The productive value of new gooseberry (*Ribes grossularia* L.) genotypes bred at the National Institute of Horticultural Research, Skierniewice, Poland

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Origin: native in Europe and Western Asia; widely grown in temperate climate regions.
Nutritional value: rich in vitamins, antioxidants and dietary fiber.
Aims of the breeding program: develop new dessert-type gooseberry cultivars, suitable for trellising cultivation, for easy hand harvesting, with high resistance to American gooseberry mildew as well as thornless shoots for easier cultivation and harvesting.


Reflamba


AGR-86


Resika

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2. Material and Methods

Research conducted from 2022 to 2024 at the Experimental Orchard of the National Institute of Horticultural Research (InHort). Dąbrowice near Skierniewice, central Poland.

Evaluated 23 gooseberry (*Ribes grossularia* L.) genotypes:

- 16 foreign cultivars (‘Biały Triumf’, ‘Captivator’, ‘Hinonmaki Green’, ‘Invicta’, etc.)
- 2 Polish cultivars (‘Hinsel’ and ‘Resika’) bred at InHort in Skierniewice
- 7 breeding clones (AGR-2/2, AGR-2/33, AGR-86, AGR-101, AGR-102, AGR-108, AGR-117)

Assessed traits: growth vigor (shrub height and width), yield, fruit mass and color, and chemical composition (soluble solids, dry matter, pH, acidity, pectins).

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3. Results

1. **Yield**: ranges from 0.17 kg (Biały Triumf) to 1.79 kg (AGR-108),
2. **Fruit weight of 100 berries** : from 219.8 g (Captivator) to 367 g (AGR-102),
3. **Plant height:** from 53.05 cm (Puszkińskij) to 119.11 cm (AGR-117),
4. **Plant width:** from 56.53 cm (Invicta) to 115.97 cm (AGR-117),
5. **Fruit color:** ranges from yellow (10), red (8), to green-yellow (4).

Cultivar/Clone	Yield (kg/bush)	100 Fruit weight (g)	Height (cm)	Width (cm)	Fruit color
Biały Triumf	0.17a	298.1defg	62.98abc	63.54abc	yellow
Captivator	0.65a-d	219.8a	87.11efg	83.74def	red
Hinonmaki Green	0.520ab	225.6a	76.29c-f	74.87a-e	yellow
Hinonmaki Rot	0.97a-f	237.1ab	72.723b-e	62.87abc	red
Hinsel (AGR-15)	1.29b-f	295.4c-f	92.31g	86.26ef	red
Invicta	0.24a	304.2efg	65.91a-d	56.53a	yellow
Kamieniar	0.56abc	281.7cde	68.07a-d	59.72ab	red
Krasnoslaviański	1.10a-f	284.2cde	86.05efg	79.10cde	red
Macurines	0.55abc	243.2ab	58.26ab	65.16a-d	green-yellow
Niesłuchowski	0.78a-e	274.0b-e	53.48a	61.81abc	red
Puszkińskij	0.55abc	268.9b-e	53.05a	64.49abc	yellow
Reflamba	0.86a-f	288.5cde	109.99h	101.13fg	green-yellow
Resika (AGR-48)	1.09a-f	362.1hi	81.80d-g	71.23a-e	yellow
Rodnik	1.04a-f	301.4d-g	80.42d-g	88.91ef	yellow
Rolonda	0.93a-f	264.7bcd	73.27b-e	80.56cde	red
Sadco	0.43ab	224.43a	66.27a-d	66.54a-d	red
AGR-2/2	1.51c-f	305.8efg	86.93efg	73.5a-e	yellow
AGR-2/33	1.65ef	328.8fgh	77.15c-g	70.83a-e	yellow
AGR-86	1.28 b-f	334.9ghi	85.06efg	76.59b-e	green-yellow
AGR-101	1.27b-f	221.4a	74.85c-f	72.86a-e	yellow
AGR-102	1.58 d-f	367.7i	73.60b-f	77.7b-e	green-yellow
AGR-108	1.79 f	257.8abc	89.44fg	88.4ef	yellow
AGR-117	0.87 a-f	239.3ab	119.11h	115.97g	red

3. Results

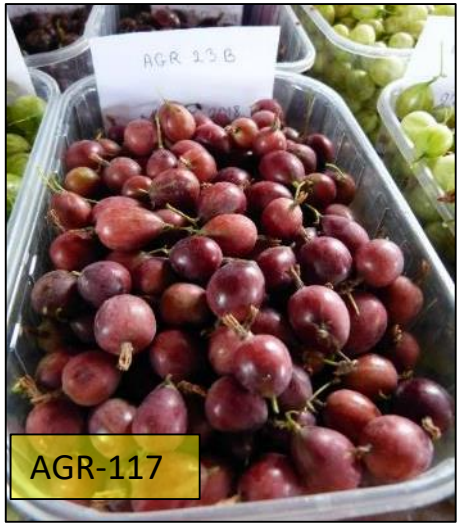
- Extract (Bx): AGR-102 has the highest extract content (15.71 Bx),
- Dry Matter: AGR-102 also leads in dry matter (20.24%),
- pH: There is some variation in pH levels, but none stands out as significantly higher or lower compared to others,
- Acidity (%): Similar to pH,
- Total Pectin (mg/kg): AGR-102 has the highest pectin content (5846 mg/kg).

Chemical Characteristics of Different Fruit Clones (Dąbrowice, 2022)

No.	Cultivars /Clone	Extract *(Bx)*	Dry matter *(%)*	pH	Acidity *(%)*	Total pectin *(mg/kg)*
1	Biały Triumf	9.49	13.72	2.99	2.24	5668
2	Invicta	11.68	15.16	3.01	2.11	4660
3	Hinsel	13.33	15.57	3.14	1.69	4165
4	Resika	11.45	15.67	2.92	2.74	5331
5	AGR-2/2	11.04	14.13	3.11	2.16	4781
6	AGR-2/33	11.16	15.08	3.07	2.17	4234
7	AGR-86	12.59	15.88	3.06	2.08	5123
8	AGR-101	12.48	16.36	2.97	2.39	5641
9	AGR-102	15.71	20.24	3.34	1.99	5846
10	AGR-108	10.94	13.81	2.97	2.24	3952
11	AGR-117	13.91	17.58	3.54	1.80	4935

4. Conclusions and Perspectives

1. The breeding clones outperform foreign cultivars in fruit yield and weight as well as certain fruit quality parameters, confirming the effectiveness of the breeding program.
2. Promising results were obtained for the clones **AGR-102, AGR-108, AGR-2/2** and **AGR-2/33**, possessing high yields and favorable fruit quality parameters.
3. The clone **AGR-102** stands out as the best-performing, with the highest values in extract, dry matter, and pectin content, making it the most suitable for high-quality processed products.
4. The clone **AGR-117** presented exceptional plant growth vigor and consistently outperforms other clones and cultivars in terms of bush height and width. This robust plant growth is accompanied by high fruit yields, making it as a potential new gooseberry cultivar for the commercial cultivation.



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