22.04	07.08	4.7 gh	11.3 h	93.8 abc	0.12 g	53.1 ab
S-123	22.04	06.09	5.8 d-g	16.3 fgh	65.7 a	0.25 d-g	19.8 i
S-157	22.04	14.08	6.1 b-f	31.4 c-f	111.7 a-d	0.29 c-f	50.1 a-d
S-186	23.04	31.08	6.9 a-d	63.9 a	81.1 ab	0.81 a	45.9 bf

4. Conclusions

- The highest fruit yield was produced by trees of the S-186 clone and the control variety 'Jojo'.
- Trees of the S-186 clone have significantly the highest productivity index, expressed as a ratio of fruit crop weight (kg) and trunk cross-sectional area (cm²).
- The remaining tested clones were inferior in production value to the control variety 'Jojo'.

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