



FRUIT CHARACTERISTICS OF SOME SCAB-RESISTANT AND NON-SCAB-RESISTANT APPLE VARIETIES

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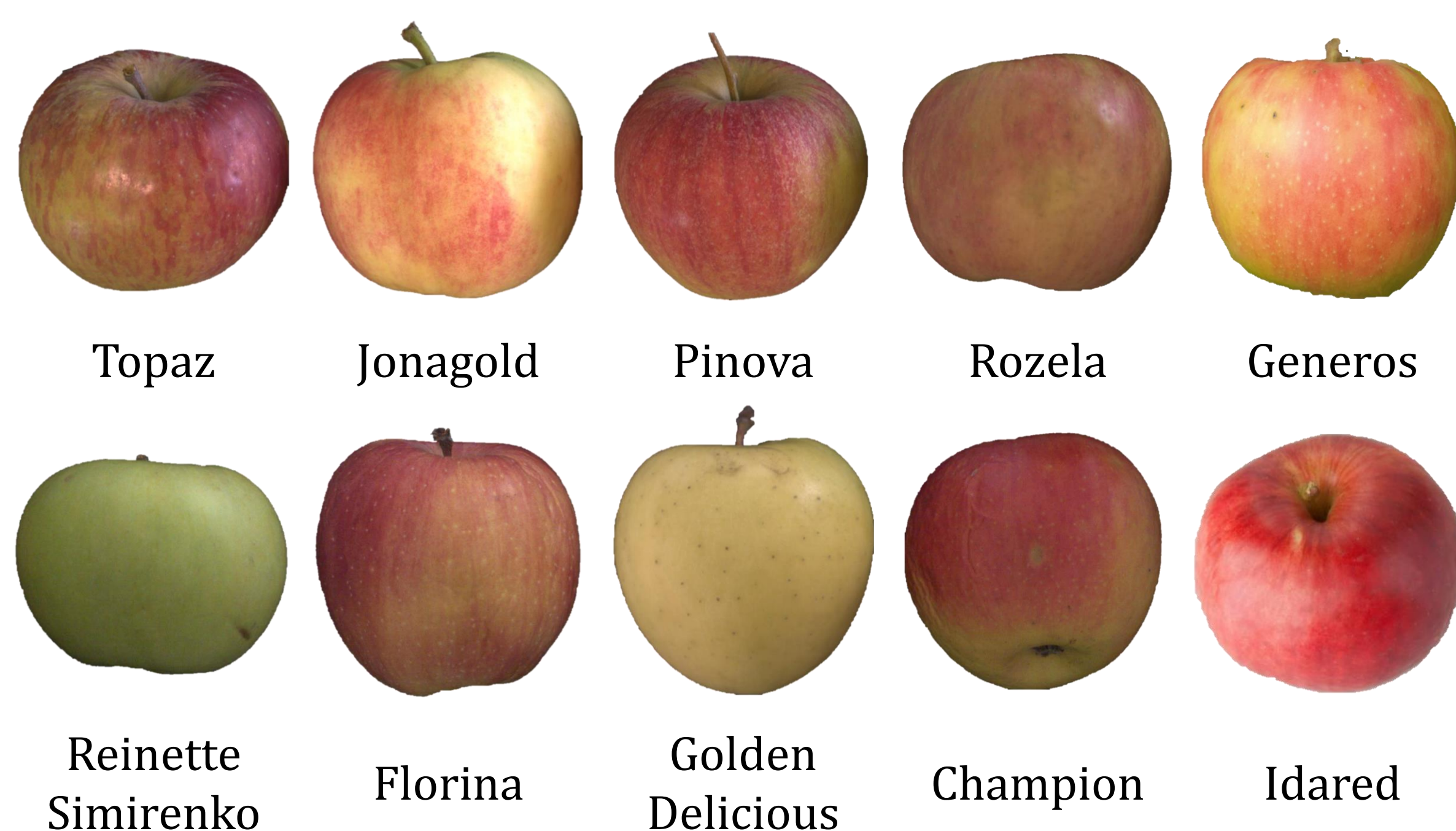
Abstract: Scab-resistant apple varieties are key components of organic farming which exhibited lately a great expansion in Europe as well. Breeding for scab resistance yielded in several varieties already reaching commercial competitiveness, but a real candidate is still missing in terms of quality attributes. Therefore, the main aim of this research was to determine fruit quality traits of 10 apple varieties including scab-resistant and non-scab resistant varieties, grown in different locations but same climatic regions. The fruit quality traits referred to both physical and chemical characteristics of the fruits including fruits size, weight, shape, firmness, pH, titratable acidity, water content, Vitamin C, total soluble solids and total sugar content. The results show that Generos, Topaz and Pinova varieties were the most successful regarding their weight, size and firmness, while the chemical composition of the fruits was remarkable in Champion, Topaz and Reinette Simirenko varieties.

• Introduction

Organic fruit cultivation and non-chemical management methods are becoming more and more important for sustainable fruit production. Regulatory agencies continue to ban or restrict the use of chemicals. This is in favor of consumers for safer food products, without harmful pesticides with less impact, but at the expense of fruit quality traits, both physical and chemical. The crucial sensory characteristic of fruits is the general aspect of the fruit which has a great influence on their market value. The most important quality characteristics of horticultural products are size, color, shape, texture/firmness and taste. Therefore, the main aim of this study was to assess and compare the fruit quality traits of 6 scab-resistant and 4 scab susceptible apple varieties in order to reveal their market potential.

• Material and method

Ten apple varieties were used to carry out this research (Fig. 1). To evaluate fruit quality fruit size, shape, weight, firmness, water content, total soluble solid content (TSS), total sugars, pH, titratable acidity (TA), and Vitamin C content was determined.



• Results and discussions

The physical traits of the analyzed apple fruits are presented in Table 1. Based on the results, Generos, Topaz, Rozela and Pinova varieties exhibited the highest values in terms of fruit size, fruit shape, fruit weight and fruit firmness.

Table 1. Physical traits of the apple varieties under study

Variety	Fruit shape index	Fruit length (cm)	Fruit width (cm)	Fruit thickness (cm)	Fruit weight (g)	Firmness (kgf/cm ²)
Topaz	1.25±0.01de	6.248±0.091bcd	7.742±0.08bc	7.964±0.09d	169.14±13.26abc	6.98±0.03b
Jonagold	1.11±0.02ab	6.812±0.14ef	7.712±0.09bc	7.502±0.13cd	202.10±16.32c	6.64±0.17b
Pinova	1.09±0.01a	6.876±0.23ef	7.624±0.16bc	7.406±0.21bcd	188.83±22.67bc	7.44±0.63b
Rozela	1.19±0.03cd	6.780±0.18ce	8.176±0.28cd	7.978±0.26d	181.56±10.41abc	5.74±0.22b
Generos	1.18±0.02c	7.664±0.08f	8.711±0.09d	7.856±0.54d	292.660±5.00d	2.03±0.33a
Reinette Simirenko	1.26±0.02e	5.190±0.12a	6.542±0.11a	6.450±0.10a	121.89±1.98a	2.56±0.27a
Florina	1.16±0.01bc	5.865±0.11ab	6.770±0.12a	6.792±0.10ab	135.43±10.61ab	2.52±0.25a
Golden Delicious	1.21±0.01cde	6.467±0.19bcde	6.980±0.13ab	6.926±0.12bc	141.88±3.80abc	2.45±0.15a
Champion	1.22±0.02cde	5.983±0.26bc	7.294±0.28ab	7.229±0.30bc	197.19±6.03c	2.32±0.15a
Idared	1.18±0.01c	5.992±0.16bcd	7.068±0.29ab	6.971±0.29	125.91±4.88a	2.73±0.50a

The results of the chemical analyses showed that Champion, Topaz, Reinette Simirenko, Jonagold and Rozela varieties exhibited the highest values for total soluble solid content, juiciness/water content, titratable acidity and total sugars (Table 2). The highest Vitamin C content was registered in Pinova variety.

Table 2. Physical traits of the apple varieties under study

Variety	TSS (%)	Total sugars (g/l)	Titratable acidity (%)	pH	Vitamina C (mg/100g)	Water content (%)
Topaz	15.20±0.70bc	136.4±7.45cd	0.2513±0.005c	3.4a	3.80±0.08b	85.92±0.17c
Jonagold	14.10±0.87b	124.7±9.24bc	0.2179±0.002c	3.52ab	3.14±0.12ab	83.32±0.71bc
Pinova	14.42±0.29b	128.1±3.08ac	0.1382±0.005a	3.87c	5.84±0.12c	84.53±0.15c
Rozela	16.62±0.51c	109.0±5.42ab	0.1333±0.006a	3.43a	2.86±0.06ab	85.51±0.60c
Generos	15.5±0.74bc	150.2±0.74d	0.1176±0.003a	3.72bc	2.58±0.03ab	80.85±0.23ab
Reinette Simirenko	16.66±0.92c	151.2±0.92d	0.2479±0.001c	3.34a	2.26±0.09a	80.83±0.55ab
Florina	12.66±1.61a	108.8±1.61a	0.2025±0.002bc	3.89c	2.24±0.11a	79.40±0.83a
Golden Delicious	14.66±0.60b	130.0±0.60c	0.1566±0.005ab	3.90c	2.48±0.11ab	81.74±0.66ab
Champion	16.93±0.67c	154.4±0.67d	0.2020±0.003bc	3.90c	2.54±0.07ab	80.36±0.51a
Idared	16.66±0.60c	151.2±0.60d	0.1966±0.001bc	3.90c	2.57±0.09ab	79.97±0.81a

• Conclusions

Overall, Topaz, Reinette Simirenko, Rozela, and Champion varieties exhibited the most valuable fruit quality traits. These results suggest that scab-resistant cultivars can match or even overtake non-scab resistant varieties' fruit quality.