



FACULTY OF AGRICULTURAL SCIENCES

AARHUS UNIVERSITY



Welcome
to the Department
of Horticulture



What is Aarhus University?

A nationwide university with 21 locations in Denmark

In 2008, featured in top 100 universities in the world

In 2008, ~10,000 staff and ~35,000 students

University is organised into:

**6 Faculties = Health Sciences, Humanities, Social Sciences,
Theology, Science, Agricultural Sciences**

2 University Schools = Business, Education

NERI = National Environmental Research Institute







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**The Faculty of Agricultural Sciences
has approx. 900 employees**

Including approx. 375 scientists

**Staff are located at 10 research
stations and centers**

**With an annual turnover of ca. 100 M
Euro p.a.**

7 Departments





Future challenges

- Increase awareness of the environment
- Increased pressure around use of pesticides
- Increased cost linked to water & nutrients
- Increase quality to meet consumer expectations and to remain competitive
- Increased need for healthy food options
- Increasing need to use new technologies

Underpinning and applied research

- Important to develop projects aligned to industry needs
- Important to take a team approach to ensure outcomes are implemented
- Important for us to bring together experts from a range of areas to ensure we have the best project team
- Important to ensure we are doing research that will secure the industries into the future



UNIVERSITY OF AARHUS

Faculty of Agricultural Sciences





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What do we work on?





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Not these!





**Medicinal
plants**

**Ornamental
plants**

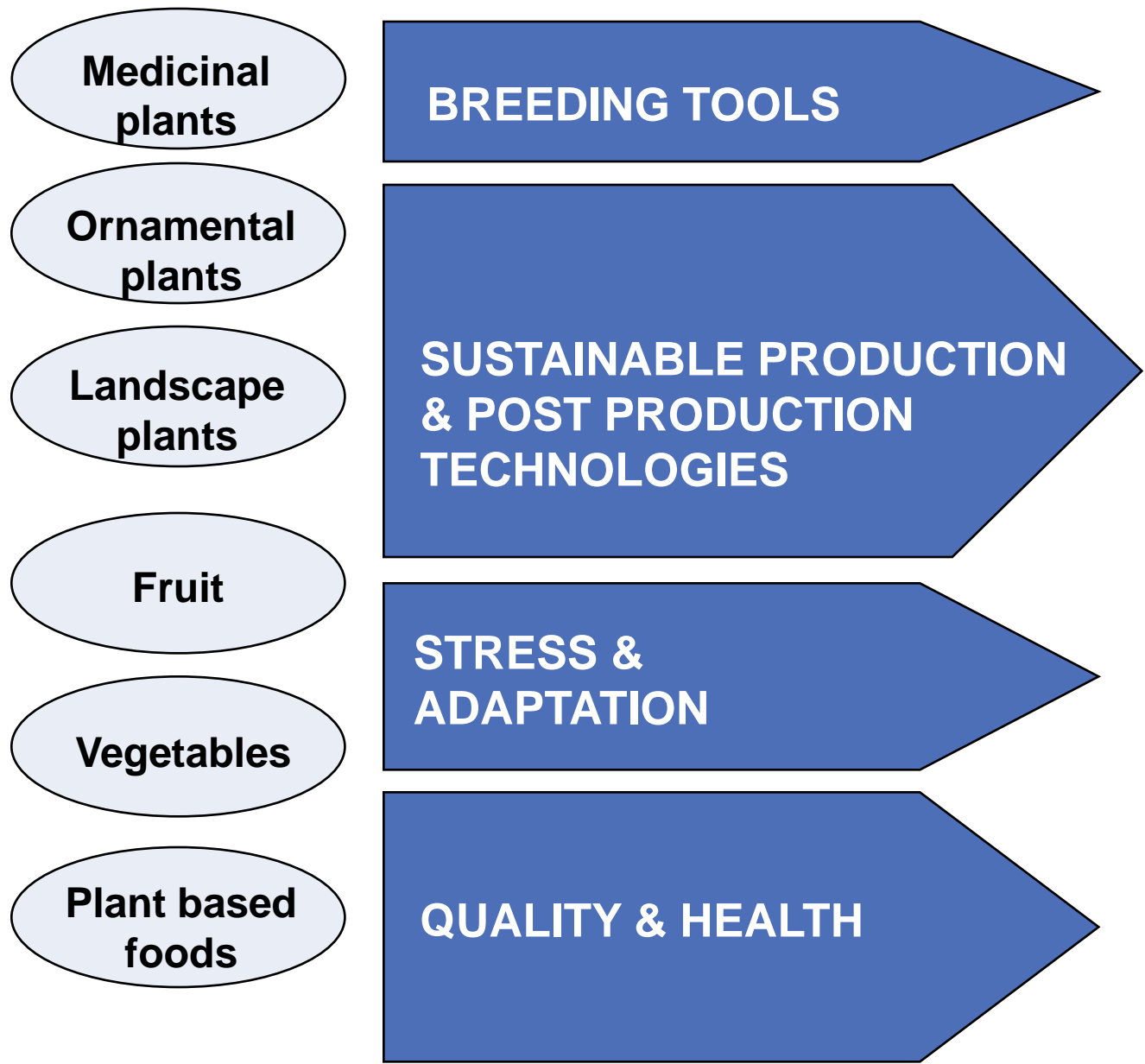
**Landscape
plants**

Fruit

Vegetables

**Plant based
foods**

Areas of expertise



Medicinal plants

BREEDING TOOLS

Ornamental plants

SUSTAINABLE PRODUCTION & POST PRODUCTION TECHNOLOGIES

Landscape plants

Fruit

STRESS & ADAPTATION

Vegetables

Plant based foods

QUALITY & HEALTH



What are the outcomes?

**Deliver new
products &
cultivars**

**Deliver solutions
to change**

**Deliver sustainable
practises = light
footprint**

**Deliver quality
plant based
products**

**Underpin
consumer health
& wellbeing**



Our current activities in berryfruit includes:

Blueberries

Strawberries

Raspberries

Fresh currants

Blackcurrants

Project	Wild Danish Blueberries (<i>Vaccinium myrtillus</i>)
Leaders	Martin Jensen & Kell Kristiansen
Partners	Aarhus University & Danish Forest and Nature Agency
Finances	2.5 years at €70 K Danish Genetic Resource Project

Wild blueberries tend to have a higher content of health promoting compounds than the larger fruited cultivars (*V. corymosum*).

Clones will be collected to establish a clonal seed orchard and future commercial plantings.

Evaluation of differences, productivity, taste, secondary metabolites, novelty and quality



Project	Strawberries – Irrigation strategies
Leaders	Karen Keofoed Petersen & Nauja Jensen
Partners	Aarhus & Copenhagen Universities, private co & growers
Finances	4.5 years at €270 K (started 2006) Danish Genetic Resource Project
<p>Investigate if irrigation strategies (deficit and partial root zone drying) can improve taste and shelf life of fruit. To follow disease susceptibility and incidence of grey mould and reduce use of chemical inputs.</p> <p>Evaluating productivity, uniformity, transport of calcium, berry firmness, water relations, photosynthesis, plant hormones, quality.</p>	



Project	Strawberries 2 – Irrigation and nutrient strategies
Leaders	Karen Koefoed Petersen et al.
Partners	Aarhus University et al.
Finances	4 years at €500 K Danish Food Industry Agency & PlanDanmark
<p>Strategies for sustainable production under protected culture, including recirculation of water, sensors, altering salt concentration & EC, increasing productivity.</p> <p>Strategies for extending the production season.</p> <p>Evaluation of quality using destructively and non destructive technologies for quality, and taste.</p>	



Project	Strawberries 3 – Fertiliser choices in organic production
Leaders	Karen Koefoed Petersen et al.
Partners	Aarhus University et al.
Finances	4 years at €200 K. Danish Food Industry Agency & PlanDanmark

Strategies for sustainable production of organic berries in the field.

Are organic fertilisers reliable?

Do they need combining?

How much fertiliser is needed to provide a profitable crop and a product that has good taste attributes?



Project	Strawberries 4 – Hot water treatments (HWT) & Zero pesticides
Leaders	Hanne Lindhard & Marianne Bertelsen et al.
Partners	Aarhus University et al.
Finances	4 years: HWT at €380 K + Zero pesticides €850 K Danish Food Industry Agency & PlanDanmark

Reducing chemical residues on fruit during the production phase

Reducing the incidence of postharvest disorders eg grey mould

HWT eg 40-50°C for 5-15 mins vs
50-60°C for 10-60 sec

Use of UV during the production phase

[Value of using 1-MCP?]

Evaluate tolerance of fruit to HWT and UV,
incidence of diseases, taste, shelf life and quality.



Project	Organic raspberries
Leaders	Holger Daugaard
Partners	Aarhus University and grower
Finances	3 years: €150 K (started in 2006) Danish Food Industry Agency
Delivering a quality product from July - Oct Grown in soil / field and in pots / protective culture	
Evaluate nutrients, growth, productivity, quality, uniformity, incidence of disease	



Project	Organic & conventional red & blackcurrants & gooseberries for fresh consumption
Leaders	Hanne Lindhard
Partners	Aarhus University and growers and storage partner
Finances	3 years: €270 K Danish Food Industry Agency



Conventional production in soil and pots

Organic production in soil

Protective culture

Sustainable production systems

Evaluate nutrients, pruning strategies,
quality, productivity,



Our strategy to
grow berryfruit
research:

ClimaFruit

**Healthy fruit
beverages**

Project	ClimaFruit
Leaders	Michelle Williams & Hanne Lindhard
Partners	Aarhus University, SCRI, SLU, BioForsk, UMB, Jork & growers & Boards
Finances	4 years: €6.1 M (start end 2009?) EU – North Sea Region

Develop a berryfruit cluster in the North Sea region

Virtual Centre: Soft Fruit Climate Change and Environment Centre

Overcome regional and climate change issues thru delivering new cultivars, adaptive strategies and sustainable solutions.

Evaluate impact of practises on carbon footprint, health attributes and quality.

Deliver web based predicitive and decision tools

Focus on blackcurrants, raspberries & blackberries



Project	Healthy fruit beverages
Leaders	Anette Thybo
Partners	Aarhus University, SCRI, PFR
Finances	4 years: €2.3 M (start 2010?) Danish Council for Strategic Research

Replace existing high sugar (10-20%) fruit beverages.

Increase intake of fruit via increased consumption of healthy beverages

Focus is high fibre, high health, low sugar.

Delivered via optimisation of maturity, cultivar selection, acid sugar:acid ratio, natural sweeteners and fibres.

Focus on apples
& blackcurrants





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