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PRESS RELEASE 2

ZEROPARASITIC: Modeling and prediction of broomrape emergence and infestation level of parasitic weeds in various Med environments.

One of the main objectives of ZeroParasitic is to model and predict broomrape parasitism in relation to climate change and soil-climate conditions. Modeling could help to predict parasitism and broomrape population dynamics during all critical phenological stages (e.g., seed germination, attachment, tubercle production, or parasitic shoot emergence).

To create this model, it is required to download meteorological data such as:

- Normalized Difference Vegetation Index (NDVI), an important indicator for measuring vegetation coverage, vegetation dynamic change and phenological change. High NDVI values indicate healthy vegetation. This occurs when humidity and soil moisture increase and temperature decreases. On the contrary, under weather conditions that increase evaporation rates (high temperature and lower humidity), less healthy vegetation is found and its NDVI values decrease.
- Soil moisture, an important variable affecting the water and heat energy exchanging between the land and the atmosphere through plant transpiration.
- Land Surface Temperature (LST), a radiative skin temperature of the land surface, as measured in the direction of the remote sensor.
- Phenological cycle of the crops, the timing of annually recurrent biological events.

The data above can be provided by the European Space Agency (ESA) through Sentinel and Landsat.

While Landsat and Sentinel satellites are well-designed and calibrated prior to launch, continuous recalibration is required to offset degradation that may be caused by mechanical or electrical effects, or exposure to UV radiation. Calibration requires a comparison between the measuring instrument and an “absolute” reference standard of known accuracy.

The model will implement a pest risk analysis, representing an emerging field of risk analysis that evaluates the potential risks of the introduction and establishment of plant pests into a new geographic location and then assesses the management options to reduce those potential risks. Considering the variability of geospatial and meteorological parameters, risk maps will be produced in a crop field scale and then integrated in the web geoportal. The risk of broomrape emergence will be classified as Low, Medium, or High.

To summarize, this risk model will allow us to prevent parasitism in an attempt to maximize the productivity of crop fields.

Prof. Marc Bonazountas | **Epsilon Malta Ltd** | Tower Business Center (Suite 125), Swatar, BKR 4013 Malta
M: +306944307576, T:+35625466048, bonazountas@epsilonmalta.com, www.epsilonmalta.com

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Prof. Marc Bonazountas **| Epsilon Malta Ltd |** Tower Business Center (Suite 125), Swatar, BKR 4013 Malta
M: +306944307576, T:+35625466048, bonazountas@epsilonmalta.com, www.epsilonmalta.com