



LITHUANIAN RESEARCH CENTRE FOR AGRICULTURE AND FORESTRY

Lietuvos agrarinių ir miškų mokslų centras



Breeding of Horticultural Plants in Lithuania



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Plan of presentation

- Lithuania in Facts
- LRCAF
- Research Topics
- Breeding on Small Fruits: Blackcurrant, Strawberry
- Breeding on Top Fruits: Apple, Pear
- Breeding on Stone Fruits: Plum, Sour and Sweet Cherry
- Breeding on Vegetables: Radish, Carrot, Red Beet, Onion, Chive, Garlic, Cucumber, Tomato
- National Cooperation
- International Cooperation



INTERNATIONAL CONFERENCE “THE MOST IMPORTANT RESERVES OF IMPLEMENTING THE FOOD PROGRAM IN UZBEKISTAN”, 5-6 JUNE, 2014



Lithuania in facts



Lithuania is the largest and most southerly of the three Baltic States.

Population: 2.979.000

Capital: Vilnius

Area: 65,300 sq km

Ethnic composition (%): Lithuanians 84.2, Poles 6.6., Russians 5.8, Belarusians 1.2 and other 2.2.

Climate: Ranges between maritime and continental. The average temperatures are +19°C in July and -3°C in January.

Orchards commercial area:

- Apple (3000 ha), blackcurrant (3100 ha), strawberry (350 ha), raspberry (230 ha), sea buckthorn (1000 ha), cabbage (1000 ha), carrot (850 ha) et al.

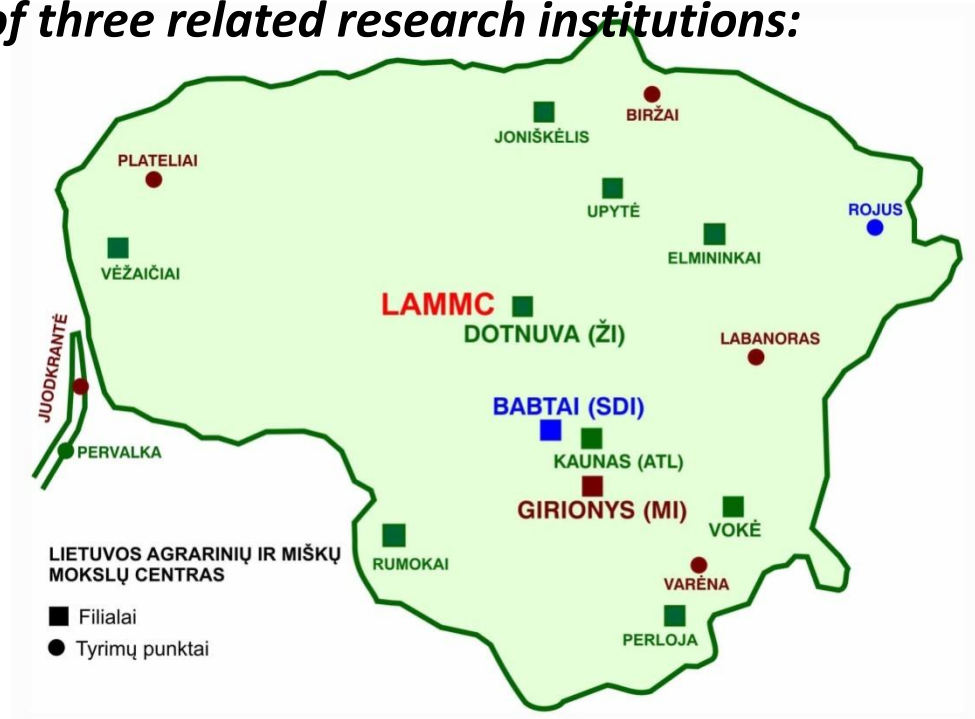




LRCAF

Lithuanian Research Centre for Agriculture and Forestry (LRCAF) was established in 2010 as a merger of three related research institutions:

- Lithuanian Institute of Agriculture,*
- Lithuanian Institute of Horticulture,*
- Lithuanian Institute of Forestry*





Research topics

- Scientists have focused on improving **cold hardiness, resistance to diseases and insects**, and **yield** as well as shipping and **shelf life** qualities.
- Research concentrated on **fruit quality, plant development** and **biotechnology** applications.
- The preservation of **genetic resources** is also a primary goal.
- Inheritance and genetic control of orchard plant traits and **creation of new breeding methods**;
- Modification of **plant genetic structure** using biotechnological methods;
- Study and preservation of gene pool of vegetative propagated plants ***in vitro, in situ* and *ex situ***, plant cryobiology;
- Investigation of **plant biodiversity** and **identification of molecular markers**;
- Study of orchard plant **resistance to abiotic and biotic factors** mechanisms;
- Breeding of **pome fruits, stone fruits** and **berries**.
- IH-LRCAF has developed over **90 new improved cultivars**.



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Breeding on small fruits

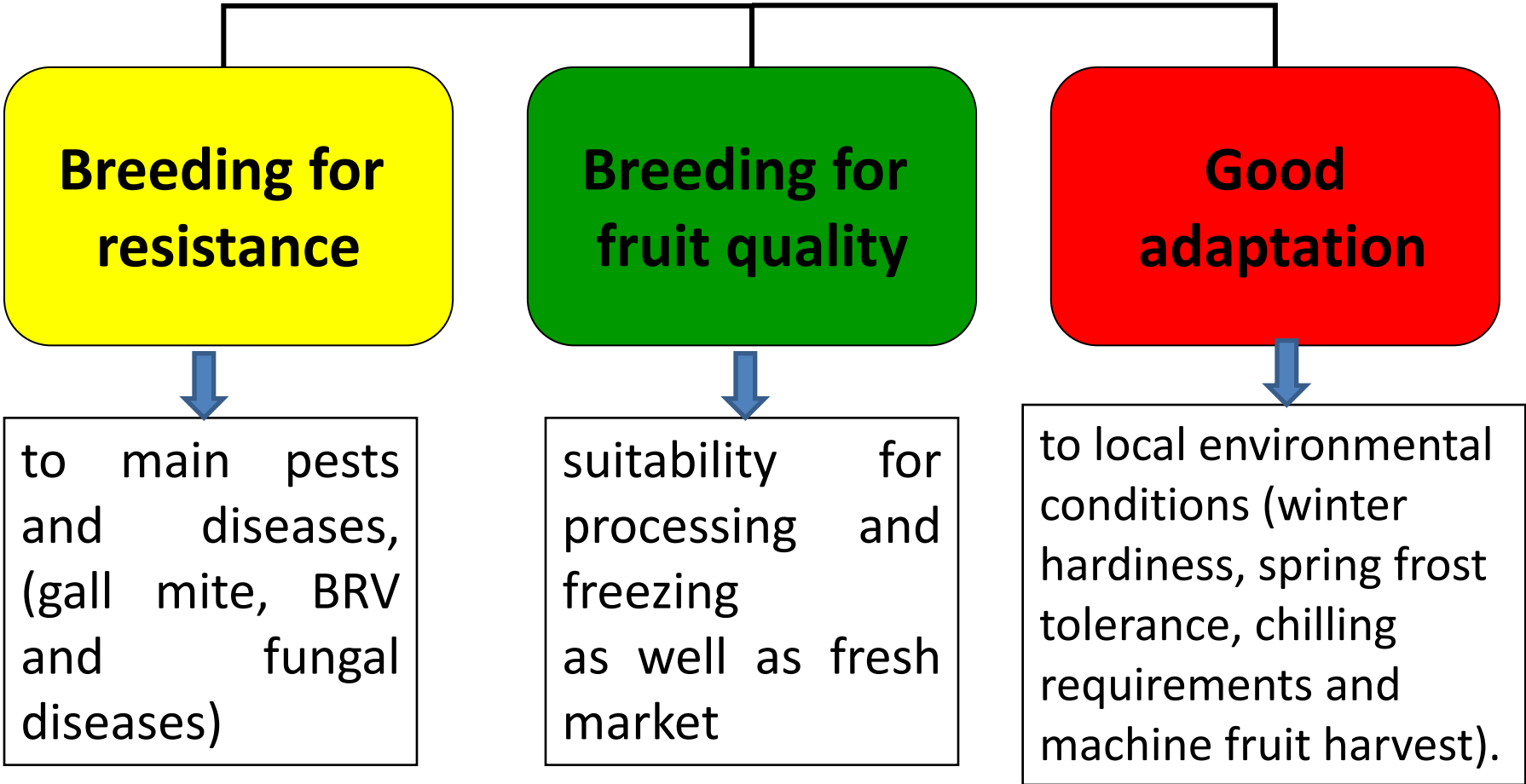
Mainly on small fruits:

- blackcurrant (*Ribes nigrum*),
- strawberry (*Fragaria annanassa*; *Fragaria vesca*),
- raspberry (*Rubus idaeus*),
- and japanese quince (*Chaenomeles japonica*).





Aims and breeding efforts





Lithuania
 Latvia
 Estonia
 Norway
 Denmark
 Hungary
 Romania



Sasnauskas, A., Rugienius, R., Bobinas, C., Strautina, S., Kaldmäe, H., Nes, A., Pedersen, H.L., Mladin, P. and Coman, M. 2012. EUROPEAN NETWORK FOR BLACKCURRANT (*RIBES NIGRUM* L.) CULTIVAR EVALUATION. Acta Horticulturae (ISHS) 926:125-131



New cultivars from Lithuania

Resistant to powdery mildew, gall mite, high productivity and cold hardiness blackcurrant cultivars



'Gojai'



'Svajai'



'Dailiai'



'Senjorai'



'Salviai'



'Karina'



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Strawberry cultivars

Two strawberry cultivars were developed at the Institute of Horticulture, Lithuanian Research Centre for Agriculture and Forestry by varietal hybridization:

‘Saulene’ (‘Shuksan’ x ‘Senga Sengana’)

Harvesting of the early cultivar ‘Saulene’ starts 5-6 days prior to standard ‘Venta’. Concentrated and high yield with excellent tasting fruits are characteristic of ‘Saulene’. High quality fruits of this cultivar are suitable for fresh use.

‘Dange’ (‘Venta’ x ‘Redgauntlet’).

Middle late cultivar ‘Dange’ distinguishes itself by good size, attractiveness of fruits and stable, high yield every year.

Rugienius, R., Sasnauskas, A. and Shikshnianas, T. 2004.
'SAULENE' AND 'DANGE' - TWO RECENT LITHUANIAN
STRAWBERRY CULTIVARS. Acta Hort. (ISHS) 649:73-76



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Breeding on top fruits



'ALDAS'



'RUDENIS'



'SKAISTIS'

Scab resistant apple cultivars

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Breeding on top fruits



'ALKA'
summer cv.



'ALNA'
autumn cv.

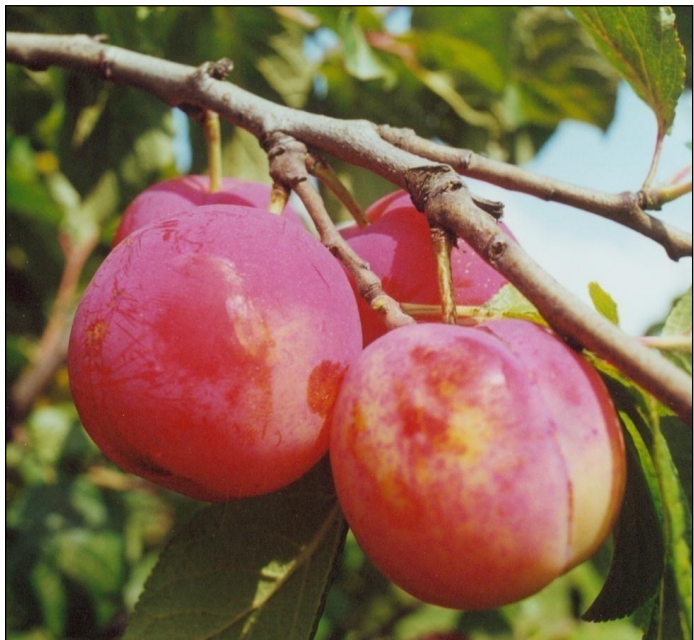
Scab resistant, winterhardy pear cultivars

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Breeding on stone fruits



'RAUSVÉ'



'ALEKSONA'

Large, sweet, winterhardy plum cultivars

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Breeding on stone fruits



‘VYTĒNŪ ŽVAIGŽDĒ’



‘NOTĒ’



‘JURGITA’

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Breeding on vegetables

Breeding is aimed at creating competitive vegetable varieties and hybrids by utilizing local genetic resources. Breeding is carried out in tomatoes, cucumbers, sweet peppers, carrots, red beets, white cabbages, radish, garlic and onions.



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Breeding on vegetables

In National plant cultivar list and EU vegetable species general catalogue are:

Radish (*Raphanus sativus*)

‘Babtu žara’



‘Liliai’



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Breeding on vegetables

Carrot (*Daucus sativus*)

‘Garduolès’, ‘Šatrija’, ‘Svalia’, ‘Skalsa’, ‘Gona’, ‘Ieva’



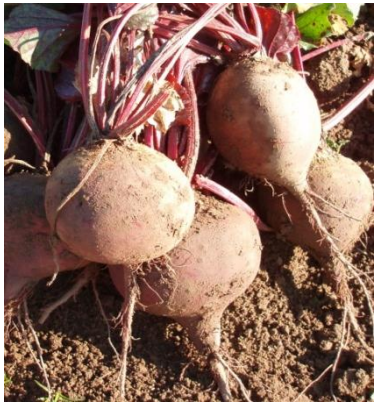
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Breeding on vegetables

Red beet (*Beta vulgaris*)

‘Joniai’, ‘Ilgiai’, ‘Kamuoliai’, ‘Rikiai’



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Breeding on vegetables

Onion (*Allium cepa*) ‘Babtu didieji’



Chive (*Allium schoenoprasum*) ‘Aliai’



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Breeding on vegetables

Garlic (*Allium sativum*)

‘Vasariai’,



‘Žiemiai’





Breeding on vegetables

Cucumber (*Cucumis sativus*)

‘Artai’, ‘Gintai’, ‘Krukiai BS’, ‘Daugiai’, ‘Troliai’



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Breeding on vegetables

Tomato (*Solanum lycopersicum*)- (for the greenhouse)

‘Arvaisa’, ‘Skariai’, ‘Rutuliai’, ‘Aušriai BS’, ‘Sveikutis BS’



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Breeding on vegetables

Tomato (*Solanum lycopersicum*) - (for the open field)

‘Laukiai’, ‘Slapukai BS’, ‘Jurgiai’, ‘Svara’, ‘Viltis’, ‘Balčiai’



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National Cooperation



VAISIAI IR
JOGOS LIETUVOS
VERSLINIŲ SODŲ
SOCIACJA

Agrarinių ir Miškų Mokslų Institutų Asociacija The Association of Agricultural and Forestry Research Institutes



Kaunas University of
Technology



Lithuanian University
of Health Science



Aleksandras
Stulginskis
University



Vytautas Magnus
University



Vilnius University



Kauno Grūdai



Lietuvos
mokslo
taryba



International Cooperation



ISHS (International Society of Horticulture Science)

EURAGRI



The European Agricultural Research Initiative (EURAGRI)



INTERNATIONAL UNION of FOOD SCIENCE AND TECHNOLOGY



International Union of Forest Research Organizations



European Society for Agronomy

Eufirin European Fruit Research Institutes Network





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Thank you for you attention!