Precise technologies and integrated management in farming

Farm «Vilcini 1»

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Main emmission chanels in Latvian crop farm

- **Use of mineral fertilizers;**
  - Precize planning and use in vegetation season;
  - Do not use carbamide for surface fertilization;

- **Soil organic matter degradation by mechanical cultivation;**
  - We could use minimum tillige, grow more winter crops, less use mechanical treatment for fallow land;

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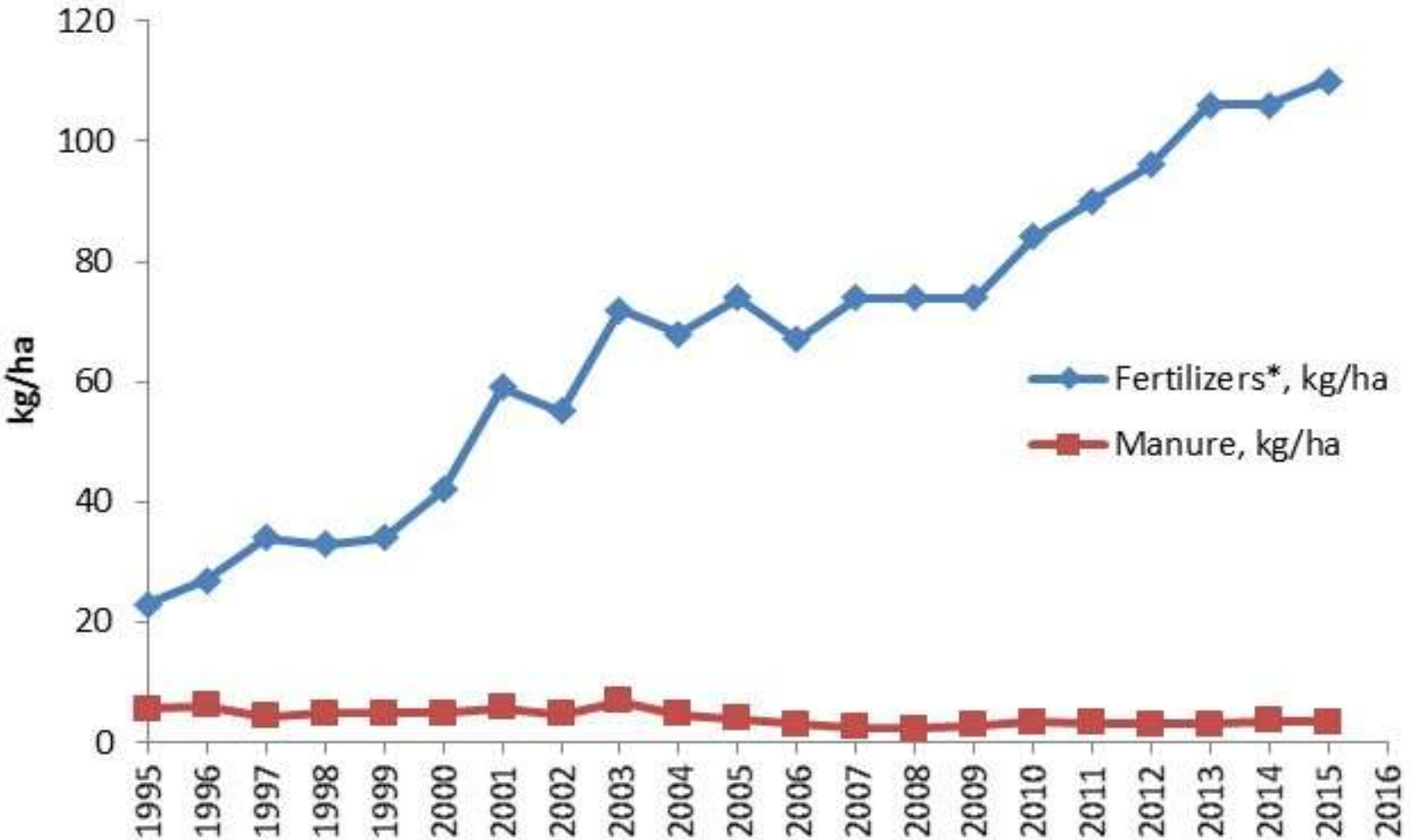
Amount of applied chemical fertilizers (recalculated on 100% plant nutrients) and manure amount kg/1 ha arable crops in Latvia



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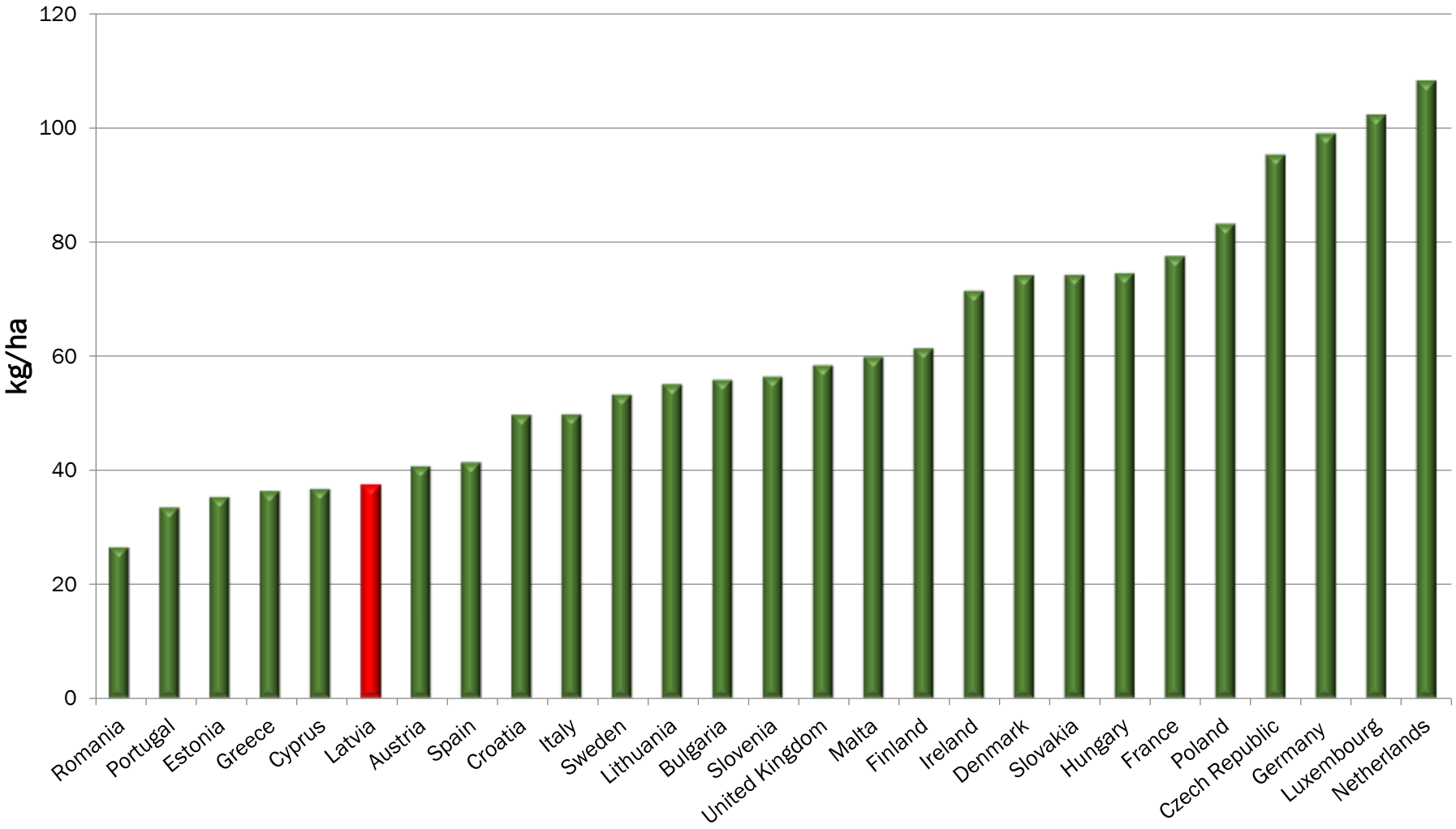
Anount of used nitrogen from mineral fertilizers (kg on 1ha used arable lands) EU countries, 2013 (EUROSTAT)



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PRIVATE FARM «VILCIŅI1»

Information about farm

- Established on 1992 on a bases of 74 ha of agricultural land
- Location: Jelgava region, Zaļenieki parish;
- Realised 9 EU projects of structural projects modernization and 2 projects of services
- 20-24 employees in the farm
- In 2003 the first steps in technology of precise agriculture

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Information about farm

- The total area above 2200 ha;
- More than 100 fields located in 10 parishes, radius 90 km

- Structure of crops:
- **72,5 % winter wheat**
- **19 % winter OSR**
- **6 % field beans**
- **1 % field peas**
- **0,5 % spring barley**
- **1 % fallow**

Precize technologies

- 5 tractors fitted with automatic steering
- Another 4 tractors equipped with parallel driving system
- 2 Greenseeker Nitrogen sensors
- 2 spreaders with electronically adjustable tray
- 3 sprayers, out of them 2 has section control
- Grain dryer with air recirculation and automatic control;
- Meteostation with prognosis
- Agricultural software

Agricultural software

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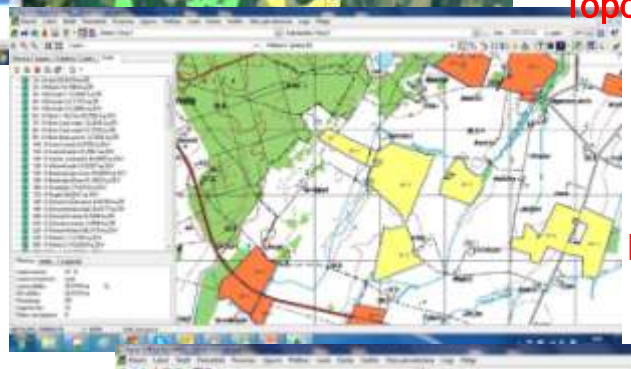
Agrar-Office
Das integrierte System.

Land_Data Eurosoft software:

- for field history records
- for mapping
- for fertilizing plans
- for financial analysis

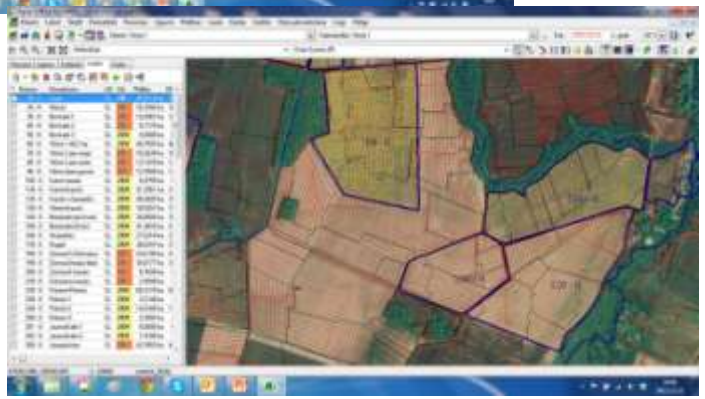
Ortofoto + field structure



Topografical map

Drainage map

Field history and analyses



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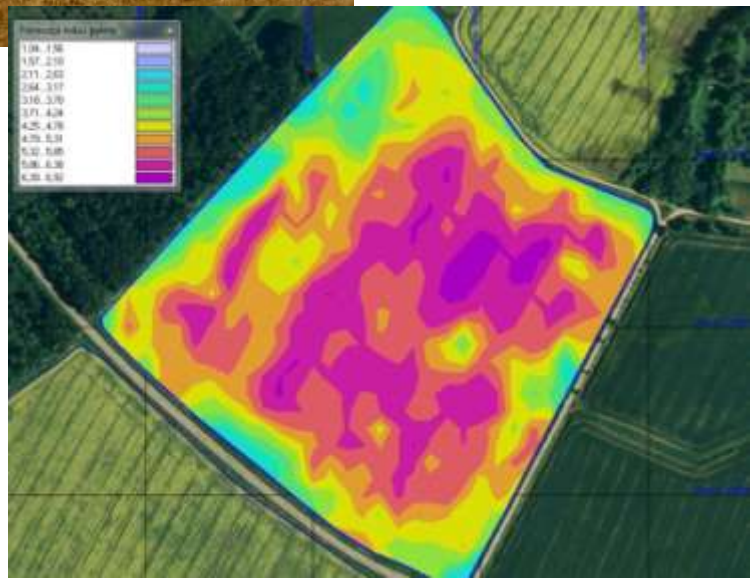
Harvesters and yield mapping



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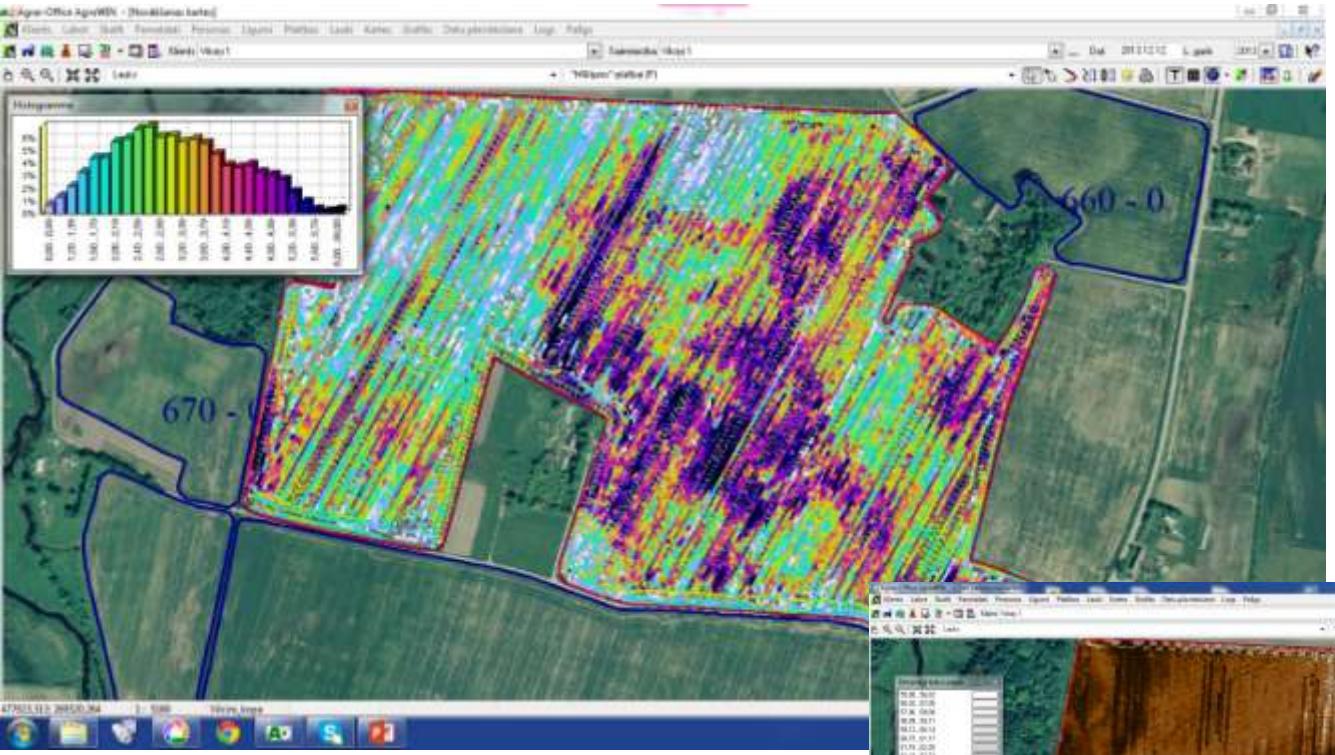
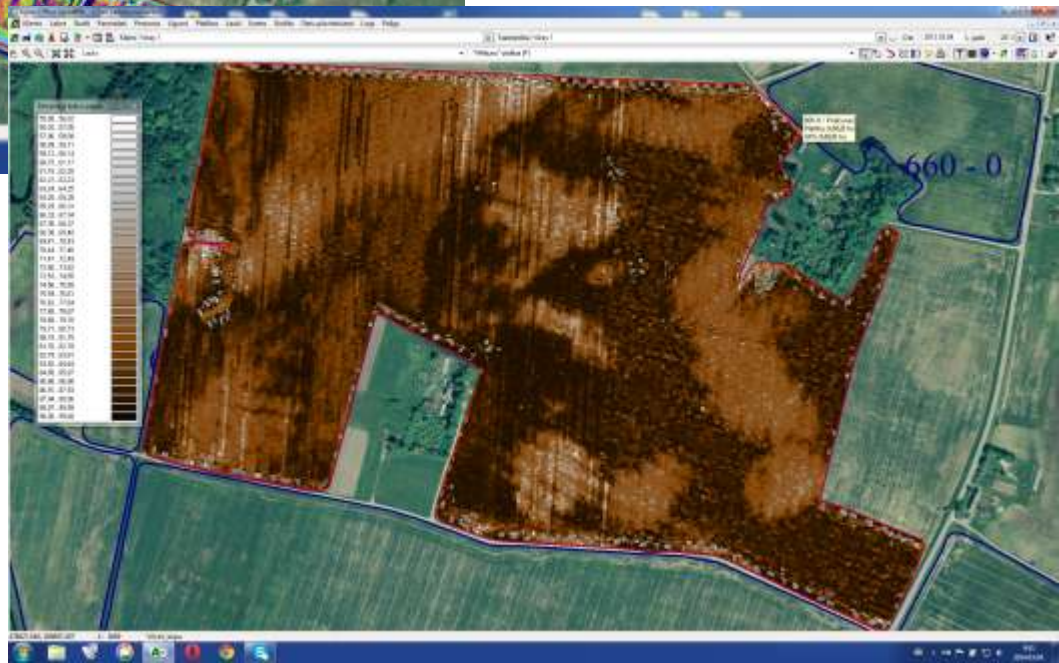
Yield and fuel maps





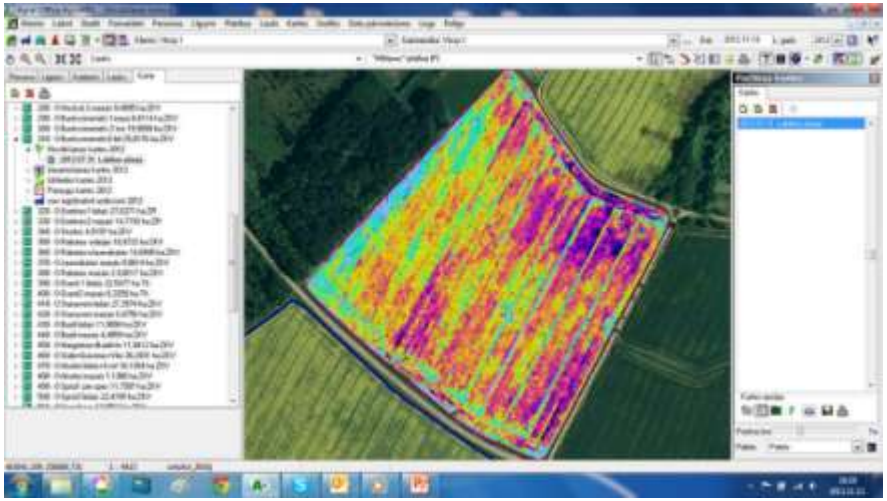
Spreaders, sprayers and an optical sensor system for dispersion of nitrogen

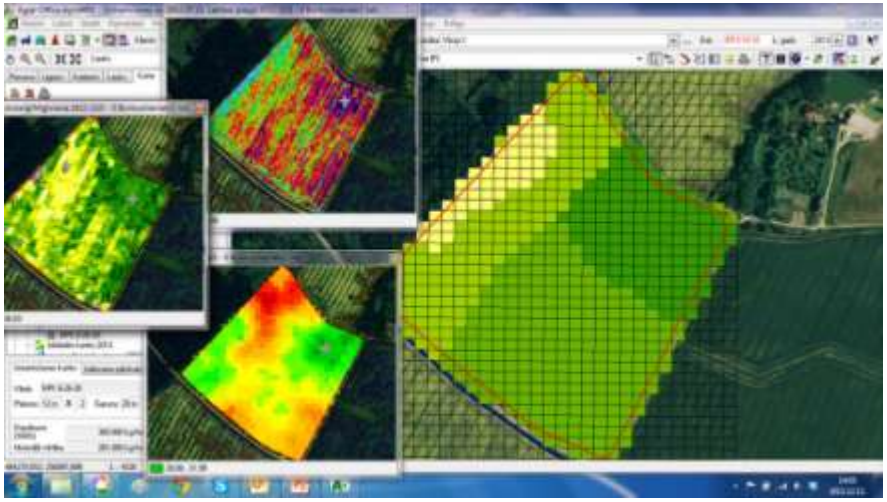
- Hydraulic drive spreaders with field edge limiters; sprayers with section control
- Variable dose of fertilizers, using different types of sensor systems

Maps of yield and differential fertilization

- Data from Greenseeker sensors, harvest maps and soil analyses are used for field condition analyses

- There are prepared maps for autumn P, K fertilization with differentiated doses





Benefits of GPS steering technologies

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Automatic steering

Benefits:

- can be used for soil treatment, planting, dispersion of fertilizers, spraying.
- makes the job easier
- reduces load for the machinery
- no coverage between sower trips

Fertilizer Spreaders

- Equipped with weighing system
- With side spread limiters
- Compatible with JD monitors

Recovery of drainage systems– wetland construction

Goals:

- to control and reduce the inflow of biogenic elements into natural water courses and bodies of water
- to control soil erosion
- to enrich the water with oxygen
- to naturally protome self-purification of water

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Wetland before the construction

Wetland during the construction

Parameters:

- total length of the ditch: 3,2 km
- catchment area: 324 ha
- size of the basin construction: 60x76 m, (0,45 ha)
- mirrored area: 0,3 ha

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The Open Day at Countryside

Farm motivation for introduction of sustainable technologies

- Cost reduction!
- To provide plant nutrients in the best time and place for plants during vegetation season
- Environmental friendly agriculture
- Precise accounting and control
- Less human factor mistakes

Main chalanges in future

- To harmonize different policies (CAP, Climate Policy, Environment Policy, etc);

Knowledge and economical resources – differs between farms;

High costs for new technologies;

Knowledge and education

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Thank you for your attention