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INSTITUTE OF
HORTI
CULTURE

THE LEADING
SCIENTIFIC CENTRE
IN LATVIA
FOR FRUIT-GROWING
AND HORTICULTURE





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DIRECTOR'S MESSAGE

“The most extraordinary people in the world today don't have a career. They have a mission. Our team's mission at the Institute of Horticulture is to share the knowledge and know-how needed to enable access to fresh, high-quality local fruits and vegetables in Latvia throughout the year.

We are inclusive – our institute is an open space for scientists, believers, dreamers, growers, artists, musicians, poets, students, local community, government and tourists, as well as everyone else.

We believe learning and achieving personal excellence is a lifelong adventure. We believe in leadership as a process of self-knowledge and social innovation.

We transform ourselves, and we transform gardens. This is a story about love – we love our work, we love sustainable ideas, and we create with love.

We believe happiness and passion are the most powerful tools for getting excellent results.”

Inese Ebele

Director, Institute of Horticulture

Below artist Māris Subačs mural painting
"God did not give himself an infinity, but the garden"





SHORT HISTORY

The beginnings of the Institute of Horticulture can be traced back to 1945, when it was founded at the Laucini nursery.

After some years, the plant breeder Pēteris Upītis (1896-1976) started planting new experimental orchards in this place. The goal of this horticulturist was to cultivate winter-hardy fruit crops that would be compatible with the climatic conditions of Latvia, and that would bear high-quality fruit.

Over the years, the orchard has changed its name and owners several times (to the Laboratory of Fruit growing, the Dobeles Horticultural Plant Breeding Experimental Station, and the Latvia State Institute of Fruit-Growing).

The institute was given its present status on 1st January, 2016 – it is now under the jurisdiction of the Latvia University of Life Sciences and Technologies.





INSTITUTE'S MISSION

“The institute is a fast-growing research institution which makes a significant contribution to the development of horticultural science and to the horticulture sector in the Baltic and Scandinavian countries. The institute’s competent and motivated scientists rationally use their resources by providing to the public new knowledge, varieties, products, technologies and services.

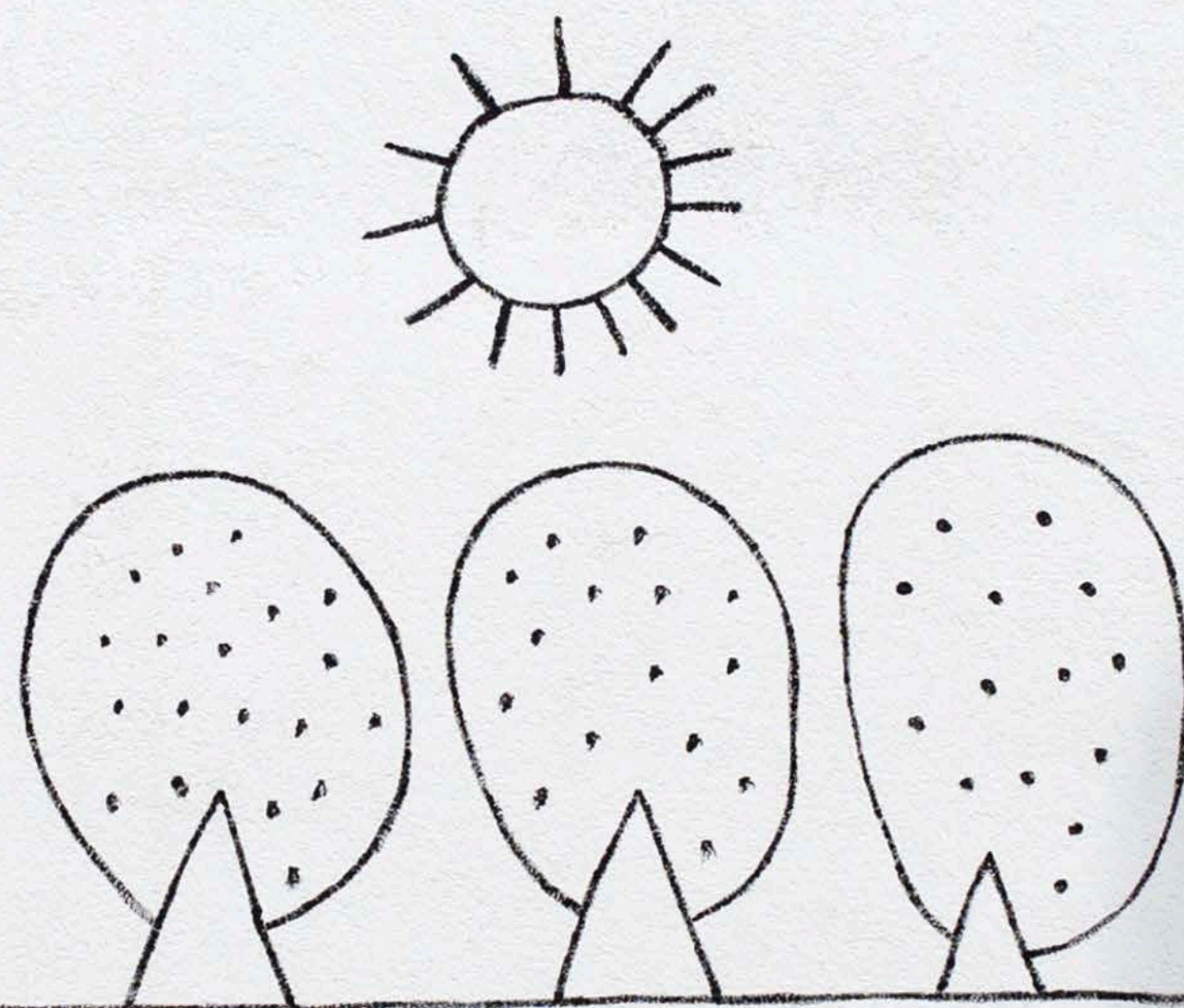
The institute is successful in balancing applied and basic research, and this allows it to publish results in peer-reviewed publications, as well as to develop innovative technologies and products, thus contributing to the competitiveness of the fruit and vegetable industry, and to smart and sustainable rural development.”

Dr. biol. Edīte Kaufmane

Chairman of the Scientific Council,
Leading Researcher



SCIENTIFIC COUNCIL OF
THE INSTITUTE OF HORTICULTURE:



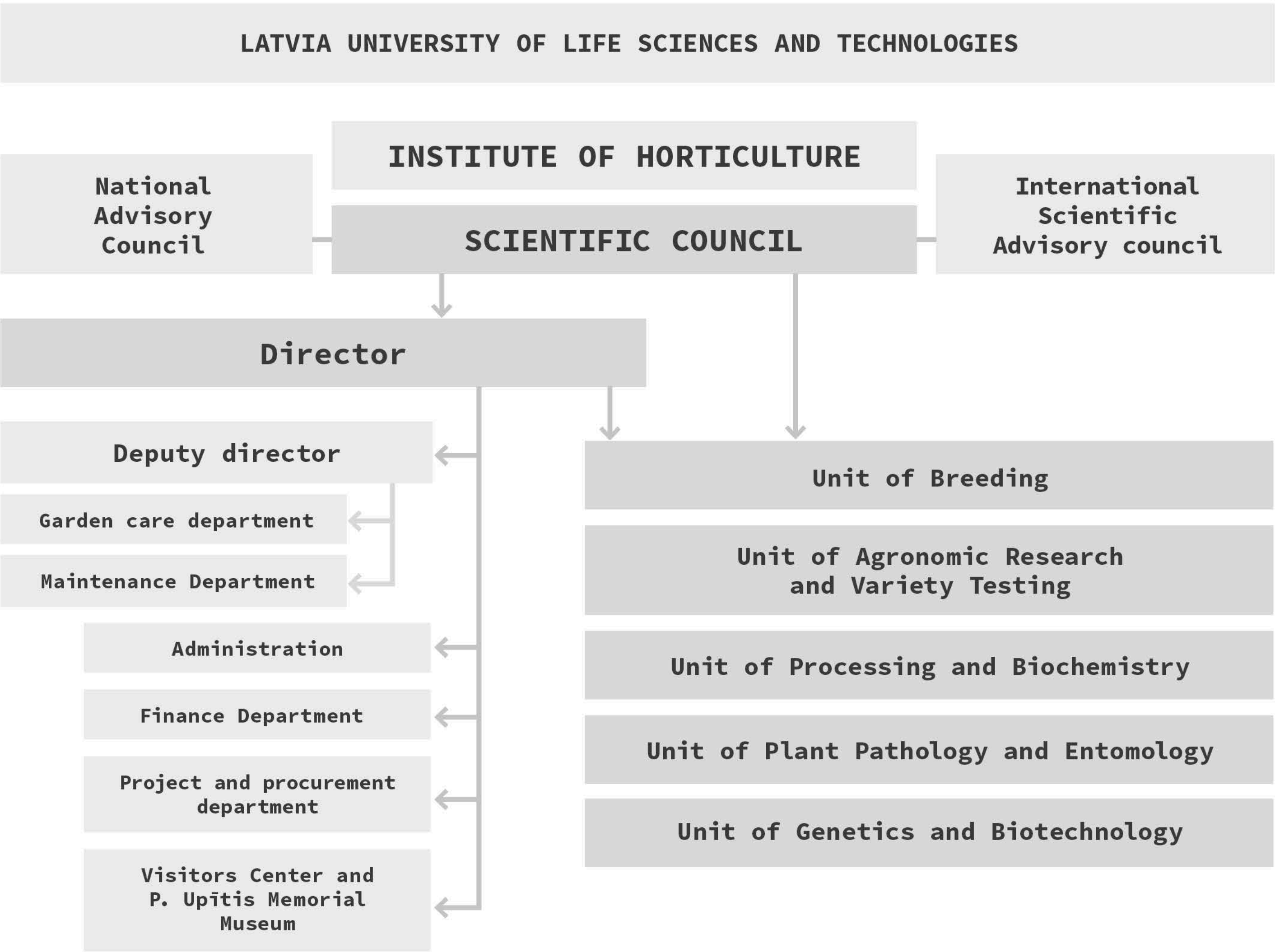
Dr. agr. Valda Laugale, Leading Researcher
Dr. agr. Līga Lepse, Leading Researcher
Dr. agr. Daina Feldmane, Leading Researcher



Dr. biol. Sarmīte Strautiņa, Leading Researcher
Dr. agr. Edgars Rubauskis, Leading Researcher
Dr. biol. Edīte Kaufmane, Chairman of Scientific Council, Leading Researcher
PhD Inga Moročko-Bičevska, Leading Researcher

PhD Gunārs Lācis, Leading Researcher, Vice-chairperson of Scientific Council
Dr. biol. Laila Ikase, Leading Researcher
Dr. sc. Ing. Dalija Segliņa, Leading Researcher
Dr. oec. Irina Pilvere, Rector of the Latvia University of Life Sciences and Technologies (not in the picture)

STRUCTURE OF
THE INSTITUTE OF HORTICULTURE:





SCIENTIFIC UNITS OF THE INSTITUTE OF HORTICULTURE

UNIT OF BREEDING

Head of the Unit:

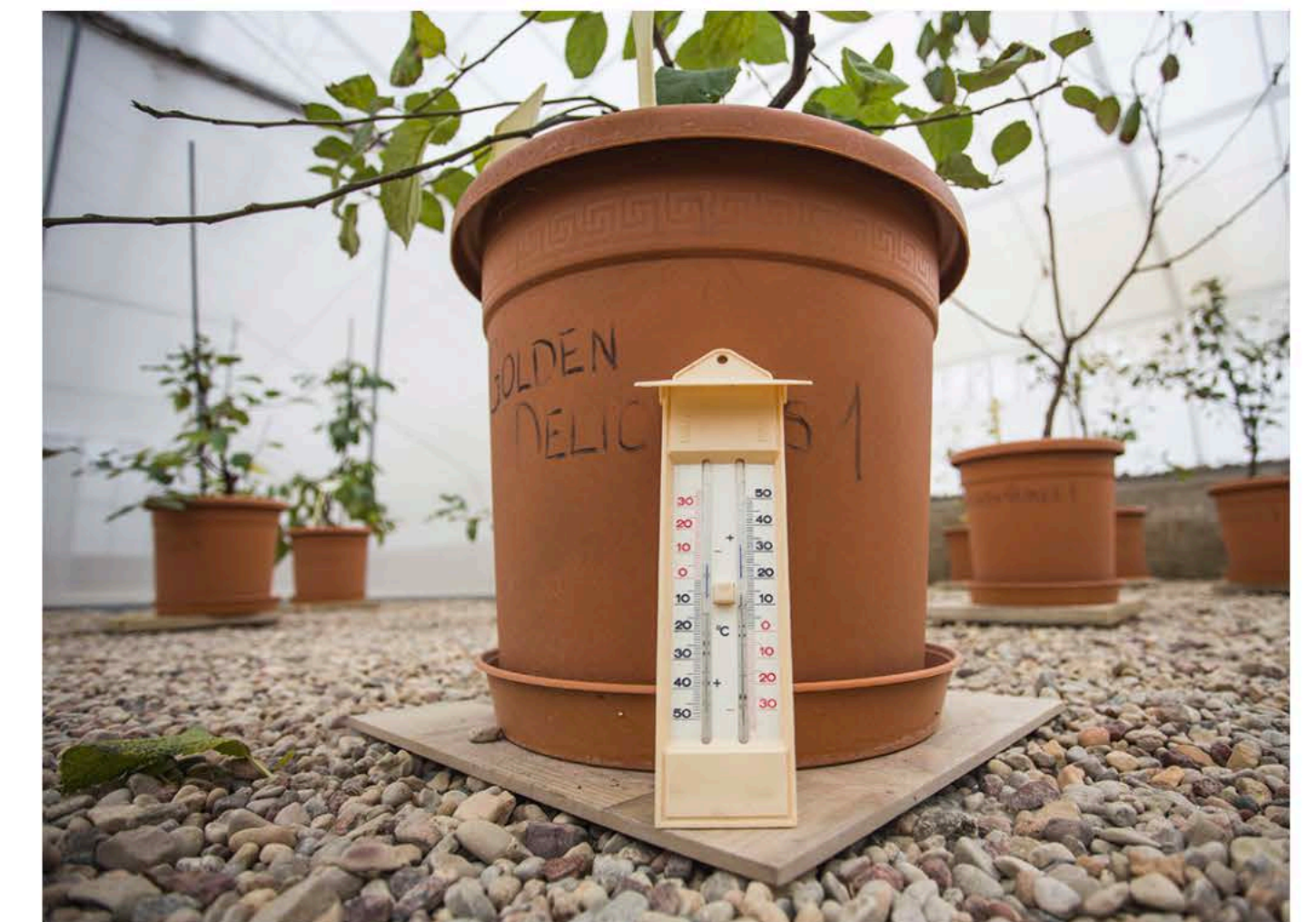
Dr. biol. Sarmīte Strautiņa

Leading Researcher

GOAL: THE DEVELOPMENT AND SELECTION OF CULTIVARS THAT ARE ADAPTED TO THE BALTIC SEA REGION AND THAT HAVE ADEQUATE LEVELS OF ECOLOGICAL PLASTICITY, PRODUCTIVITY, PRODUCT QUALITY, AND RESISTANCE TO DISEASE AND PESTS

Directions of activity:

- Selection of cultivars adapted to the agro-climatic conditions of the Baltic Sea region and that are resistant to diseases and pests
- Research on horticultural crop genetic resources, conservation, and their inclusion in breeding programmes
- The introduction of less common vegetable species to Latvia





**SCIENTIFIC UNITS OF
THE INSTITUTE OF HORTICULTURE**

UNIT OF AGRONOMIC RESEARCH AND VARIETY TESTING

Head of the Unit:
Dr. agr. Edgars Rubauskis
Leading Researcher

GOAL: TO DEVELOP AND ADAPT ENVIRONMENTALLY FRIENDLY HORTICULTURAL CROP CULTIVATION SYSTEMS AND TECHNOLOGIES TO PROVIDE SECTORAL AID IN ORDER TO ENSURE PRODUCTION EFFICIENCY

Directions of activity:

- Research into cultivation technology, development and adaptation to fruit and horticultural crops
- Evaluation of fruit tree, berry and vegetable cultivars and rootstocks and cultivar-rootstock combinations
- Research into the physiology of horticultural crops and solutions to improve winter-hardiness, to ensure photosynthesis efficiency, plant growth and regulation of production
- Study of the sustainable use of soil resources and properties for horticultural crops





SCIENTIFIC UNITS OF THE INSTITUTE OF HORTICULTURE

UNIT OF PROCESSING AND BIOCHEMISTRY

Head of the Unit:

Dr. sc. ing. Dalija Segliņa

Leading Researcher

GOAL: CREATION OF NEW KNOWLEDGE AND PRODUCTS,
DEVELOPMENT OF INNOVATIVE TECHNOLOGIES THAT PROMOTE
THE SUSTAINABLE DEVELOPMENT AND COMPETITIVENESS OF
THE LATVIAN HORTICULTURE AND FOOD SECTORS

Directions of activity:

- Testing the suitability of cultivars to various processing methods and new product and technology development
- Chemical analysis of plant-based raw materials, products and by-products, biologically active compound and technological process research
- Research on horticultural crop storage technologies (including controlled atmosphere conditions, and research with 1-MCP)





SCIENTIFIC UNITS OF THE INSTITUTE OF HORTICULTURE

UNIT OF PLANT PATHOLOGY AND ENTOMOLOGY

Head of the Unit:

PhD Inga Moročko-Bičevska

Leading Researcher

Goals and directions for activity:

- Development of a scientific and theoretical basis for economically sound and sustainable cultivation technologies by researching the occurrence and prevalence of the pathogens and pests of horticultural crops in Latvia, as well as the pathogens and pests' development characteristics, diversity, biology, ecology and interaction with hosts.
- Development of a theoretical and methodical basis for the establishment of a certified planting material system for fruit crops in Latvia by testing propagation material, virus elimination, and the establishment and maintenance of nuclear stock collections.
- Diagnostics of pathogens and pests of fruit crops.
- Maintenance of the collection and characterisation of fungi and of bacteria pathogenic to horticultural crops.





SCIENTIFIC UNITS OF THE INSTITUTE OF HORTICULTURE

UNIT OF GENETICS AND BIOTECHNOLOGY

Head of the Unit:

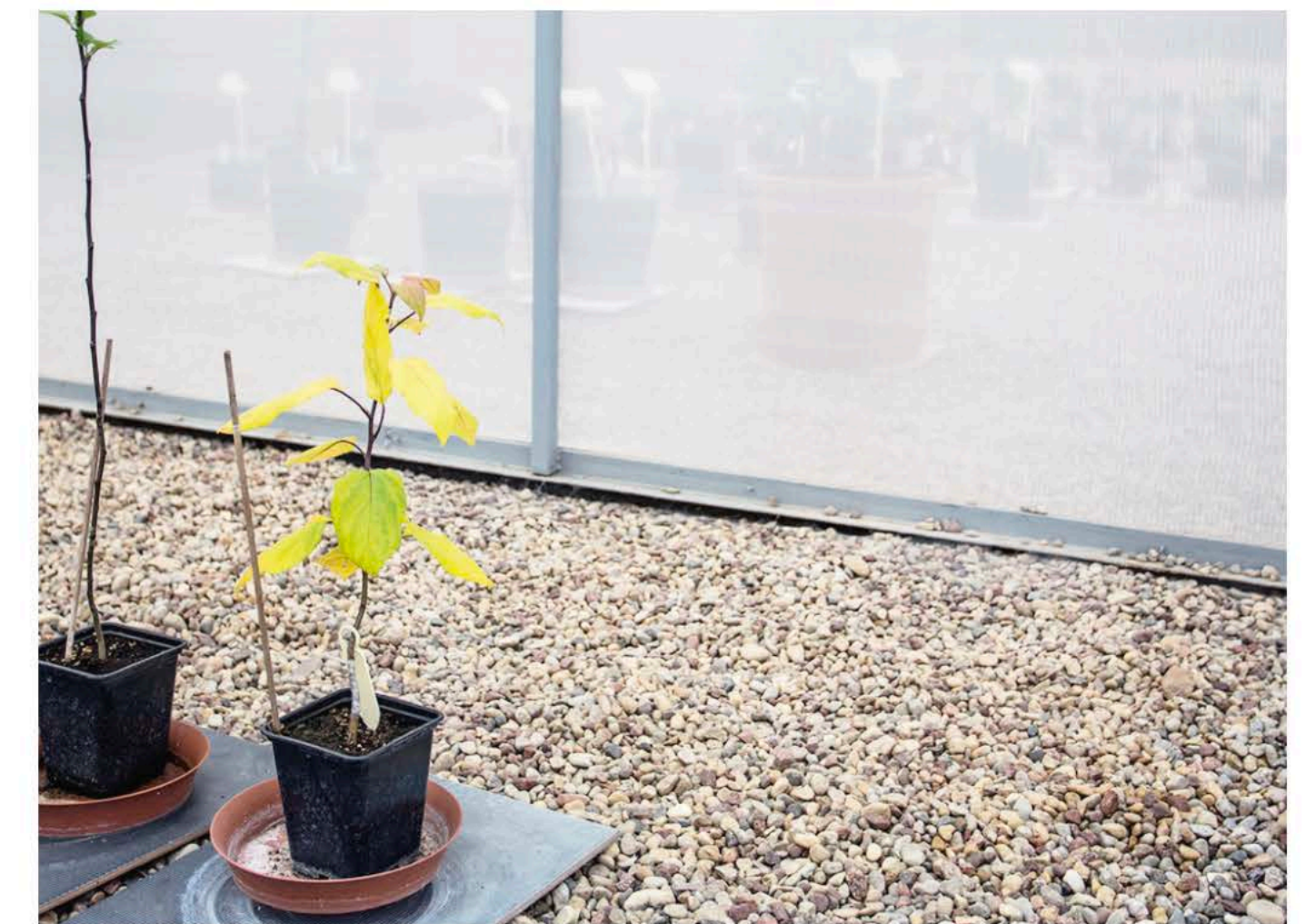
PhD Gunārs Lācis

Leading Researcher

GOAL: TO ACQUIRE NEW KNOWLEDGE ON THE HEREDITY OF ECONOMICALLY SIGNIFICANT CHARACTERISTICS AND GENETIC DIVERSITY IN HORTICULTURE CROPS, AND ON INTRODUCING AND APPLYING MOLECULAR GENETICS METHODS IN BREEDING

Directions of activity:

- Coordination of preservation and documentation, and research into horticultural crops' genetic resources, research into genetic resources using molecular markers, evaluation of genetic diversity
- The development of a scientific and theoretical basis for research into horticultural crop heredity mechanisms and breeding material by applying molecular genetics methods
- The development of a scientific and theoretical basis for the introduction of molecular genetics methods into breeding, the development and application of economically significant characteristic identification methods to breeding



**DIRECTIONS OF THE INSTITUTE
OF HORTICULTURE'S ACTIVITIES**

- 1/ SCIENTIFIC ACTIVITY IN THE SECTORS
OF HORTICULTURE AND HEALTHY FOOD**
- 2/ PROTECTION OF GENETIC RESOURCES AND
PROMOTION OF SUSTAINABLE USE**
- 3/ INTEGRATED SECTORAL, SCIENTIFIC AND
EDUCATIONAL DEVELOPMENT PROMOTION**
- 4/ PROMOTION OF AWARENESS OF
THE INSTITUTE AND THE SECTOR**



**DIRECTIONS OF THE INSTITUTE
OF HORTICULTURE'S ACTIVITIES / 1**

**1/ SCIENTIFIC ACTIVITY IN THE SECTORS OF
HORTICULTURE AND HEALTHY FOOD RESEARCH**

- **Diversification and breeding of horticultural
crop cultivars suitable for the Baltic Sea
Region**

Research aim – to develop and select cultivars that are adapted to the Baltic Sea region and that have adequate levels of ecological plasticity, productivity, product quality, and resistance to disease and pests.

- **Environmentally friendly horticultural
production systems**

Research aim – development or adaptation of environmentally friendly horticultural production systems suitable for Latvian agro-climatic conditions and cultivar biological characteristics.

- **Storage and processing technologies**

Research aim – to develop horticultural crop processing technologies and products suitable for commercial companies by assessing biochemical composition, and to test various storage technologies for extending fruit and vegetable shelf life.

- **Basic biological research for horticultural
science**

Research aim – to acquire new knowledge through scientific methods, thus facilitating the sustainable development of the scientific discipline of horticulture, and of sectors related to it such as biology, chemistry, food science, thus creating an informative base for applied research.





DIRECTIONS OF THE INSTITUTE OF HORTICULTURE'S ACTIVITIES / 2

2/ PROTECTION OF GENETIC RESOURCES AND PROMOTION OF SUSTAINABLE USE

Goal – contribute to sustainable conservation and utilisation of Latvian agricultural and food plants' (including fruit crops, vegetables, and lilacs) genetic resources (GR) for future generations in accordance with Latvia's international commitments and the expertise of the institute.

Objectives:

- To maintain and regularly update collections of genetic resources from horticultural crops
- To study, assess and characterise, including by using methods from molecular biology, the ex situ collection from fruit trees, berries, vegetables, and lilacs in Latvia, as well as wild genetic resources; to participate in in situ conservation activities
- To maintain the GR data bank of Latvia's fruit crops according to the data exchange requirements for inclusion in the GR information systems nationally and internationally

- To promote the utilisation of Latvian horticultural crops' GR in breeding, the production of traditional food products, development of new uses, etc.

- To promote the utilisation of Latvian horticultural crops' GR in breeding, the production of traditional food products, development of new uses, Institute of Horticulture currently holds more than 6000 accessions of different horticultural crop species, of which 1290 accessions are included in the national genetic resource collection. The institute holds the most extensive genetic resource collection of lilacs in the Baltics, in which are included almost all cultivars bred in Latvia. The institute takes part in ECPGR Malus/Pyrus, Prunus, Allium and Cucurbitaceae working groups; all data on national genetic resources is included in SESTO (NordGen) and EURISCO, as well as in specific databases for cultivated crops. The institute also takes part, as an associated partner, in the AEGIS initiative: the creation of a European genetic resource collection.



DIRECTIONS OF THE INSTITUTE
OF HORTICULTURE’S ACTIVITIES / 3

3/ INTEGRATED SECTORAL, SCIENTIFIC AND
EDUCATIONAL DEVELOPMENT PROMOTION

• **Sectoral collaboration**

Goal: to increase horticulture-sector-related innovation and the competitiveness of SMEs by introducing developed technologies to the institute and by expanding the spectrum and the amount of research.

We collaborate with sectoral associations in Latvia, organising hands-on events and demonstrations, as well as providing consultation.

Participation in the development of documents, laws and regulations for the horticulture and food sectors.

Collaboration with processing companies in improving technology and developing new products.

In 2010, a **technology transfer centre** was established (<http://fruittechcentre.eu>), promoting collaboration with other countries in the Baltic Sea region.

The centre serves as a base that provides different informative and educational materials for entrepreneurs.

• **Collaboration with scientific institutions, universities and educational institutions**

Goal: to promote national and international collaboration in advancing the development of interdisciplinary and internationally competitive research, coordination of research activities, useful utilisation of scientific potential and infrastructure, and strengthening of international awareness.



DIRECTIONS OF THE INSTITUTE
OF HORTICULTURE’S ACTIVITIES / 3

- **International collaboration**
The Institute of Horticulture actively collaborates (at different levels) with more than 40 foreign scientific institutions in 23 different countries, of which 6 institutions – in Lithuania, Poland, Finland and Switzerland – are strategically important partners.
- Collaboration activities: joint research projects, publications, scientist exchange programs, exchange of breeding material and research information.
- Collaboration results: participation in FP7/Horizon2020, EUROSTAR, EUREKA, INTERREG projects, as well as participation in COST Action activities; exchange of breeding material with 35 other institutions is carried out on a regular basis; the institute's scientists represent Latvia in several sectoral organisations – EUFRIN, EUVRIN, ECPGR, ISHS, EUCARPIA.



- **Collaboration with scientific institutions in Latvia**
Goal: to introduce and expand interdisciplinary research that will contribute to sustainable agriculture.
The Institute of Horticulture collaborates with 13 scientific institutions and university departments in Latvia. Close collaboration has been developed with the Latvian Plant Protection Research Centre; the Latvia University of Life Sciences and Technologies (Faculty of Agriculture, Faculty of Food Technology); the Latvian State Forest Research Institute, Silava; and the Latvian Biomedical Research and Study Centre.
- **Integrated development of science and education**
The Institute of Horticulture has developed collaboration with educational institutions that prepare experts in horticulture and food sectors. We facilitate bachelor's, master's and doctor's thesis drafting for students of the Latvia University of Life Sciences and Technologies, University of Latvia, and Riga Stradins University.
LatHort scientists are members of the LUoLSaT doctorate council and the master's examination

committee, as well as the state examination committee at LUoLSaT and Bulduri Secondary School of Gardening. The staff of the institute participates in the development of professional standards and in educational, study and internship programmes. Dobele and Pūre have internship programmes for students from LUoLSaT and the Bulduri Secondary School of Gardening. The institute works with high-school students, leading their research work development.





DIRECTIONS OF THE INSTITUTE OF HORTICULTURE'S ACTIVITIES / 4

4/ PROMOTION OF AWARENESS OF THE INSTITUTE AND THE SECTOR

The institute has **registered 18 patents in Latvia**, including 6 developed in cooperation with other institutions.

In total 55 fruit and lilac cultivars have been registered in Latvia, including 8 that have also been registered in Sweden and Belgium.

In recent years, the Latvian Academy of Sciences has included the results of four of the institute's research projects in lists of the ten best inventions of the year. The institute has received the most prestigious national award: a certificate of gratitude from the Cabinet of Ministers.



CONTACTS
DISLOCATION

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