

IPS-141

Sensory and Physiological Ecology of Plants

8: Phenology

Pedro J. Aphalo

January–February 2022

M.Sc. in Plant Biology, University of Helsinki

<http://blogs.helsinki.fi/aphalo/>

©2006–2022 by Pedro J. Aphalo

University of Helsinki, Finland.

<http://blogs.helsinki.fi/senpep-blog/>

Sensory and Physiological Ecology of Plants slides by Pedro J. Aphalo are licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.



Typeset in Lucida Sans, Lucida Bright, Lucida Console and Lucida Math. Icons from fonts “WebHostingHub Glyphs” (under SIL-Open Font License) from <https://www.webhostinghub.com/>; “insect icons” (free from <http://www.woodcutter.es/>); “linea-basic-10” and “linea-weather-10” (free from <https://github.com/linea-io>), “Mini Pics Uprooted Twig” and “Mini Pics Uprooted Twig” (commercial, from Image Club Graphics, Inc.). Plant icon as .svg by Abdul Wahhab (free from NounProject.com).

Illustrations and text quoted from copyrighted sources is excluded from this license and their use should respect the original licenses.

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