Empowering Macedonian Agriculture Through Precision Farming: Geo Innovus Leading the Way

Name of the Organisations Involved

- Geo Innovus, North Macedonia

Challenges Identified

Macedonian agriculture has faced numerous challenges in recent years. The challenges in Macedonian agriculture are multifaceted and daunting. These includes:

- Climate Change: Irregular weather patterns, attributed to climate change, disrupted traditional farming practices and called for more adaptable approaches.
- Price Volatility: Volatile crop prices hindered farmers' ability to plan and invest confidently.
- Labor Force: There is less labour in the field of agriculture in the country and number of young farmers is decreasing. Furthermore, the labour costs are in continuous growth.
- Cost Fluctuations: Unpredictable fluctuations in raw material costs added financial uncertainties to farming.

Traditional farming practices often proved insufficient to adapt to these changes.

In response to these challenges, the Geo-Innovus company, in collaboration with precision technology leaders, embarked on a mission to modernize agriculture in North Macedonia through precision farming. In light of these challenges, the primary goal was to revolutionize the agriculture landscape in North Macedonia by introducing precision agriculture technology and services, through adapted solutions for relatively small farmers compared with the European counterparts.

Goals and solution

The overarching goal was to revolutionize the agriculture landscape in North Macedonia by introducing precision agriculture technology and related services, a methodology renowned for its profitability, efficiency, and sustainability. Precision agriculture integrates advanced technologies, data analytics, and modern farming practices to ensure optimal resource utilization while minimizing the environmental impact. The implementation of precision agriculture was the beacon of hope for Macedonian farmers.

The specific goal of the company was to make the initial step towards precision farming in North Macedonia by introducing a new concept usage of navigation systems in the agricultural practices, implementation of GNNS navigator, usage of android operative system and ISOBUS technology for improving productivity and yield, lowering production costs, ensuring sustainability.

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Short description of the technology and the beneficiaries

Geo Innovus, in collaboration with other technology providers, introduced cutting-edge precision agriculture systems customized to meet the unique needs of Macedonian agriculture. These systems include:

1. GNSS Systems: Advanced Global Navigation Satellite Systems provided accurate location data for precise field operations.
2. Data Collection and Analysis Software: Specialized software collected and analyzed data from various farm operations, enabling farmers to make informed decisions regarding crop selection, precise application of fertilizers, chemicals, and more.
3. ISOBUS-Compatible Technology: This technology simplified data organization and ensured seamless communication between tractors and implements, irrespective of brand or model.
4. Advanced Precision Planting Solutions: These solutions helped optimize planting operations, ensuring consistent and even spacing of seeds for maximum yield.
5. Expert support services for implementation of the technology and training of farmers on its usage.

The technology can be applied for management of work machines, sowing, planting, spraying, fertilization, navigation, data management, drainage, leveling, harvesting, mapping, and VRA (Variable Rate Application) fertilization.

The process of installation of guidance and steering systems for agricultural vehicles includes replacing the steering wheel with a new steering wheel with an electric motor when applicable depending of the factory settings of the vehicle, installing a GNSS receiver, an angular sensor for the movement of the vehicle and a tablet with software intended for agriculture.

The true beneficiaries of this technology are the Macedonian farmers. Precision agriculture empowers them to streamline their operations, reduce costs, increase productivity, and make data-driven decisions. It also allows farmers to adapt to the changing climate and environmental conditions more effectively. In a global market characterized by competitiveness and sustainability concerns, Macedonian farmers, with the support of Geo Innovus, have gained a significant advantage.

Geo Innovus demonstrated unwavering dedication to supporting farmers with limited financial resources. They enabled the installation of precision farming equipment in older agriculture vehicles, making it more accessible for such farmers.

Possible installation on all self-propelled vehicles from all brands (tractor, combine, sprayer).

The Condition: Functional hydraulic and control system.

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Source: Geo Innnovus web-site https://geoinnovus.com/

Actions taken

Geo Innovus recognized that the introduction of technology alone was not enough. Farmers needed to be educated and informed about the benefits and applications of precision agriculture. To achieve this, they organized "Precision Agriculture" seminars, which became a cornerstone of the transformation. During these seminars, farmers were introduced to the technology, its potential applications, and the ways it could enhance their farming practices. Geo Innovus also offered comprehensive support, education, and training, ensuring that farmers could confidently embrace this technology.

Benefits and Impact

The impact of precision agriculture equipment has been profound and multifaceted:

- Efficiency Elevated: Precision systems took over late-night planning sessions, allowing farmers to spend more quality time with their families and engage in personal activities. The burden of meticulous planning was lifted, and the joy of efficient farming took its place.
- Counting Savings, Not Stress: Overlaps and skips in field operations, which had long been a source of stress and inefficiency, became a thing of the past. Precision technology ushered in an era of calm and consistency on farms, leading to a significant reduction in fuel and labor costs.
    - Direct savings of 10-20% on all input factors: fertilizers, pesticides, fuel, time, machine depreciation, rational use of labor.
    - Indirect benefits include adherence to agrotechnical deadlines, reduced operator errors, high precision, and minimal need for repairs.
- ISOBUS Technology Magic: The cumbersome task of juggling different equipment displays vanished with the introduction of ISOBUS technology. Farmers could now seamlessly integrate various equipment, regardless of brand or model, simplifying operations and increasing overall efficiency.

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- Necessity, Not an Option: Precision agriculture transformed from being an option to a necessity for Macedonian farmers aiming to stay competitive in the global market. This modern approach not only simplified farming tasks but also enhanced data-driven analysis, productivity, profitability, and overall sustainability.

Contact information

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Application Area

☒ Terrain ☒ Location of Assets

Digital Technology in the Value Chain

☒ Supply Chain Management

Digital Technologies

☒ IoT ☒ Big Data ☒ Sensor Technology

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