Growth and yield of new late ripening sweet cherry (*Prunus avium* L.) clones grafted on two rootstocks

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As a result of the sweet cherry breeding program conducted at the National Institute of Horticultural Research in Skierniewice **seven clones** were selected **C-KD1-3-23, C-KD1-3-25** (‘Drogan Yellow’ × ‘Sweetheart’), **C-KD1-3-51, C-KD1-3-53, C-KD1-3-54, C-KD1-3-59, and C-KD1-3-62** (‘Drogan Yellow’ × ‘Regina’).

The aim of the study was to evaluate the productive value of the newly developed sweet cherry clones.

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2. Material and Methods

The field trial in which the clones were evaluated was established at the Experimental Orchard in Dąbrowice (central Poland) in the autumn 2017.

The trees of the tested clones and standard cultivars were grafted on two rootstocks: the vegetative rootstock '**Gisela 5**' and the generative rootstock – *P. avium* seedlings '**Alkavo**'.

Assessment of growth and fruiting of trees was conducted in 2020-2024.

Control cultivars:

- **'Regina'**
- **'Kordia'**

Evaluated clones:

1. **C-KD1-3-23** ('Drogan Yellow' × 'Sweetheart')
2. **C-KD1-3-25** ('Drogan Yellow' × 'Sweetheart')
3. **C-KD1-3-51** ('Drogan Yellow' × 'Regina')
4. **C-KD1-3-53** ('Drogan Yellow' × 'Regina')
5. **C-KD1-3-54** ('Drogan Yellow' × 'Regina')
6. **C-KD1-3-59** ('Drogan Yellow' × 'Regina')
7. **C-KD1-3-62** ('Drogan Yellow' × 'Regina')

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3. Results and Discussion

Tree growth and fruiting of the tested sweet cherry clones (Dąbrowice, 2020–2024)

Cultivar/ clones	Date of full bloom	Date of harvesting	Flowering intensity (1–9)[y]	Total fruit yield 2020-2024 (kg·tree^{-1})	Trunk cross-sectional area in 2024 (cm^2)	Productivity index 2024 (kg·cm^{-2})	Fruit weight (g)
Regina	**25.04**	**09.07**	8.8 ab	36.7 c	113.5 ab	0.46 ab	**9.6 ab**
Kordia	23.04	04.07	**8.9 a**	46.8 abc	121.3 ab	0.46 ab	**10.0 a**
C-KD1-3-23	24.04	08.07	8.7 ab	38.3 c	111.8 ab	0.44 ab	7.9 c
C-KD1-3-25	24.04	07.07	8.3 b	39.1 c	**104.4 a**	0.42 ab	8.1 c
C-KD1-3-51	24.04	**09.07**	8.5 ab	40.8 bc	130.6 ab	0.38 bc	8.4 c
C-KD1-3-53	24.04	**09.07**	**8.9 a**	**53.9 a**	107.7 ab	**0.58 a**	7.9 c
C-KD1-3-54	**25.04**	**09.07**	8.5 ab	45.2 abc	109.0 ab	0.49 ab	8.4 c
C-KD1-3-59	**25.04**	08.07	8.6 ab	25.0 a	113.2 ab	0.25 c	**9.7 ab**
C-KD1-3-62	22.04	08.07	8.7 ab	**51.9 ab**	136.6 b	0.43 ab	9.2 b
Average for rootstocks							
Gisela 5	24.04	08.07	**8.8 a**	**58.4 a**	**86.6 a**	**0.69 a**	8.7 a
Alkavo	24.04	08.07	8.5 b	25.9 b	146.3 b	0.18 b	8.8 a

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4. Conclusions

- ✓ **The highest fruit yield was produced by trees of two clones: C-KD1-3-53 and C-KD1-3-62.**
- ✓ **Trees of the clone C-KD1-3-53 has significantly the highest productivity index, expressed as a ratio of fruit crop weight (kg) and trunk cross-sectional area (cm^2).**
- ✓ **The clone C-KD1-3-59 and the control cultivars ‚Regina' and 'Kordia' produced largest fruits.**
- ✓ **The clone C-KD1-3-53, due to its high plant vigor and late fruit ripening and high fruit yield can be used for breeding new late sweet cherry cultivars.**

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