

# ACCELERATED SOIL RESTORATION

DAMAGED AS A RESULT OF MILITARY OPERATIONS,  
BASED ON INNOVATIVE BIOTECHNOLOGIES



## OBJECTIVES.

Creation of an effective tool for making management decisions on the effective use of land resources after the end of hostilities for authorities, businesses and landowners.

## OFFER.

Digitization of the land bank, creation of an interactive map, agronomic and biological diagnostics, assessment of safety indicators, development of environmentally friendly remediation technologies

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ARYS TRADE INVEST



# RECLAMATION OR CONSERVATION?

25-30% of Ukraine's territory has been affected by military operations. This is about 8 million hectares of agricultural land. As a result, the world is missing out on about 20 million tons of grain; entrepreneurs are missing out on about \$1.6 billion in profits, the state is missing out on about \$0.4 billion in taxes to budgets of various levels, and ordinary workers are missing out on about \$0.8 million in wages.

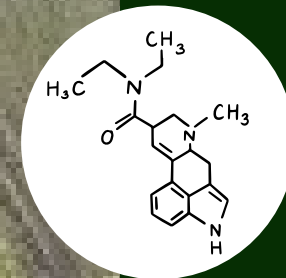
## DAMAGE TO SOILS



Mechanical contamination



Physical pollution



Chemical contamination

# 174 000

of Ukraine's square kilometers are  
contaminated with hazardous items



# DEVELOPMENT OF RECLAMATION PATHWAYS (STRUCTURE-STAGES)

## ASSESSMENT OF THE CONDITION OF LAND IN NEED OF RESTORATION

- Digitization of the studied areas, creation of an interactive map
- Determination of the degree of heterogeneity and variegation
- Preliminary assessment of the soil surface condition and geological and morphological conclusion
- Agronomic diagnostics (agrochemical and agrophysical examination)
- Diagnostics of the soil microbial community involved in the formation of soil fertility

## FORMATION OF AN EXPERT OPINION ON THE STATE OF THE STUDIED AREAS

- Assessment of the condition of the studied areas
- Determination of their suitability for reclamation

# DEVELOPMENT OF RECLAMATION PATHWAYS (STRUCTURE-STAGES)

## DEVELOPMENT OF RECLAMATION ROUTES

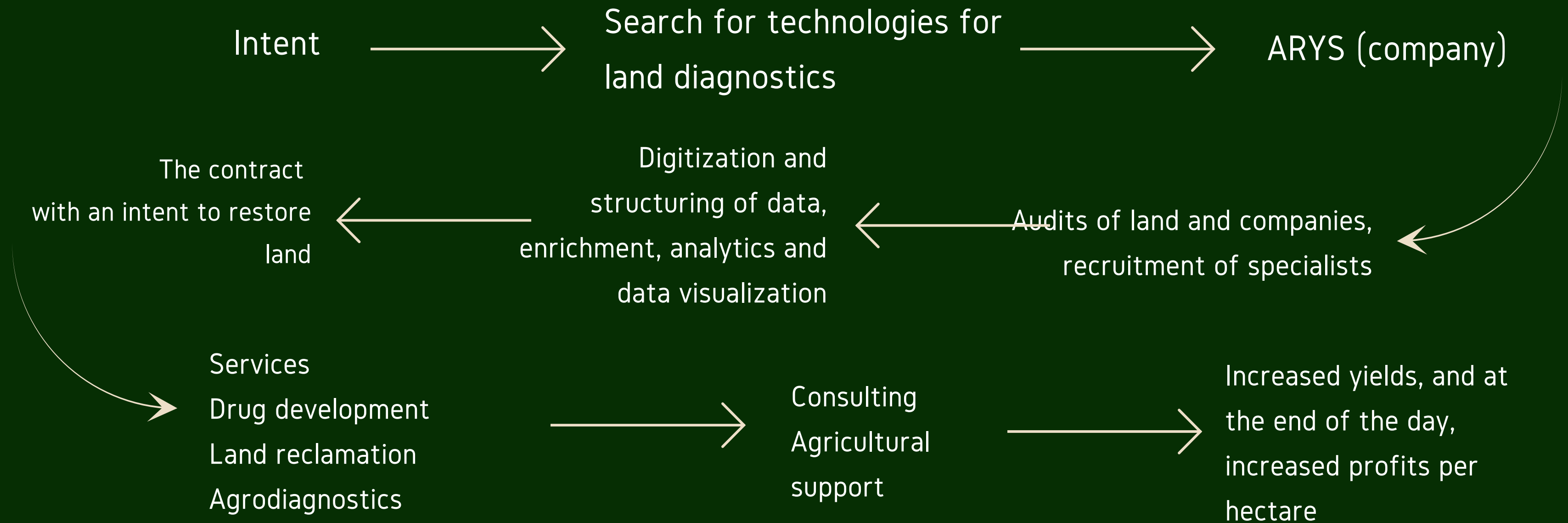
- Selection of technology
- Calculation of costs
- Formation of a comprehensive reclamation program

## IMPLEMENTATION OF RECLAMATION MEASURES

- creation of schemes for comprehensive assessment (microbiological, agrochemical) of the state of different types of soils affected by military actions
- development of new formulations of organic and biological products and schemes for their use for land reclamation



# BUSINESS MODEL



# ROADMAP

## 4Q 2024

Obtaining investments to organize the office and equip the laboratory for primary sample preparation.

## 2025

IT monitoring of land, creation of interactive maps, diagnostics of land quality

## 2026

Formation of analytical databases and development of land reclamation products

## 2027

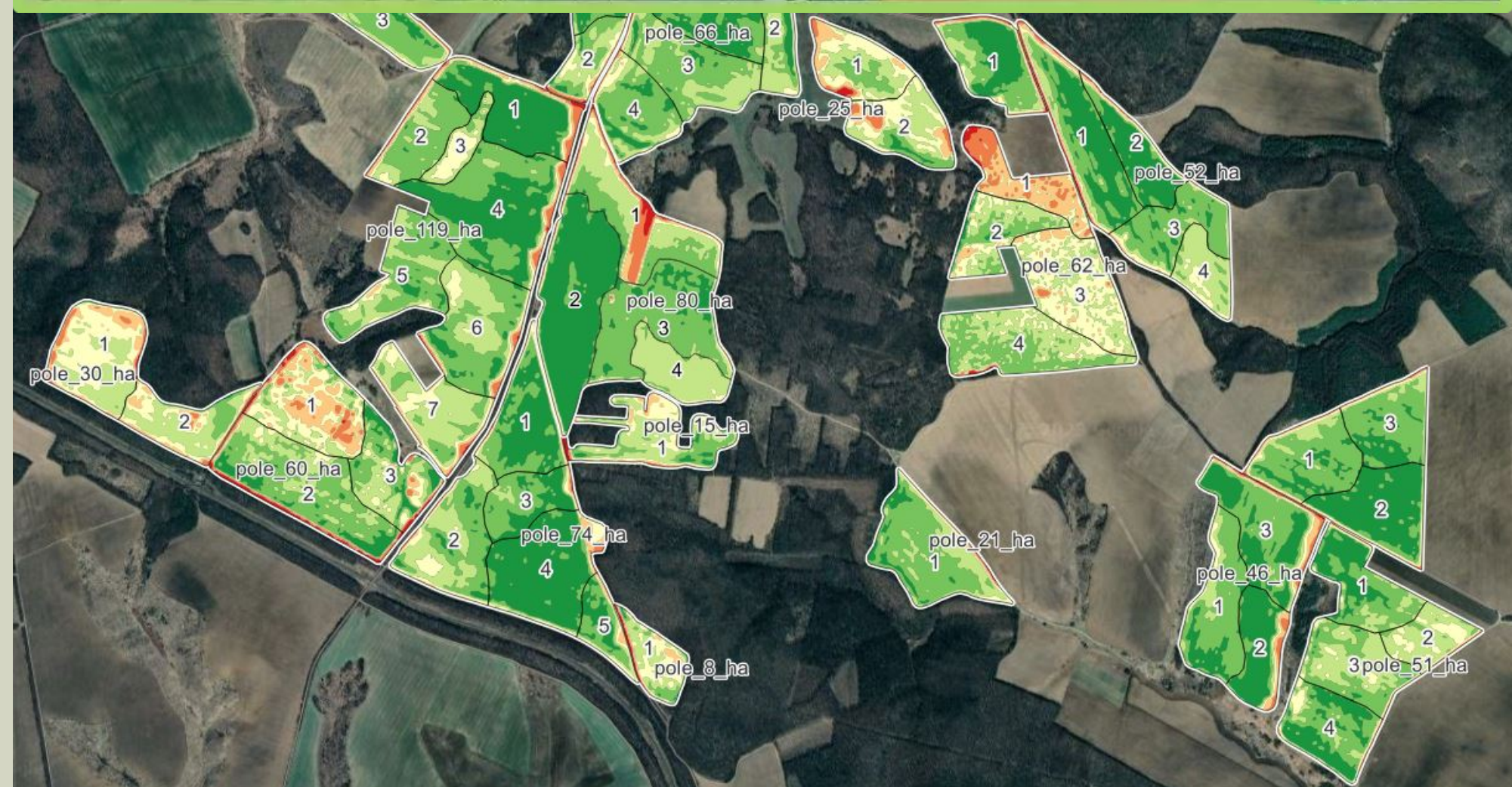
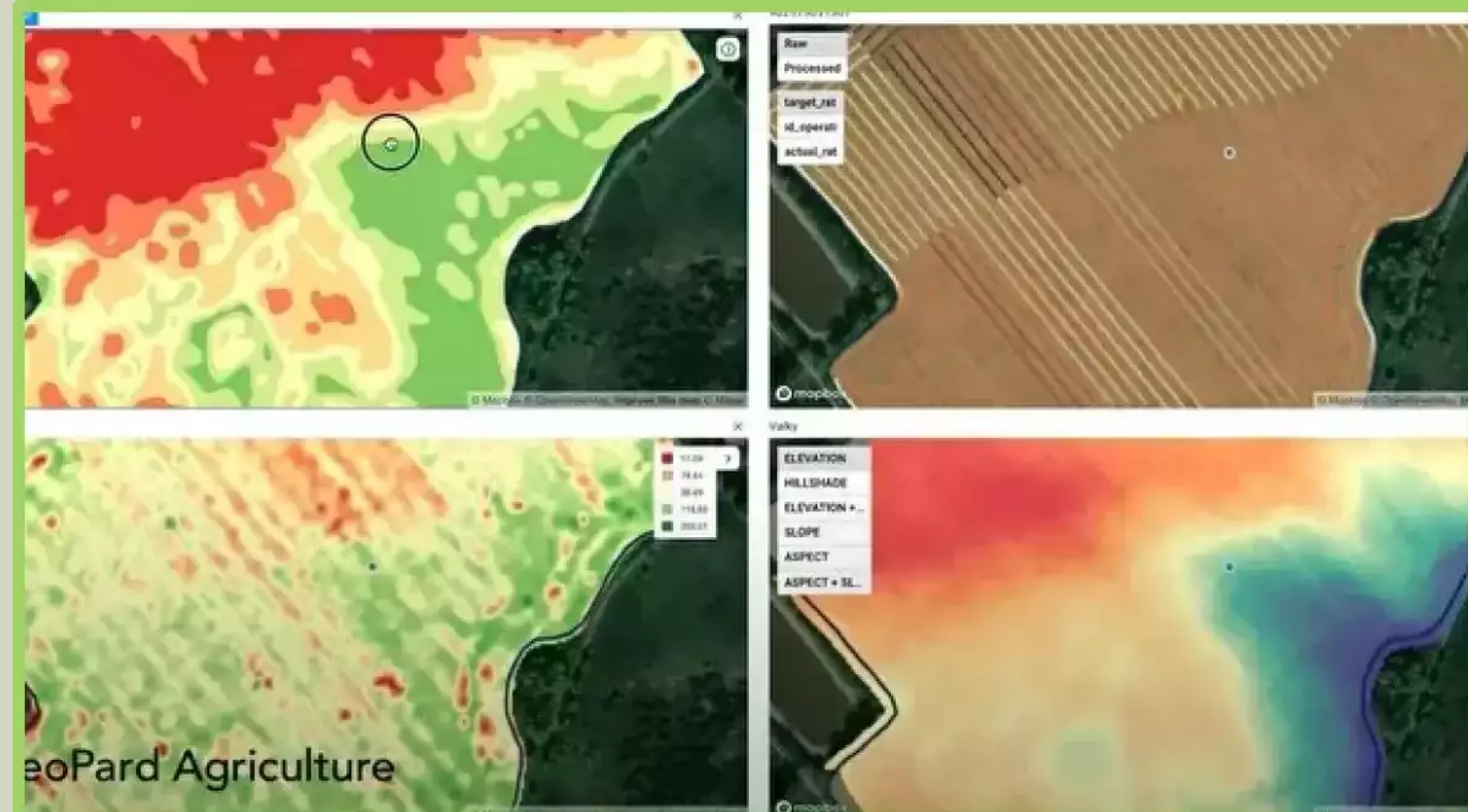
Testing of developed products and agricultural consulting

# DIGITIZATION OF GEOPARD AGRICULTURE RESEARCH AREAS

- Determination of the degree of heterogeneity and variegation;
- Preliminary assessment of the soil surface condition;
- Structuring of the studied areas into plots by the level of regradation
- Soil mapping for productivity indices;

If the company has already been digitized, we can use its maps as a basis for entering information.

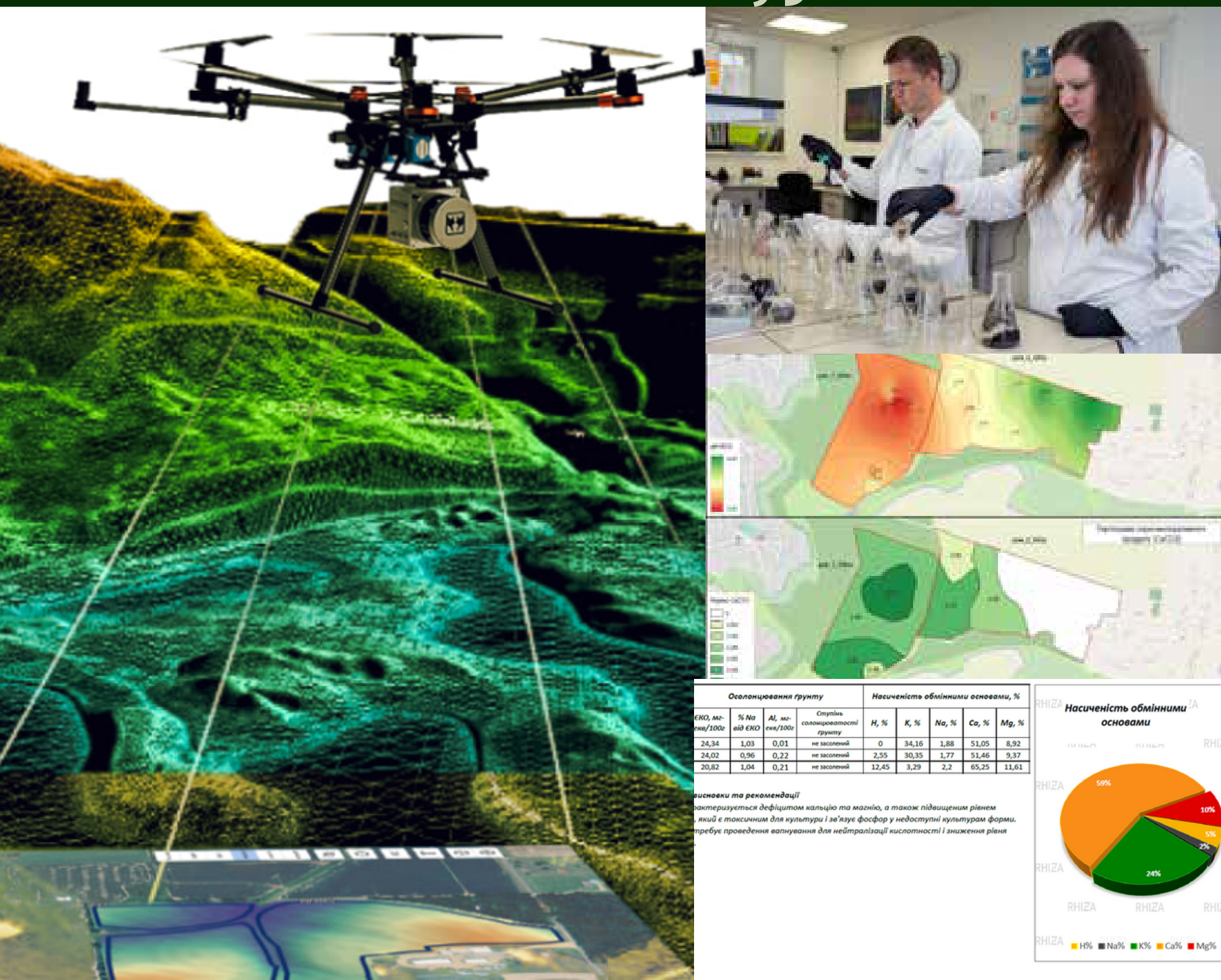
At the request of the customer, a number of legal and land maps can be created





# AGRONOMIC DIAGNOSTICS

(agrochemical, agrophysical environmental survey)



## Soil sampling

Formation of an average sample from 15-20 pricks (zones 15-20 hectares). Selection with fixing GPS coordinates.

## Laboratory analysis of samples

Determination of the level of availability of the main important physical and chemical soil indicators that form the productivity and safety of the studied areas

## Formation of conclusions and recommendations

- Conclusion on the actualization and suitability of the soil for agricultural use.

Assessment of the level of productivity

## Development of solutions and programs for soil regeneration

Selection of relevant programs and technologies to achieve the target indicators

Creating a roadmap for program implementation

- Consulting support of the program implementation stages

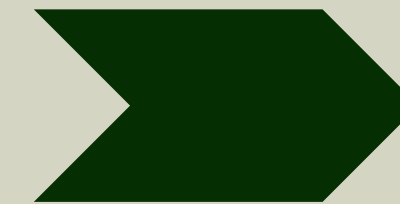
# MICROBIOLOGICAL EXAMINATION



Assessment of environmental conditions, presence and quantity of pollutants

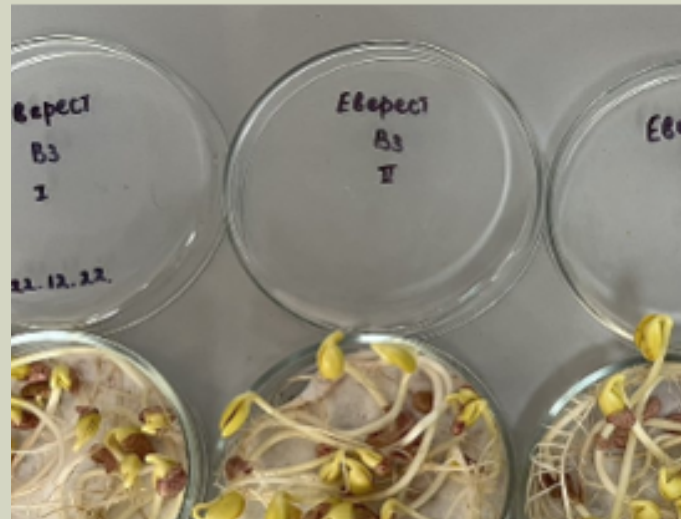


Development of a biotechnology for accelerated restoration of ecological condition, microbial cenosis and soil fertility damaged as a result of military operations



Developing biotechnologies for detoxification and returning the affected land to full land use.

# STAGES OF MICROBIOLOGICAL DIAGNOSTICS



Determination of microbiocenosis and soil biological activity

1



Study of environmental conditions, presence and quantity of pollutants

2



Studying the impact of pollutants on the phytotoxic state of the soil and the presence of pathogens of key plant diseases that can survive in this ecological niche for a long time.

3



Development of technology for the production of microbial and organic preparations for soil detoxification

4



Testing the effectiveness of the developed preparations in accelerated soil restoration technologies

5

# IMPLEMENTATION OF RECLAMATION MEASURES

The main focus of reclamation is on accelerated restoration of agronomic potential, economic feasibility, and maximum cost recovery.

- Structuring of field plots by the level of damage, contamination, and direction of reclamation solutions;
- Restoration of the profile structure of the plots, maximum reclamation of the geomorphological state (mechanical restoration, organic system, cover crops);
- Implementation of recommendations for restoration of agrochemical background, use of reclamation and recultivation products;
- Use of microbial-organic-mineral preparations for accelerated restoration of agronomic productivity;

