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Who is AgriLab

1. The team, which was the first, who have implemented precision farming technologies in Ukraine

2. The company that analyzed and digitized about 2,000,000 hectares

3. The exclusive partner of WARD laboratories (USA), the international authority in the field of agro research.

4. Developer of unique solutions and tools to determine the potential of the field and manage its profitability

5. The most authoritative company in the field of agronomy and soil testing according to farmers opinions

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Our story

2008-2013	2014	2015	2016	2017	2018	2019	2020
	Exclusive partnership with WARD laboratory (USA)		The most innovative agrocompany in Ukraine (Forbes rank)		Development of MyAgriLab softwear. Start working in Kazakhstan		Start of agroinnovation landfill “Digital Field” and own farm
Full cycle of Precision Agriculture Technologies		International cooperation:ISPA, MC Gill,Nebraska-Linkoln University		Own production of automated soil samplers		Start of educational program for precision ag	

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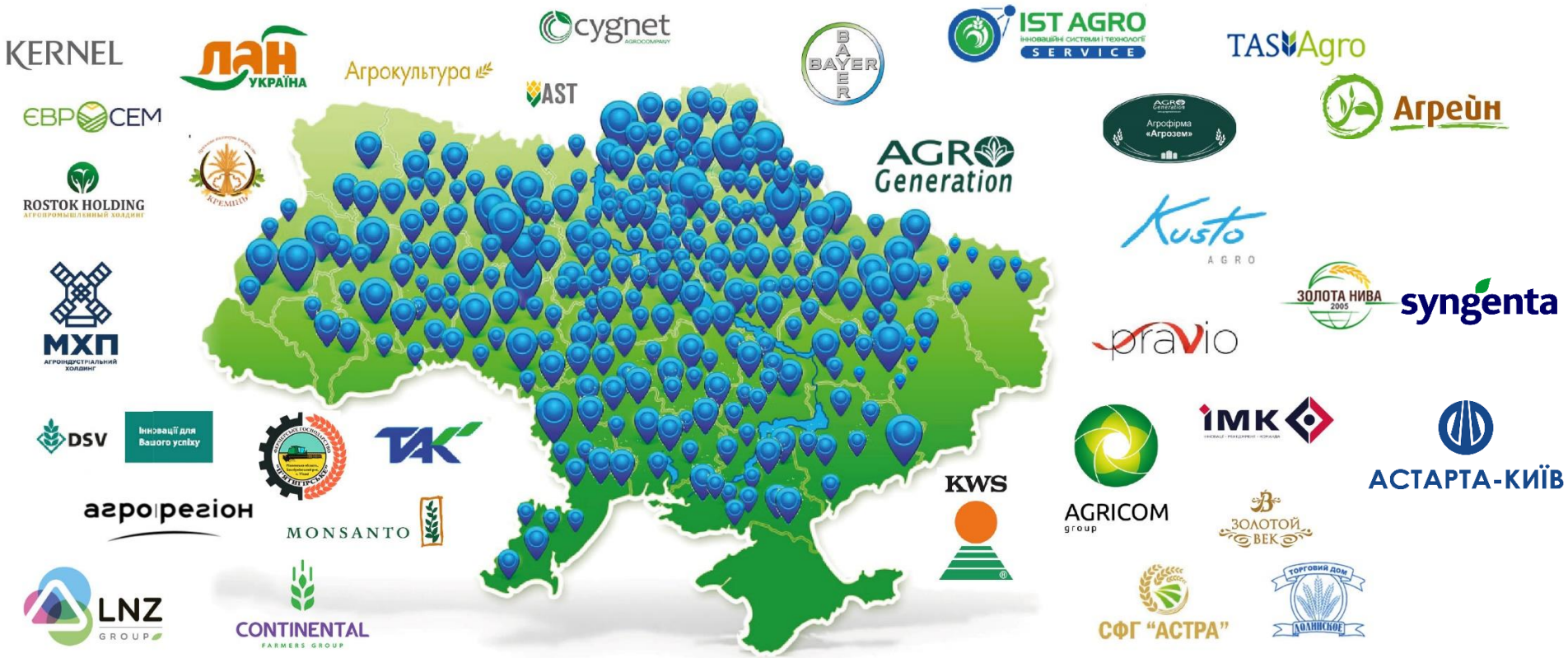
Clients



600 +

clients

2 000 000+ ha

Analyzed and digitalized

9.5 years

impeccable reputation

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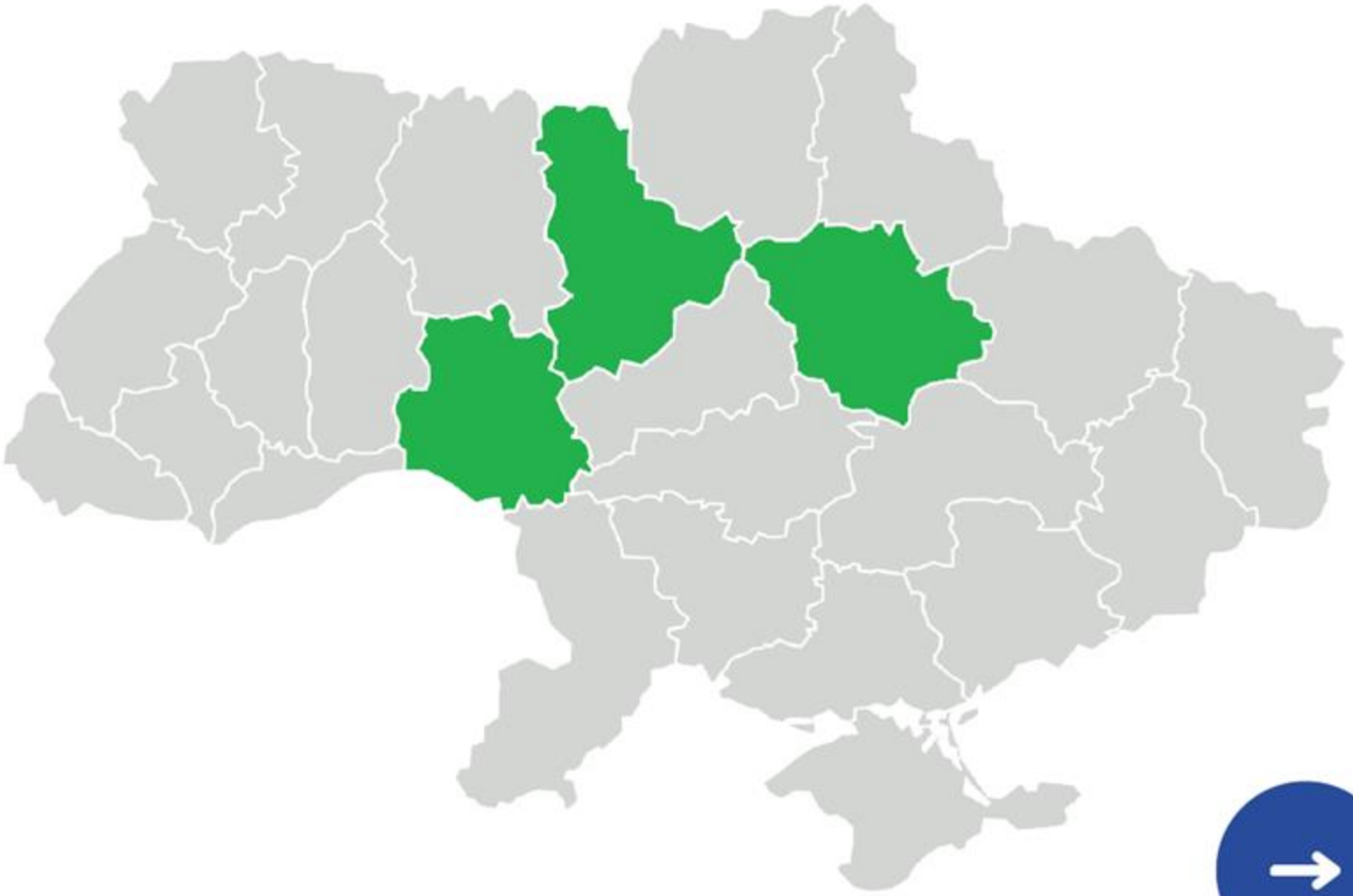
DIGITAL FIELD

GrAins



Location 1

Kyiv region,
Boryspil district,
village Velika Olesandrivka

Location 2

Poltava region,
Poltava District,
village of Rozsoshentsi

Location 3

Vinnytsia region,
Vinnytsia district,
village Illintsi

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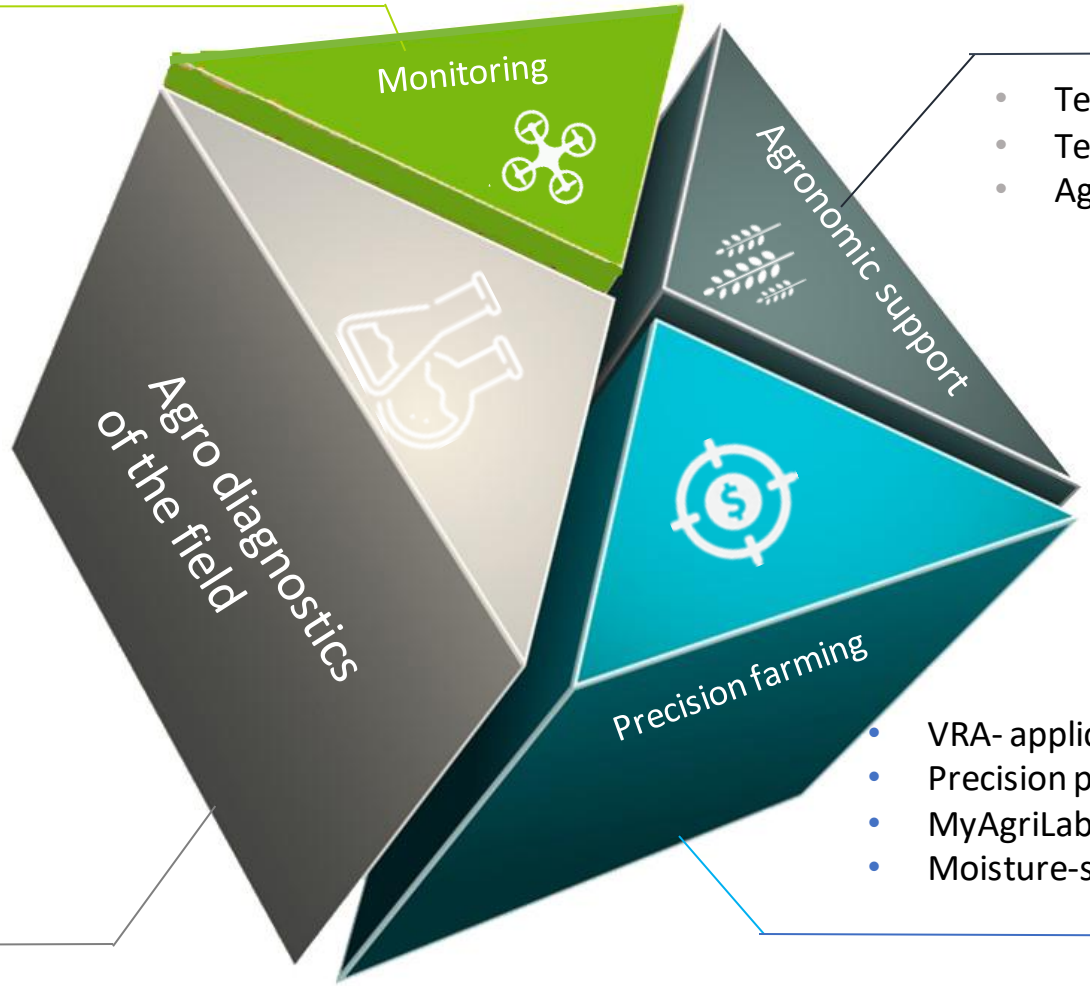
AgriLab

Services

Potential of plants

- Diagnosis of nitrogen nutrition
- Satellite monitoring
- UAV monitoring



- Technical audit
- Technological plan
- Agronomic support

Agronomy

Soil potential

- Comprehensive agrochemical analysis
- Measurement of compaction
- Analysis of weather and climatic data

- VRA- application of fertilizers
- Precision planting
- MyAgriLab software
- Moisture-saving technologies

Technology

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Complex field expertise: algorithms

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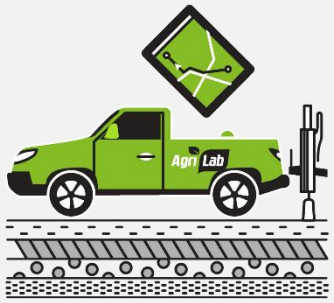
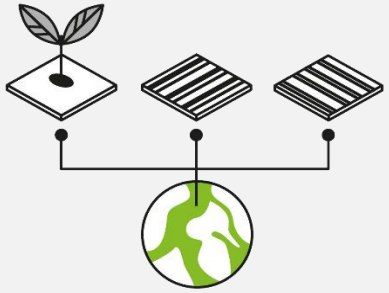
Agrodiagnostic algorithm

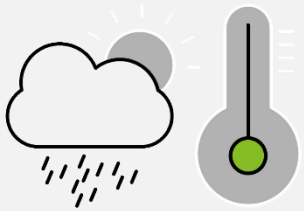


Soil sampling

Agrochemical analysis



Soil health analysis



Climate data

Critical factors

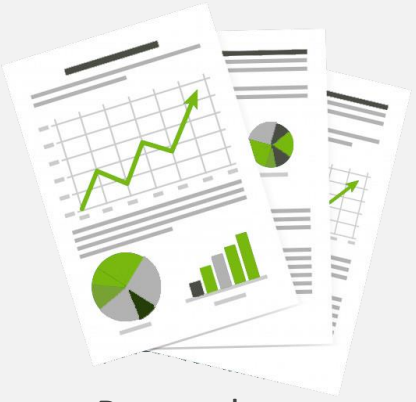
Technological analysis

MyAgriLab

Unique algorithm

Expertise

Maps



Protocols

Recommendations

MyAgriLab

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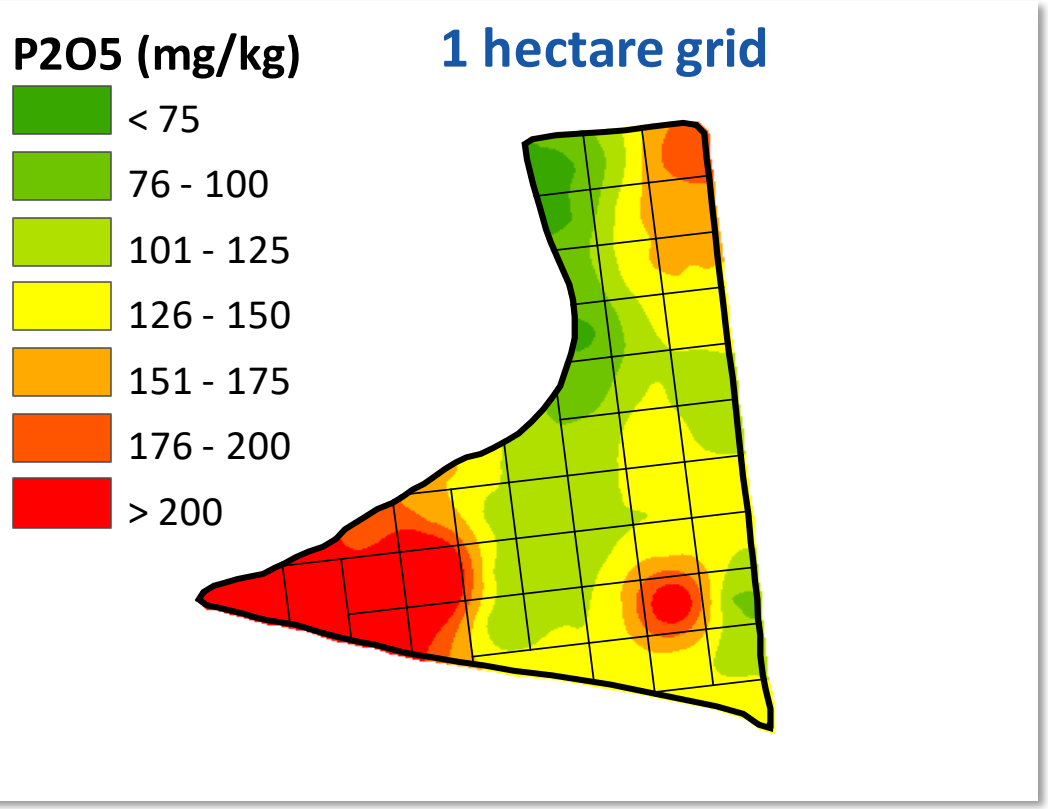
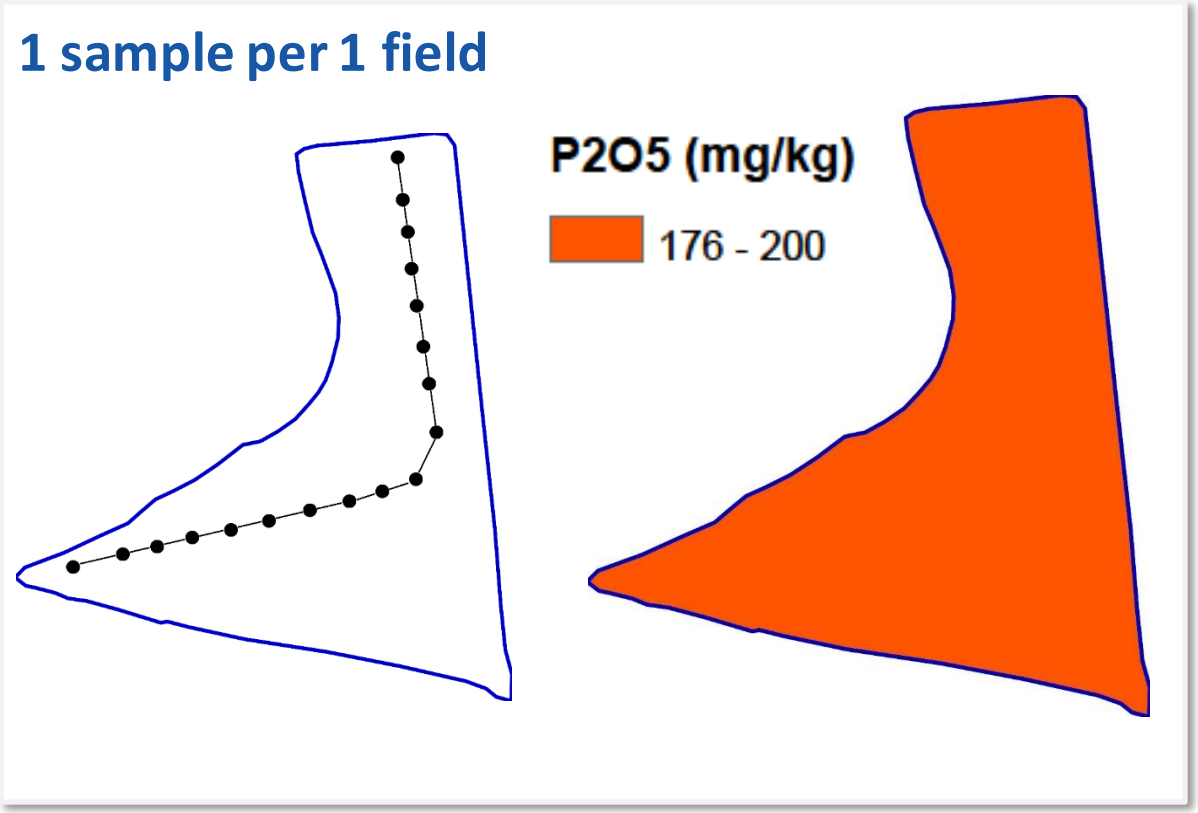
Detailing of the selection of soil samples





- Objectively less - 10 hectares,
- optimal - 5 hectares,
- the best detail is achieved from 3 to 1 ha.

1 sample from the field, the result is a high phosphorus content in the soil. The content is 30% higher than the weighted average when applying the selection grid.

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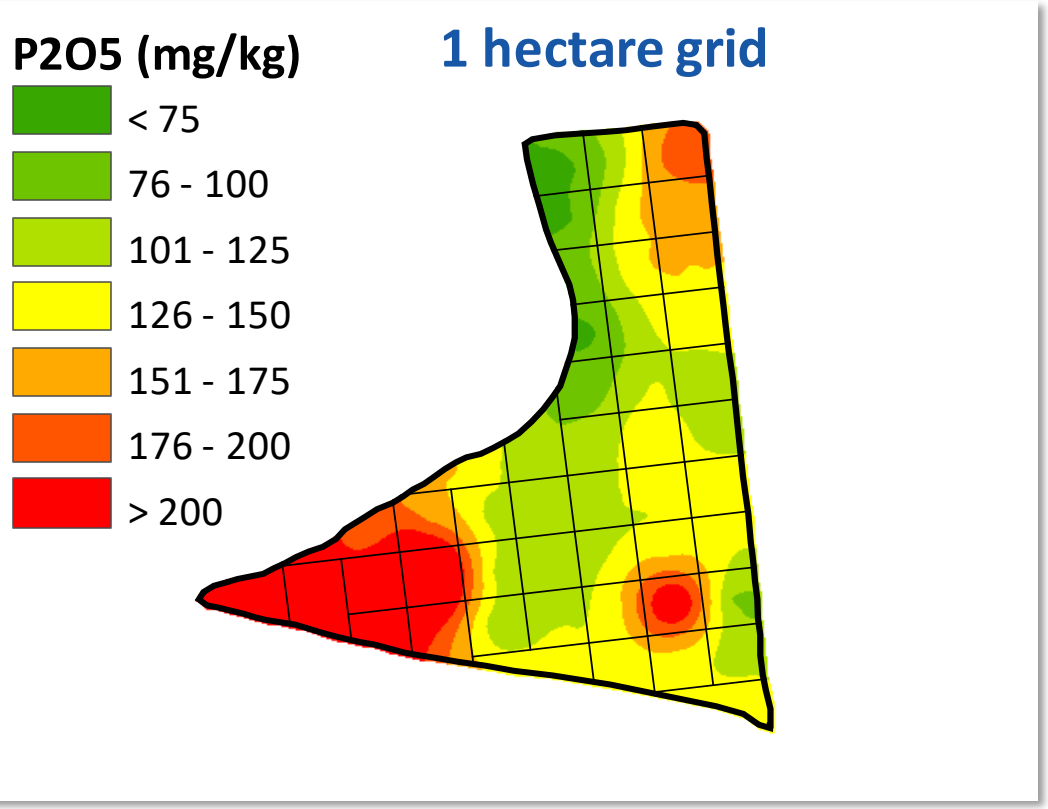
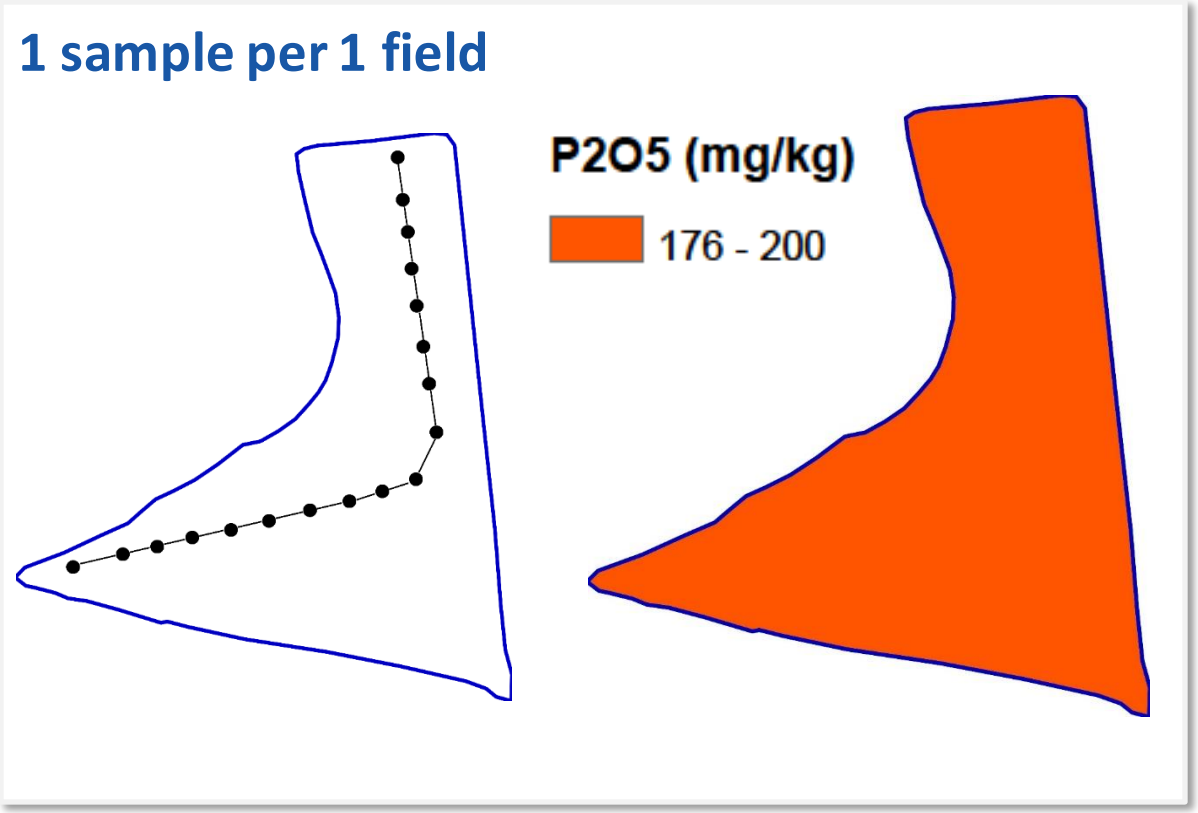
Detailing of the selection of soil samples





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SELECTION OF SOIL SAMPLES

Number of soil samples to ensure accuracy

pH		P		K		Organic matter	
+ / -	Number of samples	+ / -	Number of samples	+ / -	Number of samples	+ / -	Number of samples
0,1	337	1	337	10	164	0,1	89
0,2	85	5	14	25	27	0,2	23
0,3	38	10	4	50	7	0,3	10
0,4	21	15	2	100	2		

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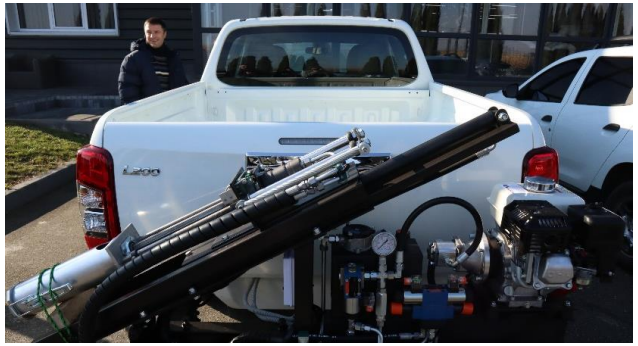
Source : Kansas State University

Step #1: Soil sampling with GPS



- **Productivity of each soil sampler is 1000 ha per day**
- **GPS, control and coding system**
- **All samples administrated in on-line system MyAgriLab**

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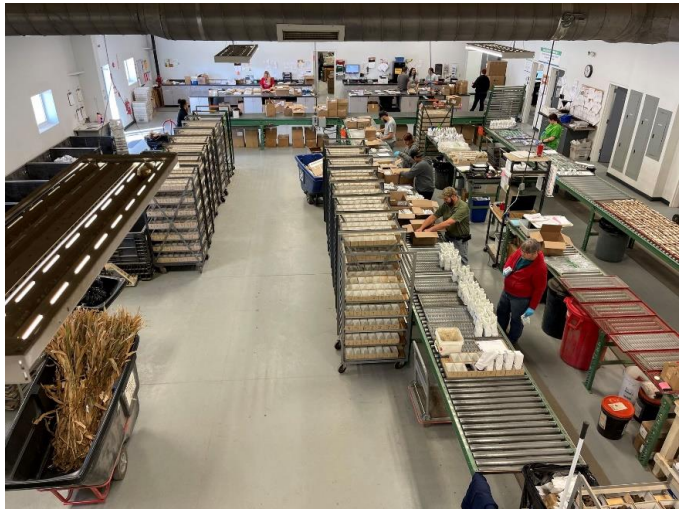
Step #2: Soil analysis

Test measures: granulometric texture, pH, buffer pH, sum of cations (CEC), base saturation (%), soluble salts, organic matter, nitrate-nitrogen, phosphorus, potassium, calcium, magnesium, sodium, sulfur, zinc, iron, manganese, copper, **carbon** etc.

The laboratory **certified**: NAPT PAP, MAP, NFTA

Productivity is 4000 samplers per day.



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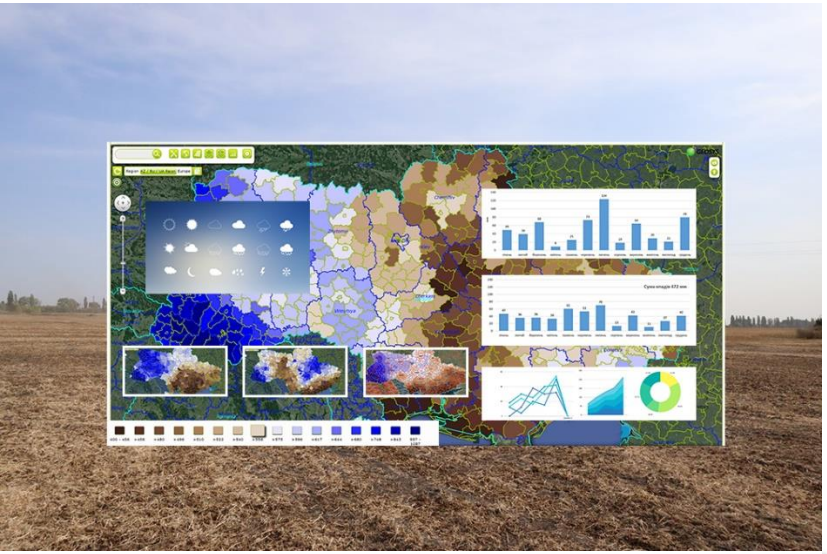
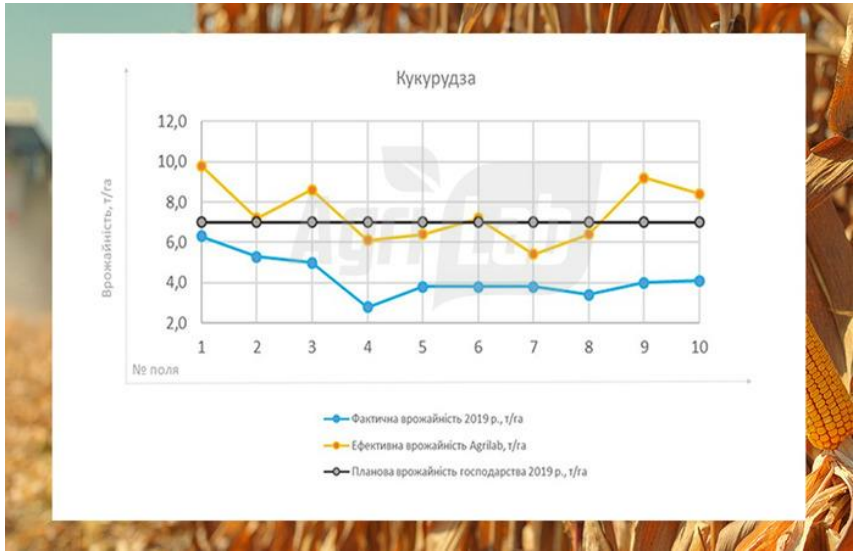
Step #3: Weather and climate analysis



- Dynamics of precipitation and temperatures
- Distribution of precipitation and temperatures during the growing season

- Soil moisture level and moisture-holding capacity
- Identification of critical factors



- Assessment of precipitation sufficiency and temperature distribution, evapotranspiration for growing various crops

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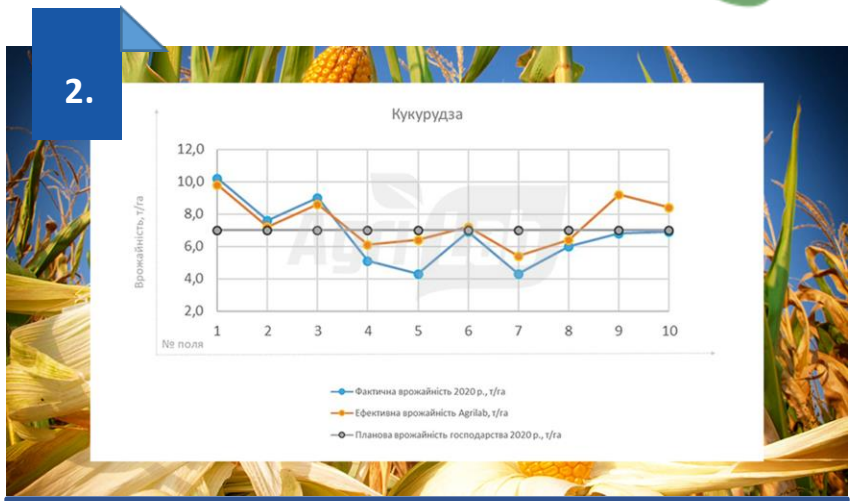
Maps, Recommendations

1.

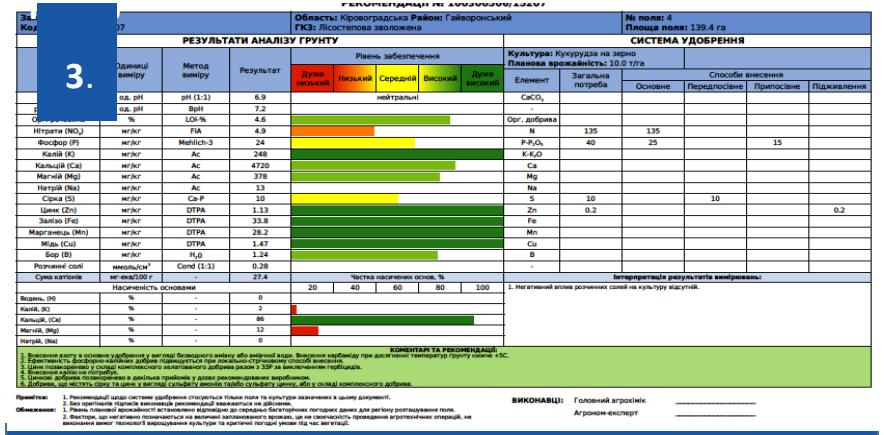
Agrochemical

2.



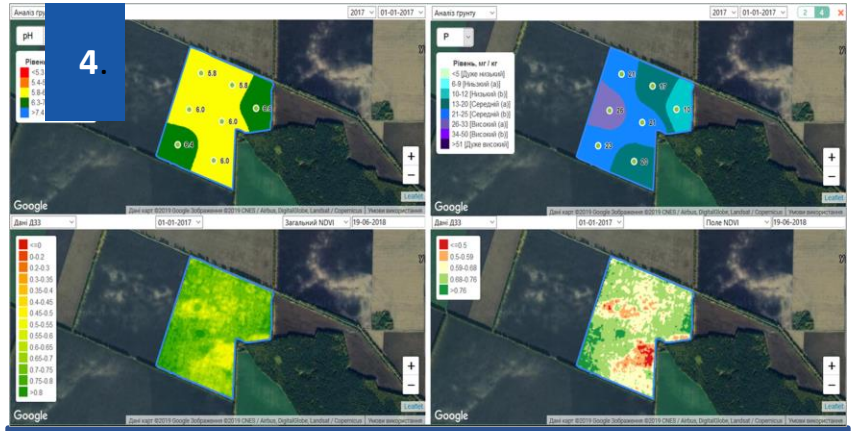
Determination of effective yield

3.



Recommendations about fertilization, crops ro moisture-saving technologies

4.



Digitalization in MyAgriLab

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Moisture-saving technologies

Testing

- Climate and weather data analysis
- Soil testing and measurement
- Crop rotation analysis
- Technological audit

Implementation

- Tillage technology
- Fertilization
- Crop rotation

Result

- Improving soil structure
- increase productivity and profitability
- Reducing risks

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Complex field expertise: results

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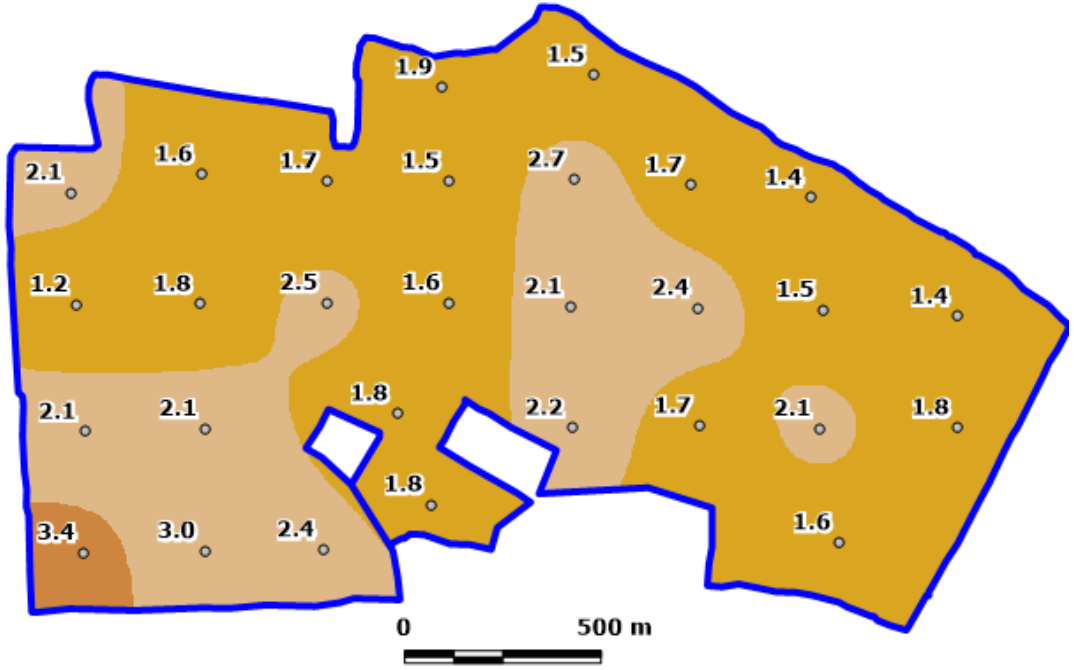
"Yatran" farm

Planned crop of 2018: sunflower

- *The field 291 hectares*

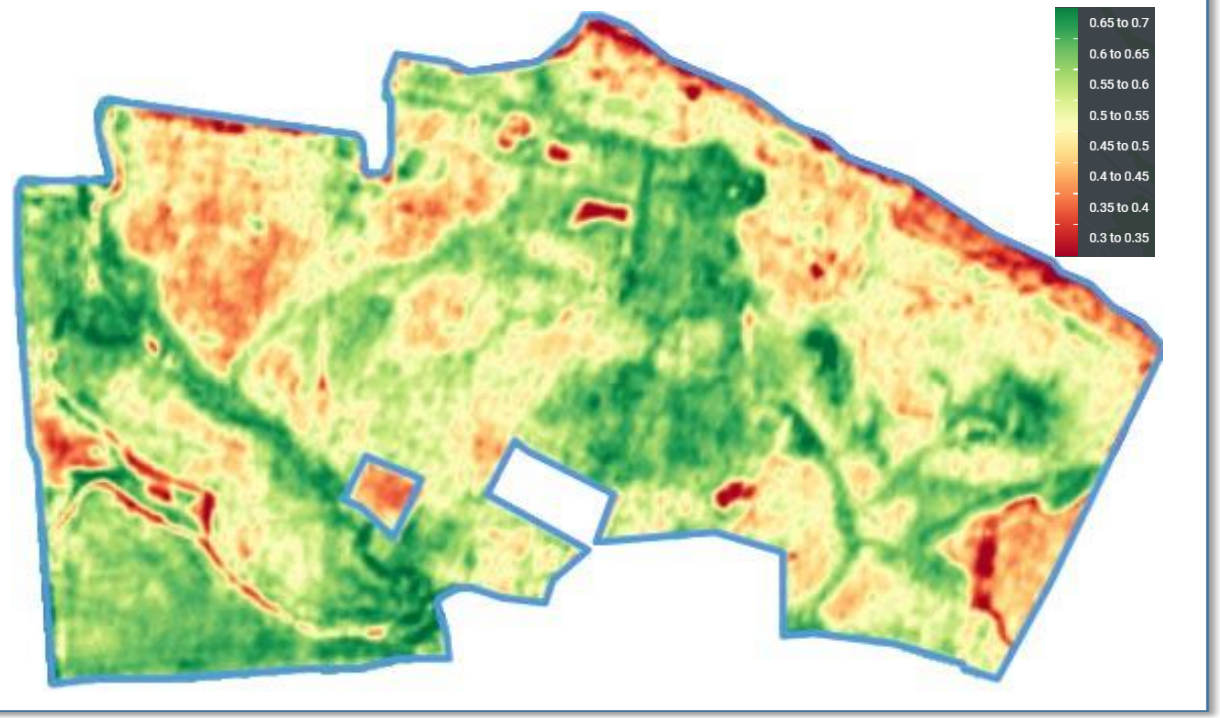
Cartogram of organic matter content



Grouping of soils according to the level of organic matter %

	Very high	>5,0		Average	2,1-3,0
	High	4,1-5,0		Low	1,1-2,0
	Increased	3,1-4,0		Very low	<1,1

NDVI 17.06.2018



Sunflower growth and vegetation depends on the fertility of different areas of the field:

High/medium organic matter content = good plant development

Low content of organic matter = retardation in growth and development

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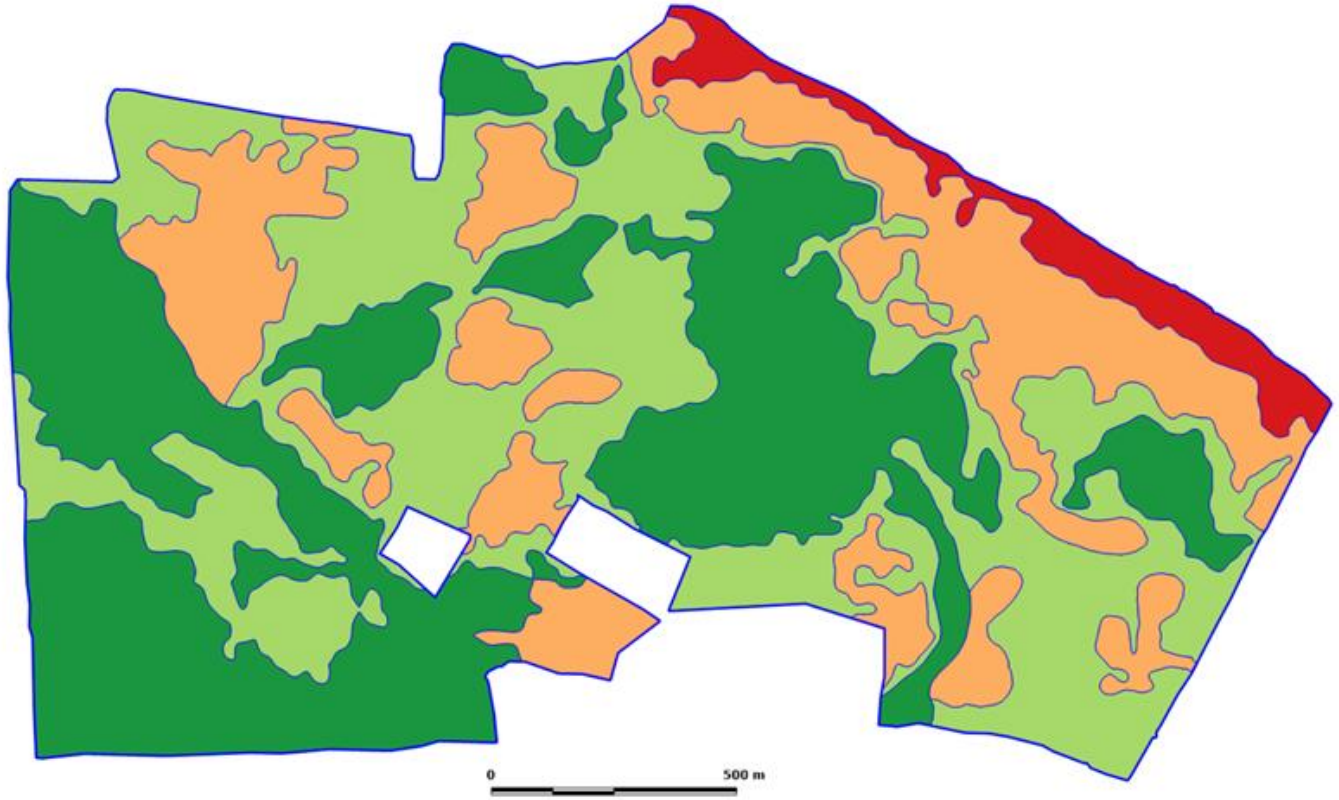
"Yatran" farm

- *Field 18Ru (291 hectares)*

Planned crop: sunflower

Productivity zones according to multi-year satellite monitoring data



Effective yield of sunflower in productivity zones

Productivity zone	Area zones, hectares	Effective yield, t/ha
very low	10,3	**< 1,5**
low	66,5	**1,6 – 2,7**
average	102,7	**2,8 – 4,0**
high	111,5	**> 4,0**
Average across the field	***291,1***	***3,0***

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"Yatran" farm

- *Field 18Ru (291 hectares)*

Effective yield: 3.5 t/ha

Phosphorus requirement: 25 kg/ha per year.

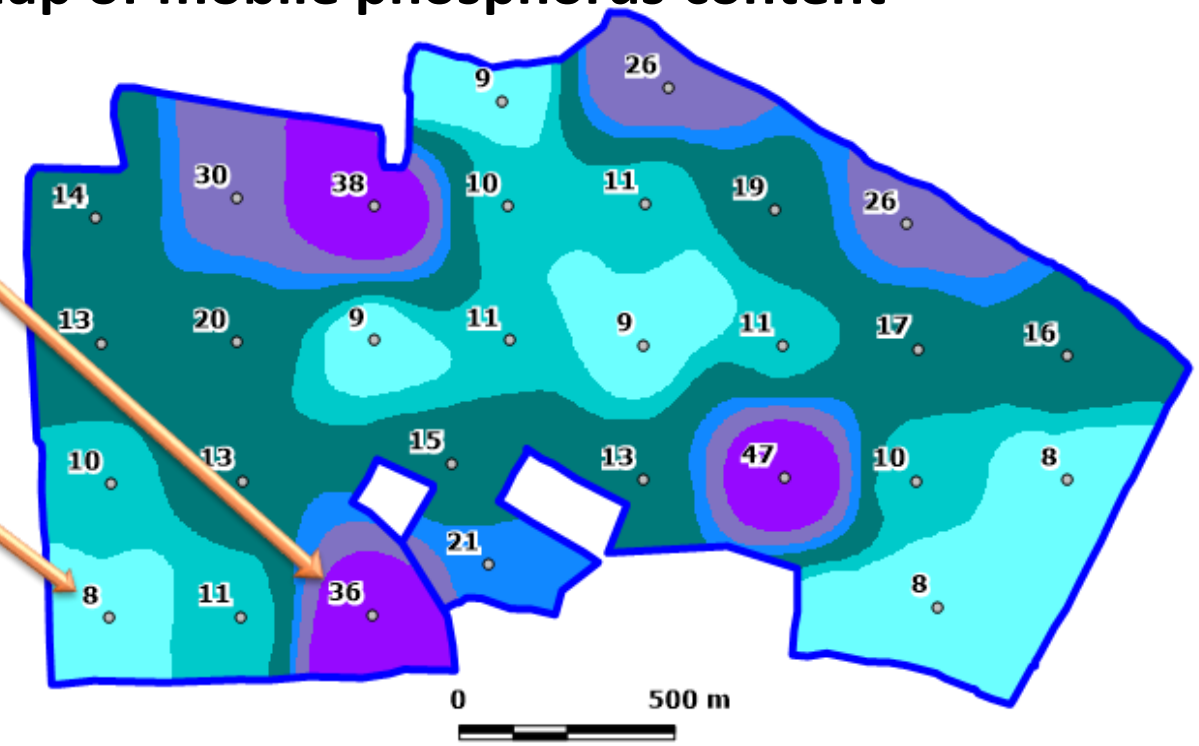
Effective yield: 3.5 t/ha
Phosphorus requirement: 50 kg/ha per year

1. The rate of phosphorus fertilizers depends on the effective crop yield and the actual content of mobile phosphorus compounds in the soil.

2. Within the same productivity zone, the need for power elements may be different.

3. Applying average fertilizer rates to the field does not allow to fully realize the potential of culture in areas with low phosphorus content. Whereas an economically unjustified rate is imposed on plots with high security.

Map of mobile phosphorus content



Soils by phosphorus (P) content, mg/kg

Very high	>51	Average (a)	13-20
high (b)	34-50	low (b)	10-12
high (a)	26-33	low (a)	6-9
Average (b)	21-25	Very low	<5

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"Yatran" farm

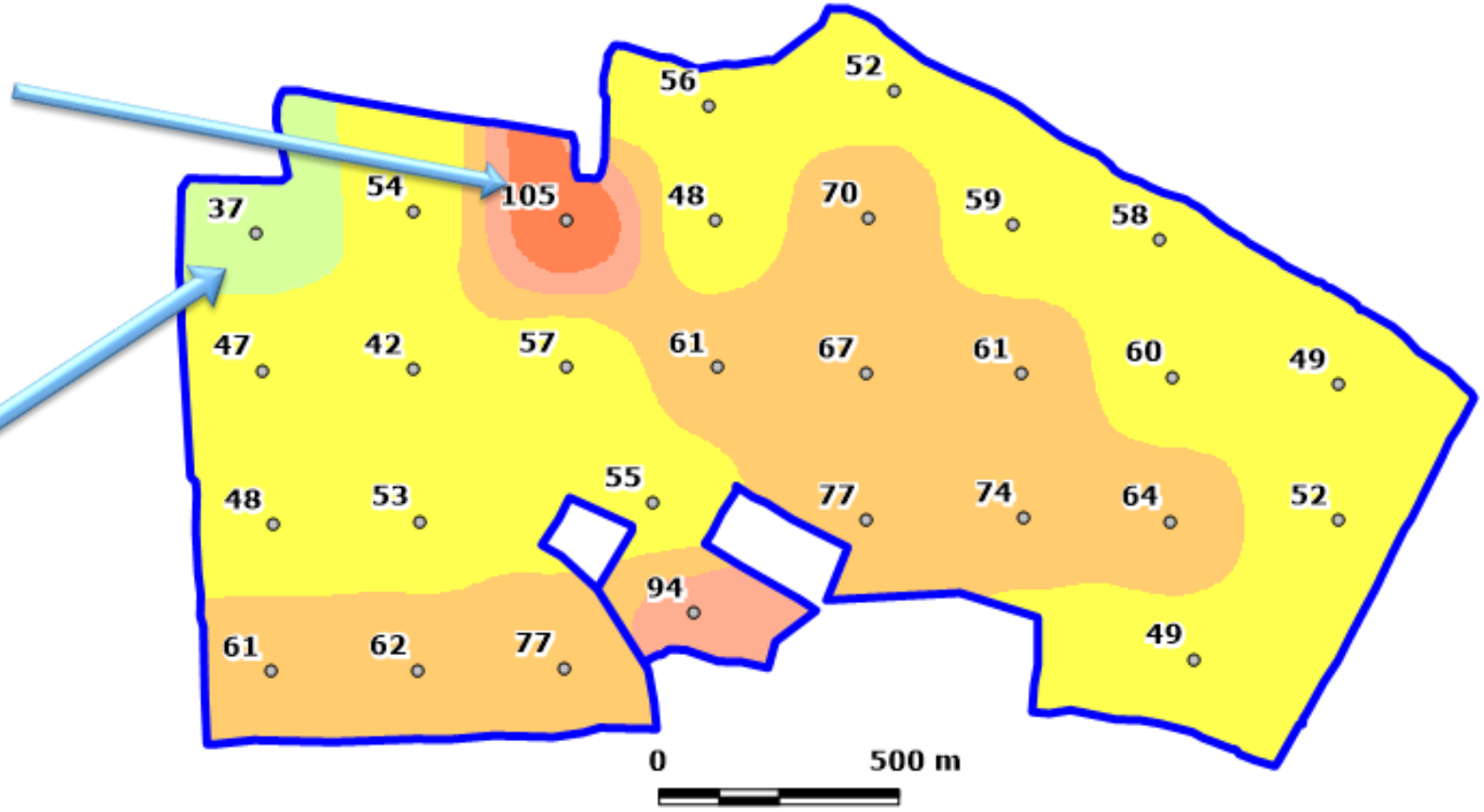
Effective yield: 3.0 t/ha

Need for potassium: 30 kg/ha a.i.

Effective yield: 3.1 t/ha

Need for potassium: 70 kg/ha a.i

Map of potassium content



Soils by potassium (K) content, mg/kg

Very high	>201	Average (a)	81-100
high (b)	161-200	low (b)	61-80
high (a)	121-160	low (a)	41-60
Average (b)	101-120	Very low	<40

Field 18Ru (291 hectares)

Planned crop: sunflower

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"Yatran" farm

Planned crop: sunflower

Field 18Ru (291 hectares)

Effective yield: 2.7 t/ha

Nitrogen requirement: 65 kg/ha per year

Effective yield: 3.5 t/ha

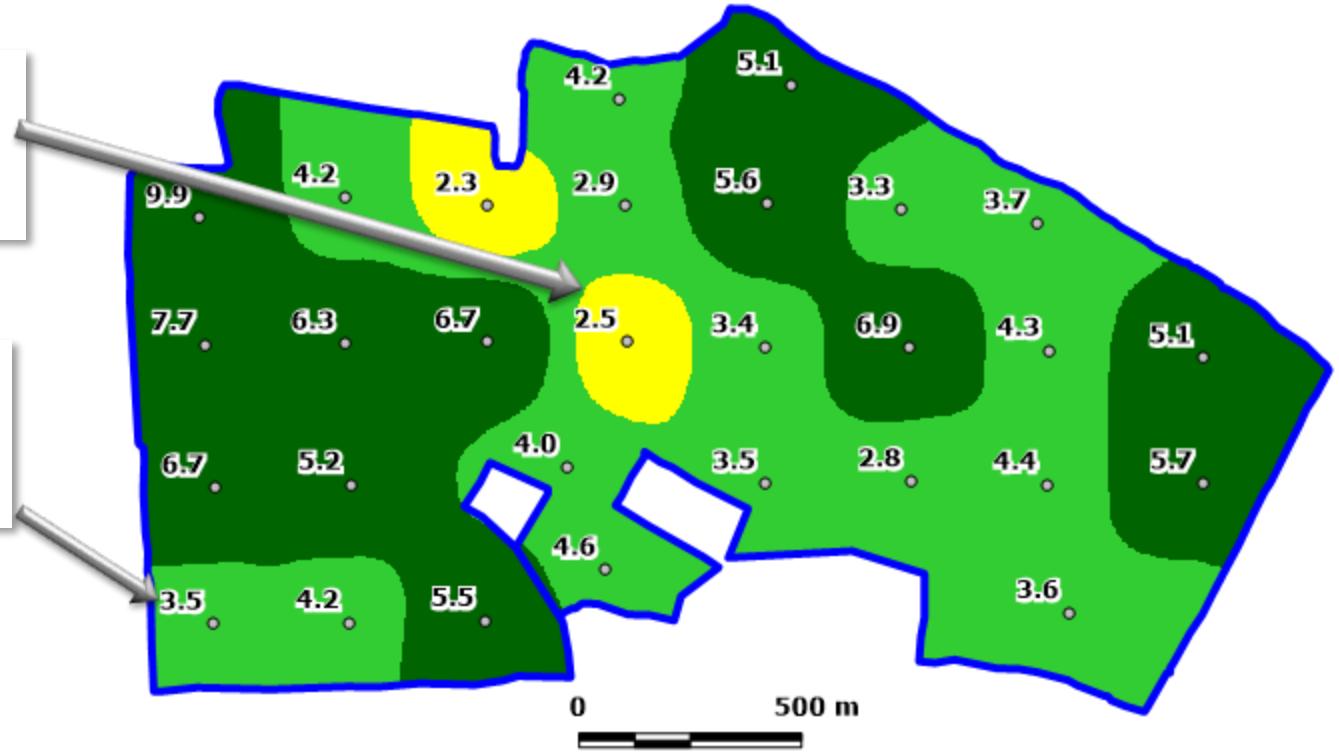
Nitrogen requirement: 85 kg/ha a.i.

Applying the average rate of nitrogen fertilizers to the field:

1) does not allow to fully realize the potential of culture in areas with high productivity.

2) an excessive rate is applied to areas with low productivity, which is economically, ecologically, and energetically impractical.

Map of nitrate nitrogen content



Grouping of soils according to the content of nitrate nitrogen (NO3)

Very high	>15,1	Low	2,6-5,0
High	10,1-15,0	Very low	<2,5
Average	5,1-10,0		

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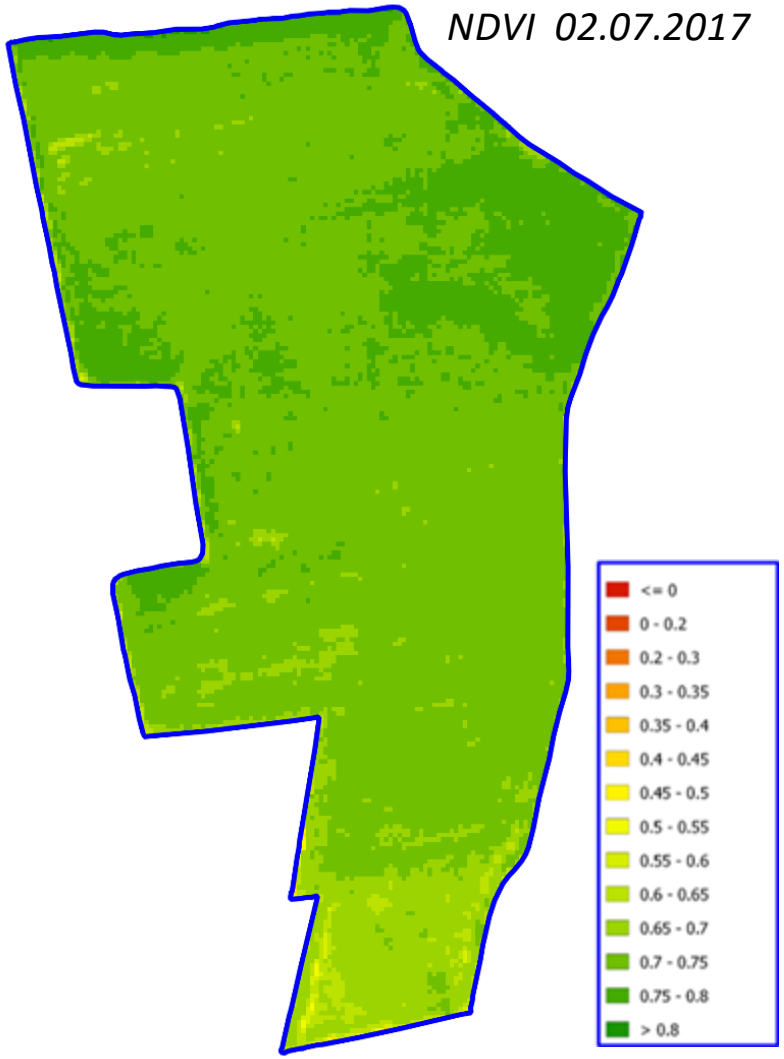
"Yatran" farm

NDVI 02.07.2017



2017 year

CULTURE: Corn
FIELD AREA: 206 ha

CULTURE DEVELOPMENT BASED ON NDVI:
Uniform distribution of the field

FERTILIZER SYSTEM:
Sulfoamofos 200 kg/ha
UAN -32– 300 l/ha

TOTAL NUMBER OF A.I.:
167 N 40 P 28 S

CROP CAPACITY:
7.2 t/ha

2018 year

CULTURE: Corn
FIELD AREA: 206 ha

PLAN. YIELD:
Effective yield+
additional income

SCHEDULED FERTILIZERS:
Sulfoamofos 177 kg/ha
UAN -32 – 235 l/ha

TOTAL NUMBER OF A.I.:
135 N 35 P 25 S

APPLICATION OF FERTILIZERS:
VRA

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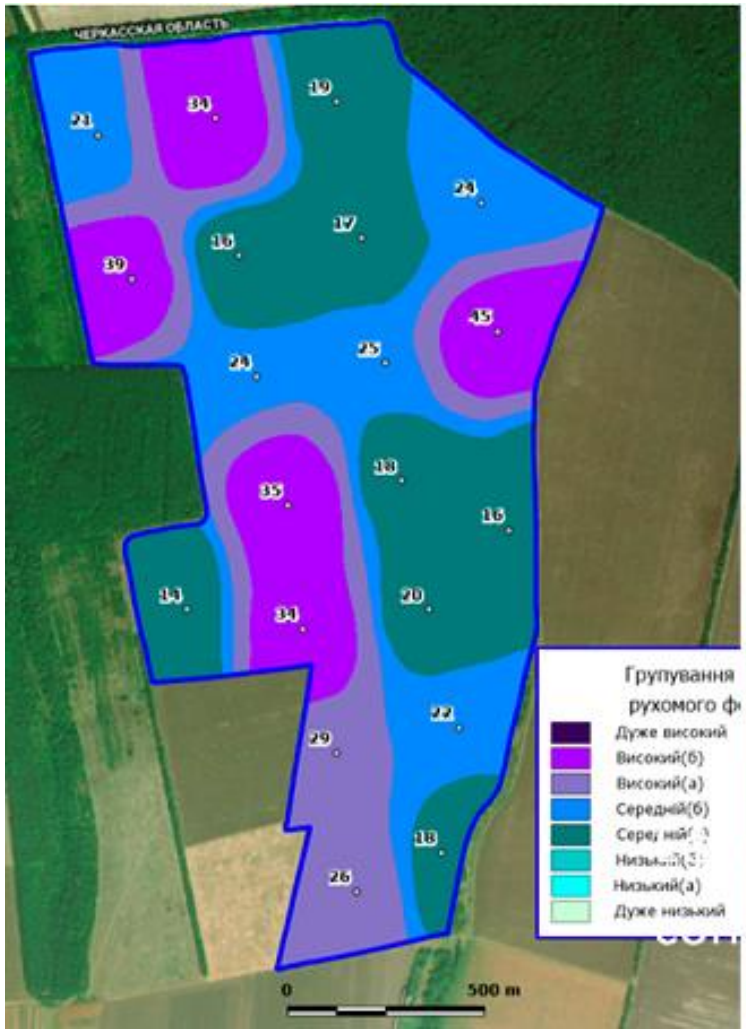
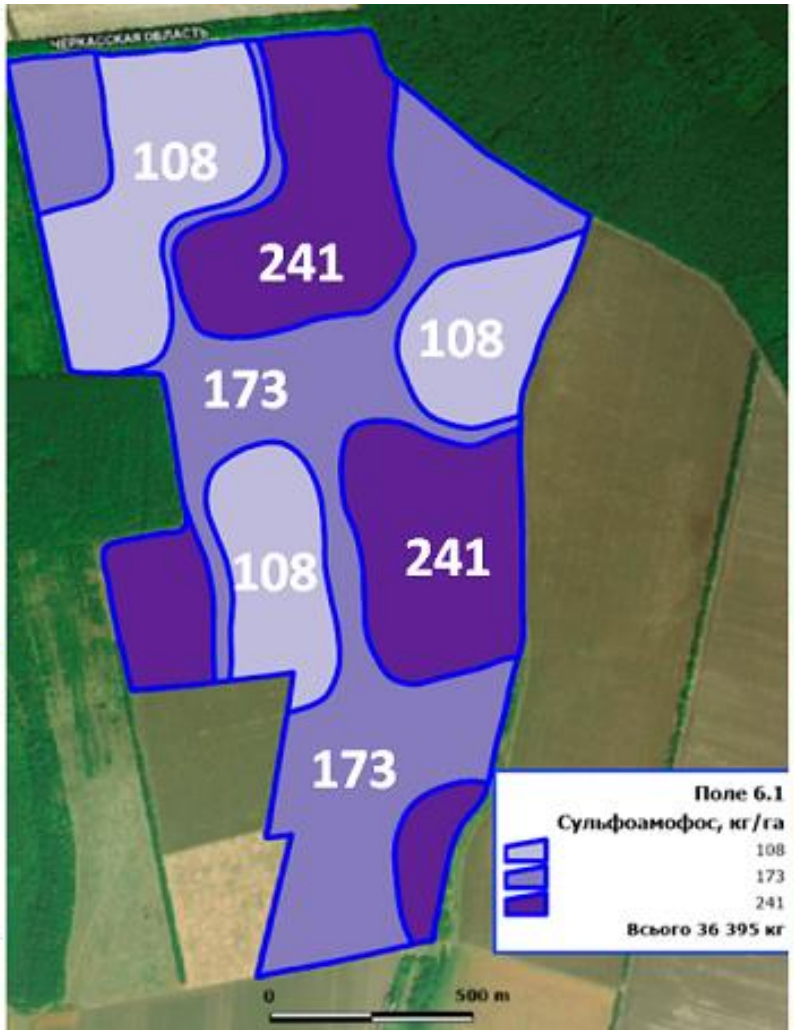
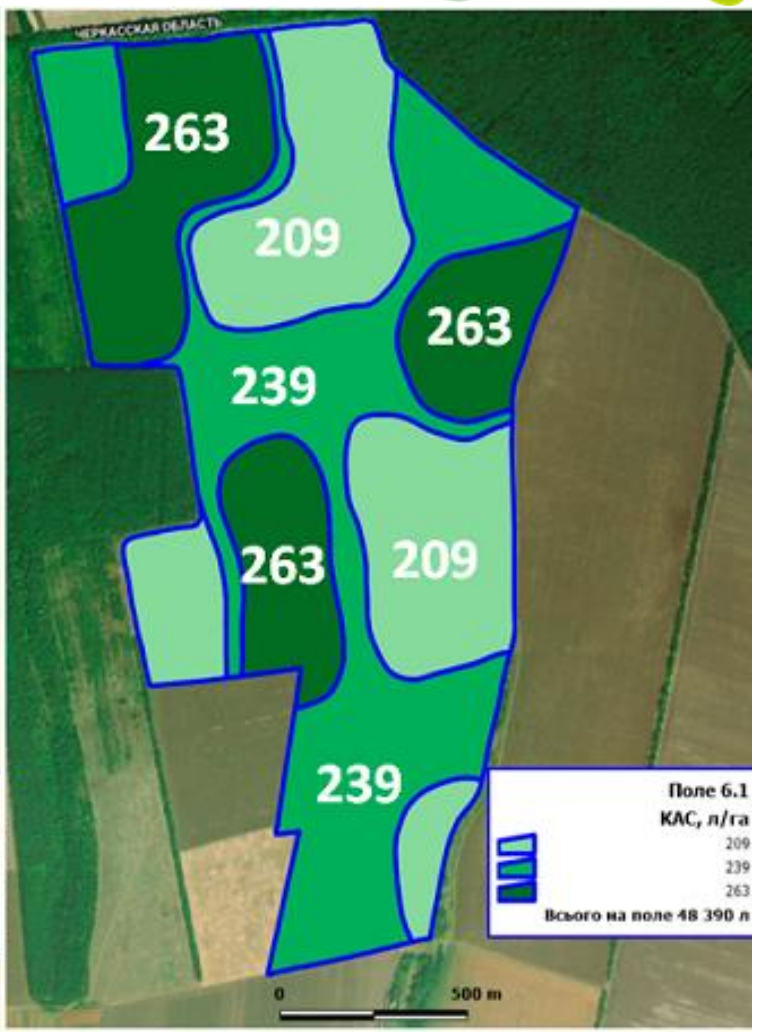
"Yatran" farm



Phosphorus content



Map-task - sulfoamofos



Map-task - UAN -32

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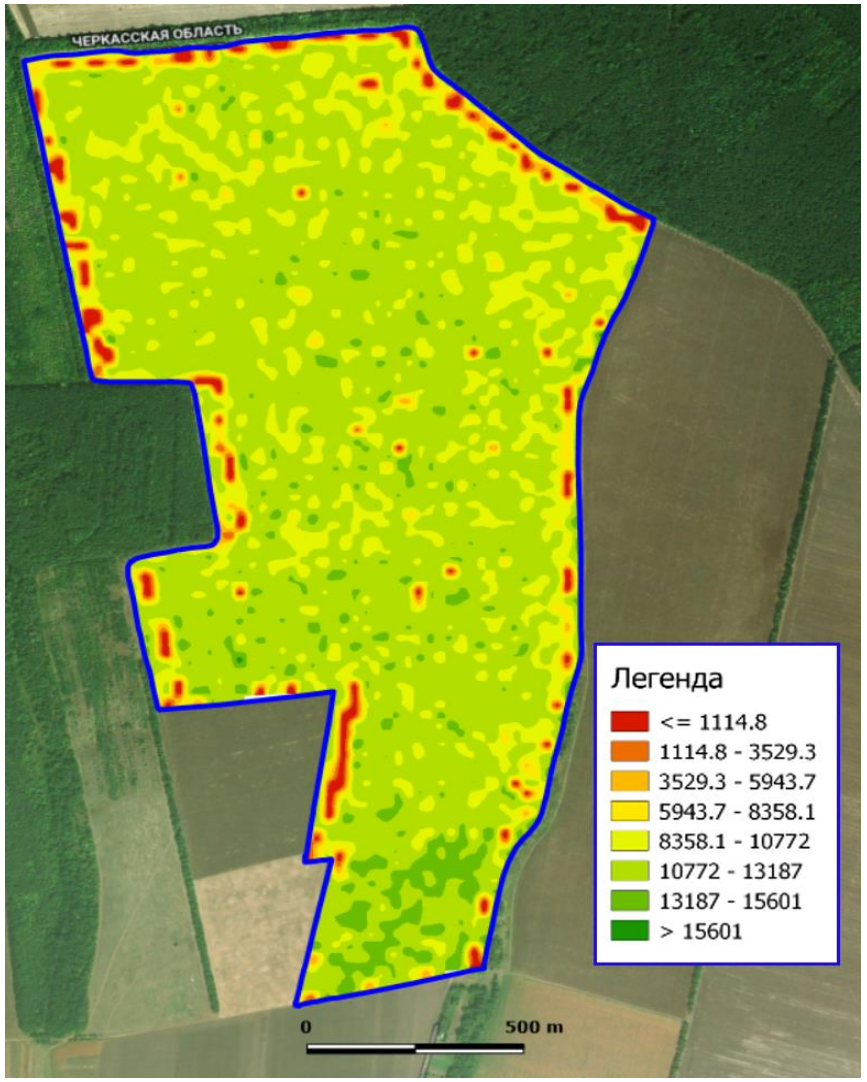
"Yatran" farm 2018



2017 year	Fertilizers	2018 year
200 kg/ha 300 l/ha	Sulfoamofos UAN -32	177 kg/ha 235 l/ha
	A.I.	
167 N 40 P 28 S		135 N 35 P 25 S
	Total need	
41,2 t 61 800 l	Sulfoamofos UAN -32	36,4 t 48 400 l
	Yield	
7,2 t/ha		12,8 t/ha

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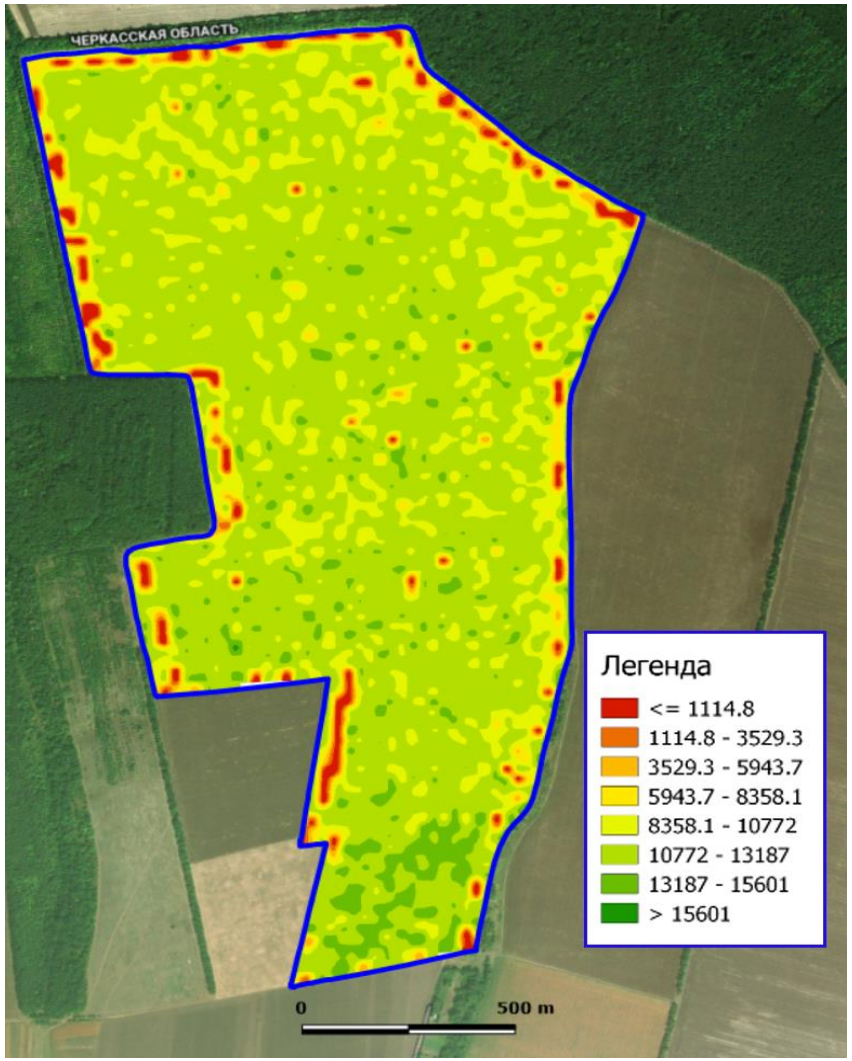
"Yatran" farm 2018



Precipitation in 2017-2018

Month	2017	2018
March	32	76
April	70	17
May	47	25
June	49	85
July	52	80
August	35	10
September	59	41
During the growing season	**345**	**335**
In a year	**587**	**559**

Yield

7,2 t/ha | **12,8 t/ha**

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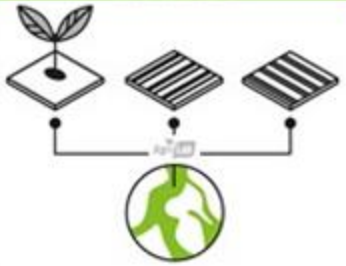
"Yatran" farm 2018

2017/2018	Fertilizer	Weather	Fertilizers cost	Yield	The results
					
2018 Agrodiagnostics	Before sowing, VRA: Sulfoamofos (NPS 20:20:14) 177 kg/ha UAN-32, 235 l/ha	**559 mm/year**	**146 $/ha**	**12,8 t/ha**	**+898 $/ha**
2017 Standard	Before sowing: Sulfoamofos (NPS 20:20:14) 200 kg/ha UAN-32, 300 l/ha	**587 mm/year**	**181 $/ha**	**7,2 t/ha**	**Planned data**

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Effective productivity

Field	Area, ha	Planned culture	Effective yield, t/ha	Planned yield, t/ha	Yield difference, t/ha	Cost of yield difference, USD/ha	The need for nutrients, kg/ha					Difference in the cost of fertilizers, USD/ha
							N	P2O5	K2O	Total NPK	NPK difference Kg-ai/ha	
1	200	Corn	**7,4**		**-2,4**	**-434**	97	15	47	159	**-45**	**-38**
				9,8			133	15	56	204		
2	100	Corn	**8,8**		**-1,0**	**-181**	102	25	62	189	**-18**	**-15**
				9,8			115	27	65	207		
3	90	Corn	**10,4**		**+0,6**	**+109**	129	55	36	220	**+15**	**+14**
				9,8			119	52	34	205		
4	300	Sunflower	**4,0**		**+0,7**	**+265**	81	54	50	185	**+38**	**+35**
				3,3			57	47	43	147		

Summary: Data collection, analysis and evaluation!

- planned real yield
- saving resources on overvalued fields

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Agrodiagnostic result

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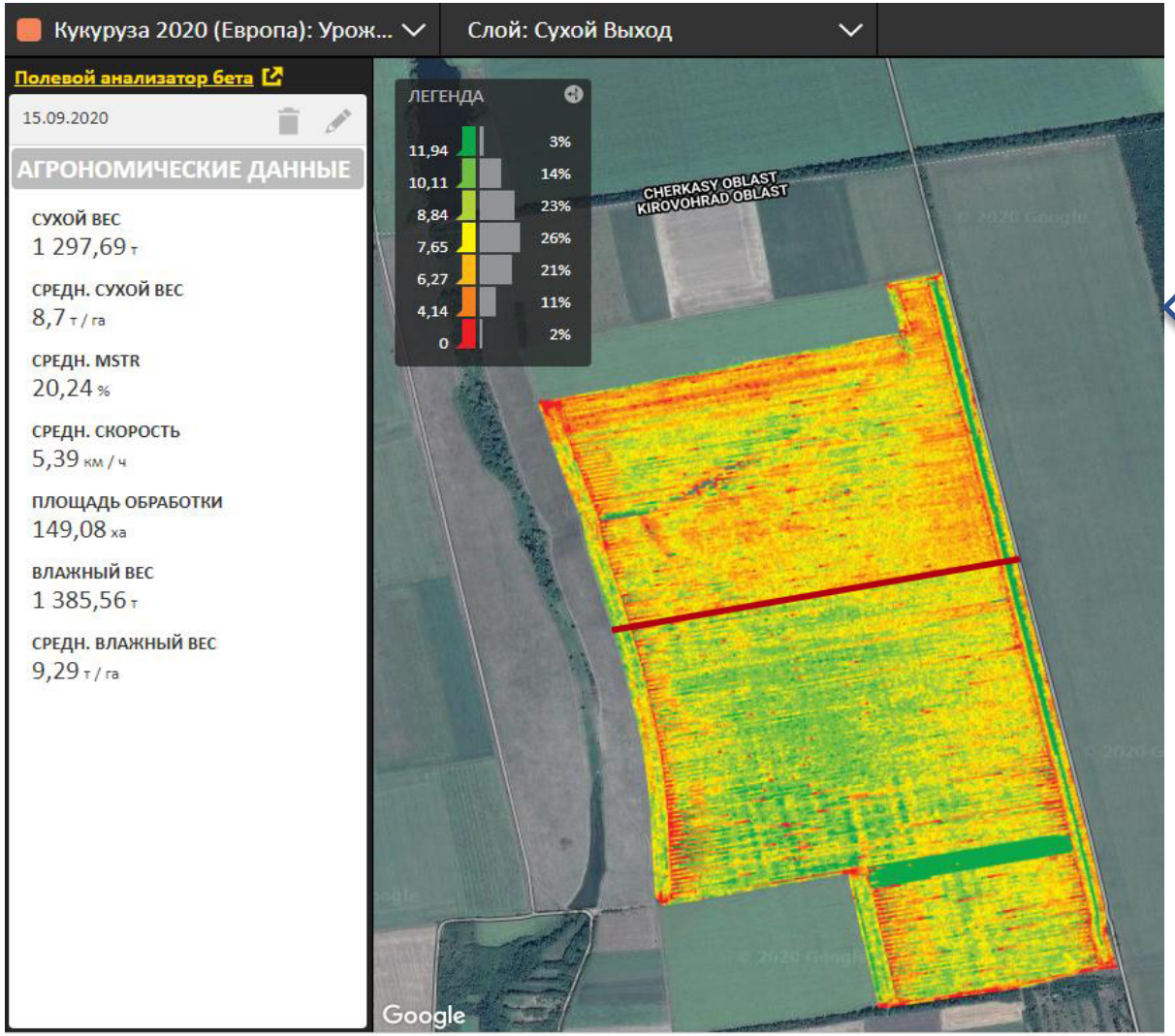
Strip-till + agrodiagnostic



Result:

+629-1074 USD/ha additional income

53 USD/ha savings on fertilizers

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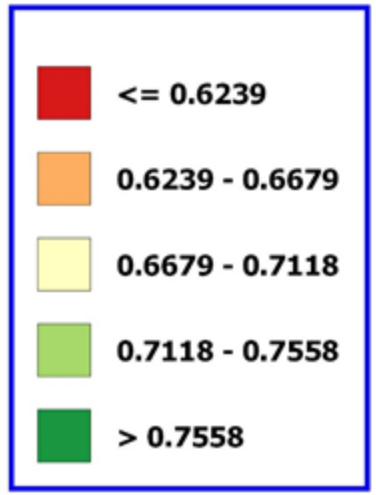
Efficiency local band application of fertilizers, sunflower

Not implemented
local band
application of fertilizers

Implemented
local tape
application of fertilizers



!Savings on fertilizers up to 30% without changing the agronomic effect compared to spreading

!Increase in productivity due to efficiency

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Possible loss of corn yield per grain due to soil pH

The average long-term yield level at optimal pH is 9.0 t/ha

pH in the zone	Loss of harvest, t/ha	Zone area, ha	Loss of harvest in zone, t	The value of the under-obtained harvest, USD
6,6	-	35,50	-	-
6,0	0,36	28,04	10,2	1529
5,7	0,96	29,82	28,5	4268
4,9	3,99	40,53	161,6	24167
In total		**133,89**	**200,3**	**29964**

**Cost of 1 ton: corn - 149 USD*

! Delay in adjusting the pH of the soil solution of the fields leads to annual agronomic losses in the form of reduced yields and has a significant impact on economic performance indicators. (see an example of calculations for corn per grain).

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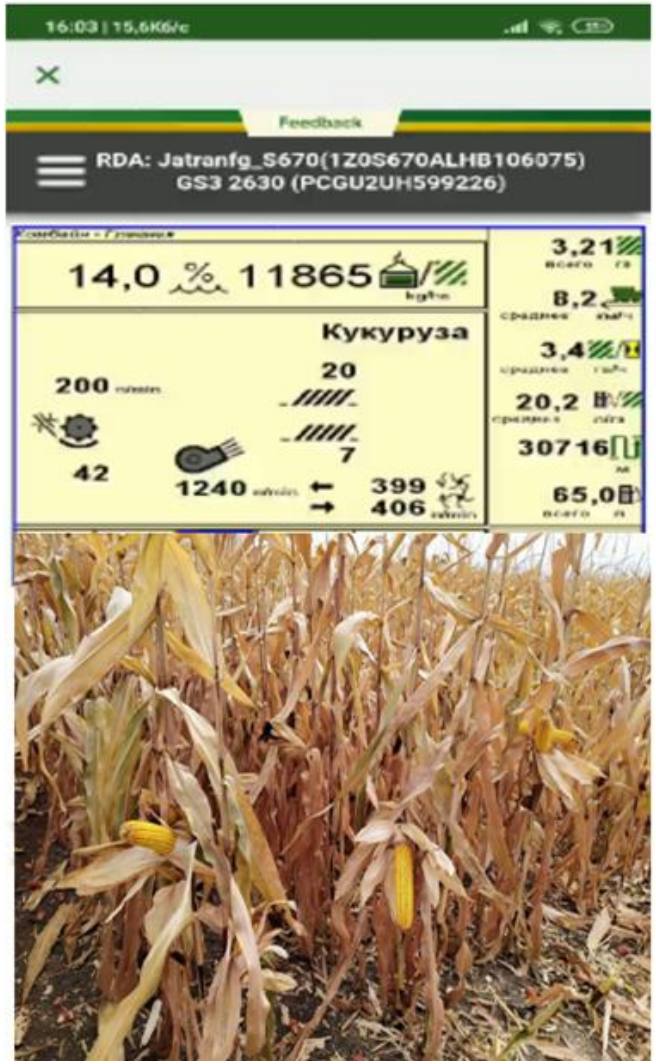
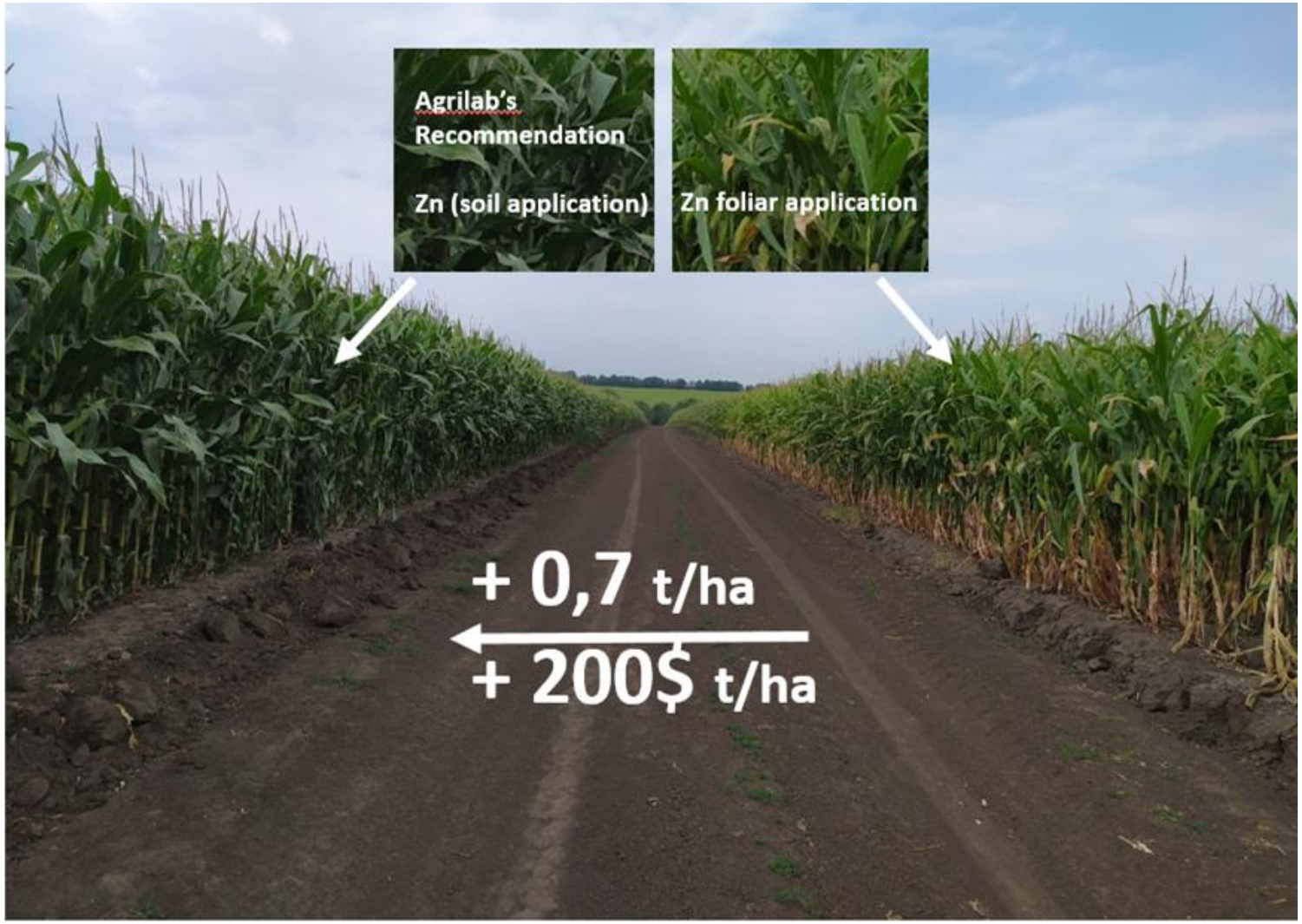
Limiting factors - zinc and its deficits





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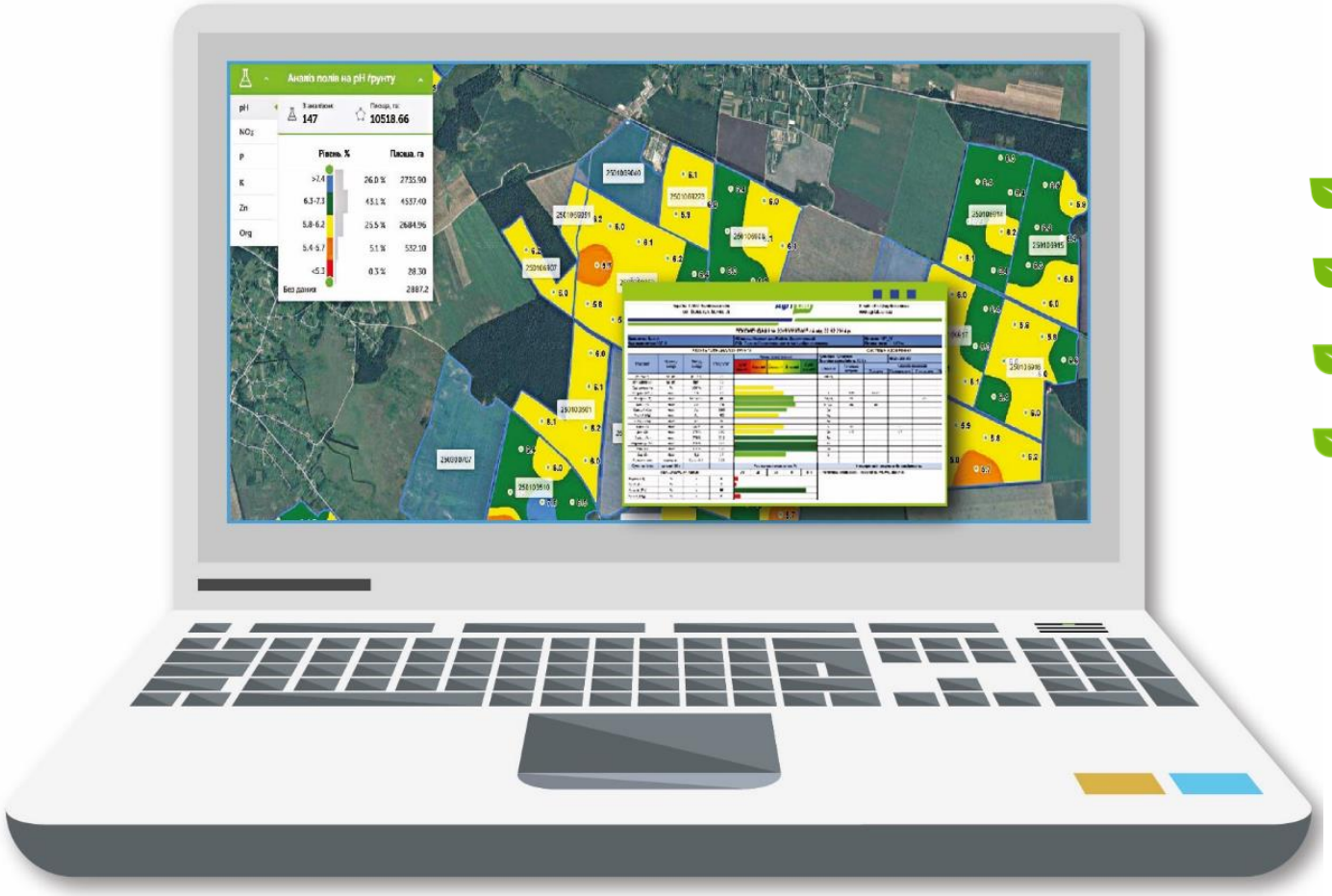

- Enclosure with history of change
- Soil analysis data
- Cropping plan
- Analytics tools

Result: production cost optimization, rapid decision-making, operational efficiency

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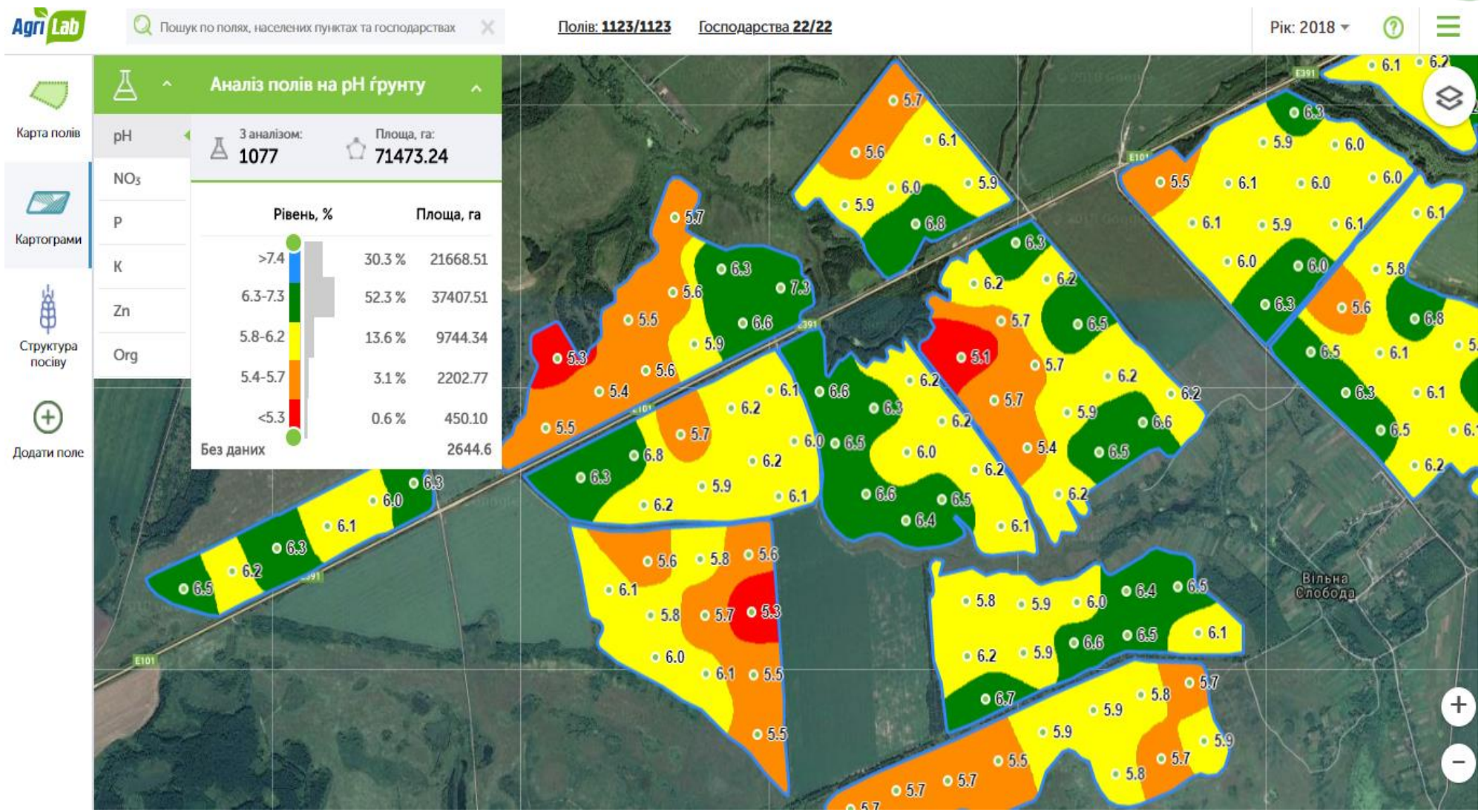

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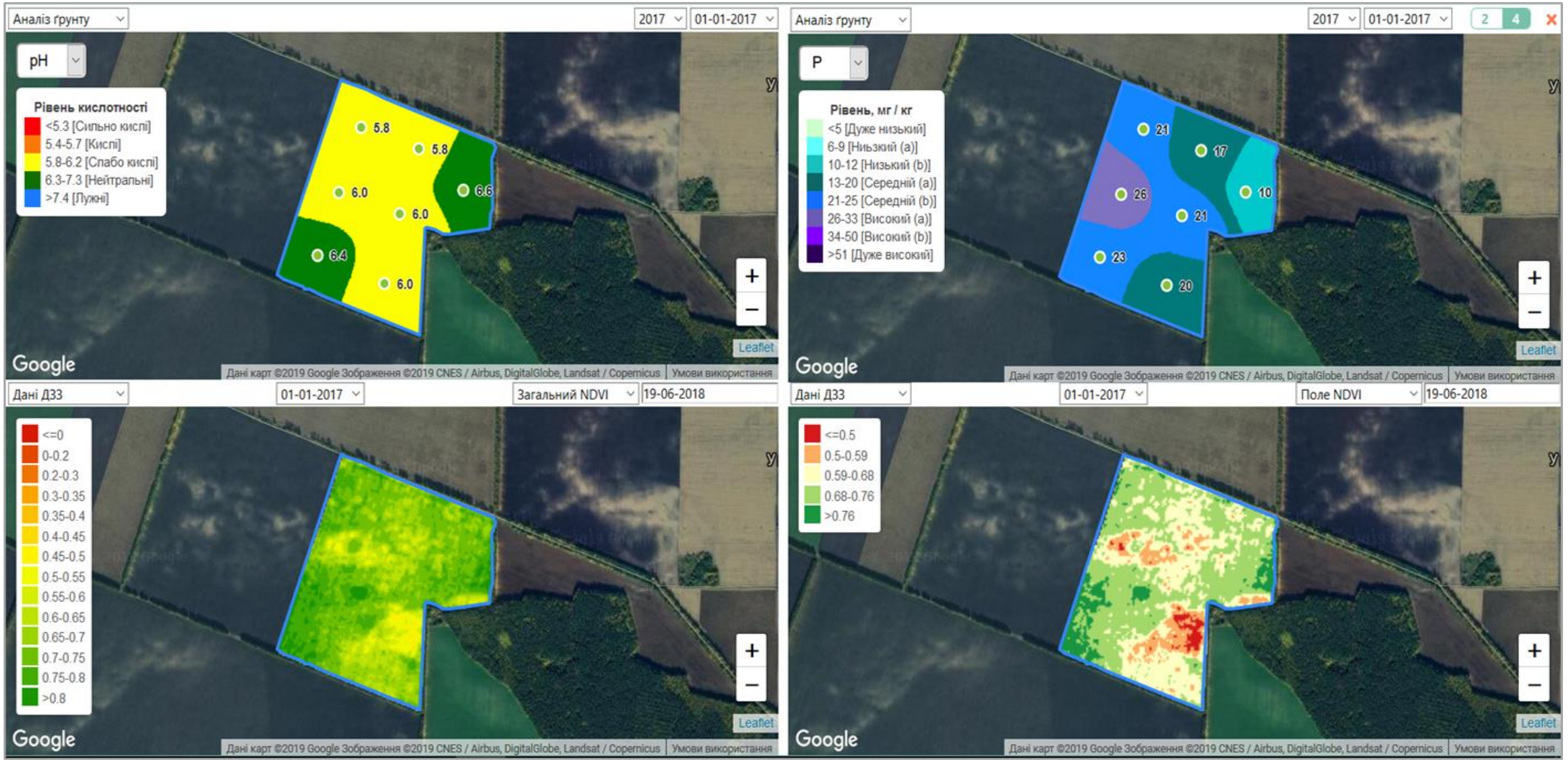

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Thank you !

For more information

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