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Grapevine phenological mapping for the Euro-Mediterranean area

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In the framework of the Cost action COST Action FA1003 – GRAPENET - East-West Collaboration for Grapevine Diversity Exploration and Mobilization of Adaptive Traits for Breeding, grapevine phenological observation was carried out by 20 institutions spread in 16 countries (Azerbaijan, Check Republic, Croatia, Cyprus, Georgia, Germany, Greece, Hungary, Italia, Latvia, Luxembourg, Moldova, Portugal, Spain, Switzerland, Ukraine), monitoring 562 accessions.

This work shows a first attempt to map at the European scale relevant phenological stages of widespread grapevine cultivars such as Cabernet sauvignon (present in 11 monitoring sites extending from Spain to Azerbaijan), Chardonnay (8 sites from Spain to Ukraine and Cyprus), Chasselas (6 sites from Portugal to Moldova), Pinot noir (7 sites from Luxembourg to Georgia), Riesling (6 sites from Germany to Ukraine) and Sultanina (5 sites from Spain to Azerbaijan).

Phenological data have been spatialized on the base of daily fields of Grapevine thermal resources expressed as Normal Heat Hours (NHH). NHH translate hourly thermal course into resources for plant development. The algorithm, parameterized on the basis of cardinal and optimal temperatures, takes into account the non-linear relation between temperature and development.

Daily NHH fields have been obtained from daily fields of maximum and minimum temperatures by means of geostatistical techniques applied to the time series of the European Climate Assessment and Dataset.

Maps or relevant phenological stages for the studied varieties are presented and discussed taking in account the related patterns of thermal resources.