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Weather Station in Agriculture

The last decades have brought tremendous changes in all spheres of life by making it more developed, more mechanised, with involvement of complicated equipment and digital technologies. Even agriculture, which before seemed to be a sphere where there was not much place for sophisticated developments and which required a lot of physical work and “favour of nature”, is now based on application of numerous auxiliary technologies and innovations which make it more automated and more efficient. Modern generation cannot believe that there were times when the farmers relied only on their knowledge and signs, which they could “get and read” in the nature, and intuitive work was something absolutely normal. Nowadays there is no need to look at the moon and rely on the omens from nature to choose the best days for planting crops and harvesting them. Various devices cope with this function quite successfully and people should learn just to operate the devices correctly and then remember to look at the screen to read from it all the information they need.

Agriculture, no matter what it goes about, fields under the open sky or greenhouses, is quite a demanding sphere. The smallest deviations in temperature, humidity, amount of sunshine or light may lead to devastating consequences and ruin all the crops. Monitoring of the ambient conditions, from the moment of planting till the harvesting phase is absolutely obligatory.



Modern weather stations, for in-the-field or on-farm application, are providing sufficient amount of information, which indicates what particularly should be changed to improve the growth conditions.

In the meanwhile, the accuracy of a weather station / the monitoring equipment has already reached such a level, that numerous parameters can be monitored precisely and there is almost nothing left that cannot be put on the functions list of the device. Agriculture is a broad notion and for sure, each user has got some particular parameters that matter the most: soil quality, soil humidity, air pressure and humidity, temperatures, climatic conditions, wind characteristics etc. So, the weather monitoring systems as well as many other devices may be customized, to such an extent, that if required, the customer may receive his/her unique forecasting and weather monitoring station/system.

Each farmer should clearly define the parameters which matter the most. For sure, weather stations applied in agricultural sector must provide information about environmental parameters, amount of precipitation and coming changes in the atmosphere. It should be sufficient for private small farms and fields, or for the typical not very demanding crops. The bigger the farms are and the more variable the selection of crops growing there is, the more detailed and complicated monitoring is required. Besides, there are farmers who take the risks of cultivating crops which are not typical for the area and then, they face quite a challenging task: besides reacting to the changes in the weather conditions, they need to do extra work on creating favourable, sometimes artificial atmosphere to provide successful growth of certain types of vegetables, fruit, herbs, berries etc.

Not only weather may endanger the whole harvest, but also insects, pests and parasites.

Depending on the weather situation (too much rain and moisture / excessive heat), certain types of insects may unexpectedly spread abnormally and attack and destroy the crops,



growing on the fields. That is why, more sophisticated systems provide not only pure weather parameters monitoring, but also monitoring of soil and plants condition. One of the cost-effective steps is arrangement of correct irrigation. Water is getting more and more expensive and in certain countries watering has become a very difficult problem, that is why excessive and unnecessary water waste should be avoided. Continuous monitoring and processing of the data provided by the weather stations allows making correct planning: how much water and when should be used. The soil condition monitoring gives a timely indication that its condition is beyond permissible levels and in accordance the corresponding steps should be made. By analysing the environmental situation on the field, the farmer may get an important information about the condition of the plants, and, for example, if any extra preventive measures are necessary. When the weather conditions change tremendously, there might be the need, as a measure of precaution, for application of pest-preventive agents, to save the harvest.

Depending on the peculiarity of each task, it is necessary to find the right location for the weather station, in particular, sensor. If the task of the farmer is to measure the amount of precipitation during the whole season, then the location should be in the open air. Such sensors are waterproof and resistant. There may be everything just absolutely fine with the sensor, but it will give false measurements – the reason for that may be the wrong location. If

it stands in the shadow of a tree, it will not measure the UV correctly, the same applies if it is protected from the wind by the walls, trees, plants, but is meant to determine wind speed and direction. Sensors for in-the-field application are robust and able to withstand the harsh environmental conditions.

There is no need for the presence of operator in the field to collect the data.

Due to the wireless data transfer, the data can be viewed on any gadget which allows the



possibility of keeping control over the situation in a few fields simultaneously, for example. A system of sending alerts serves for notifying about a potential “threat”, since unexpected change in the weather conditions may be a threat to the harvest. The farmer’s presence in the field is, of course, as important as before, but if before it was necessary to carry out many tests and checks to assess the situation, it is enough now to have the reliable information received from the weather station.

There may be a few systems installed at different parts of the field, or even in different fields, and since the information is then transmitted to one location, it also goes about time saving, because all the data are then presented on the screen and in no time at all, an experienced farmer understands the mass of the existing or coming problem as a result of weather conditions.

It does not matter how big the agricultural object is, there are mostly the same problems that the farmers inevitably face. Weather station is one of those devices that once bought and maintained

decently, pays off very quickly by providing accurate results about a current situation and giving useful preliminary information.