



SITUATION AND DEVELOPMENT OF FRUIT SCIENCE AND COMMERCIAL FRUIT PRODUCTION IN LATVIA



Edīte Kaufmane,
Māra Skrīvele, Edgars Rubauskis,
Sarmīte Strautiņa
Latvia State Institute of Fruit - Growing
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Fruit growing has old traditions in Latvia. The climatic conditions and soil are favorable for it, especially in the eastern regions of Latvia. Our fruits and berries sometimes may contain less sugar than the cultivars grown in the south, yet they have more aroma and organic acids, and significantly less pesticide sprayings are needed for their growing.



Climate of Latvia

- The climate of the western part of Latvia is **maritime**, but **continental** climate prevails in the eastern part.
- The **cyclone activity** is high (120 – 140 cyclones per year), and so the weather is very changeable.
- Precipitation (rainfall and snow) is **560 – 850 mm**
- The **yearly average temperature** is 6.6 (maritime) to 4.2 °C (continental)
- Monthly average temperature** is about -2.6 to -7.5 °C in January and +16.8 to +17.6 °C in July
- The **lowest temperature** recorded is -43.2 °C, the **maximum** is +36.4 °C
- One of the biggest problems for resultative fruit growing are frequent **temperature fluctuations** during the winter period from January to March;
- The **growth season** (t° over + 5 °C) is 180 – 200 days
- Active growth season** (t° over + 10 °C) is 135 – 140 days
- **Average temperature sum** in active growth season: **1700 – 2150 °C**, depending on region



Relief and soil of Latvia

Lowlands are prevailing in central part, in other regions they are separated by hilly uplands to 300 m above sea level.



Soil is very variable. The most **productive - soddy calcerous soils**, mostly loams and drained soddy clay - are found in southern Latvia.

The other parts of Latvia are covered by more **humid, acid soils - podzolic, podzol and gley**. Coastal areas are sandy.



Shortly about fruit growing in Latvia

By the statistic data of Latvia Fruit Growers Association, in 2011 there were about 10 000 ha commercial orchards, including – apples 4273 ha, pears 233 ha, plums 111 ha, Japanese quince 80 ha, cranberries 112 ha, blueberries 98 ha, black currants 878 ha, red currants and gooseberries 116 ha, strawberries 428 ha, raspberries 333 ha.

The average orchard area is about 3 ha, larger orchards have 15-20 ha.

Fruit growing has potential in Latvia, as:

- The market and consumer demand increase for locally grown fruits, the supply still does not meet the demand.
- Processing SME are developing very quickly, their products are various, original products have good market potential.
- The project “School Fruit” projects needs large amounts of fruits.



Shortly about fruit growing in Latvia

Apples are by far the most widely grown fruit crop in all types of orchards in Latvia. The largest part of commercial orchards were planted in the last 14 years. The most widely grown cultivars are ‘Auksis’, ‘Sinap Orlovskii’, ‘Antei’. Fruit storage still uses mostly traditional cool storage; research has only started to promote implementation of modern storage technologies.



Shortly about fruit growing in Latvia

The areas of **black currants, red and white currants, raspberries and strawberries** also have rapidly increased during the last 10 years. Technologies reducing risks (irrigation, protection against frosts, various top covers) are not widely used, but there are trends to introduce innovative technologies.



Shortly about fruit growing in Latvia

The proportion of other fruit crops (**pears, plums and cherries**), which present more risks in production and which have few well-adapted cultivars with good fruit quality, is low.



Shortly about fruit growing in Latvia

Relatively stable yields are obtained from new crops which are well-adapted to Latvian climate – **seabuckthorn** and **cranberries**. Their areas increase. There are also successful solutions in the harvesting and processing of the produce. The cultivation of **highbush blueberries** so far has problems with finding well adapted cultivars and in applying risk-reducing technologies.



Shortly about fruit growing in Latvia

The farm size is different – small farms with orchard area 1 to 3 hectares dominate and about 10 % are larger farms over 15 hectares. Insufficient cooperation is an obstacle to faster development of fruit growing, although three producer groups and three cooperatives have been formed. Specialized farms dominate. The integrated growing system was introduced in most farms since 2006.



Shortly about fruit growing in Latvia



Main problems for the development of fruit growing in Latvia:

- Lack of training and consulting system for fruit growers;
- Lack of cooperation;
- Slow introduction of innovative technologies in commercial orchards.
- The crops and cultivation methods are highly different, the plantations need long-term investment with relatively slow return - so fruit growing needs scientific expertise and long-term research.

Institutions doing research in fruit-growing science

Latvia State Institute of Fruit-Growing (LSIFG)

Pure Horticultural Research Center (Pure HRC)

Latvian State Centre of Plant Protection (LSCPP)

Institute of Agrobiotechnology, Latvia University of Agriculture (IA LUA)

Faculty of Food Technology, Latvia University of Agriculture (FFT LUA)

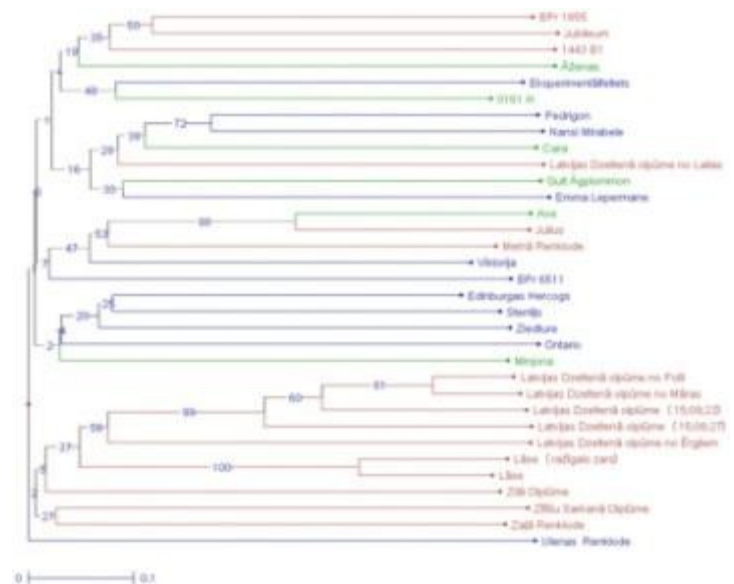
Laboratory of Plant Mineral Nutrition, LU Institute of Biology (LU IB)



Since 2007 all scientific institutions carry out a complex project of Ministry of Agriculture, Council of Rural Development «Specification of environment friendly technologies for fruit and berry plantations in different soil and climate conditions»

Research is done in the following directions:

- Breeding of disease resistant, climate adapted cultivars, using Latvian and introduced genetic resources (LSIFG, Pure HRC);
- **Development of effective methods** for controlled breeding of new cultivars and technologies of their propagation (LSIFG)





'Paula'



'Edite'



'Ligita'



'Dace'



'Aija'



'Gita'



'Adele'



'Liene'



'Rasa'

Research is done in the following directions:

- Research of fruit crop pathogens in Latvia, their distribution, development biology and control (LSIFG, LSCPP);
- Introducing of healthy plant material propagation system in Latvia (LSIFG).



Research is done in the following directions:



- Development of environment friendly, sustainable technologies for more widely grown crops in different conditions:
 - ❑ **Testing of rootstocks** and their compatibility with commercial fruit cultivars (LSIFG, Pure HRC)
 - ❑ Development of orchard **irrigation and fertigation** systems in Latvia (LSIFG)
 - ❑ Testing of up-to-date principles of **fruit and berry plant training** and their adaptation to the conditions of Latvia (LSIFG, Pure HRC)
 - ❑ Development of **risk reducing growing technologies** (covers etc.) – (LSIFG, Pure HRC)
 - ❑ Development of technologies for **less known crops** (including fertilizing system) (LSIFG, IA LUA, LU Institute of Biology)

Research is done in the following directions:

- Recommendations for storage of fruit and berry cultivars in traditional and CA storage (LSIFG)
- Development of innovative fruit processing methods and products from traditional and novel crops, waste-free technologies preserving functionally active compounds (LSIFG, LUA Food Technology Faculty)



**At present more than 10 products are sold on shops,
obtained using technologies developed at LSIFG**



Bona Dea, Ltd.



Lienama Alūksne, Ltd.



Daro Cēsis, Ltd.



Amberbloom, Ltd.



Lāči, Ltd.



Satori Alfa, Ltd.



The leading research institution if fruit growing - **Latvia State Institute of Fruit-Growing**

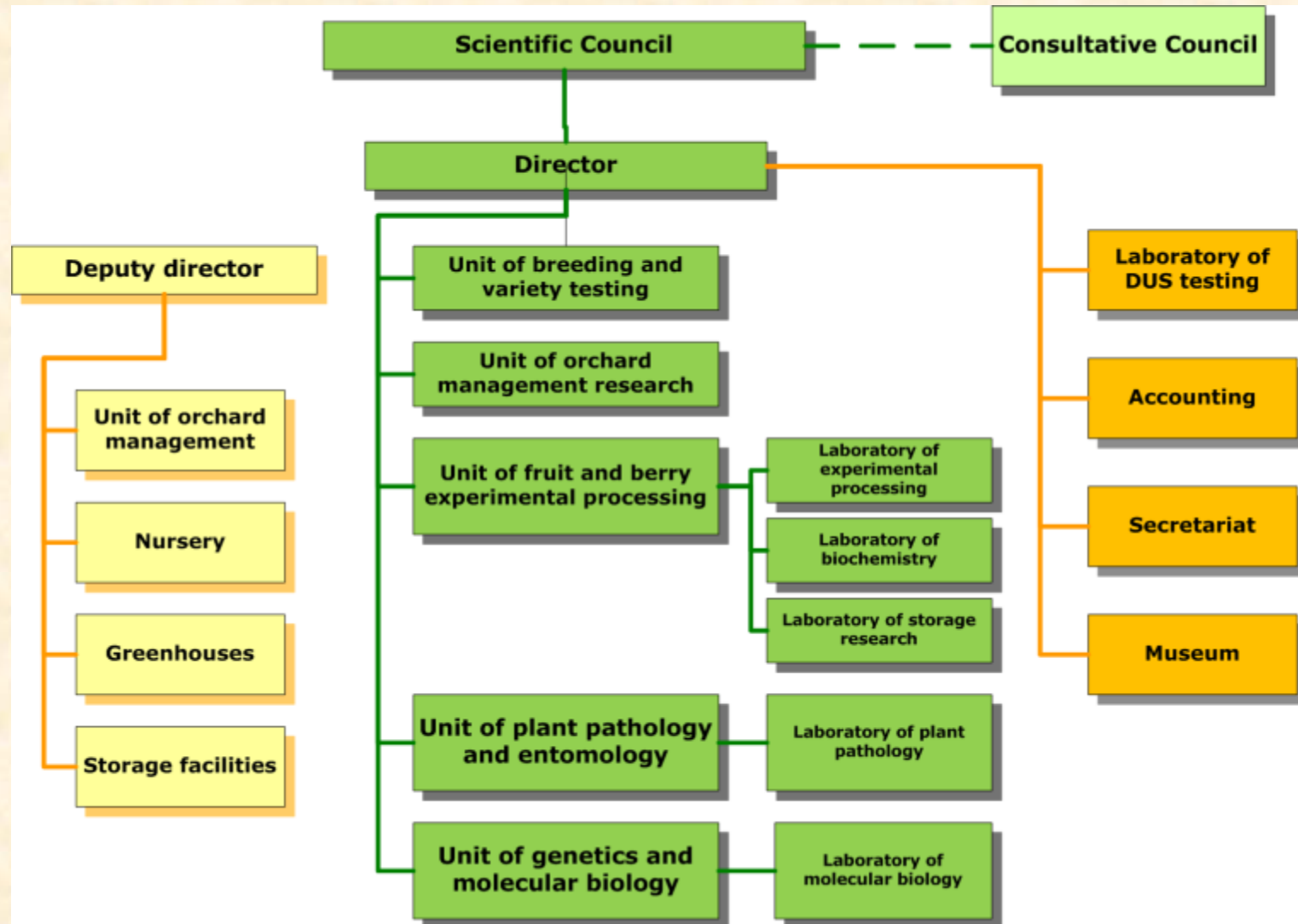
At present (January 1, 2012) the Institute's **regular staff are 62 people, of which 50 are full-time researchers and technicians, including:**

- **doctors of sciences— 14 (incl. 8 young scientists)**
- **masters of sciences— 15 (incl. 8 PhD students)**

**43% of
researchers
are of age
below 35**

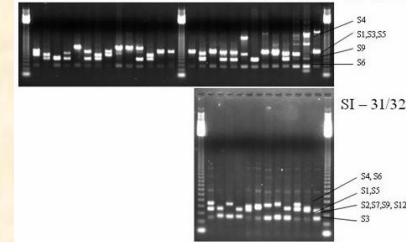


Latvia State Institute of Fruit-Growing has five research units:



The main tasks of the Institute are:

- To provide scientific background and expertise for the working-out and implementation of the development policy in fruit-growing
- To work out recommendations for environment-friendly (integrated and organic) technologies in fruit growing, processing and storage
- To develop models for commercial orchard management in different regions of Latvia
- To perform breeding of fruit and berry varieties suitable to Latvian climate
- To provide maintenance and sustainable use of fruit, berry and lilac genetic resources
- To work out scientific background for a system of the production of healthy planting material in Latvia



Local joint projects



- Developing of **technologies for commercial fruit growing** together with:
 - the Latvian State Centre of Plant Protection, Pure Horticultural Research Centre, Latvia University of Agriculture,
 - University of Latvia, Faculty of Biology, Institute of Biology of the University of Latvia, Laboratory of Plant Mineral Nutrition of the Institute of Biology, Biomedical Research and Study Centre, etc.
- **Experimental processing products from fruits and berries, their biochemical evaluation** together with:
 - LUA Faculty of Food Technology, Faculty of Chemistry, University of Latvia, and several processing enterprises.
- Maintenance of **fruit crop genetic resources** together with:
 - the Latvia Genetic Resources Centre, Riga Technical University.

International projects



- EUREKA project **“Functional food ingredients from plant products”**
- EUREKA project **“Development of new products from plant material for health improvement and cosmetics “**
- INTERREG project of the Latvia-Lithuania Cross Border Cooperation Programme **“Development of a technology transfer centre for fruit industry”**
- EU COST action **“East-West Collaboration for Grapevine Diversity Exploration and Mobilization of Adaptive Traits for Breeding”**
- EU COST action **“Sustainable production of high-quality cherries for the European market”**
- Bilateral project with University of Iowa (USA) **“ Evaluation of North American apple rootstocks in Latvia“**
- Multilateral cooperation project **“Innovative seabuckthorn products and technologies”**

National projects of the EU structural funds:

- „Scientific capacity building in fruit-growing, forestry and information technology sectors, providing research on environmentally friendly growing strategies, product development and introduction aided by computer technologies”
- “Development and adaptation of innovative risk reducing technologies for fruit and berry growing in conditions of Latvia ”
- “ Use of sea buckthorn vegetative parts for development of prophylactic products with high antioxidative effect “
- “Development of effective techniques and new plant pathogen diagnostic components for obtaining virus-free planting material of fruit crops “

Exchange of scientific information with research institutions:

Lithuanian Institute of Horticulture (Babtai), Holovousy Research Institute for Fruit Growing and Breeding (Czechia), Planteforsk division Njos (Norway), Polli Horticultural Institute (Estonia), Belarussian Research Institute for Fruit Growing (Samokhvalovitchy), Skierniewice Research Institute of Pomology and Floriculture (Poland), etc.

During Soviet times the main cooperation existed with the **countries of Soviet Union** (Russia, Ukraine, Belarus, Moldova etc.). Since the beginning of **1990ies** successful cooperation was developed among the scientific institutions of **East and West European countries, as well as between Canada and USA** and our institute.

Scientists of institute are members of International Horticultural organisations – **ISHS, ECPGR, Eucarpia, EUFRIN** etc.



Applied research for fruit growing

- The Institute has developed very successful cooperation with fruit and berry growers in Latvia. Our Institute was the initiator of the **Latvian Fruit Growers' Association** founded in 1997. Our Institute is the collective member of the Association. All newest information obtained by scientific research, which can become useful for commercial growers, is passed on to the farmers with the help of the Association.
- **Seminars for farmers** are organized regularly. The scientists of Institute participate in lectures organized by the regional Departments of Agriculture.
- Institute organizes or participates in **fruit and berry exhibitions** in Dobeles, Riga and other towns in Latvia.
- Every year **Farmers Days** take place at Dobeles in March and August, collecting numerous visitors.

As there is no State consulting system for fruit growers in Latvia, to solve this problem at least partly, **Technology Transfer Centre for Fruit Industry (TTC)** has been developed together with Lithuanian Institute of Horticulture.

Activities carried out during the establishment of TTC:

■ Working out of different **informative materials** (leaflets, booklets, Handbook and DVD materials) and development of methods (incl. homepage www.fruittechcentre.eu) to help the information to reach the target group;

■ **Teaching and consultations** at the Institute, **seminars** for fruit growers and processing units at different commercial farms in Latvia and Lithuania, travels for exchanging experience;

■ **Improvement of MTB**, including equipment for demonstrations and training in modern technologies, aimed at fruit and berry growers and processing enterprises.



ĀBEĻU VAINAGU VEIDOŠANAS PAMATPRINCIPI

Piramidālais vainags – labākais!

- Piemērotākā vainaga forma jebkura auguma kokam ir piramīdas daļiņā veidī – gan platāka, gan šaurāka, gan zemāka, gan augstāka – atkarībā no šķirnes, potēlma un stādīšanas attāluma.
- Piramīdālais vainags auglējai daļai zariem jābūt īsākiem, lai gaisma piekļūtu arī apakšējiem zariem.
- Lai iegūtu labu piramīdālu vainagu, visu koka augstuma jāveido 10 – 15 daļiņā zari.

SKELETARUS jeb pamatزارus iedēlcamu auglības visu koka mūžu. Ābeļiem, kuriem vainaga veido slaidās vārpas formā, tie ir divi līdz seši apakšējie zari, kuri jaunākiem kokiem jābūt vidēji 0,8 – 1 m augstam. Ābeļiem uz vidējā auguma potēlmiem tie var būt trīs vai, veidojot plakano vainagu, tikai divi.

KĻAIZARI ir 1-5 gadīgi zari, uz kuriem veidojas ziedpumpuri vai auglzarīti, un tie var būt ievietoti uz skeletariem jeb pamatزارiem vai arī vadāra – stubura auglējai daļi. Tie ir regulāri atjaunojami zari, jo līdzīkajai daļai šķirņu spēcīgākie auglzarīti veidojas uz jaunām zaru posmiem. Sakot ar kļāzara trīsgadīgo posmu, sākas auglzarītu novecošanās un atmiršana, veidojas kaili zaru posmi.

1. gads
Nepareizi veidots koks ar „cepuri” (pirms apgriešanas)

2. gads
„Cepure” likvidēta, uzskata piramīdas veidošanos.

Speciāli auglzarīti uz kļāzara divgadīgā posmā.

Ābeļu uz vidējā auguma potēlma ar diviem skeletaru pāriem.
Apakšējie izveidoti mēdus vārpas, auglējās – tā, lai nenodrošu apakšējos.

Galvenās kļāzara novecošanās un garā spēcīgās kļāzarus, kuriem pie pamutes auglzarīti jau atmiruši, izņem, atstājot celtniņu.

Šķērveida kļāzari uz maza auguma potēlma pēc pamatزارu vainaga atjaunošanas ražoja labi.

No atstātā šķērveida kļāzara veidojas jauns kļāzars.



Public Homepage has been created and is regularly renewed, providing information about TTC activities and the created informative materials, and answering questions both from growers and consumers.

www.fruittechcentre.eu

fruittech centre
augļkopības tehnoloģiju pārnese centrs

Aktualitātes Par projektu Kontakti

latviski no russkai lietuvių english

■ AKTUALITĀTES

■ JAUTĀJUMI UN ATBILDES

■ BIBLIOTĒKA

■ NODERĪGAS SAITES

■ SADARBĪBAS PARTNERI

■ ARHĪVI

Aktualitātes

Apmācības (laukudiena)

Publicēts: 01.09.2010 [Nav komentāru](#)

Apmācības jeb lauku diena Latvijas Valsts Augļkopības Institutā rudens pusē 3. septembrī. [Lasīt tālāk >](#)

Praktiskās apmācības vainagu veidošana

Publicēts: 04.08.2010 [Nav komentāru](#)

Augustā praktiskās apmācības ķiršu un ābeļu vainagu veidošanā. [Lasīt tālāk >](#)

Augļaizmetņu retināšana

Publicēts: 04.08.2010 [Nav komentāru](#)

Neliels ieskats augļaizmetņu retināšanā ābelēm.

septembris 2010

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13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

[« Aug](#)

Dream of the Fruit Scientists

Every person living in Latvia can buy high quality fruits and berries grown in Latvia, as well as healthy processing products made by small enterprises. Latvian grown fruits and berries are found also in shops of the neighbouring countries.





**Thank you for your
attention!!!!**