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Forecasting plant phenology: evaluating the degree-day method for Betula pendula and Padus racemosa spring phases in Latvia

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A phenological and meteorological data series for period 1960-2009 were used to evaluate the usefulness of the degree-day approach for forecasting beginning of leaf unfolding and flowering for two tree species – silver birch *Betula pendula* and bird cherry *Padus racemosa* in Latvia (Kalvane et al, 2009).

The degree days – sum of the active temperatures accumulated after the winter calm period – were calculated for a range of base temperatures (0, 3, 5, 7 and 10^{o}C). The results were compared to the timing of the phenological events observed at eight stations in order to evaluate year-to-year as well as regional variations.

Different base temperatures gave surprisingly similar results. The most appropriate threshold temperatures was found to be +7°C for both the budburst and flowering of silver birch, +3^{o}C for the budburst of bird cherry and +5^{o}C for flowering of bird cherry. Giving the most appropriate estimated base temperatures, it is found that the budburst of the *Betula pendula* takes place when 70 degree-days after the winter calm is accumulated and the flowering takes place when 85 degree days are accumulated. The respective degree day values for the *Padus racemosa* are 117 and 164. The conclusions should be considered as indicative because the exact locations of the phenological observations originating from the network of the volunteers are not known exactly.

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Key words: phenology, degree day, *Betula pendula*, *Padus racemosa*, Latvia

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