MO.PAS acronym for "Microwave for sustainable agriculture" is a project presented under the financial benefits referred to in Ministerial Decree 05/03/2018 - Chapter II - Agreements for innovation.
To date, the assessments of the relevant bodies have been positively passed and the start is expected in 2022.

The project
The project aims to replace pesticides for the abatement of populations of soil-borne pathogens and most of those intended for the control of weeds thanks to the use of innovative antennas for the emission of microwaves with different intensity and penetration capacity. in the soil and in plant tissues.
The project is divided into various phases within which it is planned to carry out:
1. Research activities in the laboratory on different types of soils aimed at defining the intensity, depth of penetration into the soil as well as the effects on the biome, and on weeds.
2. Research activity aimed at comparing the new treatment with other thermal treatments and with conventional ones with pesticides
3. Research activities for the development of functional parameters for the executive design of the machine prototype, search for the most appropriate microwave transmitter in relation to use on various soils and pathogens
4. Design and implementation of software for controlling microwave emissions and machine progress.
5. Realization of the prototype, experimentation in the company sites
6. Analysis of the effects of the experimentation on company soils and crops
7. Study for the evaluation of the effects of microwaves on soils, the environment and crops in a protected environment, in the sites under study.
8. Feasibility study of the use on an industrial scale of the new technology in the “fresh-cut salad” supply chains and for the exploitation of this for commercial purposes.

The objectives

The project aims to provide an answer to the problem of reducing the use of phytosanitary substances in intensive horticultural crops through the use of heat treatments centered on the use of microwaves.

The expected response to new treatments, as evidenced by several national and international studies, consists of the killing of the populations of pathogens (fungi and nematodes) in the soil and the control of weeds.

We intend to study and test a new production process based on the use of microwaves in pre-sowing and to create and test a prototype machine that allows it to be used in greenhouses, tunnels and in the open field.

The replacement of chemical treatments of soils with heat treatments responds to two specific needs of the agricultural sector and of the fresh-cut product in particular:

1. ensure a "zero residue" final product. through the elimination of the populations of pathogens present in the soil (fungi and nematodes) before the development of the crop, it is possible to reduce the treatments in the vegetative phases and / or use low toxicity products with very short deficiency times.
2. reduce the impact of cultivation on the agro-ecosystem by avoiding the spread of pollutants in the soil and water and safeguarding biodiversity.

The response to these needs is a necessary condition for the maintenance and development of horticultural supply chains for the fresh-cut salad, and potentially for other sectors of intensive agriculture, for which the healthiness of the product and the environmental sustainability of production practices has become a pre-requisite. quality.

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