

DATA SET DESCRIPTION

Phenological observations of crops from sowing to harvest (annual reporters, historical)

Version v007

Cite data set as: DWD Climate Data Center (CDC): Phenological observations of crops from sowing to harvest (annual reporters, historical), Version v007, 2021.

Dataset-ID: urn:x-wmo:md:de:dwd.cdc::obsgermany-phenology-annual_reporters-crops-historical

INTENT OF THE DATASET

The phenological data provide an overview of plant development in Germany over the year. The data are collected by volunteer observers and reported to DWD.

POINT OF CONTACT

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DATA DESCRIPTION

Spatial coverage Germany

Temporal coverage 1951-01-01 until - 2019-12-31

Temporal resolution annual

Format(s) Ascii. Each file PH_Jahresmelder* contains the observation of a certain species (e.g., oat), with fixed object_id (e.g., 208). The rows are sorted according to Stations_id, reference year, phase_id. Each row corresponds to one observation. The list with all phenological stations and corresponding meta-data can be found here:
https://opendata.dwd.de/climate_environment/CDC/help/PH_Beschreibung_Phaenologie_Stationen_Jahresmelder.txt .

Units meadows, winter wheat, winter rye, winter barley, winter oilseed rape, summer wheat, spring barley, oat, sunflower, maize, potato, early potato (pregerminated), early potato (non pregerminated), late potato, green bean, green pea, tomato, white cabbage, alfalfa, red clover, beet, sugar beet, fodder beet.

| | | |
|------------------|-----|---|
| Qualitaetsniveau | see | Quality_flags |
| Stations_id | see | stations annual reporters |
| Referenzjahr | | year corresponding to phase |
| Objekt_id | see | phase definition |

| | | |
|-------------------|---------------------|----------------------------------|
| Phase_id | see | phase definition |
| Eintrittsdatum | date of observation | yyyymmdd |
| Eintrittsdatum_QB | see | Quality_flags |
| Jultag | date of observation | day of the year |

Uncertainties Factors for uncertainties include:
(1) change of observer (2) change of plants.

Quality information The QUALITAETS_BYTE (QB) denotes whether the value was objected to and/or corrected.

Explanation for QB:

QB = 1 : had no objections;
QB = 2 : corrected;
QB = 3 : confirmed with objection rejected;
QB = 5 : doubtful;
QB = 8 : incorrect;
QB = 10 : meadows continuous green, a new greening could not be observed.

The QUALITAETS_NIVEAU (QN) shows the quality control procedure applied for a data report (of several parameters) for a certain reporting time.

Explanation for QN:

QN = 1 : only formal control;
QN = 7 : second control done, before correction;
QN = 10 : quality control finished, routine corrections finished (individual corrections later still possible).

Occasionally, there are duplicate records with QN=1 and QN=7 or QN=10. The record with the highest QN should always be used.

DATA ORIGIN

A fixed observation area is assigned to every phenological observer. Each observation area has a station-id assigned by the network administration. The observer registers the beginning of determined growth stages (pheno phases) and notes the date in the phenological observation journal, as soon as it occurred. Crops are observed from sowing to harvest on the same field. At the end of the year, the observer send the completed observation sheet to the network operator for data recording. In the long run, this system will be replaced by online data transmission (2020: about 50 % of the observers).

VALIDATION AND UNCERTAINTY ESTIMATE

During the operational handling of phenological data each year a gross error check and an additional spatial quality control has been performed. Each year 1 - 2 % of the data are flagged to be wrong. Causes could be confusion of months and phases.

CONSIDERATIONS FOR APPLICATIONS

Remarks from the observer about the report (such as K.n.A.d.Ph. = abnormal occurrence of phase) see https://opendata.dwd.de/climate_environment/CDC/observations_germany/phenology/annual_reporters/crops/historical/PH_Jahresmelder_Landwirtschaft_Kulturpflanze_Notiz.txt. Maize - variety and method of harvest see https://opendata.dwd.de/climate_environment/CDC/observations_germany/phenology/annual_reporters/crops/historical/PH_Jahresmelder_Landwirtschaft_Kulturpflanze_Mais_Spezifizierung.txt. BBCH code see [phase definition](#).

ADDITIONAL INFORMATION

English and Latin names of plants are listed in [PH_Beschreibung_Pflanze.txt](#). For the English name of the phase see [PH_Beschreibung_Phase.txt](#). According to experience, at some sites a few plant species are not, not continually or only partly observed. From 1991 (West Germany)/ 1992 (East Germany) a modified observation programme was introduced, see [PH_Beschreibung_Phaenologie_Besonderheiten_Zeitreihen.txt](#). When using phenological data, it is advisable to use several stations characteristically of a natural area or natural area group. In this way, the data have less gaps and the specifics of a single station are less prominently influencing the results. The classification of natural areas and natural area groups used by Deutscher Wetterdienst (DWD) for phenological data is based on the map *Naturräumliche Gliederung und Waldverbreitung* (Meynen und Schmithüsen, 1953-1962), see also [Handbuch der naturräumlichen Gliederung Deutschlands](#). Observation criteria for current pheno phases are defined in the [instructions for observers](#).

REFERENCES

Bruns, E., van Vliet, A.J.H.: Standardisation of phenological monitoring in Europe. Wageningen University, Deutscher Wetterdienst, 2003.

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Emil Meynen, Josef Schmithüsen (Herausgeber): *Handbuch der naturräumlichen Gliederung Deutschlands*. Bundesanstalt für Landeskunde, Remagen/Bad Godesberg, 1953–1962.

Kaspar, F., K. Zimmermann, and C. Polte-Rudolf: An overview of the phenological observation network and the phenological database of Germany's national meteorological service (Deutscher Wetterdienst). *Adv. Sci. Res.*, 11, 93-99, doi:10.5194/asr-11-93-2014, 2014.

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REVISION HISTORY

This document is maintained by the Climate Data Center (CDC) of DWD, last edited on 2021-06-15.