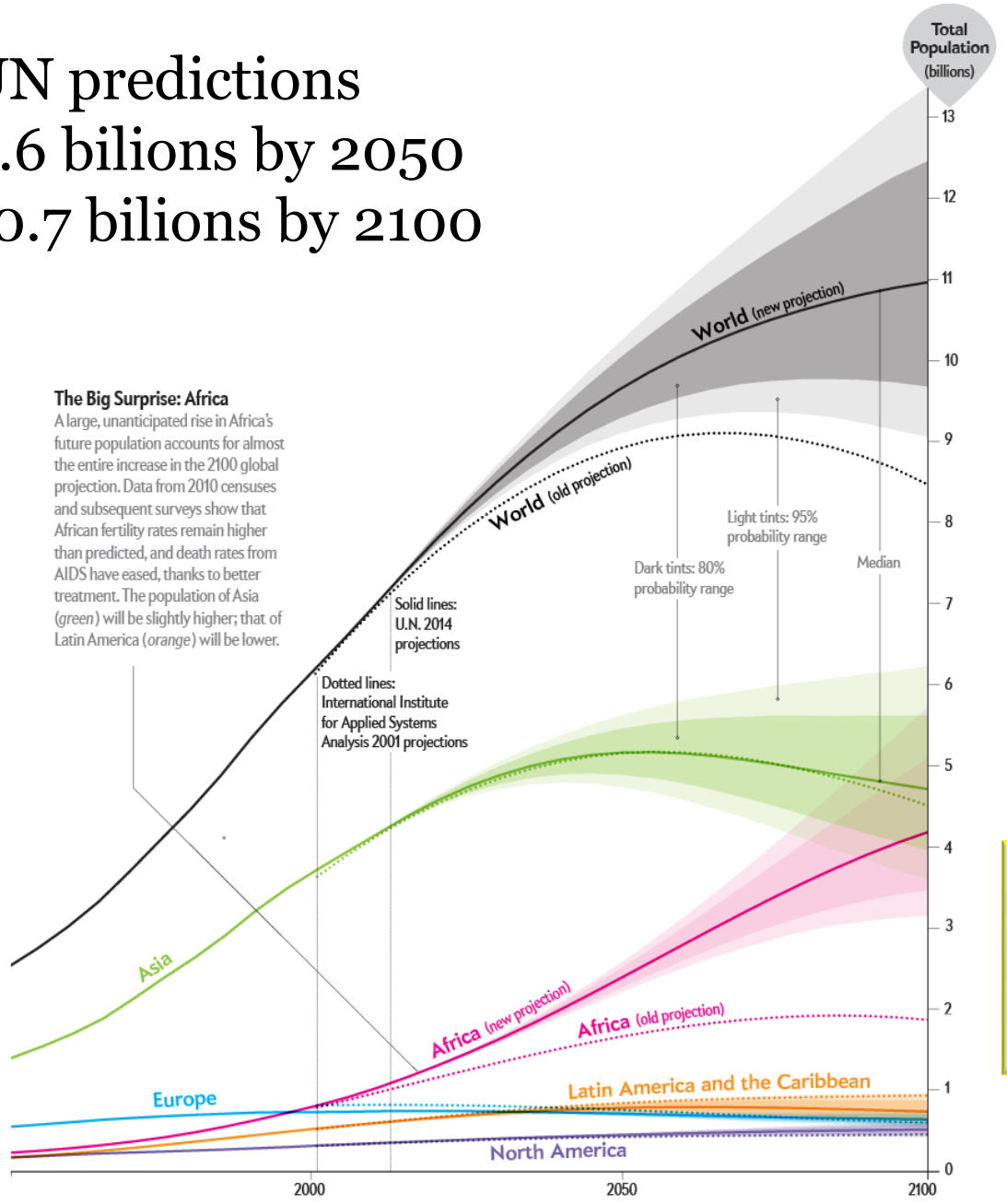
Josip Juraj Strossmayer University of Osijek
Faculty of Agrobiotechnical Sciences Osijek

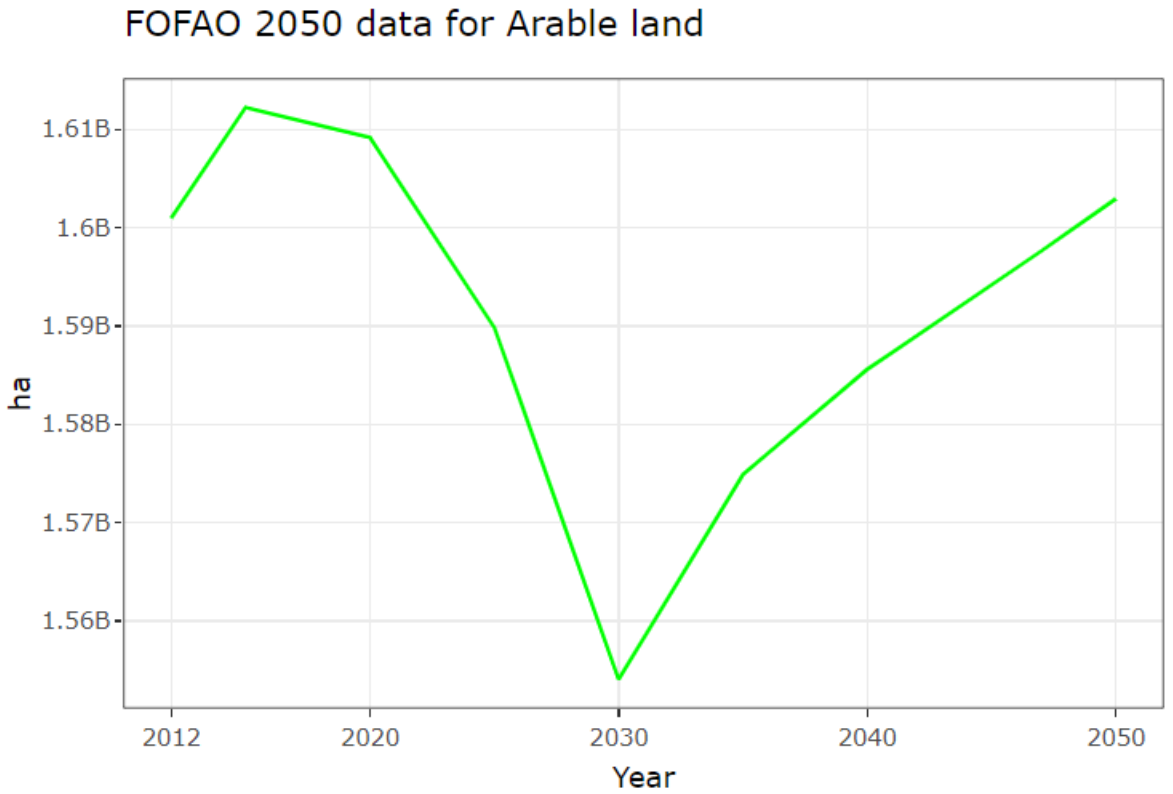
Digitalization in Agriculture – What Competencies Agronomist Needs

Andrijana Rebekić
Faculty of Agrobiotechnical Sciences Osijek

SUSTAINABLE DEVELOPMENT GOALS

UN predictions
9.6 bilions by 2050
10.7 bilions by 2100

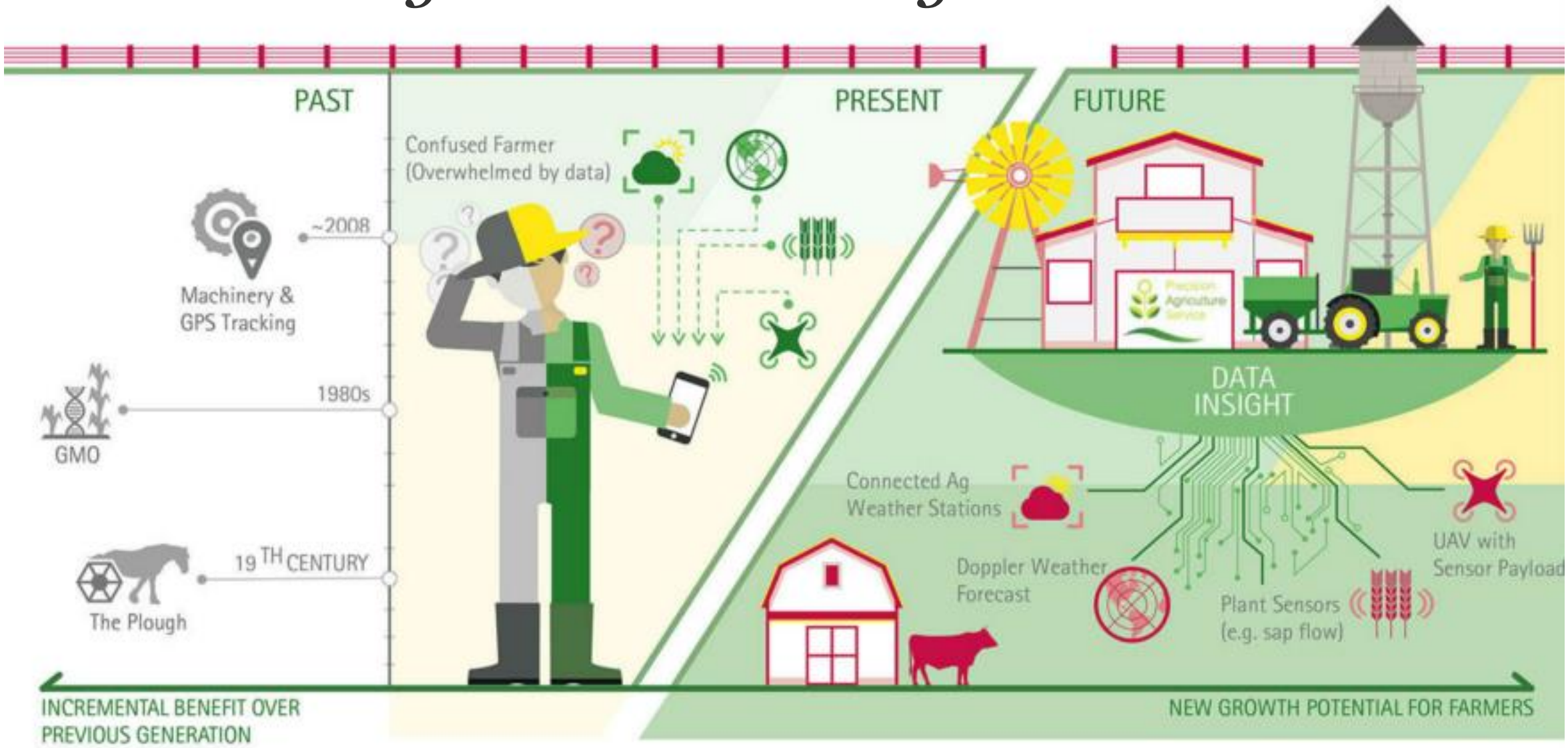




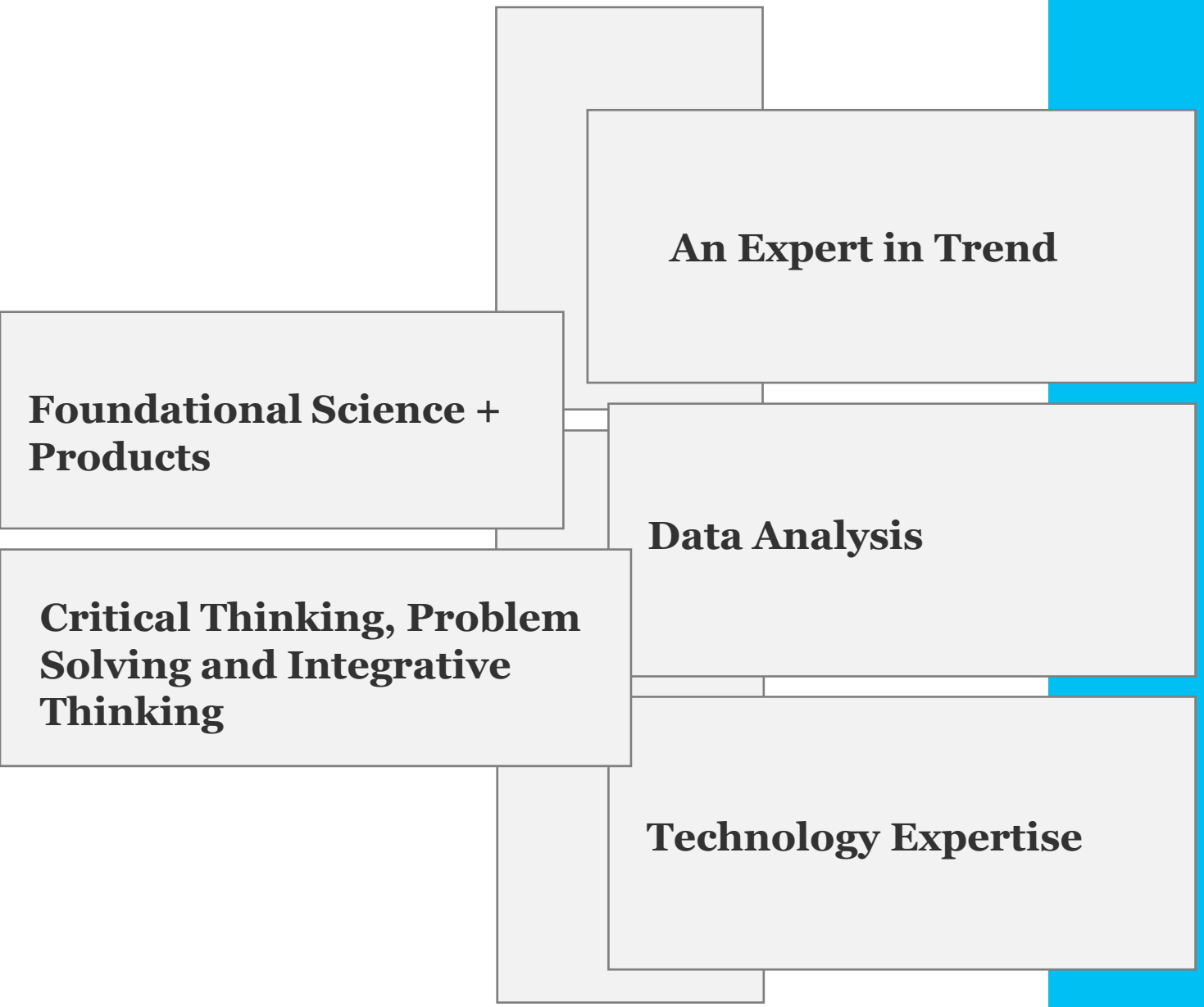
FAO. 2018. *The future of food and agriculture – Alternative pathways to 2050*. Rome.

How the world will feed a few billion more people is the question of the day.

Digitalization in Agriculture



WHAT SKILLS AND KNOWLEDGE BASE WILL AN AGRONOMIST NEED IN A FUTURE?



„the agronomist of the future having a computer science/engineering background with foundational understanding of the basic agricultural sciences to ground them in making the right tech recommendations”

„Soft" Skills

An ability or willingness to change in order to suit different conditions.

Adaptability

Determining what is the most important, how to prioritize, why specific components are the most important and determining a path Through.

Embracing of Complexity/Critical Thinking

Quality related to exploration, investigation, and learning, evident by observation in Humans.

Curiosity

The ability to find quick and clever ways to overcome difficulties.

Resourcefulness

- adviser for agricultural production
- adviser for vegetable production
- agronomists
- agronomy adviser
- agronomy analyst
- agronomy consultant
- agronomy research analyst
- agronomy research scientist

Drone Technologists > Will show farmers how to increase yields and reduce crop damage using sensors, robotics and images from the air.

Crop Scout > Inspects farmers' fields and records weed, insect, disease and other observations. This is an important role to help farmers make timely, informed and economical field crop decisions.

Agricultural Pilot > Fly small planes at low altitudes in order to apply pesticides, fertilizers or fungicides on fields, must be able to mix and add chemicals for application, maintain their airplane and equipment, and keep records of applications to report back to the grower.

Hydrologists > Protect the environment and promote sustainability while helping supply the world with clean, safe water.

Agriculture Communicator > Share the story of agriculture and engage the public to better understand it.

Precision Agriculture Technologists > Will teach farmers how to work better, not harder, by using new technologies that increase crop yields and decrease inputs.

Occupational standard – HKO (Croatian Qualifications Framework)

Standardi zanimanja (7)

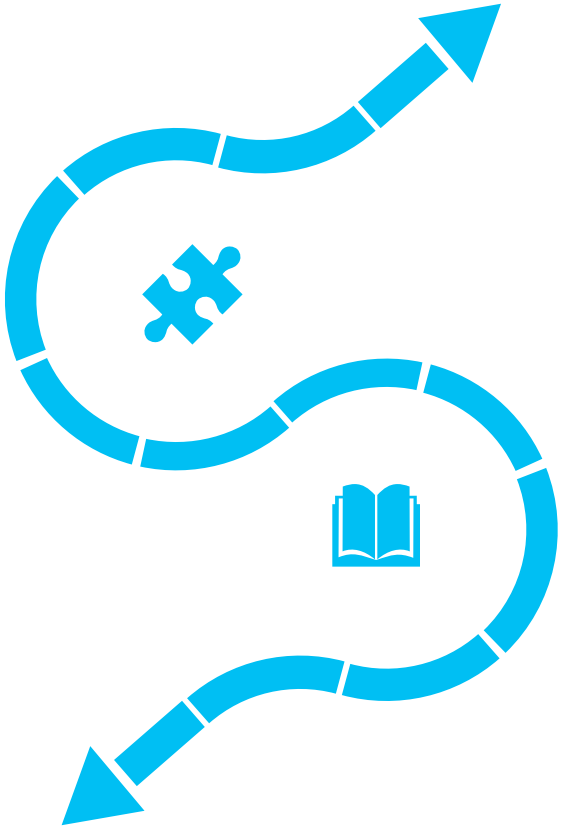
64 sets of competencies

1. Agroeconomist
2. Technologist in fruit growing, viticulture and winemaking
3. Technologist for agricultural technique and technology
   Predlagatelj: **Fakultet agrobiotehničkih znanosti Osijek** Datum do kada vrijedi: **1.7.2026**
4. Technologist of environmental protection in organic agriculture
5. Technologist in horticulture
6. Tehnolog/Tehnologinja u animalnoj proizvodnji
   Technologist in animal production
7. Technologist in plant production

university bachelor's degree (baccalaureus/baccalaurea) engineer/engineer of agronomy (level 6.1sv)

How to make transition?

- **adopt – change curriculum**
- **create new study programs**
- **lifelong learning**



Agronomist (tomorow)

Agronomist (today)

Graduate Study Programme in English

Digital Agriculture

Digital Agriculture

Learning outcomes

of the knowledge, skills and abilities students should possess and can demonstrate upon completion of a study

Manage collected data and databases (design and model databases; big data management) in agricultural production

Compare the available hardware and software components of digital agriculture

Select the optimal agricultural technique for sustainable production in conventional and precision agriculture

Select available technological solutions, analytical methods and information technologies for analysis, forecasting and decision-making in agriculture

Design sustainable animal and plant production in optimal and specific socio-economic, environmental and technological conditions

Recommend the application of innovations in agriculture and the system and technologies of precision agricultural production

Create computer decision-making systems, models and simulations for the management and development of production technologies and agricultural systems

Competencies necessary for communication with programmer or computer scientists

Where we are ?

- Aware of necessary changes in our study programs
- In need of institutionl support (umbrella institutions)
- Human capacity (education of our teachers)
- Cooperation between faculties

„The question is not if weather we need a study reform & educational praxis, but how profound and intensive must be”.

Emil Erjavec
Professor for agricultural policy and economics
University of Ljubljana, Biotechnical Faculty

Questions

Thank you!

Andrijana Rebekić
Vice dean for education and quality management
Faculty of Agrobiotechnical Sciences Osijek