

Scanning report [Audrius Sasnauskas, LRCAF]

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Y3 report due May 2018 for the period 06-17 to 05-18]

Source materials and methodology

Data for the development and evaluation collected and analyzed based on scientific publications, methodologies, and Lithuanian Republic and EU legislative documents:

1. Council Regulation (EC) N°2100/94 of 27 July 1994 according law protection of plant varieties in EU.
2. OEPP/EPPO (1992) Recommendations made by EPPO Council in 1981: certification of virus-tested fruit trees, scions and rootstocks. *EPPO Technical Documents* 1013, 42-43.
3. OEPP/EPPO (1992) EPPO Standards PM 4/1(1) Certification schemes. Virus-free or virus-tested fruit trees and rootstocks. Part I. Basic scheme and its elaboration. *Bulletin OEPP/EPPO Bulletin* 22, 267-277.
4. OEPP/EPPO (1993) EPPO Standards PM 4/7(1) Certification schemes. Nursery requirements - recommended requirements for establishments participating in certification of fruit or ornamental crops. *Bulletin OEPP/EPPO Bulletin* 23, 249-252.
5. Testing agreement for fruit plant material. http://www.eufrin.org/fileadmin/user_upload/WG_-_Apple_and_pear/Eufrin-agreement_update_1_1_2009-03-04.pdf
6. Law protection of plant varieties in Lithuanian Republic of 22 November 2001, No. IX-618.

According to long-term data collected in Institute of Horticulture, Lithuanian Research Centre for Agriculture and Forestry (IH-LRCAF) methodologies for evaluation of new fruit cultivars were prepared:

1. Sasnauskas A., Gelvonauskienė D., Rugienius R. Methodology for evaluation of cultivars for orchard plants. 2013. Kaunas. P. 206-215. (in Lithuanian).
2. Intensive apple and pear growing technology (N. Uselis). 2005. Lietuvos sodininkystės ir daržininkystės institutas. Baltai. 211 p. (in Lithuanian).
3. Intensive small fruits growing technology (N. Uselis). 2002. Lietuvos sodininkystės ir daržininkystės institutas. Baltai. 190 p. (in Lithuanian).
4. Descriptor list for “level 1” EUROFRU trials. http://eufrin.org/fileadmin/user_upload/WG_-_Apple_and_pear/EUFRIN_descriptor_list_apple.pdf

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

Methodologies were prepared for every orchard plant species based on studies of plant genetics, physiology, and biochemistry parameters.

Scientists of IH-LRCAF evaluating of introduced fruit cultivars to abiotic and biotic factors, adaptability to local climatic conditions. Research topics are: developing high fruit quality new cultivars resistant to main pest and disease, resistant to spring frost and winter hardiness; genetic control of orchard plant traits and creation of new breeding methods; optimization of orchard plant vegetative and generative development. Data obtained in these studies is published in local and international scientific journals, presented in conferences, seminars, meetings and open days. Scanning report prepared based on scientific publications, methodologies, and Lithuanian Republic and EU legislative documents.

Best practice findings

Climatic conditions and the socio-economic environment have given rise to unique horticultural traditions characteristic to Lithuania. Plant breeding, such as winter-hardiness, frost tolerance, high productivity, fruit quality, complex resistance to apple scab (*Venturia inaequalis*) and apple blotch (*Phyllosticta mali* Pr.at Del.), canker (*Nectria galligena* Bres.), high storage potential and cultivar evaluation has been an important activity at the IH-LRCAF. The goals of research and breeding of fruit plants include also collection activities and preservation of genetic resources, assessment and improvement of quality of germplasm. Database of apple are used for managing the apple collections, sharing of information for growers and efficient use of germplasm for breeding. Biological and economical features of rootstock-cultivar combinations for the modern commercial orchards are evaluated. Apple cultivar 'Auksis' became more popular not only in Lithuania, but also between Belarus, Latvia, and Estonia farmers. Our results showed that the Lithuanian apple cultivars 'Auksis', 'Štaris', 'Noris', 'Aldas', 'Skaistis' and 'Rudenis', pear cultivars such as 'Lukna', 'Gaisra' and 'Liepona', sweet cherry cultivars 'Jurgita', 'Mindaugė', 'Jurga', 'Meda', the sour cherry cultivars 'Vytėnų žvaigždė' and 'Notė', the plum cultivars 'Gynė', 'Jūrė', 'Rausvė', 'Kauno vengrinė', and 'Aleksona' increasing profitability for fruit growers. It is very important to use virus-free planting material in establishing orchards, to maintain a high level of economic productivity of apple trees. Health propagation of plant material system (monitoring, isolation, propagation and retesting of apple nuclear stock material for initial virology condition) supply health orchard plant material for the growers. Growers started to plant cultivars and promising hybrids on intensive dwarf and semi-dwarf rootstock in farms. Fruits of these cultivars and they products spread more and more in local farmer's shops, also in supermarkets or hypermarkets. Under EUFRIN methodology Lithuanian pome cultivars and promising hybrids evaluated in the other EU regions. On the other hand apple cultivars from Italy, France, Czech Republic, Russia, Belarus, Latvia, Estonia, Sweden evaluated at the trials of IH-LRCAF.