CLIMATE MONITORING as part of the MOPS Project

Maximizing Organic Production Systems (MOPS) is a European Innovation Partnership project led by the Irish Organic Association. There are 11 horticultural growers from different farms across Ireland, all with very differing farm size, from 1 ha to >100ha.

The overarching objective of the project is to design an individual cropping system specific to each farm that feeds into a master cropping system. In order to achieve this, a myriad of on-farm monitoring to evaluate various factors including, but limited to; land quality, soil and nutrient analysis, weed pressure, planting techniques, inputs, and climate/weather condition impact have to be assessed. After some delays, the project eventually started in June 2018, the hottest summer on record for many years. On-farm monitoring began in earnest and what an appropriate year to be installing the climatic data readers, measuring relative humidly (RH), soil and air temperature. Each farm had a monitor for relative humidity, air and soil temperature installed in a field location, representative of the growing area. In addition to field data collection, polytunnels or glasshouses also had RH and air temperature monitors. A basic overview of the climate data readers may be found below, this gives a high-level view of the data provided from a selection of the farms.

MAXIMIZING ORGANIC PRODUCTION SYSTEMS

An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine

The European Agricultural Fund for Rural Development: Europe investing in rural areas

Padraig Fahy from Beechlawn Organic Farm at his open farm event in September

Participating farmers in MOPS

Mimi and Liam Ryan from Moyleabbey Farm with their climate monitor

The MOPS project has deployed instrumentation monitoring soil temperature (see figures 1 and 2) and air temperature (t) / relative humidity (RH), see figure 2. The objective is to assess the usefulness of deriving data monitored at each site, augmenting regional data sets supplied by agencies such as Met Eireann.

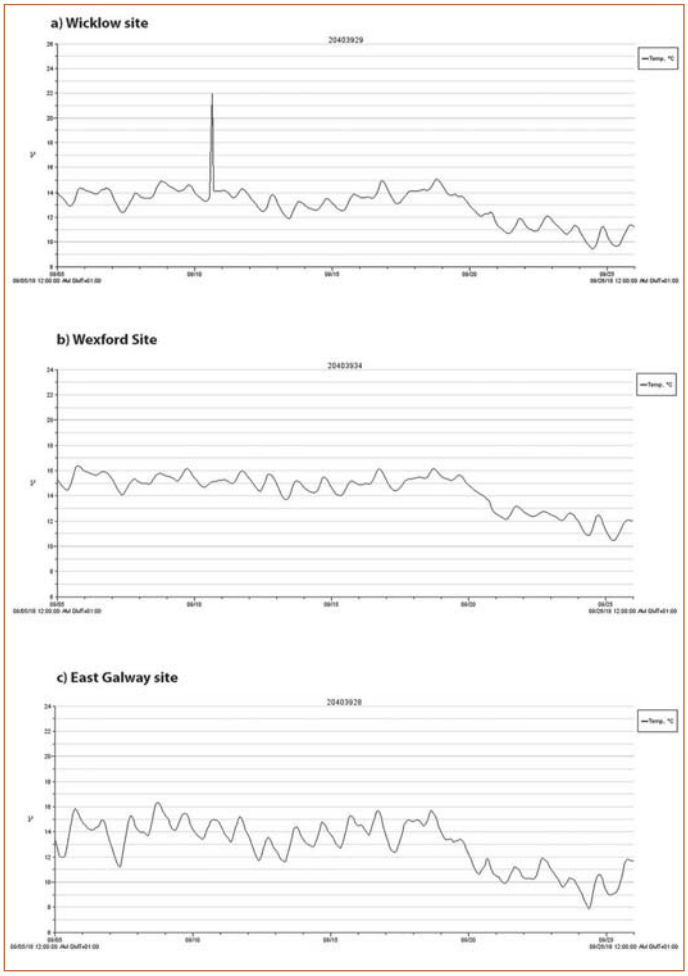

Fig 1. Sample soil temperature data from 3 locations.

Soil temperature data collected in September 2018, illustrated in figure 1, show a similar downward trajectory across the distributed sites with a degree of variability that would be typical as the seasons move into Autumn. A likely data spike can be seen in Figure 1(a) and this sensor will be assessed for accuracy and precision.

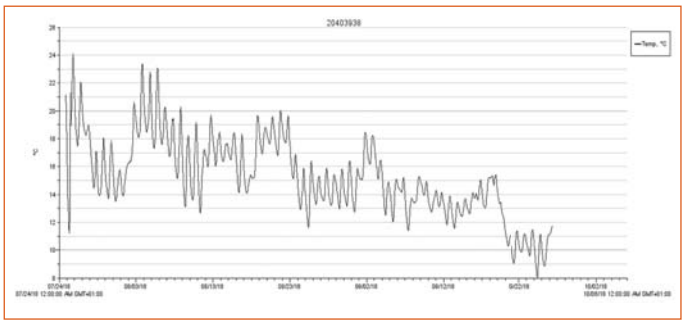

Fig 2. Soil temperature record

Figure 2. A soil temperature record from an early sensor installation (July through October). The unit was installed on the 25th July, therefore the low reading on same date is the morning air temperature in storage before transport to farm. Once installed, the soil temperature the following day (at 20cm into the ground) was a staggering 24°C, possibly one of the hottest days of summer 2018.

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Climate monitor in situ in indoor production

Because the project began mid-way through the year, and it took some time to get the sensors installed, in 2018 the key growing season was missed in terms of climate monitoring. Figure 2, however, shows the type of detailed information that will be collected now the project is underway.

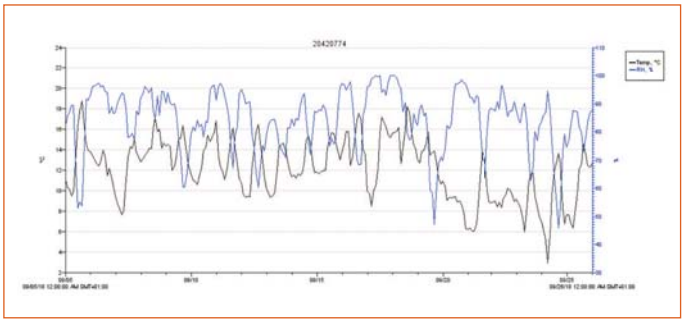

Figure 3. Air temperature and relative humidity data (outside monitor)

Figure 3 illustrates data monitored by one of the field t/RH sensors in Co. Kildare during the month of September 2018. In time the record will be compared with seasonal growth rates to assess impacts. Where the sensors have been deployed in enclosed growing areas (i.e. polytunnels), the data can be used to assess impact and guide potential remedial actions where values are outside optimal.