



Changes of growing season in Latvia

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To investigate the changes of growing season the study uses phenological and climatological data in Latvia for the period 1971- 2000.

The phenological calendar method was applied. Changes of growing seasons were described using data about 2 phenological phases in 6 observation points (voluntary collected data) and also climatological data of closest meteorological stations for each site. The growing season was described using the birch *Betula pendula* and maple *Acer platanoides* as an example. The duration of the growing season, defined as the time between leaf onset (BBCH 61) and beginning of leaf colouring (BBCH 92).

The growing season by climatological data for each site was calculated as the number of days with mean temperatures above 5°C. Correlation analysis, linear regression and non-parametric Mann - Kendall trend tests were applied to establish the relationship between phenological phases and climatological data. The phenological dates given refer to day of the year, but phenological phases are in BBCH codes.

The greatest increases in average air temperature in Latvia have been recorded in the spring (March, April and May) and the early winter (November and December).

The average growing season for birch and maple started on 2 May, the end dates of the growing season are 21 September for maple and 23 September for birch. The average duration of the growing season for birch was 144 days and 143 for maple. The shortest average growing season record was 126 days (in 1981) for birch, 129 days (in 1979; 1981) for maple and the longest season was 158 days (in 1983; 1990) for birch and 172 days for maple in 1997.

The results indicate a statistically significant trend toward earlier onset of the spring phases and starts of growing season (r varies from -0.33 to -0.55; in all stations results of the Mann-Kendall trend are significant (test statistic ≤ -1.65). Within the study period, the beginning of the growing season advanced by 4.6 to 5.6 days per decade. The study confirms expressed tendency that on average the onset of phenological autumn in Latvia starts earlier and therefore increases of growing season referable to spring phase. The length of growing season for maple is increase by 3.6 days per decade and by 6.4 days per decade for birch.

Also significant changes in the start, end and duration of growing season considering climatological observations during 20th century have been observed. At the same time for the period 1971-2000 there is seen rather high variability in annual length of growing season according to climatological data.

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