

SweetVeg -Improving yield of sweet corn & tomato and their compliance to food manufacturers' requirements using by precision agriculture application

The SweetVeg aims to develop a solution for improving the yield, quality and compliance to food manufacturers' requirements of sweet corn and tomato through optimisation of the nutrient uptake, irrigation, yield, harvesting time, with particular focus to the key quality attributes of sweet corn (for IQF cut corn defects, texture, colour, flavour for canned whole kernels defects, texture, appearance, flavour) and tomato (water content, nutritional properties, size, flavour, colour, defects and brix values). Sweet corn and tomatoes are two of the most important vegetable crops for the freezing and canning industry.

In the framework of the project, the application will be tested in two countries with two crops. In



HUNGARY, model will be developed through monitoring the growing of sweet corn, while in PORTUGAL, the same task will be completed on tomato (sweet corn is particularly important in Hungary, tomato in Portugal). On a global market the improvement of the yield of the crop, the sensory quality and the reduction of product defects originating from the raw materials increase the competitiveness of the products. As a result of the high competition on the market, manufacturers are

differentiating their products by better sensory properties and lower number of product defects. These properties of processed products are defined mainly by the quality of the raw material, the processing can only preserve or damage the favourable properties. The yield, the sensory attributes and the development of the product defects on the crop are significantly influenced by the parameters of the soil (soil moisture, availability nutrients, micro and macro elements) and other environmental conditions.

Both crops are associated with high risk of production as sweet corn is very sensitive for water supply and the production of tomato costs are very high. Only a few months are available for harvesting and processing both of them. In order to reduce the risk and cost of production and to maintain sustainable production, IT systems are implemented to monitor, control continuously the plants and the environment of



the plants. The developed monitoring and controlling system will be able to measure factors e.g. quality of soil, nutrient supply, hours of sunshine and water supply, then by collecting and evaluating these data, is able to determine the relationship among environmental factors, soil quality and the growth stage of the crop in order to improve the yield and quality.

In the frozen food and canned food industry Campden's specifications for processed vegetables and fruits, such as quick frozen cut corn, for quick frozen corn on the cob, tomato paste and puree, canned chopped tomatoes and canned peeled whole tomatoes are widely acknowledged in the world and are used as reference standards of trade. The expected quality of the crops will be determined based on these standards.

The project is targeted farmers and manufactures in the same time. The integrated system helps farmers to use their resources (water, chemical, other resources) in a more efficient way and decrease the cost of their work. For manufactures, the two main advantages of the project are the optimized harvesting time and that they will be provided raw material with high quality.

The processing season of the sweet corn in Hungary starts around the last week of July and lasts till mid-October. Tomato is produced between April and September in Portugal, and the industrial processing occurs during the tomato harvesting, usually during 4 months/year.

The models for sweet corn will be developed by the Hungarian partners, the models for tomatoes will be developed by the Portuguese partner. The exchange of the experiences will be used for improving the models, the sensors and interference systems for both sides, as well as for knowledge transference on precision agriculture solutions according to the specifications of both industries and to improve European agro-industry competitiveness.

Further information about SweetVeg:

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NATIONAL RESEARCH, DEVELOPMENT
AND INNOVATION OFFICE
HUNGARY

PROJECT FINANCED
FROM THE NRDI FUND

MOMENTUM OF INNOVATION