



Development of field cultivation technology with plant conditioning



CONSORTIUM:

Mezőfalvai Plc

ELCOM Ltd

Centre for Agricultural Research

Budapest University of Technology and Economics

R+D PARTNERS: Eurofins Minerág Ltd; Seacon Europe Ltd; T-Markt Kereskedőház Ltd

The project will be implemented by more than 50 employees and independent contractors.

OUR GOAL IS TO DEVELOP SUCH NEW, DISRUPTIVE TECHNOLOGY, A SPRAYER MACHINE THAT

- 1. is remotely controlled*
- 2. is based on the databases we will build from our measure results, it automatically optimizes the method and intensity of spraying to the actual plants, weather and ground variables*
- 3. is equipped with analyzing cameras, that oversee the distribution of sprayed materials, and automatically correct the spraying parameters if necessary*
- 4. can simultaneously spray different fluids with different intensity to the plants*
- 5. effective use of water and spraying materials, of ground parameters and energy, protects the environment and decreases agriculture's contribution to global warming.*
- 6. increases yield*
- 7. helps dynamizing the agrarian sector and the food industry, income of companies using our technology will increase*
- 8. makes spraying more cost effective, it reduces pesticide use and cost. Only the necessary amount of pesticide will be used, only where it is needed. We experience in practice that basic requirement of agriculture is cost efficient irrigation that at the same time increases yield, further requirements are efficient plant nutrition and spraying.*



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According to our plans, the development project of HUF 1301 M will be realised with HUF 465 M own contribution and HUF 836 M support. Exceptional experts participating in the development are researchers of Budapest University of Technology and Economics (BME) at its research site at Balatonfüred) and Centre for Agricultural Research (ATK, at its research site of Martonvásár).

The current unexpected and extreme weather events create unpredictable precipitation worldwide. Agriculture is responsible for approx. 70% of global freshwater use, decreasing this, making this sustainable contributes to decreasing the harmful effect of global warming both to the ecosystem and to human society. Directly increasing the security of food supply needs flexible plant spraying and irrigation that surpasses current methods. Optimizing plant care to biolysis parameters becomes important, we devise this calculation method.

We especially focus on highly efficient water use. Optimization at plants requiring much water like corn and sugar-beet can save significant amount of water. Starting our development on current botanics, optimizing plant conditioning and irrigation will increase yield and at the same time will decrease plant health issues.

We use organic materials, and develop the new generation of precision agriculture technology. We reach our results mostly by increasing plant health. Our solution principle helps all agriculture, increases nutritional value of animal feed and human food.

Mezőfalvai Zrt., the consortium leader provides the development with different crop fields (where different plants grow on different ground parameters, the furthest fields are as far as 80 km from each other.), Elcom Kft. measures weather parameters and creates the control of the spraying machine. Elcom Kft. already developed ground moisture sensors, as part of this project, it will develop 3D visualisation of the measured data. The Centre for Agricultural Research (ATK) contributes to the project by phenotypical measurements and devising the predictive mathematical model for spraying optimization, the Budapest University of Technology and Economics (BME) devises camera system mounted on the machine, devises the real time image analysis and the algorithms immediately modifying spraying intensity if needed, to maximize yield.

The developed technology makes agriculture more competitive, increases the health of plants. The machine and the digitalized calculation system can be adapted to individual crop fields.