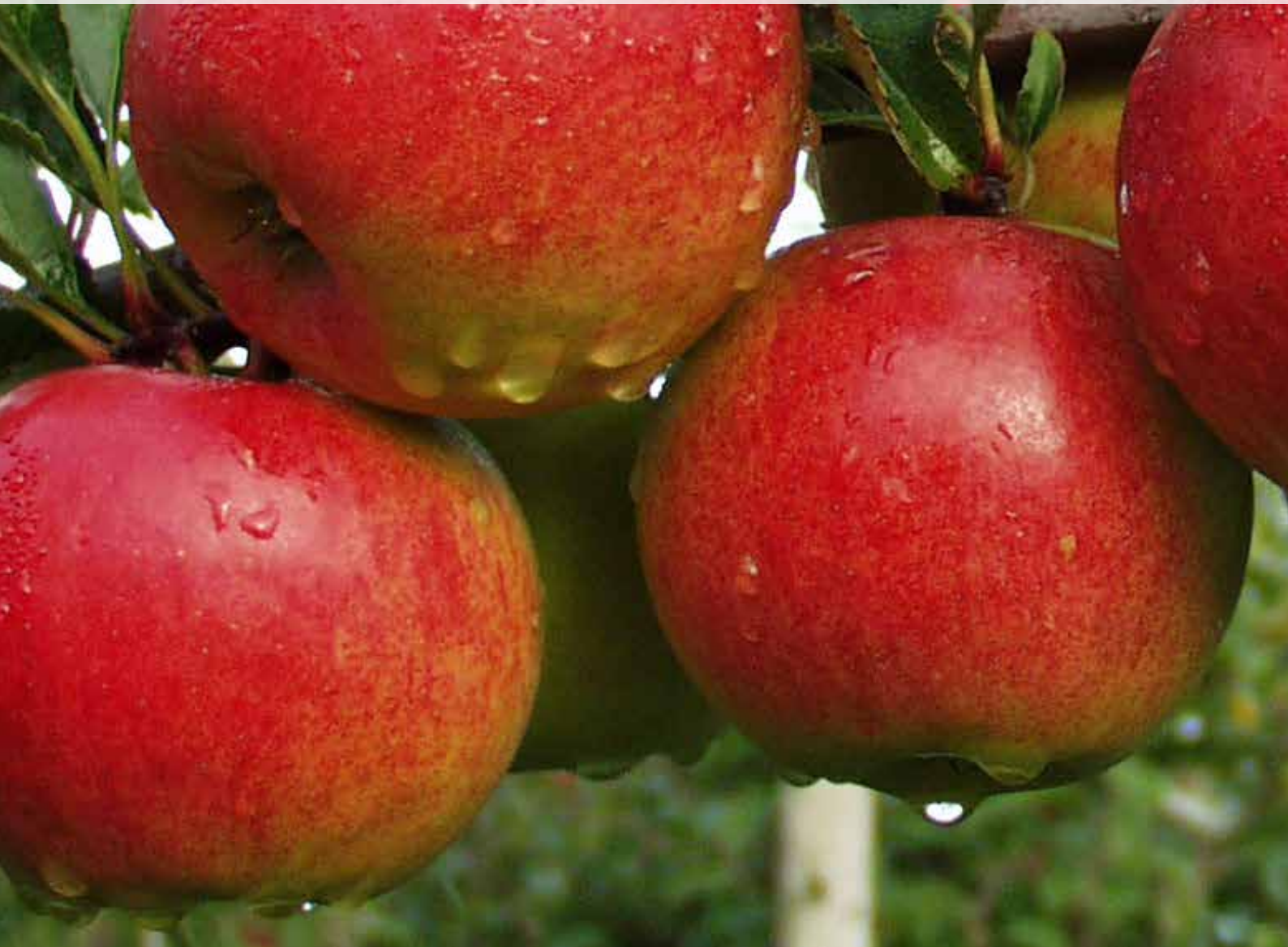
FRUIT RESEARCH
IN THE ENTIRE FOOD CHAIN

From genes to consumers

AARHUS UNIVERSITY



Fruit research at the Department of Food Science focuses on new solutions and technologies that increase the efficiency and reduce the impact on the environment of fruit production, and ensure quality, diversity and health potential of end products.

Key areas are understanding the crop physiology of fruit, and the interactions with horticultural conditions in both organic and conventional cropping systems. Research includes production techniques, production value, flowering and growth physiology, product quality including genetic aspects, water use efficiency and minimisation of pesticide use.

Research also focuses on the postharvest phase and possibilities to extend shelf life to increase sensory quality, consumer acceptance and reduce waste. Furthermore, characterisation of fruit as a raw material, changes induced by processing as well as the health-related characteristics of plant products are addressed including metabolomic studies of health potential.

Research is both basic and strategic and is carried out in close collaboration with Danish and international food industries.

FRUIT RESEARCH IN THE ENTIRE FOOD PRODUCTION CHAIN

Genes
- Evaluation of fruit germplasm for sustainable production
- Importance of genetic material for product quality
- Exploitation of fruit cultivars from traditional germplasm collections

Production
- Technologies and management methods for organic and conventional fruit production
- Nutrient and water use efficiency
- Adaption to climate change
- Minimising pesticide use and introducing alternative methods of pest management
- Influence of growing conditions on fresh and storage quality

Postharvest & Processesing
- Optimal postharvest conditions to ensure sensory quality and shelf life and sustain nutritional value
- Effect of packaging and modified atmosphere on quality traits

Health
- Identification of species and cultivars with high content of specific secondary metabolites and specific bioactivity
- Effect of primary production on the content of secondary metabolites
- Metabolomic studies of metabolites in biofluids after plant food intake

Consumers
- Differentiated fruit based products and sensory quality
- Relating consumer preferences and liking to product knowledge and processing to ensure consumer acceptance of products, e.g. with respect to sensory and health-related aspects

RESEARCH FACILITIES

Department research facilities include field-based machinery, harvesting and grading equipment and approx. 100 ha of land, including a unique 20 ha organic research area for vegetables and orchard trees and for protected cultivation in tunnels or greenhouse. Postharvest facilities for storage under controlled atmosphere.

Laboratory facilities include non-destructive technologies (FT-NIR, Videometry, photosynthesis, stomato conductance, chlorofyll fluorescence); equipment for UV-B and UV-C treatments, minirhizotrons for root studies, image analysis, specialised facilities for irrigation and organic/conventional pest control treatments, texture analyser, mass spectrometry (GC-MS, LC-MS), HPLC, low-field and high-field NMR (600 MHz), *in vitro* laboratories for cell studies, and professional sensory science facilities.

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