

# Estonian Dairy Cluster express tests of mastitis and lessons from 2015-2019

Hardi Tamm, Chairman

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ENRD workshop “Pathways to farm competitiveness”



Euroopa Maaelu Arengu  
Põllumajandusfond:  
Euroopa investeringud  
maapiirkondadesse

# NGO

- ❖ Established 8.10.2015
- ❖ Members (22)
- ❖ Cooperation of different abilities and needs
- ❖ Pajumäe Piim Llc, Adavere Agro Ltd, Halinga Llc, Järva PM Llc, Kehtna Mõisa Llc, Kuivajõe Farmer Llc, Kõljala Llc, Kärneri-Jõe Llc, Orgita Põld Llc, Paistevälja Llc, Soone Farm Llc, Tartu Agro Ltd, Vao Agro Llc, Viraito Llc, Voore Mõis Llc, Vändra Llc, Weiss Llc, Kaiu LT Llc
- ❖ Farmi Piimatööstus Ltd, E-Piim Tootmine Ltd
- ❖ Dairy Society of Saaremaa
- ❖ The Estonian Chamber of Agriculture and Commerce



# Partners

- ❖ Estonian University of Life Sciences
  - ❖ Ants-Hannes Viira PhD, Institute of economics and social sciences
  - ❖ Kerli Mõtus PhD, Institute of veterinary medicine, clinical veterinary
  - ❖ Prof. Meelis Ots, Animal nutrition
  - ❖ Prof. Haldja Viinalass, Animal breeding and biotechnology
  - ❖ Prof. Ülle Jaakma, Animal breeding and biotechnology
- ❖ TorroSen Llc, Toonika Rincken, PhD
- ❖ Competence Centre on Health Technologies, prof. Andres Salumets
- ❖ Animal Breeders Association of Estonia, Tanel-Taavi Bulitko
- ❖ Lingent Llc, Alar Meltsov
- ❖ BioCC Llc, Ene Tammsaar



# 4 years programme, 2016-2020

- ❖ **Export capacity** (The development of the production of breeding heifers as a new product category with high export potential)
- ❖ **Milk quality** (New set of quality indicators criteria of raw milk; The assessment on the impact of dry matter content of milk on the actors of the value chain and price formation mechanism)
- ❖ **Herd health** (Herd health programmes along with development of methodology for economic impact assessment; The development of rapid biosensor-based mastitis test platform)
- ❖ **Breeding** (A study for establishing a new genomic selection consortium in Eastern and/or northern Europe and preparation for Estonian dairy cattle evaluation system based on genomic breeding criteria, Genetic assessment of young EH heifers)
- ❖ **Feeding** (Youngstock feeding strategy for effective and sustainable reproduction of dairy herds, feeding costs optimisation model)

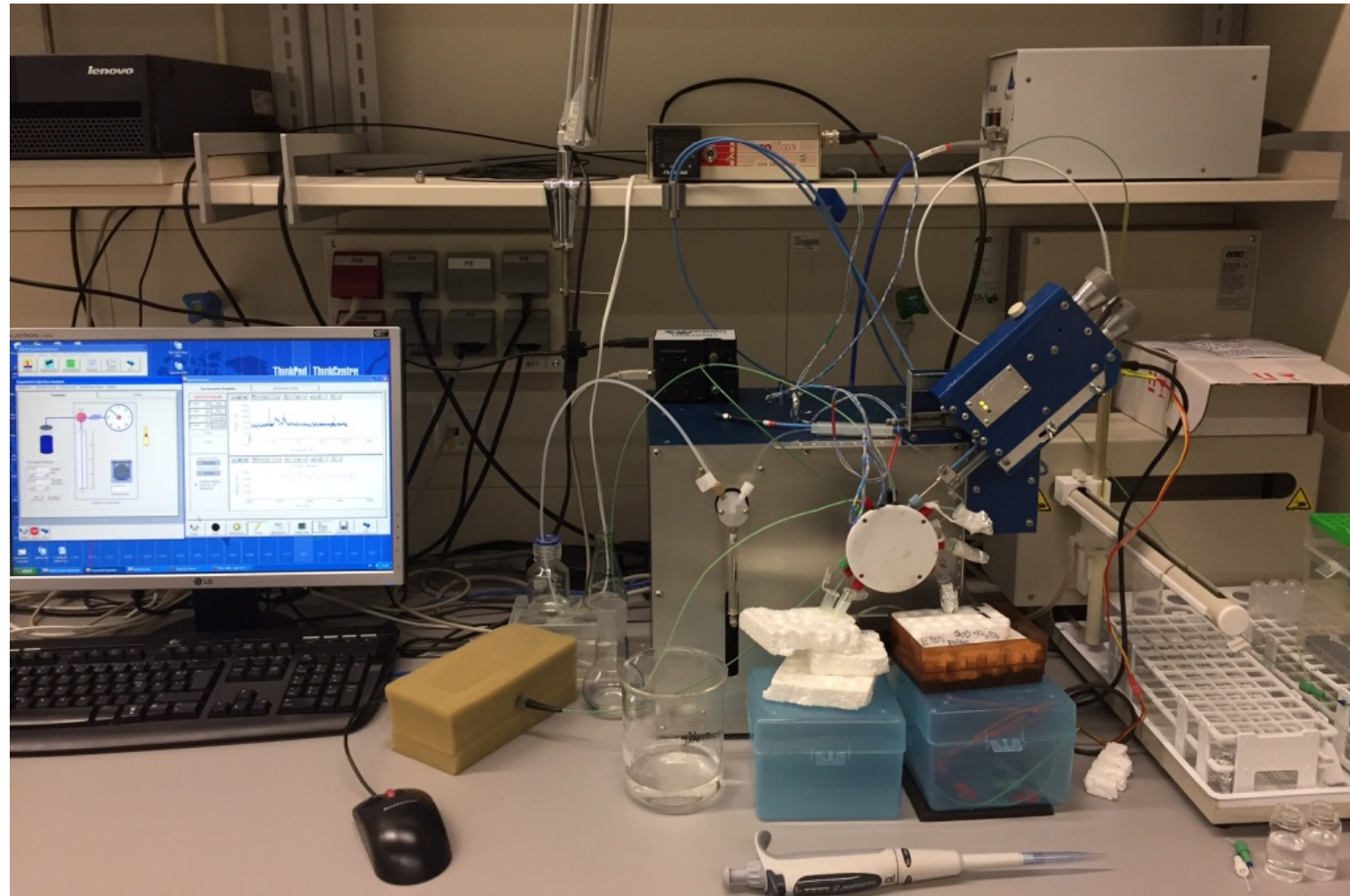


# The development of rapid biosensor-based mastitis test platform

- ❖ The development and testing of biosensor-based technology (lab-scale prototype & method) for the rapid identification of 3 major mastitis-causing pathogens in milk
  - ❖ Simultaneous detection of different pathogens
  - ❖ Detection range  $10^2 - 10^8$  CFU/ml
  - ❖ Analysis time (incl. system regeneration) < 20 min
  - ❖ Sample volume < 0.1 ml
- ❖ EDC members approval 2017, phase II project design 2018



# Lab-scale prototype



# MAVAS (1/2)

- ❖ Biosensor development for the detection of mastitis-causing bacteria and early identification of mastitis-infected dairy cows
- ❖ Carried out by the EDC-EIP group
  - ❖ 2 dairy farms – Kuivajõe Farmer Llc and Kaiu LT Llc
  - ❖ Partners TorroSen Llc, Estonian University of Life Sciences
  - ❖ cooperation with Finnish EIP group ÄLYREHY, Kajaani
  - ❖ Duration 4 years (September 2018 – August 2022)
  - ❖ Financed by Estonian Rural Development Policy measure 16.2 and coordinators



# MAVAS (2/2). The aims

- ❖ Implementation and prototyping of novel biosensing system allowing rapid multiplex detection of most common mastitis-causing bacteria in milked milk (the selection of detectable pathogens can be modified farm by farm)
- ❖ correlation the system with other mastitis biomarkers, validation of obtained results
- ❖ identification of dairy cows suffering from preclinical and clinical mastitis during milking



- ❖ **Development of an automated system for mastitis diagnostics in farms allowing to make the treatment of infected cows more efficient, reduce costs and decrease the amount of antibiotics used**





# Activity report EDC, 2015-2019

- ❖ EDC 2016-2020, I – 800 000 €
  - ❖ December 2017, first project completed
  - ❖ All activities initiated/full programme will be completed
- ❖ EIP group registration 2017, principles since start
- ❖ MAVAS, 2018-2022 jointly with 2 members – 451 039€
- ❖ Digitalisation 2019-2023, II – 799 789 €
  
- ❖ Contribution to Estonian RDP 2030, etc
- ❖ Current management style is strongly supported
- ❖ EDC has to keep going and further growth, is in members interest



# Thank you for your attention



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