IPS-141
Sensory and Physiological Ecology of Plants

8: Phenology

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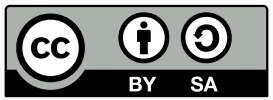

Outline

Phenology

Introduction

- The study of the timing of biological events of the life history of plants and animals, and how this timing is controlled by the environment.
- According to the seasons of the year, not the daily rhythms.
- Important both for annual, biennial and perennial plants.
- Perennial plants: 1) initiation of growth (budburst, flowering); 2) growth cessation; 3) leaf senescence; 4) frost hardening and dehardening.

+ See (**Larcher2003**) for details, and information on species from other latitudes.

Yearly variation

- Phenological events define the limits of phenophases.
- The timing of phenological events will vary from year to year depending on the prevailing weather.
- The study of phenology is an ancient science. More than a 1000 years ago there were phenological calendars in China.
- The basis has been the collection of long time series of observations and relating them to weather records.
- More recently an experimental approach has also been used.

The available signals

- Temperature
  - Cold $\rightarrow$ means winter.
  - Warm $\rightarrow$ means summer.
  - Stimulus is accumulated: temperature sums related to responses.
- Photoperiod (day length)
  - Short days $\rightarrow$ means autumn.
  - Long days $\rightarrow$ means spring.