# Automatic detection of the timing of phenological phases of apricot trees using webcam image processing

Philipp Weihs (1) and Sandro Oswald (2)

(1) Universität für Bodenkultur, Inst. fuer Meteorologie, Wien, Austria (weihs@mail.boku.ac.at), (2) Zentralanstalt für Meteorologie, Wien, Austria

Global warming has a large impact on the timing of phenological phases. Due to climate change phenological phases occurred earlier during the last years.

Photography has been used for several years now for the study of the phenological phases. Most of the photographs are analysed manually. There are however some few studies dealing with the automatic analysis of webcam images for the detection of the different phenological phases. One of the major problems are changes in the illuminance of the environment. Satisfying results were among others obtained using the greenness index for the detection of leaf growth. More difficulties are encountered trying to detect flowering because of white background objects which lead to errors in pixel detection.

Using web cam images of apricot trees from Wachau, Austria we successfully tested the greenness index for the detection of green vegetation. A method for the detection of flowering was developed using data of one year and was tested using data of supplementary years. An analysis of the accuracy of the method is presented.

In the end, the timing of the phenological phases is analysed as a function of meteorological conditions (temperature, precipitation) for the time period 2013-2018.