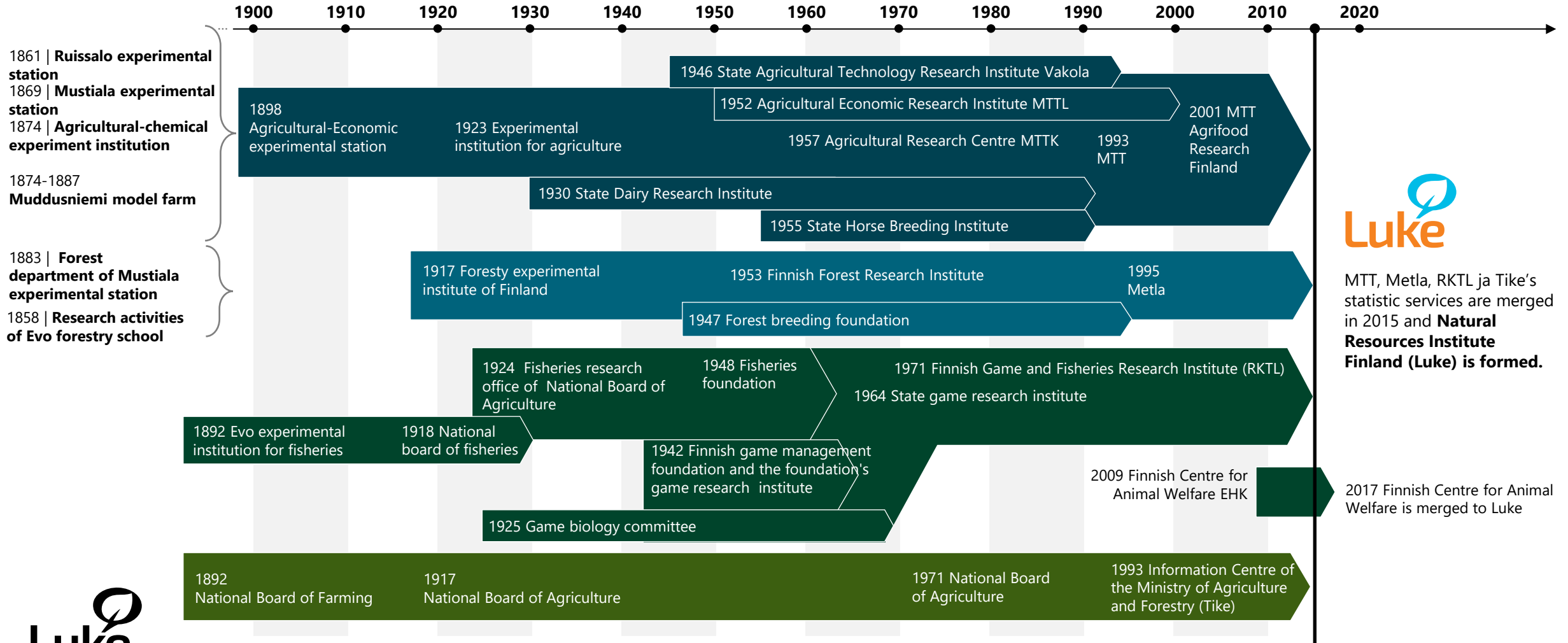


Sustainable future and well-being from renewable natural resources

Natural Resources Institute Finland
2025



We have a long history



Luke in brief

85
M€
State budget
funding



66
M€
External funding

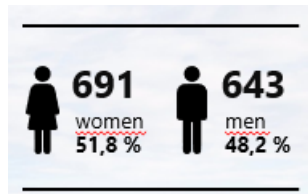
22
Locations
head office in
Helsinki, Viikki

1334
employees

648 Scientists

639 Experts*

47 Research professors



*Employees in service groups and research infrastructure services as well as directors



Figures updated: 31 December 2023

22 locations

Our head office is located in Helsinki, Viikki. We have operations in 12 campuses with universities, research institutes and polytechnics



Locations

Helsinki
Jokioinen
Joensuu
Oulu
Jyväskylä
Kokkola
Kuopio (Maaninka)
Paltamo
Rovaniemi
Savonlinna
Seinäjoki
Turku



Experimental stations

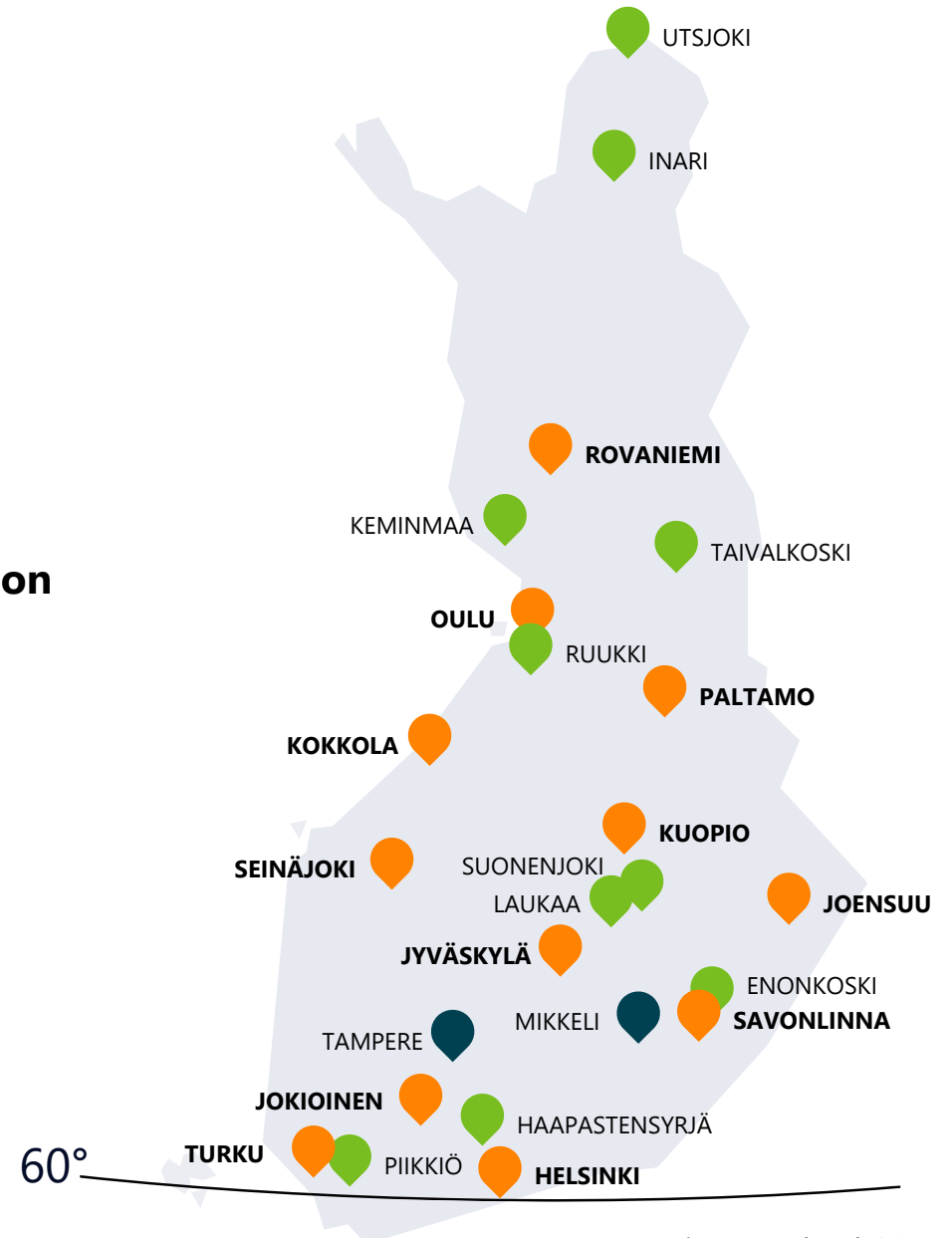
Enonkoski
Haapastensyrjä (Loppi)
Inari
Keminmaa
Laukaa
Piikkiö (Kaarina)
Ruukki (Siikajoki)
Suonenjoki
Taivalkoski
Utsjoki



Research cooperation sites

Mikkeli
Tampere

Jokioinen is located 120 km from Helsinki, 90 km from Turku and 10 km from Forssa.



Figures updated: 31 December 2023

The collaboration networks we coordinate

AgriHubi



Farmer's competence network gathering Finnish agriculture and horticulture operators such as farmers, advisors, educators and researchers to collaborate in order to support the management of farm businesses.

Tulanet



A cooperation forum of eleven governmental research organizations* to promote the development of research policy and the research system

- * 1. Geological Survey of Finland (GTK)
- 2. Finnish Meteorological Institute (FMI)
- 3. Natural Resources Institute Finland (Luke)
- 4. National Land Survey of Finland (NLS)
- 5. Finnish Food Authority
- 6. Finnish Environment Institute (Syke)
- 7. Technical Research Centre of Finland VTT Oy
- 8. Finnish Institute for Health and Welfare (THL)
- 9. Finnish Institute of Occupational Health (FIOH)
- 10. Finnish Institute of International Affairs (FIIA)
- 11. Institute for Economic Research (VATT)

Finnish Organic Research Institute



An expert network of the University of Helsinki and Luke which supports the strengthening role of organic production

Finnish Centre for Animal Welfare



National network of specialists to improve and safeguard the animal welfare

AnaEE Finland



Brings together 11 ecosystem research platforms in Finland. Luke coordinates a network of five partners**

- ** 1. University of Helsinki
- 2. University of Eastern Finland
- 3. Natural Resources Institute Finland (Luke)
- 4. University of Oulu
- 5. University of Turku

Majority of our work is scientific research

Research

72%

Budget funding 57M€,
External funding 50M€

Statutory and expert services 21%

Budget funding 24 M€,
External funding 9 M€

Customer services 4%

External funding 6M€, Revenue from client-funded activities of statutory and expert services 2M€

Statistical services 3%

Budget funding 4 M€, external funding 1 M€

Scientific activity

We have **650** ongoing research projects, including **80** EU projects. We coordinate **15** of these.



646

Scientific peer-reviewed articles in 2023

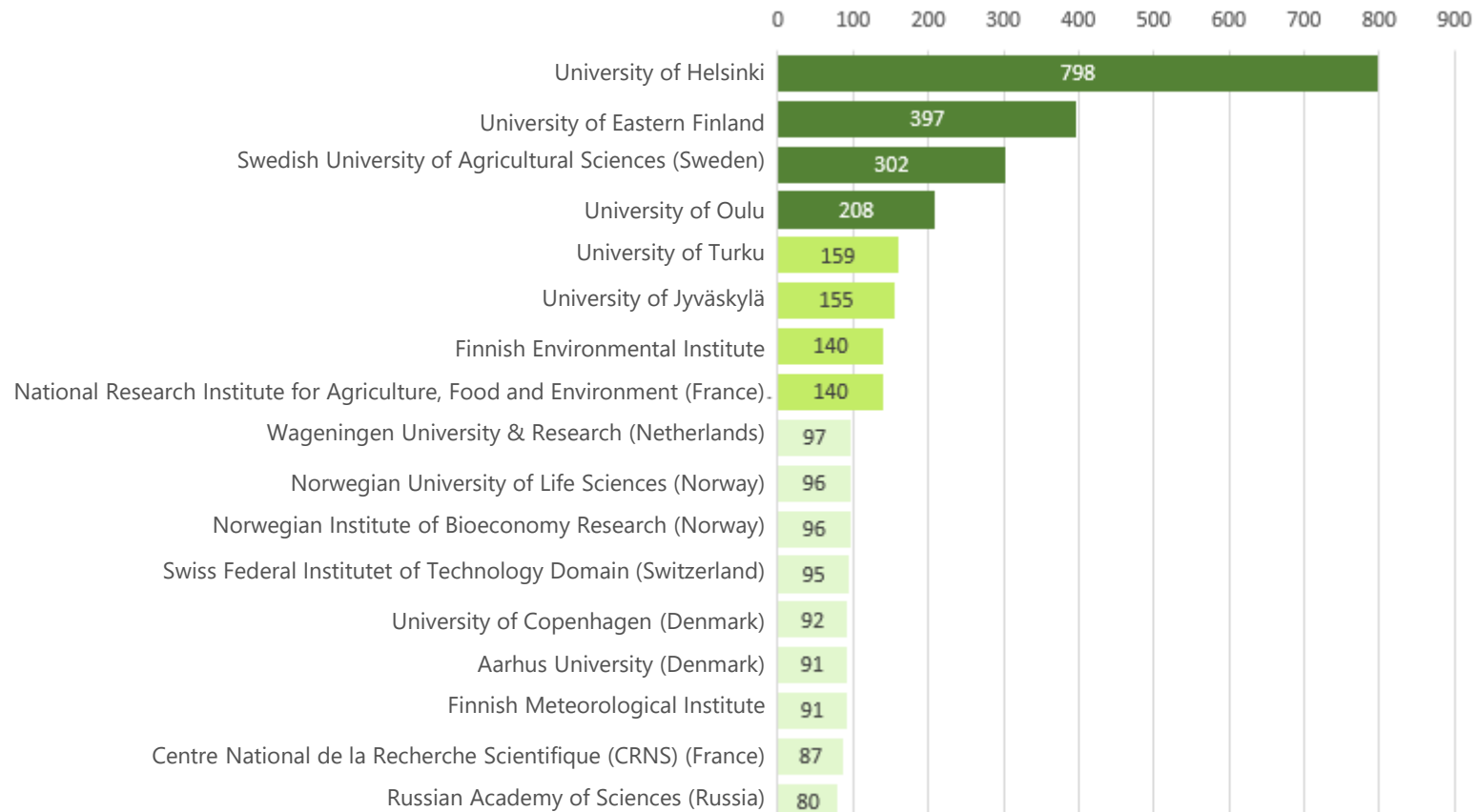
We promote the achievement of the United Nations Sustainable Development Goals with our research



Luke's co-authors and scientific impact

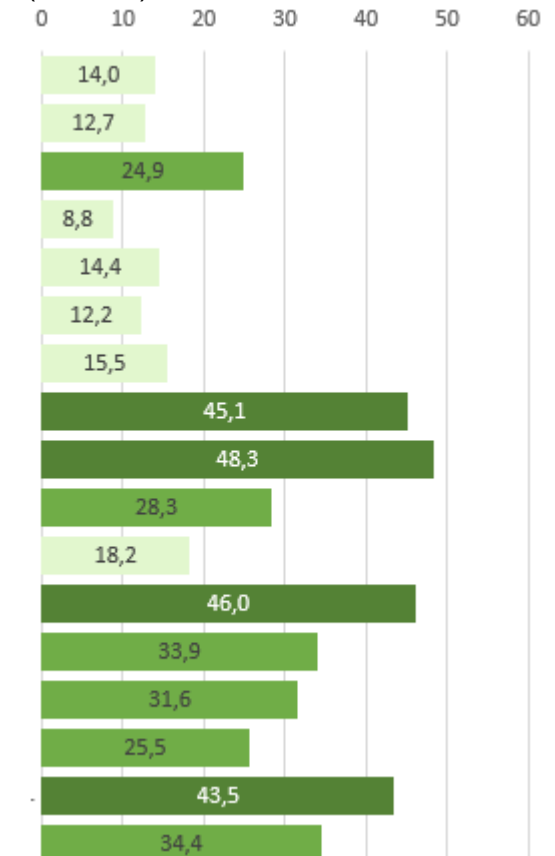
Co-authored articles

2019-2023



Scientific impact

In accordance with the references* received by the articles (TOP10%)."



Research infrastructures



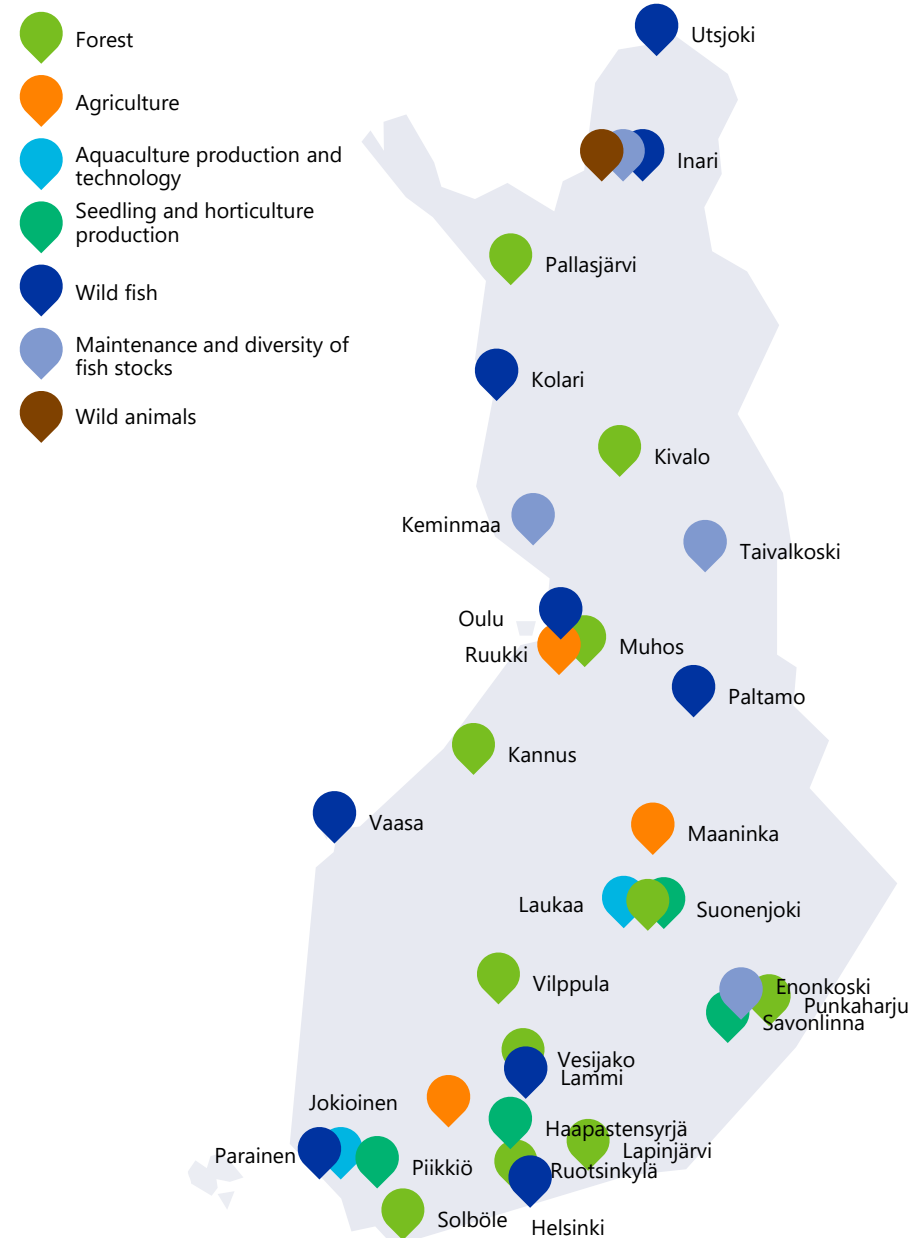
Research infrastructures

Greenhouses, research fields, research barns, aquaculture farms, research forests and various laboratories, as well as a biobank serve various research needs remotely, virtually and on-site.

Luke is involved in both international and national research infrastructure (RI) networks.

Research infrastructures include

- Research facilities and equipment
- Data resources
- E-infrastructures
- Tools and instruments



Our research infrastructures

Agriculture



Research on agricultural production and its environmental impacts, smart agriculture, food systems, growth conditions, bioeconomy, and new energy solutions.

Forests



Approximately 18,000 hectares of research forest for long-term forest research and experimentation, as well as shorter experimental studies.

Crop and horticulture production



Open fields, greenhouses, growth tunnels, as well as various research platforms and equipment for studying berries, fruits, vegetables, trees, and plants used in landscaping.

Fish and aquaculture



Research on aquaculture, selective breeding, wild fish populations, fish welfare, and sustainable fishing practices, as well as conservation of endangered valuable fish stocks.

Wild animals



Studying the behavior, physiology, genetics, reproduction, and diet selection of reindeer in natural pastures or under supplementary feeding.

Laboratories



Versatile research laboratories, specialized laboratories, and support laboratories for research infrastructure cater to the needs of natural resources research.

Pilot platforms



Pilot platforms for circular economy solutions and food and feed research

Data services



High-quality data production and information flows from the sources to the end-users of the data, and the Biobank's valuable and diverse sample collection.

Luke field trials in Jokioinen

Nordic Field Trial Network Conference 2025

Kalle Ohralahti

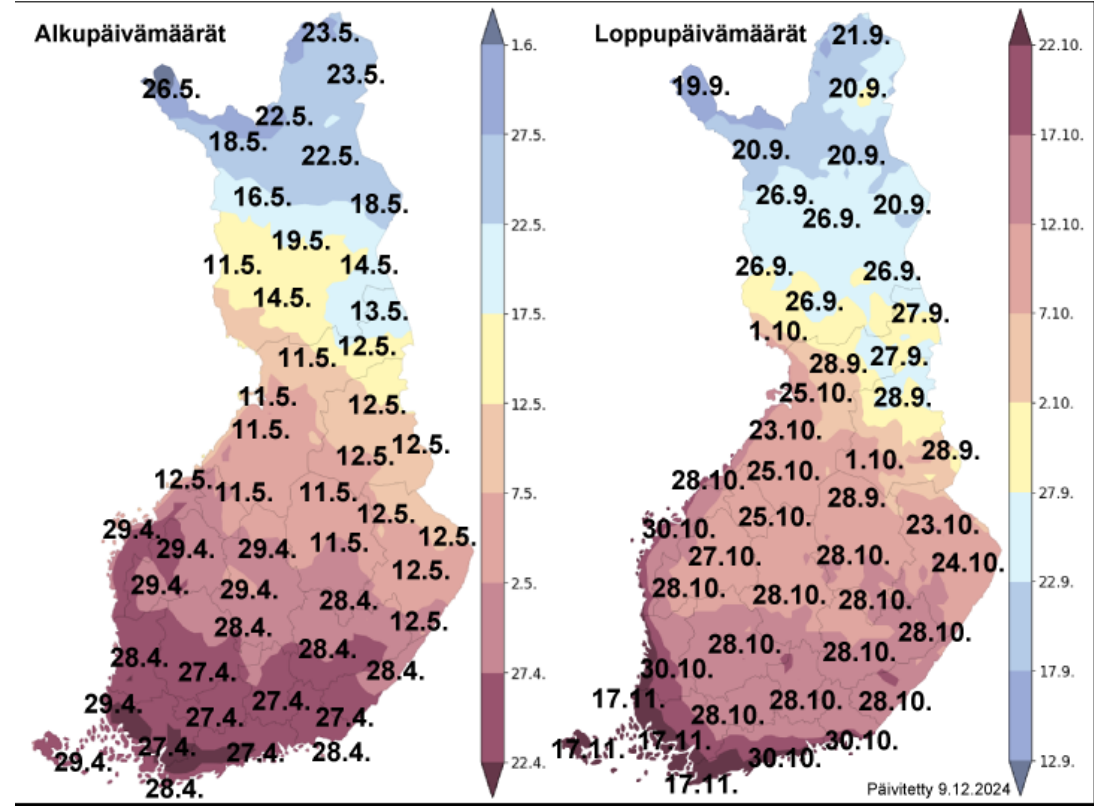


Content

- Luke Jokioinen infrastructure
- GEP plant protection trials
- Official variety trials



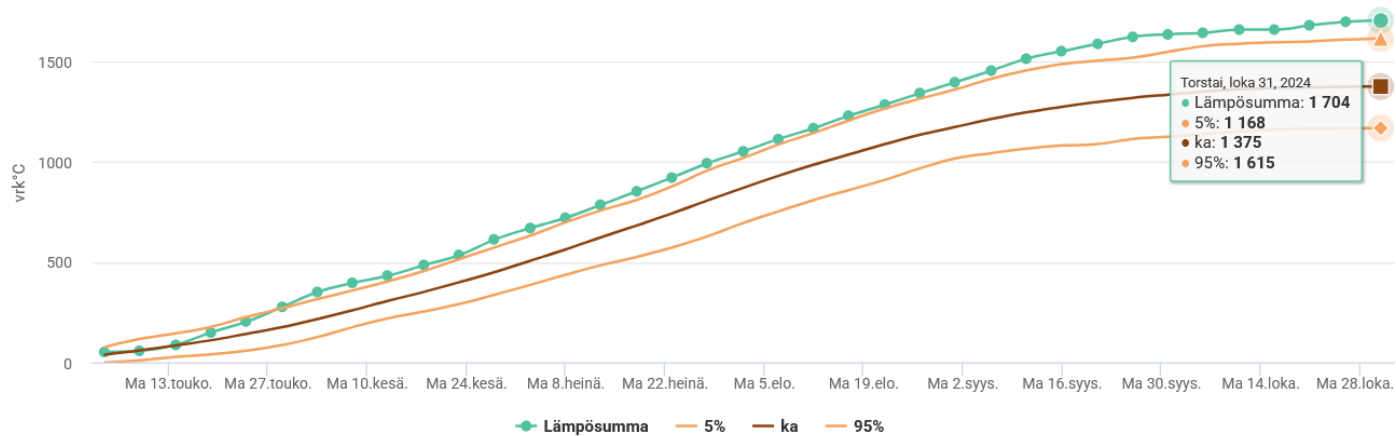
Jokioinen weather



Jokioinen

Tehoisan lämpösunnan kertymä

Jokioinen

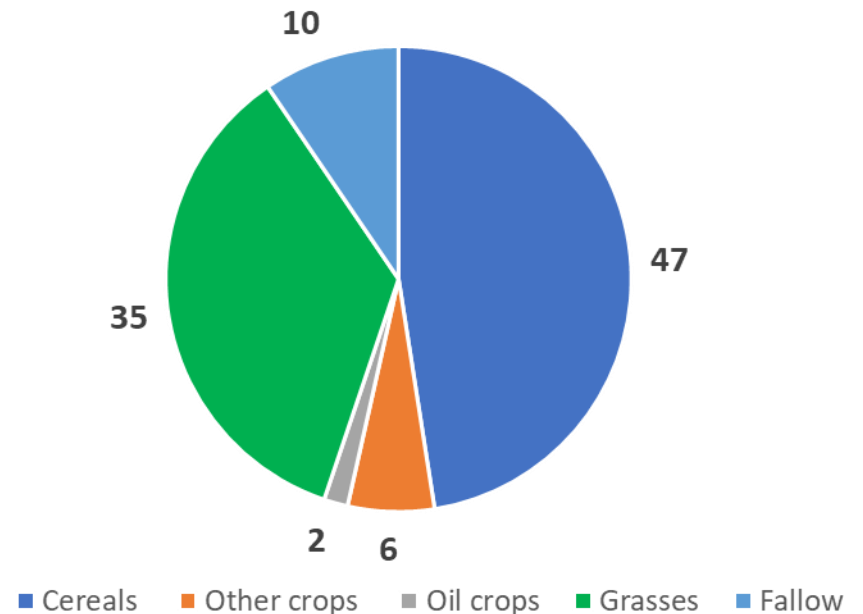


Agriculture in Finland

- 75% of Finland's land area is forest
- 2,2 million ha fields
- The northernmost agricultural country in the world
 - The Gulf Stream
- 1150 km long
 - Growing conditions vary greatly
- Special circumstances
 - Hard winter
 - Short growing period
 - Long days in summer
 - Helsinki (13.5-22.6) 17 hours – 18 hours 50 min
 - Rovaniemi (13.5-22.6) 18 h 23 min – 24 hours

Agriculture production

- In 2023 Finland there were approximately 42 000 farms In Finland
 - In 1995 approximately 120 000 farms
- Average farm size 54 ha field /farm

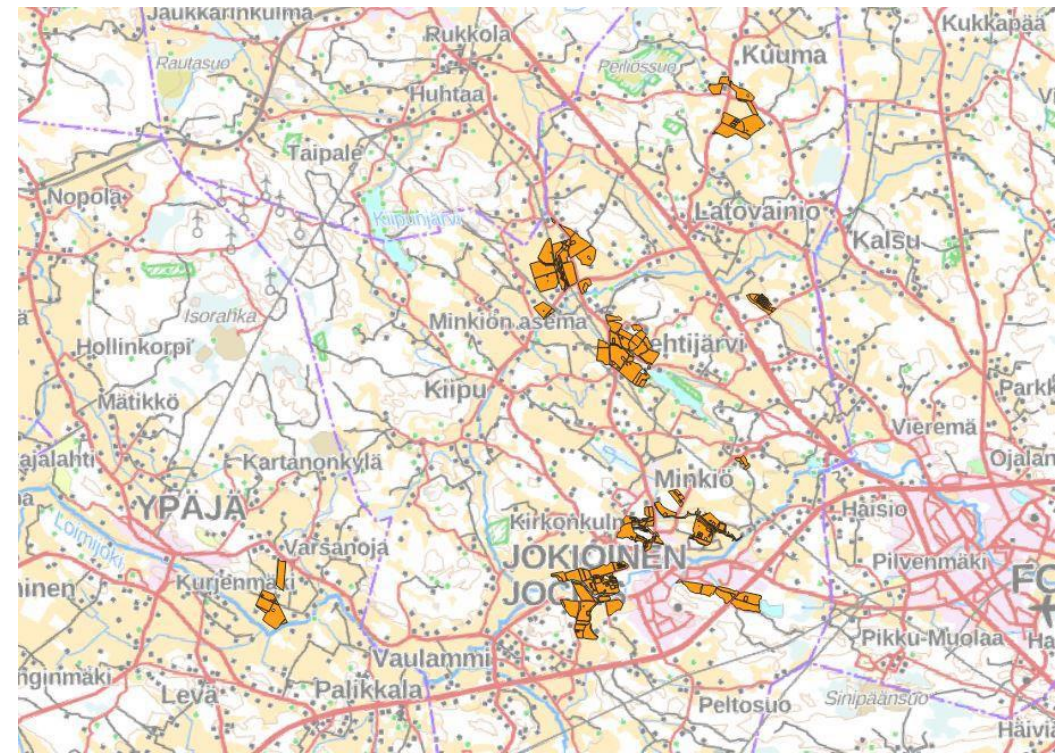
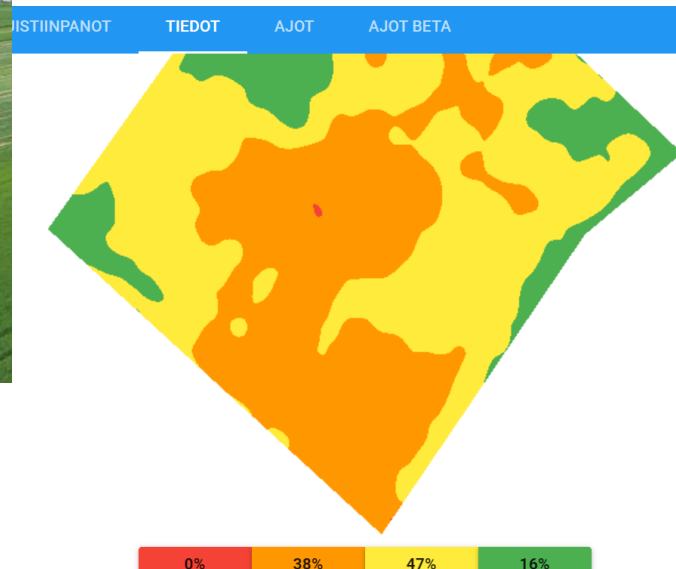


Field infrastructure in Jokioinen

- Around 600 ha of cereal and grassland cultivation
- Documentation of land use since the 1980s
- Mostly clay soils, irrigation possible only on some sites
- The 80 ha Smart Farming research and development platform
 - Field area with smart farming equipment: ISOBUS systems, satellite tracking devices, weather stations, soilscouts, Eddy Covariance measuring



© Luke



Long-term fields

- Five different long-term fields (crop rotation, zero tillage)
- Field for biodiversity research, 20 years fallow
- Four separate leaching fields (1975) and one drainage field



Fig. Jaakko Heikkinen, Luke

Ploughing 2009-
Direct drilling in spring 2008, ploughing in autumn
Fallow, no tillage 2003-2007
Rotary harrowing 2002
Ploughing 1996-2001
Ploughing 1994-1995

Direct drilling 2009-
Direct drilling 2008
Fallow, no tillage 2003-2007
Rotary harrowing 2002
Shallow stubble cultivation 1996-2001
Stubble over winter, harrowing in spring, 1994-1995

Research fields

- Research field trials every year 50-70 ha (of that 600 ha)
- Production techniques, fertilizers, plant protection, soil, crop rotation, grasses, special crops etc.
- Plot size machinery

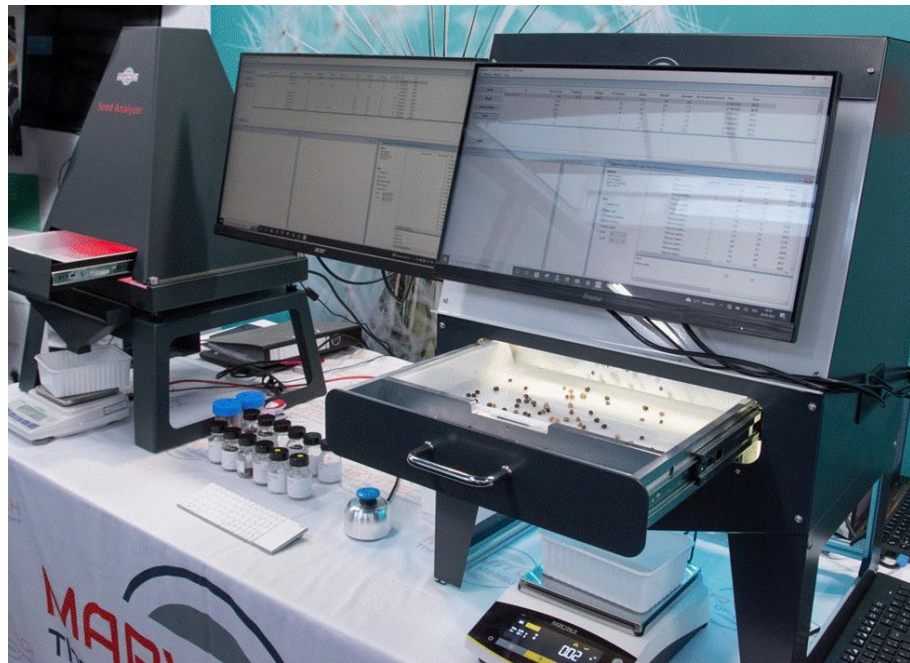


Other research infra

- Plots for organic farming
- Adjustable research platform on the climate and water impact of peat fields
- Greenhouses and growth chambers
- Research platform for carbon flows
- Soil and plant laboratories



Laboratory infra



Infrastructure in Jokioinen

- New research barn for 125 cows in Jokioinen with the newest technology will be ready 2026
- The farm-scale biogas plant was completed in 2023 at the Luke Jokioinen research barn. Plant reactor size: 1100m³.
- Biopaja – solutions for the circular bioeconomy
Testing, developing and adopting recycled fertilisers, renewable energy and other value-added products.

Elonkierto exhibition park

Elonkierto exhibition park illustrates the diversity of the rural environment, tells about climate change and soil health, and highlights the relationship between food production, and human and animal welfare



GEP plant protection trials

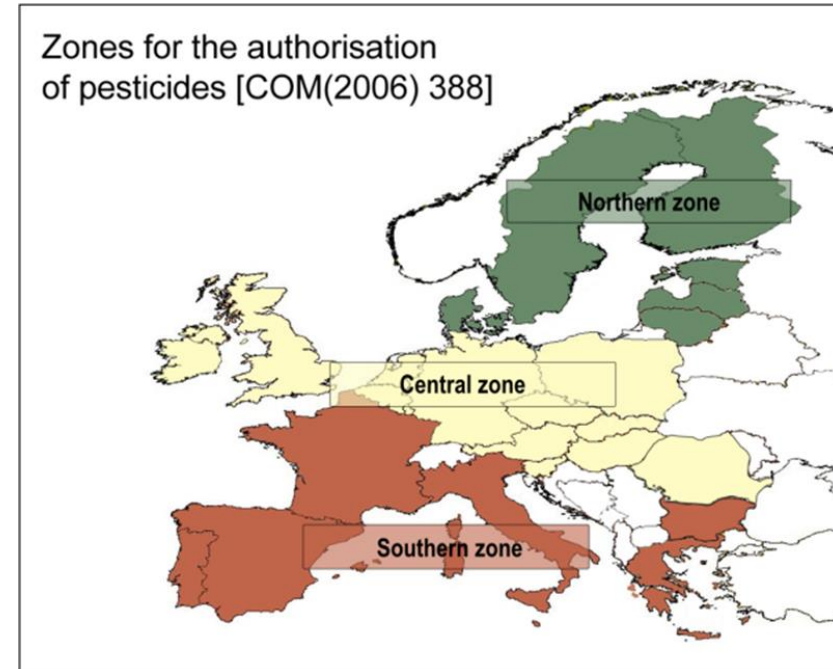
- We have had GEP since 1998
- 15-25 efficacy studies every year (cereals, oilseed crops, potato, carrot, caraway)
- Herbicides, fungicides, insecticides, biostimulants, biologicals
- 6 researchers, 10 field technicians
- Planning and implementation of field, greenhouse and laboratory tests



Luke GEP –trial locations



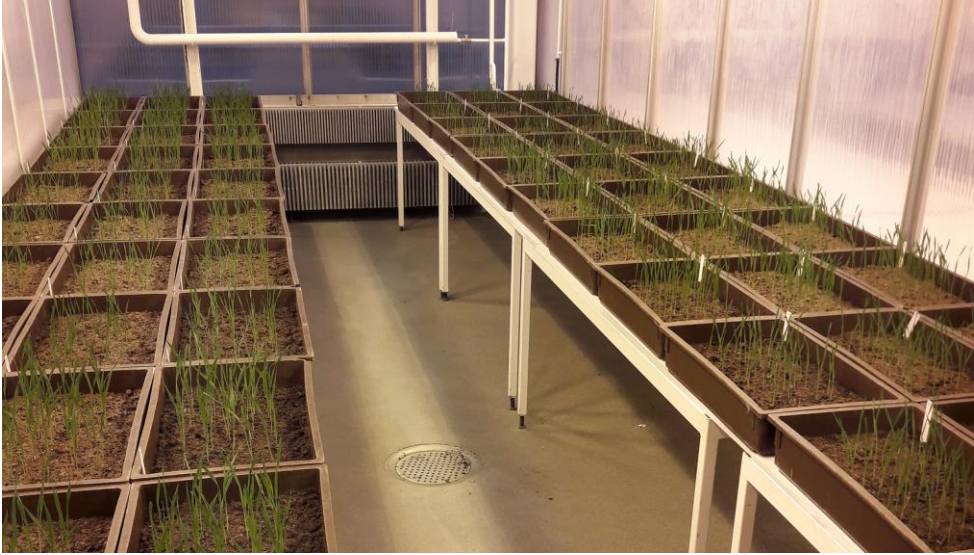
24 Pentti Ruuttunen



Our spraying equipment

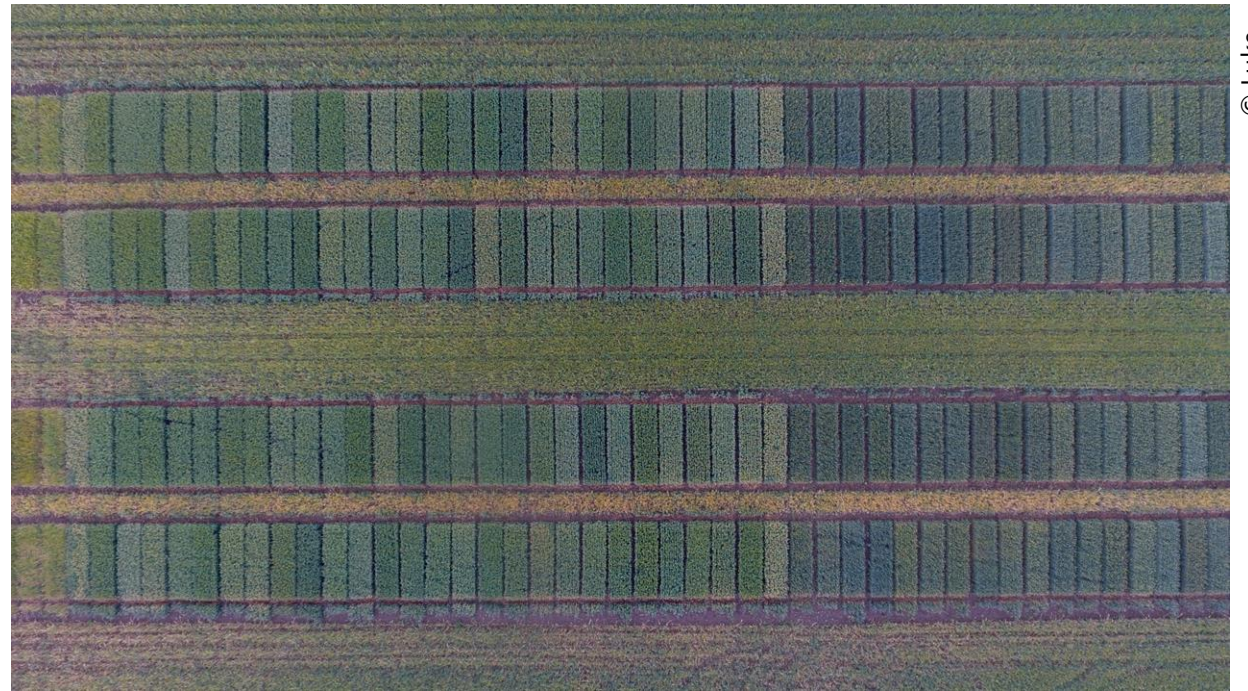


Field trials and greenhous trials

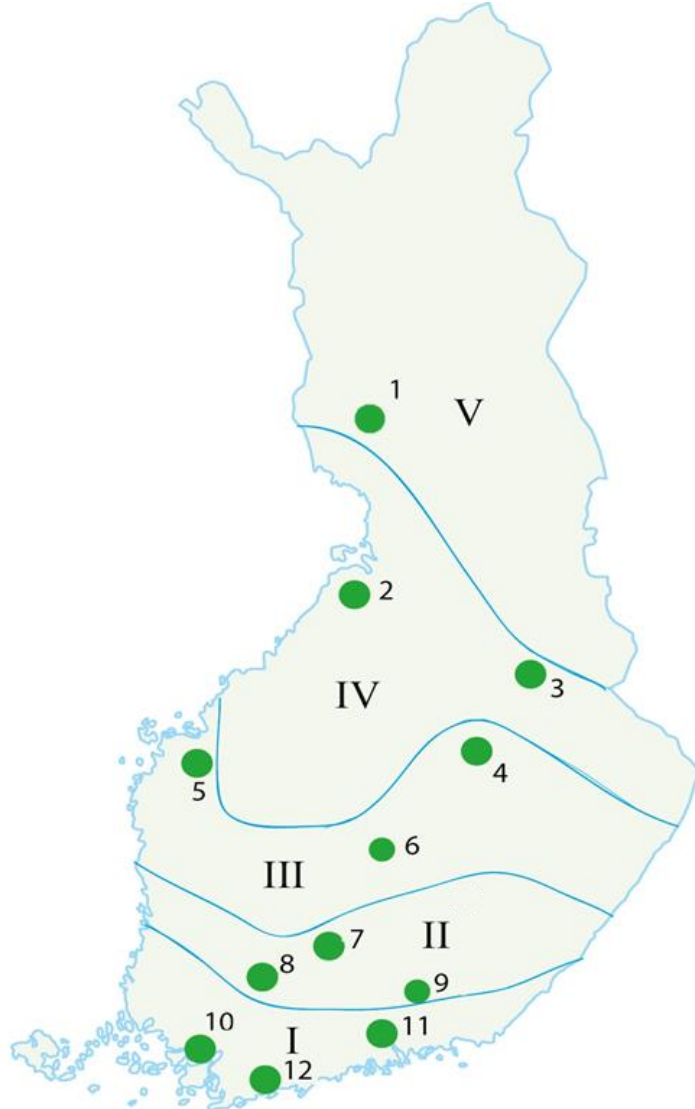


Official variety trials

- Luke organizes the trials
- 5 researchers, 2 biometricians
- Luke does trials in 3 locations (7 researchers/technicians)
- Boreal plant breeding 6 trial sites, Lantmännen 1, NSL 2
- Each crop 5-10 trials around Finland (3-4 zones)
- Cereals 2 years in trials, grasses 3
- Ruokavirasto (Finnish food authority) does authenticity inspections for new varieties
- Treated seed in the trials, no disease control (only herbicide and insecticides if needed)
- Luke gives statement to accept/deny new variety (Plant variety board)
- New crops or organic variety trials in the future
- Data published: <https://px.luke.fi/PxWeb/pxweb/en/maatalous/> www.luke.fi/lajikevalinta



Units of Natural Resources Institute Finland (Luke) and the other trial sites



1. LOUE, TERVOLA, Ammattiopisto Lappia
2. RUUKKI, SIIKAJOKI (Luke)
3. SOTKAMO, Boreal Plant Breeding Ltd.
4. MAANINKA (Luke)
5. ISOKYRÖ (Bor)
6. LAUKAA, Jyväskylän seutu (Bor)
7. HAUHO, Hämeenlinna, Experimental farm of K Group
8. JOKIOINEN (Luke)
8. JOKIOINEN (Bor)
9. IITTI (NSL)
10. LIETO, Turun seutu (Bor)
11. PERNAJA, ProAgria Nylands Svenska Lantbrukssällskap (NSL), Storsarvlax Farm
12. INKOO, ProAgria Nylands Svenska Lantbrukssällskap, Västankvarn School Farm

Official variety trials

Field crops

- Winter rye (10 varieties)
- Winter wheat (15)
- Winter triticale (5)
- Winter barley (8) (new crop 2022)
- Winter turnip rape, rape (2+2)
- Spring barley (29 varieties)
- Spring wheat (23)
- Spring oat (15)
- Pea (8)
- Faba bean
- Spring turnip rape and rape (3)
- Oil seed hemp (4) (new crop 2021)

Feed grasses

- Timothy
- Meadow fescue
- Tall fescue
- Festulolium
- Cocksfoot grass
- Annual ryegrass
- Perennial ryegrass
- Red clover
- Alsike clover
- White clover



Thank you!

<https://www.luke.fi/en/luonnonvaratieto/science-and-information>



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