

Scanning report
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Country: Romania

NUTS 3 region(s)¹: NUTS 3 REGION(s): RO111 Bihor, RO112 Bistrița-Năsăud, RO113 Cluj, RO114 Maramureș, RO115 Satu Mare, RO116 Sălaj, RO121 Alba, RO122 Brașov, RO123 Covasna, RO124 Harghita, RO125 Mureș, RO126 Sibiu, RO211 Bacău, RO212 Botoșani, RO213 Iași, RO214 Neamț, RO215 Suceava, RO216 Vaslui, RO221 Brăila, RO222 Buzău, RO223 Constanța, RO224 Galați, RO225 Tulcea, RO226 Vrancea, RO311 Argeș, RO312 Călărași, RO313 Dâmbovița, RO314 Giurgiu, RO315 Ialomița, RO316 Prahova, RO317 Teleorman, RO321 București, RO322 Ilfov, RO411 Dolj, RO412 Gorj, RO413 Mehedinți, RO414 Olt, RO415 Vâlcea, RO421 Arad, RO422 Caraș-Severin, RO423 Hunedoara, RO424 Timiș

WP no. and title: WP2 New fruit cultivars

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Source materials and methodology

University of Agronomic Sciences and Veterinary Medicine of Bucharest is a key actor in the national fruit growing field and a reference point in international cooperation at EU level and worldwide.

Beside its educational side, UASVMB is involved in many applied researches and extension activities through its Research Stations (located at Moara Domneasca, Istrita, Pietroasa).

In Bucharest, inside the campus, at Istrita and Moara Domneasca there is a pomological collection of Romanian and foreign cultivars which is enriching yearly by adding new apple varieties in order to test them for the adaptation capacity in domestic environmental conditions.

At Istrita, new Romanian scab resistant hybrids are in evaluation process, and comparative experimental plots are set up with Romanian and famous apple international cultivars in different training systems.

UASVMB is part of EUFRIN network and represented actively by Prof.dr. Florin Stănică. Attending many relevant ISHS international conferences and EUFRIN meetings, also professional workshops and exhibitions (such as Interpoma), the newest information can be valorized by all of us.

Different research projects were conducted in particular in variety testing, fruits quality, shelf life, organic production, training systems etc.

A bilateral project between Research Institute for Fruit Growing Pitesti Maracineni, UASVM Bucharest and INRA Angers facilitated the good practice exchange in 2012 concerning the apple and pear variety testing and breeding scab or fire blight resistant varieties.

¹ Please see ec.europa.eu/eurostat/ramon/nomenclatures/ for details on NUTS regions, level 3

Another bilateral project with China in 2014 give us the opportunity to survey the apple varieties in other conditions than Europe and to explore new methods and practices for organic orchards.

As a member of Core Organic ERA-NET scheme since 2013, we had have access to the newest trends and research outcomes in the field of organic agriculture, sharing inside the community relevant ideas and transnational opportunities for collaboration.

Best practice findings

1. New apple varieties

The new Sub Program for Fruit Growing financed through the Rural Development Program PNDR 2014-2020 create new opportunities for the new orchards and put some pression in the same time on the new cultivars market. In this regard, we start for many years ago to test different cultivars in our cultural conditions in order to recommend or advice about their features and behaviour.

For Romanian growers, scab resistant cultivars are very important for several reasons but much important are for economical point of view and from organic production perspective.

Such experimental plots with scab resistant cultivars Romanian as well as foreign ones grafted on M9 rootstock were established in different areas in the country. Following Romanian scab resistant cultivars Generos, Romus 3, Romus 4, Romus 5, Real, Remar, Iris, Redix, Rebra, Aura, Starkprim, Ionaprim have been evaluated for scab resistance and morpho-productive traits. All of them (Vf cultivars) seems to have a very good resistance to scab except Generos (Vr) which in some years require 3-4 sprays. Good behavior present Romus3 and Real but they rippe in July and August. The other ones are with limited storage life, but Generos and Redix.

Many other cultivars from abroad join the comparative experiments. From those, remarkable from the productivity and quality point of view are: Goldrush, Sirius, Red Topaz, Pinova, Luna, Fuji, Piros, Rubinola, Crimpon Crisp. Other interesting cultivars are: Mars, Karneval, Fujion, Opal, Orion, columnar ones (Redcats, Goldcats, Suncats, Starcats).

In an experimental organic apple orchard, three scab resistant varieties (Rubinola, Topaz and Gold Rush), grafted on M9 rootstock, are studied since 2008, at the Faculty of Horticulture, UASVM Bucharest.

The inter row was cultivated with a mixture of perennial grasses and mowed mechanically. Drip irrigation was provided on the row, having a continuous line with auto compensating drippers every 0.5 m. On the row, the soil was maintained clean by hand and mechanical cultivation. The fertilization was assured with different types of Fertisol and Folplant, organo-mineral fertilizers, applied to the soil and foliar sprays, respectively. An integrated pest management was applied by using pheromones traps, mat disruption and organic approved, non- chemical pesticides. Tree growth was measured using annual trunk cross sectional area, number and shoots length per tree, typology of the fruit branches, etc. In parallel, blooming intensity, fruit set percentage, fruit number, fruit size and fruit production per tree were measured and evaluated.

The evolution of the soil agrochemical characteristics and plant content in nutrients was studied along the year, based on monthly analyses. The results entirely justify the use of organo-mineral fertilizers to insure a high fruit yield and the economic efficiency and sustainability of the organic apple orchard (Stănică et al., 2010, Ilie and Stănică, 2011, Ilie and Stănică, 2012).

2. New pear variety

In Romania, pear breeding has been polarized by breeding centre: Research and Development Station for

Fruit Growing (RDSFG) Voinești Dâmbovița, Research Institute for Fruit Growing (RIFG) Pitești Mărăcineni and RDSFG Cluj-Napoca. Due to a massive lack of financed research and breeding programme the last decade is characterized by a discontinuous work in this area. However, a lot of Romanian cultivars are very popular and appreciated by the consumers, few of cultivars being known abroad. 'Monica' is a very attractive and competitive cultivar. 'Napoca' is well disseminated in the country and appreciated for the taste. Special attention is given to a series of varieties obtained at Voinești with fire blight tolerance or resistance such as: Ervina, Euras, Corina, Orizont, Tudor, Cristal, Romcor. We are testing them in the Bucharest field on different rootstocks and own roots. Very good behaviour to *Erwinia amylovora*.

Several research were made on six self-rooted cultivars Abbé Fétel, Max Red Bartlett, Conference, Beurré Bosc, Alexander Lucas, Clapp's Favourite at USAMV Bucharest under the "Trident" training system. The trunk diameter, total annual shoot length and shoot number, tree height and other growth parameters were measured annually at the beginning of growing season. The obtained results indicated differences between varieties with the greatest values for tree height registered in Abbé Fétel variety in both season and the lowest values for Clapp's Favourite variety in one season and Max Red Bartlett variety in the second season. The data referring to trunk cross section pointed out very significant positive differences at Abbé Fétel and significant positive differences in case of "Conference" variety.

The Parallel Trident canopy was studied on four cultivars: Abate Fétel, Conference, Kaiser and Williams (control), *in vitro* propagated and self-rooted, planted at 4.0 x 2.0 m. Trees were trained on two systems: vertically on 2 + 3 wires and on two plans at 30°, using 2 top wires and 3 bamboo tutors per tree. Tree growth was evaluated using tree height, trunk cross sectional area, number and length of shoots per tree, typology of the fruit branches, etc. Conference had the highest trunk cross section area, being significant more vigorous than Williams. Abate Fétel produced the highest number of dards/tree (24.61) and the lowest number of spurs/tree (49.00) with very significant difference regarding the control - Williams. Abate Fétel recorded the highest cumulative yield, being followed by Conference. Kaiser and Williams had similar cumulative yield for the studied years. Tree productivity indexes were compared at the end of the each growing season by reporting the number of fruits (No/TCSA) and the yield per unit of trunk cross-sectional surface area (Y/TCSA). Conference had the smallest productivities indexes, while Williams showed the highest productivity. The Trident shows to be a suitable planting system easy to manage, efficient and sustainable for the medium density pear orchards.

In the same period were conducted researches regarding pests from pear culture under ecological agricultural system in the orchard of University of Agronomic Sciences and Veterinary Medicine of Bucharest. The aim of the researches was to study the harmful fauna of pear (*Pyrus communis* L.) following a classical methodology. There were carried out observations on pest attack in pear plots, together with determination of the useful insect and were identified pests belong to six systematic groups. Some of the insect could become key-insects for pear culture due to weather's condition, cultivation methods and even period of the time for pest detection. The problematic pests were *Eryophyid* mites, as *Eriophyes pyri*, *Epitrimerus pyri*. The beneficial insects present in culture are insufficient for limitation of some specific pest population, so having regard especially the attack produced by eriophyid mites there had to be applied chemical treatments in order to reduce the level of existing population.

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