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**THE GROWTH OF THE INTRODUCED APPLE VARIETIES ON M 9
ROOTSTOCK IN CONDITIONS OF THE FOREST-STEPPE OF
UKRAINE**

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Task assignment. The main task of varieties study is selection of varieties which are most suitable for modern technology of high yields with low production cost. Vigor, type of branching, density of overgrowth, duration of the productivity of the fruitful and carrier wood are important characteristics during varieties selection for some type of orchards. It is also important demand of varieties for soil-climatic conditions in particular soil temperature and the duration of the vegetation which is limited by late-spring and early-autumn frost.

Research result. Our research was conducted in the research orchard of Uman' NUH in 2016 and 2017. Young trees were planted in 1995. The rootstock is M 9. Planting scheme is 4 x 1 m with trellis and without irrigation. The system of inter-row spacing maintenance was black soil. The rows spacing were mulched by straw. We studied introduced apple varieties 'Bellida', 'Gold Chief' ('Gold Chief[®] Gold Pink'), 'Erovan' ('Early Red One[®]'), 'Red Jonaprince' ('Wilton's[®]', 'Red Prince[®]'), 'Fuji Fubrax' ('Fuji Kiku[®] Fubrax'), 'Honeycrisp' ('Honey Crisp', 'Honeycrunch[®]'), 'Florina' ('Querina[®]', control). Measurement, supervision and statistical processing of data were conducted according to the common methodic.

The increase of the stem diameter is characterizing growth potential of the tree including vigor. The most active lateral growth was fixed due to 'Bellida', 'Fuji Fubrax' and 'Honeycrisp'. Florina showed smallest growth. The stem thickening of the 'Gold Chief', 'Erovan' and 'Red Jonaprince' was from 7,3 to 8,8 mm. The least significant difference was determined at them.

The trees of the 'Fuji Fubrax' and 'Bellida' characterized the most spreading crown and more active growth. It was affected on volume and projection of crown. They were biggest due to 'Fuji Fubrax' and 'Bellida' among researched varieties. The smallest parameters of crown were fixed due to varieties 'Red Jonaprince' and 'Florina'. The trees of the 'Red Jonaprince' had volume and projection of crown almost on the same level. It can be explained more uniform growth of the shoots during research years. At the same time the trees of 'Florina' had much smaller volume of crown compare with it projection. It can be explained by smaller length of shoots in 2016 and bigger length of shoots in 2017. Low parameters of crown were fixed due to 'Honeycrisp'. It can be explained by reducing of shoots growth in 2017.

Increase of the crown size took place due to increasing shoots number and their total length. It is found that maximal total length of shoots was fixed due to 'Gold Chief' and 'Fuji Fubrax' in 2016 and due to 'Bellida' and 'Fuji Fubrax' in 2017. The total length of shoots for majority of research varieties was from 6,1 m to 8,2 m in 2016. It was observed increasing of total length of shoots in 1,7–2,9 times next year. It was observed weak growth in 2016 with increasing in 2,9 and 3,2 times next year's due to 'Red Jonaprince' and 'Florina'. Increasing of total length of shoots took place due to increasing number of shoots due to majority of varieties. At the same time 'Florina' showed increasing of the shoots' length.

It was observed reducing of the shoots length in 2017. Only 'Bellida' showed uniform length increasing each year. Change of the average length of shoots was depended from number of them during research years' and was equal 0,35–0,50 m. It is fixed longer shoots due to 'Fuji Fubrax' and 'Honeycrisp'.

The spurs were taken into consideration while structure of tree was studied. It was fixed significant excess of the number of spurs due to 'Fuji Fubrax' and 'Honeycrisp' trees compare with other ones. The varieties 'Red Jonaprince', 'Fuji Fubrax' and 'Honeycrisp' were different by relation of shoots number to spurs number (1,2–1,4). The predominance of the shoots number was observed due to 'Bellida' and 'Gold Chief'.

The varieties with high awakening of the buds and weak or very weak sprout-forming ability are most suitable for modern orchards. Our varieties showed high awakening of the buds and high sprout-forming ability, especially 'Gold Chief'. It can be explained by low or absence of yield and predominance of growth on fruiting.

Conclusions. The research introduced apple varieties on M 9 rootstock characterized of predominance of growth processes. Increase of stem was fixed from 4,3 to 10,8 mm, volume of crown was observed from 0,17 to 0,91 cubic meter and average shoots length was from 0,35 to 0,50 m with higher value due to 'Bellida', 'Fuji Fubrax', 'Honeycrisp' and weak growth due to 'Red Jonaprince' and 'Florina'. The studied varieties had high awakening of the buds and high sprout-forming ability.

Those research need continuation for more detailed learning peculiarities of growth and fruiting of the investigated varieties.

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