The trends in phenology of Zea Mais in Veneto Region (Italy) , 2005

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Understanding and predicting crop phenology is important for many reasons, including improving the efficacy of management practises and the accuracy of simulation models and decision support system.

The aim of this study is to show the differences of phenological phases of some varieties of Zea Mais in Veneto Region. For the purpose of this research, field observations were conducted during 2005 in seven sites which are uniformly distributed in the region. Veneto region is situated in the Northern East of Italy, in the Mediterraneo basin.

The phenological network consist in 4 observes, who do the observations on a voluntary basis. All the phenophases were observed between the end of April and the end of end of September. The BBCH code was used by all observers.

In the seven places the varieties of Zea Mays belonged to FAO class 500 in Buttapietra, Legnaro, Belfiore d'Adige, Fiesso Umbertiano, San Stino di Livenza, and to FAO class 600 in Noventa Vicentina and Castelfranco Veneto.

The end of March and April is the time of the year when the beginning of germination season usually starts, the variability of the weather from year to year leads to certain fluctuations in the annual timing of phenophases.

The harvest time was the same in the FAO class 500 and FAO class 600, i.e. in the first ten days of the month.

In order to describe the relationships between temperature and plant development, station data of air temperature from the Arpa Veneto – Centro Meteo di Teolo (Pd) were used to calculate the average air temperature and the GDD (Growing Degree Days) with base temperature of 8 °C. Some of the principal phenophases, are reached in two FAO class at slightly different temperature sums, in particular:

BBCH **51** (inflorescenze emergence heading) in Fao Class 500 at 996 and in Fao Class 600 at 1039;

BBCH **65** (full flowering-anthesis) in Fao Class 500 at 1168 and in Fao Class 600 at 1190;

BBCH **73** (early milk) in Fao Class 500 at 1513 and in Fao Class 600 at 1656;

BBCH **89** (fully ripe) in Fao Class 500 at 2083 and in Fao Class 600 at 2175.

The phenological Veneto network is one of the first examples in Italy of a regional net and shows how it is an important step in growth stages prediction. In 2006, the monitoring activity of the phonological network is continuing and data collected in the two years will be used to the paramerisation of crop models to simulate crop phenology and yield in Veneto Region. Information coming from the model are used to support decisions for optimising various management practises, thanks to the elaboration and spreading of agrometeorological bulletins realized by the Regional service. The continuous updating of the data of the phonological network is available on line in the Agrometeo Veneto web site (www.arpa.veneto.it/agrometeo).

Next step will be the analysis of the historical phenological data set in the Zea Mais in the site of Legnaro, where the meteorological data set 1953-2005 is also available, to analyse the trend of phenophases in this long period. This analysis will be also useful to investigate the impact of climate evolution on plant development in the territory