

Agricultural Forecast

The role of weather forecasting in agriculture is becoming increasingly important in the age of organic farming, as it saves water and energy. Quality forecasting of seasonal weather and agricultural variables enables farmers to effectively manage water and fertilizer requirements, plant diseases and pests, etc.



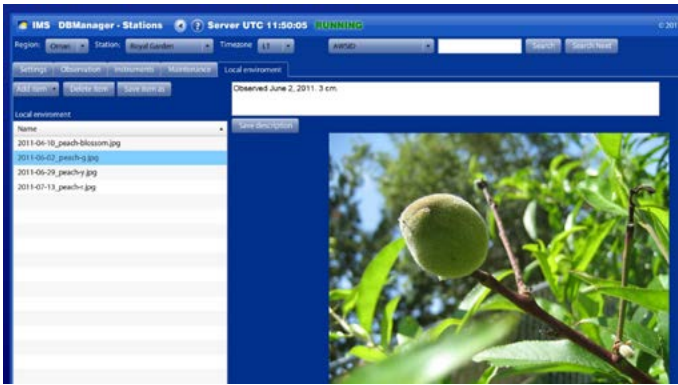
The advantage of using long-term weather forecasts is to minimize the negative impact of adverse mid-seasonal weather phenomena, thus minimizing losses, and increasing profits and the farm's net income.

MicroStep-MIS offers farmers, gardeners, biologists, and agrometeorologists an automated system (IMS4 Agro Center) for the acquisition, processing, and analysis of weather and phenological data, agrometeorological modeling, and warnings, in which the technology of long-term forecasts of temperature, humidity and precipitation is adapted to the needs of agriculture.

The IMS4 Agro Center assists in crop management decisions by providing seasonal drought forecasting and monitoring, phenological phase estimating, disease/pest control, and prevention. The information can be displayed on a data logger, computer screen, tablet, or smartphone.

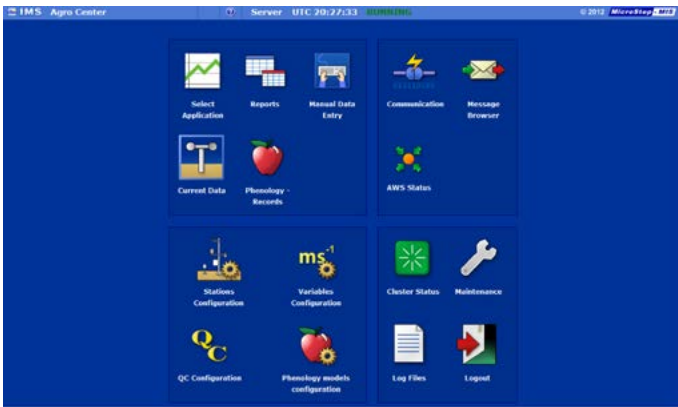
The IMS4 Agro Center connects to automatic agrometeorological stations (IMS4 Agro) in the fields, downloads the measured data from the data logger, processes them, and stores them in the internal database. The data contain primary meteorological information obtained as a result of observations (air and soil temperature, air humidity and leaf wetness, wind, precipitation, sunshine duration, solar and gamma radiation, evaporation, etc.) as well as calculated values (hourly, daily, monthly, decadal, growing season, annual totals, average and minimum/maximum values, active and effective temperatures, duration of high or low temperatures and leaf wetness, etc.).

The IMS4 Agro Center calculates agrometeorological parameters that indicate the conditions for the potential spread of drought. For example, when the amount of accumulated precipitation is low, or when the soil moisture is low for an extended period of time (depending on pre-configured thresholds), a drought warning is issued.



IMS4 Agricultural Database

The principle of estimating plant phenological phases in the IMS4 Agro Center is based on the comparison of real-time meteorological measurements of meteorological parameters and climate data. For example, the occurrence of the flowering phase in a vineyard correlates with the 2-month average air temperature (March - April). Formulas for estimating phenological phases have been developed based on experience and long-term analysis of weather data for various plant species. IMS4 Agro Center enables the integration of locally developed algorithms to evaluate the phases of local plants in the gardens and farms.



IMS4 Agro Center

The occurrence, predictions, and warnings of plant disease or pest development are based on knowledge of biology and the interaction between the disease/pest, plant, and environment. Such forecasts and warnings are calculated from several meteorological parameters measured by automatic agrometeorological stations IMS4 Agro, as well as from a number of statistical data. IMS4 Agro Center calculates the probability of the occurrence of diseases/pests so that it is possible to effectively plan the appropriate time for spraying and other agrotechnical interventions.



IMS4 Agricultural Station Environment

IMS4 Agro Center is open to further integration of new disease/pest risk models developed for local climates and local plant varieties. Simple models can be customized by the user, while MicroStep-MIS staff can help with complex models as well as with calibrating models for local conditions.

