Veneto phenological network: an example of characterization long term trend in Maize

A. Bonamano (1), M. Borin (1)

(1) Dipartimento di Agronomia Ambientale e Produzioni Vegetali, Università degli Studi di Padova, ITALIA

Phenological observations provide valuable climate information, e.g. when one considers environmental monitoring or climate reconstruction, by linking the physical part of the climate system to its effects on the biosphere. Information on variations in phenological stages is therefore important to quantify the impact of climate variability and change.

The Veneto Phenological Network was formed in 2005 and is a small network to study the impact of climate change on a local area in some main crops of this part of Italy. It focuses on wheat and barley during the winter, corn and grapevine during the summer. The aim of this work is to inform farmers about the real phenological phases of the crops, and the phenological observations are used to support the scheduling of agricultural works.

The Network is based on volunteers partners and they are homogeneously scattered in the whole region. Phenological observations are collected by volunteers every 10-15 days, using the BBCH scale for the description of the main (longer-lasting) phenological development stages. Data are sent to the University of Padua for elaboration and are simultaneously made available on Arpav website (http://www.arpa.veneto.it/upload_teolo/agrometeo/index.htm).

In particular, the experimental site of Legnaro Padua, Italy (Lat. N 45˚20'26" e Long. E 11˚58'0") has a meteorological database from 1965, which facilitates evaluation of the influence of temperature on the main phenological phases on the corn.

The aim of this work is to show how these phase are changed in the long term and

inform farmers about the real phenological phases of the crops, and the phenological observations are used to support the scheduling of agricultural works.

The main phases which are considerate are: sowing (BBCH 00), emergence (BBCH 09), flowering and anthesis (BBCH 60), ripening-dough stage (BBCH 85), ripening-fully ripe (BBCH 89). BBCH phases are correlated in a long term with date and with GDD (growing degree day) to analyze how the increase of the temperature can be influence the phenological phases.

Phenology is easy to observe, and is a cost-efficient instrument for the early detection of changes in the biosphere, and therefore nicely complements the instrumental measurements of national meteorological services. Information on the actual state of the cultures is indispensable to provide important support in the form of frost warnings and recommendations for pest control measures.

In addition, the Network is seeking other volunteer partners to collect more phenological data in the Veneto Region and to build a bigger database management system.