Description of the Plant-Phenological Online Database *PPODB*

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1 Introduction

1.1 Data base overview

The Plant-Phenological Online Database *PPODB* comprises plant-phenological observations collected in Central Europe with an emphasis on Germany between 1880 and 2009. Most of the data presented here were kindly provided by the Deutscher Wetterdienst (German meteorological service, DWD), a public-law institution in the area of accountability of the German Federal Ministry of Transport, Building and Urban Development. Access to the data from the DWD, below referred to as 'DWD' and 'HPDB', is unrestricted and free of charge according to the conditions of data usage and policies of the DWD. The raw data can also be ordered directly from the DWD (www.dwd.de). Access to the data, below referred to as 'HIS', are licensed under the Database Contents License. Basically you are free to use, share, modify the data, as long as you keep the resulting data equally open and redistribute under a similar license. For more details see here.

For questions and suggestions, please contact admin@ppodb.de

The *PPODB* comprises three data sources,

• phenological observations collected by the Deutscher Wetterdienst (German meteorological service, DWD) from 1951 to 2009. This data is referred to as 'DWD'-data and tables containing this data are named with the prefix 'DWD'.

• the historical phenological database (HPDB) from the DWD, which is a collection of phenological observations from Central Europe, mainly Germany, covering the years 1880 until 1941 from various sources. This data is referred to as 'HPDB'-data and tables containing this data are named with the prefix 'HPDB'.

• To supplement the data for the time before 1951 and to fill the gap between 1941 and 1951 we digitalized phenological data that were available only in printed form. These data were collected by the volunteer network of the precursor of the DWD, the Deutscher Reichswetterdienst, and were published after world war II (Schnelle and Witterstein, 1952; Schnelle and Witterstein, 1964). These observations cover the years 1922 until 1944. Additionally, we digitalized phenological data that were published between 1951 and 1961 in the meteorological yearbooks of the DWD (DWD, 1951; DWD, 1953; DWD, 1960; DWD, 1961). All these historical data were stored in yet another historical phenological database (HIS), which for the first time is made publicly available. Only the meteorological yearbooks of the former US-Zone in Germany covered the whole time span from 1945 until 1951, whereas the meteorological yearbooks of the other occupied zones started publishing later, e.g. the British-Zone started 1949. Thus, continuous time series for the whole period from 1880 until 2009 could only be found for southern Germany. This data is referred to as 'HIS'-data and tables containing this data are named with the prefix 'HIS'.

The *PPODB* offers a unique data source, where, for the first time, plant-phenological observations from 130 years are brought together in one consistent database. Moreover, sophisticated outliers detection methods and quality checks are applied.

For more information about the different databases, please refer to (Schaber, 2002) and (Schaber and Badeck, 2005).

For a quick overview we compiled some summary statistics about the number of stations, phenological phases, observations and observation years for the different data bases in Table 1.1.

Table 1.1: PPODB Overview

Database	Plant type	# Plants	# Phases	# Stations	# Observations	Observation Period
DWD	Wild	37	75	6,514	5,897,274	1951 - 2009
	Agro	25	140	6,410	5,981,960	1951 - 2009
	Fruit	24	67	6,433	3,534,316	1951 - 2009
	Vine	4	27	1,176	100,609	1951 - 2009
	All	**90**	**309**	**6,544**	**15,514,159**	**1951 - 2009**
HIS	Wild	26	48	1,195	128,387	1921 - 1955
	Agro	40	157	1,262	50,630	1921 - 1955
	Fruit	20	64	1,191	45,924	1921 - 1955
	All	**86**	**269**	**1,664**	**224,941**	**1921 - 1955**
HPDB	Wild	28	58	1,099	109,782	1880 - 1941
	Agro	11	24	944	16,955	1880 - 1941
	Fruit	18	42	1,078	52,943	1880 - 1941
	NA[1]	290	1398	1,161	122,015	1880 - 1941
	All	**293**	**1,565**	**1,184**	**284,235**	**1880 - 1941**
Combined Data[2]	Wild	37	75	7952	6,142,068	1880 - 2009
	Agro	47	249	7807	6,064,664	1880 - 2009
	Fruit	31	99	7859	3,623,751	1880 - 2009
	Vine	4	27	1182	101,383	1951 - 2009
	NA[1]	277	1344	1073	116,185	1880 - 1944
	All	**352**	**1,961**	**8,333**	**16,065,517**	**1880- 2009**

[1] Unspecified plant types refer to plant-phase combination that are not in the actual DWD database.
[2] The Combined Data refers to the database where stations and corresponding observations from all three databases have been combined and merged.

1.2 Combining data bases

The total number of stations present in all three databases indicated in Table 1.1 (9403) is overestimated, because there is a certain number of stations that appear in more than one database. These stations are of special interest, because identifying

those stations is a prerequisite for obtaining phenological time series that span more than the observation period of just one database. Especially for the DWD and the HIS databases, there is quite a number of stations that appear in both databases (see Table 2.1). Unfortunately, it is not so easy to identify those stations, because station ids have changed over the years.

We made a special effort to identify those stations that appear in more than one database. This effort is reflected in the tables pheno_stations and all_pheno_obs, where we compiled all supposedly unique stations and all phenological observations in all three databases, respectively. In Table 1.2 we display an overview of the number of stations that appear in only one or more than one database.

Table 1.2: Overview of number of stations that appear in more than one database

	DWD	HIS	HPDB	In all three	sum
DWD	5582	583	281	117	6563
HIS	583	1031	21	117	1752
HPDB	281	21	884	117	1303

In Table 1.2, the total number of stations present in a respective database (rightmost column) exceeds the number displayed in Table 1.1. That is because we identified stations that were merged or split over the years. For example, the same DWD-station can appear twice, but with different HIS-stations assigned to it, in case of a merged station, or vice versa, in case of a split station.

In the table pheno_stations the columns REMARK_HIS and REMARK_HPDB specify whether stations are split or merged. The geographical location refers in all cases to the one in the most recent database, respectively. Overall we identified 8333 unique stations (see table pheno_stations).

It can be the case that the observer changed for a certain station, which is not reflected in a change of a station-id. Unfortunately, phenological observations are historically only geo-referenced rather than referenced by both location and observer. Especially for a station that was identified to be in all three databases and spanning an observation period of almost 130 years it is obvious that observations at this station cannot be recorded by the same observer. This introduces systematic shifts in observations, because every observer interprets the observation instructions differently and probably also observe different individual plants.

However, as these shifts can also occur in a single database, we tried to identify those stations that refer to the same geological location. Therefore, for the construction of long time series, we strongly suggest not to use single station time series, but rather combined time series of a larger geographical region, where it can be assumed that the errors introduced by a change in observer and other errors are averaged out. For the construction of combined time series and outlier detection,

please refer to section 1.3. Combined time series for Natural Regions and for Germany can be found online and in tables pheno_nr_*.

Here, we shortly sketch the algorithm how the table pheno_stations was constructed. We only matched HIS- and HPDB-stations to DWD-stations. We did not try to match HPDB- and HIS-stations. Note that the geographical location for phenological stations, given in decimal degrees longitude and altitude and height (meters), usually refers to the centre of the town or city where the observation were made and do not reflect the geographical location of the plant(s) to which observations relate.

Matching HIS-stations to DWD-stations:

- The DWD kindly provided a table in which some DWD-stations were already matched to HIS-stations (see table his_dwd_ids). These were directly matched and tagged '*his'*. Some HIS-stations were assigned more than one DWD-station in this table. In this case the station was apparently split and the DWD-station id was duplicated in the table pheno_stations and assigned two different HIS-station ids. In the column REMARK_HIS this was noted as *'split'*.
- Additionally, we matched HIS-stations to DWD-stations that are at the same geographical location (longitute and altitude) and noted this as '*loc*' in the column REMARK_HIS.
- In case there were more than one DWD-station at the same geographical location as a HIS-stations, station were apparently split again and marked as *'loc_split*' in the column REMARK_HIS. For all HIS-stations marked *'loc_split*', there is a DWD-station tagged '*his*', that may have a slightly varying geographical location. This can be interpreted that the historical station was assigned a different location in the database, because of a change of the city centre, for instance. However, there are also DWD-stations at the same location have not been tagged '*his*'. In these cases it is not clear if and to what station the observer changed.
- In case there was more than one HIS-station at the same location as a DWD-station, these stations were assumed to be merged and were tagged *'loc_merge*' in the column REMARK_HIS. Here it can also be the case that for the specific DWD-station-HIS-station pair tagged '*loc_merge*', there also is a pair tagged '*his*'. As in the case above it is not clear what happened to the observer.
- The geographical location of stations usually refers to the centre of the town or city where observation are made and the city-centre changed over time. Therefore geo-references are not exact and, thus, we also considered stations to be the same, when they had the same name, and longitude and latitude does not differ more than 0.01 decimal degrees. These stations are marked as '*sim*' in the column REMARK_HIS.
- As in the case for location equality above, there were also HIS-stations that were similar to more than one DWD-station and vice versa. In the former case these were markred as '*sim_split*' and in the latter case as '*sim_merge*', respectively.

Matching HPDB-stations to DWD-stations:

- In the HPDB, which was kindly provided by the DWD, some stations were already matched to actual DWD-stations. In the column REMARK_HPDB this was noted as '*hpdb*'.
- Additionally, as above, we also checked for stations that were either at the same location or, alternatively, had the same name and were located at a similar location (longitude and latitude does not differ more than 0.01 decimal degrees). As explain above these cases were marked as '*loc*','*loc_split*', '*loc_merge*', '*sim*', '*sim_split*', and '*sim_merge*'.

1.3 Combined time series and outlier detection

One of the main reason to construct this database and to merge stations from different databases was to enable the construction of long phenological time series in order to study the effect of climate change on plant phenology. For the rationale and detailed description of combined phenological time series, please refer (Schaber, 2002) and (Schaber, et al., 2010). In Figure 1 we show histograms of the amount of time series of a certain length for single stations and Natural Regions, respectively. For Natural Regions, there is a substantial increase of long time series at the expense of short time series.

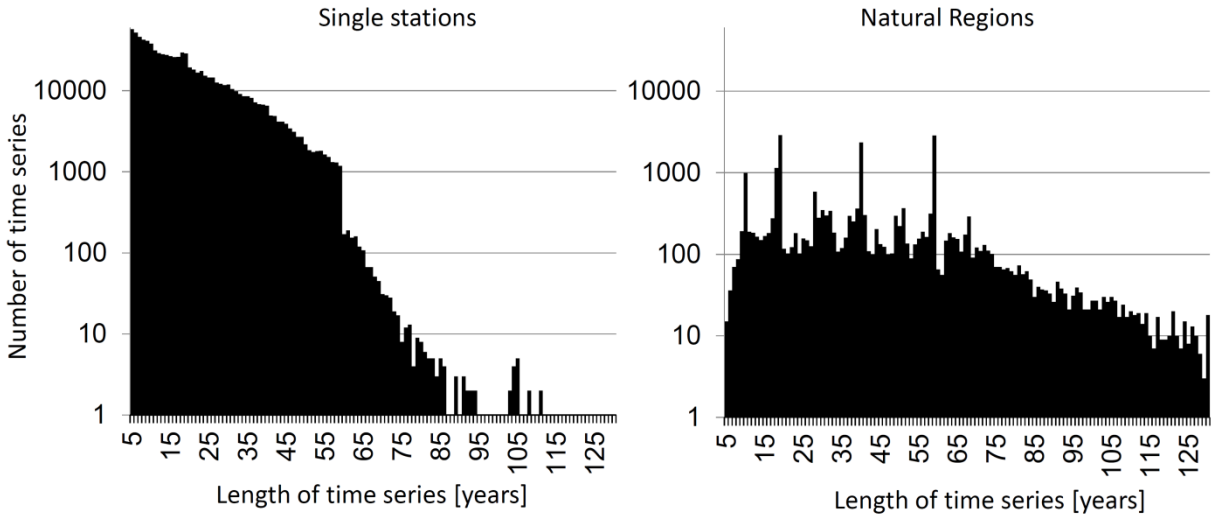

Figure 1: Histograms of the amount of time series of a certain length for single stations and Natural Regions, respectively. The SQL-code to retrieve the histogram data from the database can be viewed in the SQL-access-tab at ppodb.de.

Shortly, a combined times series is basically a sophisticated average over many time series that corrects for artefacts introduced by simple averages due to the unequal distribution of time series in time and space. Mathematically, combined time series are the general mean + year effects of a linear two-way crossed classification model.

One useful result of the construction of combined time series is the extraction of station effects, (i.e. the characteristic deviation of the date of phase onset at a given observational station relative to a population of stations). These station effects are

less sensitive to gaps in the data series and different length of observation periods than the deviation from average values.

One prerequisite of a combined time series is that the observations that are to be combined come from a climatologically sufficiently homogeneous region such that the phenological development of certain phases is consistent concerning years and stations. A natural choice of such regions for Germany are the so-called Natural Regions (Naturraumgruppen, see online map) that are defined by homogeneous climate, soil and phenology.

Combined time series for Germany and Natural Regions, including confidence intervals and other useful statistics, can be viewed online by selecting the Natural-Regions-perspective or can be found in the tables pheno_nr *.

Obtaining phenological data is often an error-prone process and we use combined time series to detect outliers (DWD, 1991; Schaber, et al., 2010; Schaber and Badeck, 2002). One of the few types of errors that can be detected is the so-called month mistake. (Schaber and Badeck, 2002) developed a method to detect month mistakes with combined time series. Month mistakes are marked in the tables of the phenological observations in the column OUTLIER. Please refer to the respective table for a description.

However, even though combined time series can be used to detect outliers and average out extreme observations to some extent, outliers can still persist. For example, the time series for the plant ‘winter wheat’, phase ‘beginning of full ripeness’, and Natural Region ‘Gaeuplatten im Neckar- und Tauberland’ has one extreme data point at 1951. As can be seen in the data column ‘n_obs’ this data points is “combined” using only one observation. As this observation is already extreme and there are no other observations in this year to be compared to, it cannot be detected as outlier, even though it looks as one. Combined observations which are combined using few observations should be taken with care.

2 Data tables in *PPODB*

In the following we provide a short overview of all tables in PPODB. A detailed description of the contents of the tables is given in section 3 or click on table names in Table 2.1 for direct access.

The tables which comprise the data of the three main databases, as mentioned in the introduction, have the prefix DWD, HIS, and HPDB, respectively. When none of these prefixes is given the table refers to the DWD database.

Each database has its own way of coding the data for historical reasons. We made an effort to merge the three databases and make them comparable, especially concerning station ids. The central result of this endeavour is the Table 2.27: pheno_stations, which compiles the stations from all three databases, making it possible to tract phenological observations at a certain station over maximally 130 years. Please refer to section 1.2 for further details. For an overview of the

observation period of the three databases DWD, HIS and HPDB, and number of observations for different plant types, please refer to Table 1.1.

The term phenological phase usually comprises a plant, e.g. wheat, beech, apple, etc., as well as the actual phenological phase, e.g. sowing, bud burst, ripening, etc., except for the HPDB, where plants and phase have separate ids.

Table 2.1: List of tables in the database PPDOB in alphabetical order with hyper-links.

Table Name	Description
Table 2.2: agro_pheno_def	Definitions of agrological phases (DWD)
Table 2.3: agro_pheno_obs	Observation dates of agrological phases (DWD)
Table 2.4: agro_varieties_def	Definitions of agrological varieties (DWD)
Table 2.5: agro_varieties_obs	Observation dates of agrological varieties (DWD)
Table 2.6: all_pheno_obs	Combination on dwd_pheno_obs, his_pheno_obs and hpdb_pheno_obs.
Table 2.7: dwd_pheno_def	Definitions of all phenological phases (DWD)
Table 2.8: dwd_pheno_obs	Observation dates of all phenological phases (DWD)
Table 2.9: dwd_pheno_stations	Description of phenological stations of the DWD
Table 2.10: fruit_pheno_def	Definitions of fruit phases (DWD)
Table 2.11: fruit_pheno_obs	Observation dates of fruit phases (DWD)
Table 2.12: fruit_varieties_def	Definitions of fruit varieties (DWD)
Table 2.13: fruit_varieties_obs	Observation dates of fruit varieties (DWD)
Table 2.14: his_agro_pheno_obs	Observation dates of historical agrological phases (HIS)
Table 2.15: his_dwd_ids	Mapping of historical station IDs (HIS) to actual station IDs (DWD)
Table 2.16: his_pheno_obs	Observations of historical phenological phases (HIS)
Table 2.17: his_pheno_stations	Description of historical phenological stations (HIS)
Table 2.18: his_wild_pheno_obs	Observation dates of historical wild phases (HIS)
Table 2.19: hpdb_phases	Description of phases in the HPDB
Table 2.20: hpdb_pheno_obs	Observations of historical phenological phases (HPDB)
Table 2.21: hpdb_pheno_stations	Description of historical phenological stations (HPDB)
Table 2.22: hpdb_plants	Description of plants in the HPDB
Table 2.23: phase_mappings	Mapping of HPDB phases and plant names to HIS/DWD phases
Table 2.24: pheno_nr_ts_1951	Combined time series starting 1951
Table 2.25: pheno_nr_ts	Combined time series starting 1880
Table 2.26: pheno_nr_stats_1951	Station effects of combined time series starting 1951

Table 2.27: pheno_nr_stats	Station effects of combined time series starting 1880
Table 2.28: pheno_stations	Phenological stations at the DWD, HPDB and HIS with mapped station IDs
Table 2.29: vine_pheno_def	Definitions of the vine phases (DWD)
Table 2.30: vine_pheno_obs	Observation dates of vine phases (DWD)
Table 2.31: vine_varieties_def	Definitions of the vine varieties
Table 2.32: vine_varieties_obs	Observation dates of the vine varieties
Table 2.33: wild_pheno_def	Definitions of wild phases (DWD)
Table 2.34: wild_pheno_obs	Observation dates of wild phases (DWD)

In the following we provide a short description of the actual data columns of each table in *PPODB*. For each table we provide column name, data type, default values and a brief description of the column content, however, column names should already give an idea about its content.

The respective column has no default values, in case the column default value is listed as 'NOT NULL'. In the table footer we also provide primary and foreign keys.

Table 2.2: agro_pheno_def

Name	Type	Default	Description
PHASE_ID	int(4)	NOT NULL	Phase identifier
PHASE_NAME_DE	char(40)	NOT NULL	German phase name
PHASE_NAME_EN	char(40)	NOT NULL	English phase name
PHASE_SHORT	char(4)	NULL	Phase name abbreviation
PLANT_NAME_DE	char(60)	NOT NULL	German plant name
PLAN_NAME_EN	char(60)	NOT NULL	English plant name
PLANT_NAME_LA	char(30)	NULL	Latin plant name

Primary key is (PHASE_ID).

Table 2.3: agro_pheno_obs

Name	Type	Default	Description
DWD_STAT_ID	int(19)	NOT NULL	DWD station identifier
PHASE_ID	int(4)	NOT NULL	Phase identifier
OBS_DAY	int(3)	NOT NULL	Julian day of observation
OBS_YEAR	int(4)	NOT NULL	Year of observation
CHECKED	int(2)	NOT NULL	0 : checked by DWD and seems ok 8 : not checked by DWD
OUTLIER	int(3)	0	1 : outlier: assumed month mistake based on the combined time series of respective Natural Region after 1951

			2 : outlier: assumed month mistake based on the combined time series of respective of Germany after 1951 4 : outlier: assumed month mistake based on the combined time series of respective Natural Region between 1880-2009 8 : outlier: assumed month mistake based on the combined time series of respective of Germany between 1880-2009
INSERT_DATE	DATE	NOT NULL	Date of insertion
MODIFY_DATE	DATE	NOT NULL	Last modification date

Primary key is (DWD_STAT_ID, PHASE_ID, OBS_DAY, OBS_YEAR), Foreign key is agro_pheno_def(PHASE_ID).

Table 2.4: agro_varieties_def

Name	Type	Default	Description
PHASE_ID	int(4)	NOT NULL	Phase identifier
VARIETY_ID	int(2)	NOT NULL	Variety identifier
PLANT_NAME_DE	char(60)	NOT NULL	German plant name
PLANT_NAME_EN	char(60)	NOT NULL	English plant name
PLANT_NAME_LA	char(30)	NULL	Latin plant name
SORTE	char(30)	NOT NULL	German variety name
VARIETY	char(30)	NOT NULL	English variety name

Primary key is (PHASE_ID, VARIETY_ID).

Table 2.5: agro_varieties_obs

Name	Type	Default	Description
DWD_STAT_ID	int(19)	NOT NULL	DWD station identifier
PHASE_ID	int(4)	NOT NULL	Phase identifier
VARIETY_ID	int(3)	NOT NULL	Variety identifier
OBS_YEAR	int(4)	NOT NULL	Year of observation
CHECKED	int(2)	NOT NULL	0 : checked by DWD and seems ok 8 : not checked by DWD
OUTLIER	int(3)	0	1 : outlier: assumed month mistake based on the combined time series of respective Natural Region after 1951 2 : outlier: assumed month mistake based on the combined time series of respective of Germany after 1951 4 : outlier: assumed month mistake based on the combined time series of respective Natural Region between 1880-2009 8 : outlier: assumed month mistake based on the

			combined time series of respective of Germany between 1880-2009
INSERT_DATE	DATE	NOT NULL	Date of insertion
MODIFY_DATE	DATE	NOT NULL	Last modification date

Primary key is (PHASE_ID, VARIETY_ID, OBS_YEAR).

Table 2.6: all_pheno_obs

Name	Type	Default	Description
STAT_ID	int(10)	NOT NULL	PPODB station identifier
DWD_STAT_ID	int(10)	NULL	DWD station identifier
HIS_STAT_ID	int(10)	NULL	HIS station identifier
HPDB_STAT_ID	int(10)	NULL	HPDB station identifier
PHASE_ID	int(4)	NOT NULL	Integer phase identifier. Can be '0', in case in the historical observation program there is no corresponding phase in the actual observation program.
HPDB_PLANT_ID	int(3)	NOT NULL	HPDB ID of the plant. Can be '0'. Phase_id and corresponding historical plant ids are not matched yet for observation after 1950.
HPDB_PHASE_ID	int(2)	NOT NULL	HPDB ID of the phase Can be '0'. Phase_id and corresponding historical phase ids are not matched yet for observation after 1950.
OBS_DAY	int(3)	NOT NULL	Julian day of observation
OBS_YEAR	int(4)	NOT NULL	year of observation
NUM_OBS	int(1)	NOT NULL	Number of observations of the respective phase
CHECKED	int(2)	NOT NULL	0 : checked by DWD and seems ok 8 : not checked by DWD
OUTLIER	int(3)	0	1 : outlier: assumed month mistake based on the combined time series of respective Natural Region after 1951 2 : outlier: assumed month mistake based on the combined time series of respective of Germany after 1951 4 : outlier: assumed month mistake based on the combined time series of respective Natural Region between 1880-2009 8 : outlier: assumed month mistake based on the combined time series of respective of Germany between 1880-2009
SOURCE_DB	char(4)		Original database of observations (HPDB, HIS, DWD)
INSERT_DATE	DATE	NOT NULL	Date of insertion
MODIFY_DATE	DATE	NOT NULL	Last modification date

Primary key is (STAT_ID,PHASE_ID,HPDB_PLANT_ID,HPDB_PHASE_ID,OBS_DAY,OBS_YEAR, NUM_OBS,SOURCE_DB).

Note that observations having a PHASE_ID>0 do not necessarily have corresponding HPDB_PLANT_ID>0 and HPDB_PHASE_ID>0, because the mapping is not unequivocal. Moreover, there are observations from the HPDB having HPDB_PLANT_ID>0 and HPDB_PHASE_ID>0, but PHASE_ID=0, because no corresponding observations exists in the HIS or DWD database.

Table 2.7: dwd_pheno_def

Name	Type	Default	Description
PHASE_ID	int(4)	NOT NULL	Phase identifier
PHASE_NAME_DE	char(40)	NOT NULL	German phase name
PHASE_NAME_EN	char(40)	NOT NULL	English phase name
PHASE_SHORT	char(4)	NULL	Phase name abbreviation
PLANT_NAME_DE	char(60)	NOT NULL	German plant name
PLANT_NAME_EN	char(60)	NOT NULL	English plant name
PLANT_NAME_LA	char(30)	NULL	Latin plant name
PLANT_TYPE	char(5)	NOT NULL	plant type: agro, fruit, wild or wine

Primary key is (PHASE_ID).

Table 2.8: dwd_pheno_obs

Name	Type	Default	Description
DWD_STAT_ID	int(19)	NOT NULL	Integer DWD station identifier
PHASE_ID	int(4)	NOT NULL	Integer phase identifier
OBS_DAY	int(3)	NOT NULL	Julian day of observation
OBS_YEAR	int(4)	NOT NULL	Year of observation
CHECKED	int(2)	NOT NULL	0 : checked by DWD and seems ok 8 : not checked by DWD
OUTLIER	int(3)	0	1 : outlier: assumed month mistake based on the combined time series of respective Natural Region after 1951 2 : outlier: assumed month mistake based on the combined time series of respective of Germany after 1951 4 : outlier: assumed month mistake based on the combined time series of respective Natural Region between 1880-2009 8 : outlier: assumed month mistake based on the combined time series of respective of Germany between 1880-2009
INSERT_DATE	DATE	NOT NULL	Date of insertion
MODIFY_DATE	DATE	NOT NULL	Last modification date

Primary key is (DWD_STAT_ID, PHASE_ID, OBS_DAY, OBS_YEAR). Foreign key is dwd_pheno_def(PHASE_ID).

Table 2.9: dwd_pheno_stations

Name	Type	Default	Description
DWD_STAT_ID	int(10)	NULL	Integer DWD station identifier
STAT_NAME	char(52)	NOT NULL	Station name
STAT_LON	float(5,2)	NOT NULL	Longitude [degrees.centi-degrees]
STAT_LAT	float(5,2)	NOT NULL	Latitude [degrees.centi-degrees]
STAT_ALT	float(6,2)	NOT NULL	Altitude [meters]
GK_HOCHWERRT	int(4)	NOT NULL	Gaus-Krueger Hochwert
GK_RECHTSWERT	int(4)	NOT NULL	Gaus-Krueger Rechtswert
STAT_LANDKREIS	char(30)	NULL	Station county
STAT_BUNDESLAND	char(30)	NULL	Station federal state
NATURRAUM_ID	int(4)	NULL	Ecounit ID. Ecounits are based on a ecological classification of a certain landscape
NATURRAUM_NAME	char(50)	NULL	Ecounit name
NATURRAUM-GRUPPEN_ID	int(3)		Ecounit-group-id (Natural Region), Ecounit groups are aggregations of ecounits of a certain landscape and mostly called Natural Regions
NATURRAUM-GRUPPEN_NAME	char(60)	NULL	Ecounit group name
COUNTRY	char(20)	NULL	Actual country of station location
BEGIN_OBS	int(4)	NULL	Begin of observation
END_OBS	int(4)	NULL	End of observation
N_OBS_YEARS	int(4)	NULL	Number of observation years, not necessarily equal to (End-Begin) [years]

Primary key is (DWD_STAT_ID).

Table 2.10: fruit_pheno_def

Name	Type	Default	Description
PHASE_ID	int(4)	NOT NULL	Phase identifier
PHASE_NAME_DE	char(40)	NOT NULL	German phase name
PHASE_NAME_EN	char(40)	NOT NULL	English phase name
PHASE_SHORT	char(4)	NULL	Phase name abbreviation
PLANT_NAME_DE	char(60)	NOT NULL	German plant name
PLAN_NAME_EN	char(60)	NOT NULL	English plant name
PLANT_NAME_LA	char(30)	NULL	Latin plant name

Primary key is (PHASE_ID).

Table 2.11: fruit_pheno_obs

Name	Type	Default	Description
DWD_STAT_ID	int(19)	NOT NULL	DWD station identifier
PHASE_ID	int(4)	NOT NULL	Phase identifier
OBS_DAY	int(3)	NOT NULL	Julian day of observation
OBS_YEAR	int(4)	NOT NULL	Year of observation
CHECKED	int(2)	NOT NULL	0 : checked by DWD and seems ok 8 : not checked by DWD
OUTLIER	int(3)	0	1 : outlier: assumed month mistake based on the combined time series of respective Natural Region after 1951 2 : outlier: assumed month mistake based on the combined time series of respective of Germany after 1951 4 : outlier: assumed month mistake based on the combined time series of respective Natural Region between 1880-2009 8 : outlier: assumed month mistake based on the combined time series of respective of Germany between 1880-2009
INSERT_DATE	DATE	NOT NULL	Date of insertion
MODIFY_DATE	DATE	NOT NULL	Last modification date

Primary key is (DWD_STAT_ID, PHASE_ID, OBS_DAY, OBS_YEAR), Foreign key is agro_pheno_def(PHASE_ID).

Table 2.12: fruit_varieties_def

Name	Type	Default	Description
PHASE_ID	int(4)	NOT NULL	Phase identifier
VARIETY_ID	int(2)	NOT NULL	Variety identifier
PLANT_NAME_DE	char(60)	NOT NULL	German plant name
PLANT_NAME_EN	char(60)	NOT NULL	English plant name
PLANT_NAME_LA	char(30)	NULL	Latin plant name
SORTE	char(30)	NOT NULL	German variety name
VARIETY	char(30)	NOT NULL	English variety name

Primary key is (PHASE_ID, VARIETY_ID).

Table 2.13: fruit_varieties_obs

Name	Type	Default	Description
DWD_STAT_ID	int(19)	NOT NULL	DWD station identifier

PHASE_ID	int(4)	NOT NULL	Phase identifier
VARIETY_ID	int(3)	NOT NULL	Variety identifier
OBS_YEAR	int(4)	NOT NULL	Year of observation
CHECKED	int(2)	NOT NULL	0 : checked by DWD and seems ok 8 : not checked by DWD
OUTLIER	int(3)	0	1 : outlier: assumed month mistake based on the combined time series of respective Natural Region after 1951 2 : outlier: assumed month mistake based on the combined time series of respective of Germany after 1951 4 : outlier: assumed month mistake based on the combined time series of respective Natural Region between 1880-2009 8 : outlier: assumed month mistake based on the combined time series of respective of Germany between 1880-2009
INSERT_DATE	DATE	NOT NULL	Date of insertion
MODIFY_DATE	DATE	NOT NULL	Last modification date

Primary key is (PHASE_ID, VARIETY_ID, OBS_YEAR)

Table 2.14: his_agro_pheno_obs

Name	Type	Default	Description
HIS_STAT_ID	int(7)	NOT NULL	HIS station ID
DWD_STAT_ID	int(10)	NULL	DWD station ID
PHASE_ID	int(4)	NOT NULL	phase ID
OBS_DAY	int(3)	NOT NULL	Julian day of observation
OBS_YEAR	int(4)	NOT NULL	year of observation
NUM_OBS	int(1)	NOT NULL	
OUTLIER	int(3)	0	1 : outlier: assumed month mistake based on the combined time series of respective Natural Region after 1951 2 : outlier: assumed month mistake based on the combined time series of respective of Germany after 1951 4 : outlier: assumed month mistake based on the combined time series of respective Natural Region between 1880-2009 8 : outlier: assumed month mistake based on the combined time series of respective of Germany between 1880-2009
INSERT_DATE	DATE	NOT NULL	Date of insertion
MODIFY_DATE	DATE	NOT NULL	Last modification date

Primary key is (HIS_STAT_ID, PHASE_ID, OBS_DAY, OBS_YEAR, NUM_OBS. Foreign key is his_pheni_stations(HIS_STAT_ID, dwd_pheno_stations(DWD_STAT_ID) and agro_pheno_def(PHASE_ID).

Table 2.15: his_dwd_ids

Name	Type	Default	Description
HIS_STAT_ID	int(7)	NOT NULL	Integer HIS station identifier
DWD_STAT_ID	int(10)	NOT NULL	Integer DWD station identifier
STAT_NAME	char(30)	NOT NULL	Station name
STAT_LON	float(5,2)	NOT NULL	Longitude [degrees.centi-degrees]
STAT_LAT	float(5,2)	NOT NULL	Latitude [degrees.centi-degrees]
STAT_ALT	float(6,1)	NOT NULL	Altitude [meters]

Primary key is (HIS_STAT_ID, DWD_STAT_ID). Foreign key is his_pheno_stations(HIS_STAT_ID) and dwd_pheno_stations(DWD_STAT_ID).

Table 2.16: his_pheno_obs

Name	Type	Default	Description
HIS_STAT_ID	int(7)	NOT NULL	HIS station identifier
DWD_STAT_ID	int(10)	NULL	DWD station identifier
PHASE_ID	int(4)	NOT NULL	phase identifier
OBS_DAY	int(3)	NOT NULL	Julian day of observation
OBS_YEAR	int(4)	NOT NULL	year of observation
NUM_OBS	int(1)	NOT NULL	
OUTLIER	int(3)	0	1 : outlier: assumed month mistake based on the combined time series of respective Natural Region after 1951 2 : outlier: assumed month mistake based on the combined time series of respective of Germany after 1951 4 : outlier: assumed month mistake based on the combined time series of respective Natural Region between 1880-2009 8 : outlier: assumed month mistake based on the combined time series of respective of Germany between 1880-2009
INSERT_DATE	DATE	NOT NULL	Date of insertion
MODIFY_DATE	DATE	NOT NULL	Last modification date

Primary key is (HIS_STAT_ID, PHASE_ID, OBS_DAY, OBS_YEAR, SUM_OBS). Foregin key is his_pheno_stations(HIS_STAT_ID), dwd_pheno_stations(DWD_STAT_ID) and agro_pheno_def(PHASE_ID).

Table 2.17: his_pheno_stations

Name	Type	Default	Description
HIS_STAT_ID	int(7)	NOT NULL	definite HIS identifier
DWD_STAT_ID	int(10)	NULL	Integer DWD station identifier
STAT_NAME	char(30)	NOT NULL	Station name
STAT_LON	float(5,2)	NOT NULL	Longitude [degrees.centi-degrees]
STAT_LAT	float(5,2)	NOT NULL	Latitude [degrees.centi-degrees]
STAT_ALT	float(6,1)	NOT NULL	Altitude [meters]
STAT_LANDKREIS	char(30)	NULL	Station county
NATURRAUM_ID	int(4)	NULL	Ecounit ID. Ecounits are based on a ecological classification of a certain landscape
NATURRAUM_NAME	char(60)	NULL	Ecounit name
NATURRAUMGRUPPEN_ID	int(3)	NULL	Ecounit-group-id (Natural Region), Ecounit groups are aggregations of ecounits of a certain landscape and mostly called Natural Regions
NATURRAUMGRUPPEN_NAME	char(70)	NULL	Ecounit group name
BEGIN_OBS	int(4)	NULL	Begin of observation
END_OBS	int(4)	NULL	End of observation
N_OBS_YEARS	int(4)	NULL	Number of observation years, not necessarily equal to (End- Begin) [years]

Primary key is (HIS_STAT_ID), Foreign key is dwd_pheno_stations(DWD_STAT_ID).

Table 2.18: his_wild_pheno_obs

Name	Type	Default	Description
HIS_STAT_ID	int(7)	NOT NULL	HIS station ID
DWD_STAT_ID	int(10)	NULL	DWD station ID
PHASE_ID	int(4)	NOT NULL	phase ID
OBS_DAY	int(3)	NOT NULL	Julian day of observation
OBS_YEAR	int(4)	NOT NULL	year of observation
NUM_OBS	int(1)	NOT NULL	
OUTLIER	int(3)	0	1 : outlier: assumed month mistake based on the combined time series of respective Natural Region after 1951 2 : outlier: assumed month mistake based on the combined time series of respective of Germany after 1951 4 : outlier: assumed month mistake based on the

			combined time series of respective Natural Region between 1880-2009 8 : outlier: assumed month mistake based on the combined time series of respective of Germany be-tween 1880-2009
INSERT_DATE	DATE	NOT NULL	Date of insertion
MODIFY_DATE	DATE	NOT NULL	Last modification date

Primary key is (HIS_STAT_ID, PHASE_ID, OBS_DAY, OBS_YEAR, SUM_OBS). Foregin key is his_pheno_stations(HIS_STAT_ID), dwd_pheno_stations(DWD_STAT_ID) and agro_pheno_def(PHASE_ID).

Table 2.19: hpdb_phases

Name	Type	Default	Description
HPDB_PHASE_ID	int(2)	NOT NULL	Phase identifier
PHASE_SHORT	char(3)	NOT NULL	Abbreviation for the phase name
PHASE NAME	char(45)	NOT NULL	Phase name

Primary key is (HPDB_PHASE_ID).

Table 2.20: hpdb_pheno_obs

Name	Type	Default	Description
HPDB_STAT_ID	int(7)	NOT NULL	definite HPDB ID
HPDB_PLANT_ID	int(3)	NOT NULL	HPDB ID of the plant
HPDB_PHASE_ID	int(2)	NOT NULL	HPDB ID of the phase
OBS_DAY	int(3)	NOT NULL	Julian day of observation
OBS_YEAR	int(4)	NOT NULL	year of observation
NUM_OBS	int(1)	NOT NULL	Number of observations of the respective phase
SOURCE_ID	int(3)	NOT NULL	ID of data source. Contact DWD.
OUTLIER	int(3)	0	4 : outlier: assumed month mistake based on the combined time series of respective Natural Region between 1880-2009 8 : outlier: assumed month mistake based on the combined time series of respective of Germany be- tween 1880-2009
INSERT_DATE	DATE	NOT NULL	Date of insertion
MODIFY_DATE	DATE	NOT NULL	Last modification date

Primary key is (HPDB_STAT_ID, HPDB_PLANT_ID, HPDB_PHASE_ID, OBS_DAY, OBS_YEAR, NUM_OBS). Foreign key is hpdb_plants(HPDB_PLANT_ID), hpdb_phases(HPDB_PHASE_ID).

Table 2.21: hpdb_pheno_stations

Name	Type	Default	Description
HPDB STAT	int(7)	NOT NULL	HPDB station identifier
DWD_STAT_ID	int(10)	NULL	DWD station identifier
NAME STAT	char(30)	NOT NULL	Station name
STAT_LON	float(5,2)	NOT NULL	Longitude [degrees.centi degrees]
STAT_LAT	float(5,2)	NOT NULL	Latitude [degrees.centi degrees]
STAT_ALT	float(5,2)	NOT NULL	Altitude [degrees.centi degrees]
NATURRAUM_ID	int(4)	NULL	Ecounit ID. Ecounits are based on a ecological classification of a certain landscape
NATURRAUM_NAME	char(60)	NULL	Ecounit name
NATURRAUMGRUPPEN_ID	int(3)	NULL	Ecounit-group-id (Natural Region), Ecounit groups are aggregations of ecounits of a certain landscape and mostly called Natural Regions
NATURRAUMGRUPPEN_NAME	char(70)	NULL	Ecounit group name
BEGIN_OBS	int(4)	NULL	Begin of observation
END_OBS	int(4)	NULL	End of observation
N_OBS_YEARS	int(4)	NULL	Number of observation years, not necessarily equal to (End- Begin) [years]
CHECKED	int(2)	NOT NULL	0 : checked by DWD and seems ok 8 : not checked by DWD 1 : location checked

Primary key is (HPDB_STAT_ID). Foreign key is dwd_pheno_stations(DWD_STAT_ID).

Table 2.22: hpdb_plants

Name	Type	Default	Description
HPDB_PLANT_ID	int(2)	NOT NULL	Phase identifier
PLANT_NAME_DE	char(60)	NOT NULL	German plant name
PLANT NAME	char(45)	NOT NULL	Latin plant name

Primary key is (HPDB_PLANT_ID).

Table 2.23: phase_mappings

Name	Type	Default	Description
PHASE_ID	int(4)	NOT NULL	Phase identifier
PHASE_NAME_DE	char(40)	NOT NULL	German phase name
PHASE_NAME_EN	char(40)	NOT NULL	English phase name
PHASE_SHORT	char(4)	NULL	Abbreviation for the phase name
PLANT_NAME_DE	char(60)	NOT NULL	German plant name
PLANT_NAME_EN	char(60)	NOT NULL	English plant name
PLANT_NAME_LA	char(30)	NULL	Latin plant name
HPDB_PLANT_ID	smallint(3)	NOT NULL	HPDB plant identifier
HPDB_PLANT_NAME_DE	char(60)	NOT NULL	German HPDB plant name
HPDB_PHASE_ID	int(2)	NOT NULL	HPDB phase identifier
HPDB PHASE_SHORT	char(3)	NOT NULL	HPDB abbreviation for the phase name
HPDB PHASE NAME	char(45)	NOT NULL	HPDB phase name
PLANT_TYPE	char(5)	NOT NULL	plant type: agro, fruit, wild or wine

Primary key is (PHASE_IDm HPDB_PLANT_ID, HPDB_PHASE_ID). Forgein key is (dwd_pheno_def(PHASE_ID), hpdn_plant(HPDB_PLANTID), hpdb_phases(HPDB(PJASE_ID).

Note, that a PHASE_ID can have several combinations of HPDB_PLANT_ID and HPDB_PHASE_ID.

Table 2.24: pheno_nr_ts_1951

Name	Type	Default	Description
NATURRAUMGRUPPEN_ID	int(3)	NOT NULL	Ecounit-group identifier
NATURRAUMGRUPPEN_NAME	char(70)	NOT NULL	Ecounit-group name
PHASE_ID	int(4)	NOT NULL	Phase identifier
OBS_YEAR	int(4)	NOT NULL	Observation year
YEAR_EFFECT	float(5,2)	NOT NULL	Year effect
N_OBS	int(6)	NOT NULL	Number of observations pe year
SD	float(8,6)	NOT NULL	Standard deviation of year effect
L95CL	float(5,2)	NOT NULL	Lower 95% confidence level of year effect
U95CL	float(5,2)	NOT NULL	Upper 95% confidence level of year effect
TREND	float(5,2)	NOT NULL	Trend, as slope of a linear regression
TREND_SD	float(5,2)	NOT NULL	Standard deviation of trend
P_VALUE	float(8,6)	NOT NULL	P-value of trend

SET_INDEX	int(2)	NOT NULL	Index of connected set

Primary key is (NATURRAUMGRUPPEN_ID, PHASE_ID, OBS_YEAR). Foreign key is dwd_pheno_def(PHSE_ID).

Table 2.25: pheno_nr_ts

Name	Type	Default	Description
NATURRAUMGRUPPEN_ID	int(3)	NOT NULL	Ecounit-group identifier
NATURRAUMGRUPPEN_NAME	char(70)	NOT NULL	Ecounit-group name
PHASE_ID	int(4)	NOT NULL	Phase identifier
OBS_YEAR	int(4)	NOT NULL	Observation year
YEAR_EFFECT	float(5,2)	NOT NULL	Year effect
N_OBS	int(6)	NOT NULL	Number of observations pe year
SD	float(8,6)	NOT NULL	Standard deviation of year effect
L95CL	float(5,2)	NOT NULL	Lower 95% confidence level of year effect
U95CL	float(5,2)	NOT NULL	Upper 95% confidence level of year effect
TREND	float(5,2)	NOT NULL	Trend, as slope of a linear regression
TREND_SD	float(5,2)	NOT NULL	Standard deviation of trend
P_VALUE	float(8,6)	NOT NULL	P-value of trend
SET_INDEX	int(2)	NOT NULL	Index of connected set

Primary key is (NATURRAUMGRUPPEN_ID, PHASE_ID, OBS_YEAR). Foreign key is dwd_pheno_def(PHSE_ID).

Table 2.26: pheno_nr_stats_1951

Name	Type	Default	Description
NATURRAUMGRUPPEN_ID	int(3)	NOT NULL	Ecounit-group identifier
NATURRAUMGRUPPEN_NAME	char(70)	NOT NULL	Ecounit-group name
PHASE_ID	int(4)	NOT NULL	Phase identifier
DWD_STAT_ID	int(10)	NOT NULL	DWD station identifier
STAT_EFFECT	float(5,2)	NOT NULL	Station effect
N_OBS	int(6)	NOT NULL	Number of observations pe year
SD	float(8,6)	NOT NULL	Standard deviation of year effect
L95CL	float(5,2)	NOT NULL	Lower 95% confidence level of year effect
U95CL	float(5,2)	NOT NULL	Upper 95% confidence level of year effect

SET_INDEX	int(2)	NOT NULL	Index of connected set

Primary key is (NATURRAUMGRUPPEN_ID, PHASE_ID, DWD_STAT_ID).
Dwd_pheno_stations(DWD_STAT_DI) and dwd_pheno_def(PHASE_ID).

Table 2.27: pheno_nr_stats

Name	Type	Default	Description
NATURRAUMGRUPPEN_ID	int(3)	NOT NULL	Ecounit-group identifier
NATURRAUMGRUPPEN_NAME	char(70)	NOT NULL	Ecounit-group name
PHASE_ID	int(4)	NOT NULL	Phase identifier
DWD_STAT_ID	int(10)	NOT NULL	DWD station identifier
STAT_EFFECT	float(5,2)	NOT NULL	Station effect
N_OBS	int(6)	NOT NULL	Number of observations pe year
SD	float(8,6)	NOT NULL	Standard deviation of year effect
L95CL	float(5,2)	NOT NULL	Lower 95% confidence level of year effect
U95CL	float(5,2)	NOT NULL	Upper 95% confidence level of year effect
SET_INDEX	int(2)	NOT NULL	Index of connected set

Primary key is (NATURRAUMGRUPPEN_ID, PHASE_ID, DWD_STAT_ID).
Dwd_pheno_stations(DWD_STAT_DI) and dwd_pheno_def(PHASE_ID).

Table 2.28: pheno_stations

Name	Type	Default	Description
STAT_ID	int(10)	NOT NULL	PPODB station identifier
DWD_STAT_ID	int(10)	NULL	DWD station identifier
HIS_STAT_ID	int(10)	NULL	HIS station identifier
HPDB_STAT_ID	int(10)	NULL	HPDB station identifier
STAT_NAME	char(30)	NOT NULL	Station name
STAT_LON	float(5,2)	NOT NULL	Longitude (most recent location) [degress.centidegress]
STAT_LAT	float(5,2)	NOT NULL	Latitude (most recent location) [degress.centidegress]degrees
STAT_ALT	float(6,1)	NOT NULL	Altitude (most recent location) meters
STAT_LANDKREIS	char(30)	NULL	Station county

NATURRAUM_ID	int(4)	NULL	Ecounit ID. Ecounits are based on a ecological classification of a certain landscape
NATURRAUM_NAME	char(60)	NULL	Ecounit name
NATURRAUMGRUPPEN_ID	int(3)	NULL	Ecounit-group-id (Natural Region), Ecounit groups are aggregations of ecounits of a certain landscape and mostly called Natural Regions
NATURRAUMGRUPPEN_NAME	char(70)	NULL	Ecounit group name
BEGIN_OBS	int(4)	NULL	Begin of observation
END_OBS	int(4)	NULL	End of observation
N_OBS_YEARS	int(4)	NULL	Number of observation years, not necessarily equal to (End-Begin)
REMARK_HIS	char(10)	NULL	years **his**: HIS-station assigned to DWD-station in table his_dwd_ids from the DWD. **loc**: same location **loc_merge**: More than one HIS-station at the same location as a DWD-station. **loc_split**: More than one DWD-station at the same location as a HIS-station. **sim**: HIS-station assigned to DWD-station by similarity (same name and difference in longitude and altitude <=0.1 decimal degrees, respectively). **sim_merge**: More than one HIS-station similar to the same DWD-station. **sim_split**: More than one DWD-station similar to the same HIS-station. split: more than one DWD-station assigned to one HIS-station in table his_dwd_ids from the DWD.
REMARK_HPDB	char(10)	NULL	hpdb: **loc**: same location **loc_merge**: More than one HIS-station at the same location as a DWD-station. **loc_split**: More than one DWD-station at the same location as a HPDB-station..

Primary key is (STAT_ID). Foreign key is dwd_pheno_stations(DWD_STAT_ID), his_pheno_stations(HIS_STAT_ID), hpdb_pheno_stations(HPDB_STAT_ID). UNIQUE is (DWD_STAT_ID, HIS_STAT_ID, HPDB_STAT_ID).

Table 2.29: vine_pheno_def

Name	Type	Default	Description
PHASE_ID	int(4)	NOT NULL	Phase identifier
PHASE_NAME_DE	char(40)	NOT NULL	German phase name
PHASE_NAME_EN	char(40)	NOT NULL	English phase name
PHASE_SHORT	char(4)	NULL	Phase name abbreviation
PLANT_NAME_DE	char(60)	NOT NULL	German plant name
PLAN_NAME_EN	char(60)	NOT NULL	English plant name
PLANT_NAME_LA	char(30)	NULL	Latin plant name

Primary key is (PHASE_ID).

Table 2.30: vine_pheno_obs

Name	Type	Default	Description
DWD_STAT_ID	int(19)	NOT NULL	DWD station identifier
PHASE_ID	int(4)	NOT NULL	Phase identifier
OBS_DAY	int(3)	NOT NULL	Julian day of observation
OBS_YEAR	int(4)	NOT NULL	Year of observation
CHECKED	int(2)	NOT NULL	0 : checked by DWD and seems ok 8 : not checked by DWD
OUTLIER	int(3)	0	1 : outlier: assumed month mistake based on the combined time series of respective Natural Region after 1951 2 : outlier: assumed month mistake based on the combined time series of respective of Germany after 1951 4 : outlier: assumed month mistake based on the combined time series of respective Natural Region between 1880-2009 8 : outlier: assumed month mistake based on the combined time series of respective of Germany between 1880-2009
INSERT_DATE	DATE	NOT NULL	Date of insertion
MODIFY_DATE	DATE	NOT NULL	Last modification date

Primary key is (DWD_STAT_ID, PHASE_ID, OBS_DAY, OBS_YEAR), Foreign key is agro_pheno_def(PHASE_ID).

Table 2.31: vine_varieties_def

Name	Type	Default	Description

PHASE_ID	int(4)	NOT NULL	Phase identifier
VARIETY_ID	int(2)	NOT NULL	Variety identifier
PLANT_NAME_DE	char(60)	NOT NULL	German plant name
PLANT_NAME_EN	char(60)	NOT NULL	English plant name
PLANT_NAME_LA	char(30)	NULL	Latin plant name
SORTE	char(30)	NOT NULL	German variety name
VARIETY	char(30)	NOT NULL	English variety name

Primary key is (PHASE_ID, VARIETY_ID).

Table 2.32: vine_varieties_obs

Name	Type	Default	Description
DWD_STAT_ID	int(19)	NOT NULL	DWD station identifier
PHASE_ID	int(4)	NOT NULL	Phase identifier
VARIETY_ID	int(3)	NOT NULL	Variety identifier
OBS_YEAR	int(4)	NOT NULL	Year of observation
CHECKED	*int(2)*	*NOT NULL*	0 : checked by DWD and seems ok 8 : not checked by DWD
OUTLIER	int(3)	0	1 : outlier: assumed month mistake based on the combined time series of respective Natural Region after 1951 2 : outlier: assumed month mistake based on the combined time series of respective of Germany after 1951 4 : outlier: assumed month mistake based on the combined time series of respective Natural Region between 1880-2009 8 : outlier: assumed month mistake based on the combined time series of respective of Germany be- tween 1880-2009
INSERT_DATE	DATE	NOT NULL	Date of insertion
MODIFY_DATE	DATE	NOT NULL	Last modification date

Primary key is (PHASE_ID, VARIETY_ID, OBS_YEAR).

Table 2.33: wild_pheno_def

Name	Type	Default	Description
PHASE_ID	int(4)	NOT NULL	Phase identifier
PHASE_NAME_DE	char(40)	NOT NULL	German phase name
PHASE_NAME_EN	char(40)	NOT NULL	English phase name
PHASE_SHORT	char(4)	NULL	Phase name abbreviation
PLANT_NAME_DE	char(60)	NOT NULL	German plant name

PLAN_NAME_EN	char(60)	NOT NULL	English plant name
PLANT_NAME_LA	char(30)	NULL	Latin plant name

Primary key is (PHASE_ID).

Table 2.34: wild_pheno_obs

Name	Type	Default	Description
DWD_STAT_ID	int(19)	NOT NULL	DWD station identifier
PHASE_ID	int(4)	NOT NULL	Phase identifier
OBS_DAY	int(3)	NOT NULL	Julian day of observation
OBS_YEAR	int(4)	NOT NULL	Year of observation
CHECKED	int(2)	NOT NULL	0 : checked by DWD and seems ok 8 : not checked by DWD
OUTLIER	int(3)	0	1 : outlier: assumed month mistake based on the combined time series of respective Natural Region after 1951 2 : outlier: assumed month mistake based on the combined time series of respective of Germany after 1951 4 : outlier: assumed month mistake based on the combined time series of respective Natural Region between 1880-2009 8 : outlier: assumed month mistake based on the combined time series of respective of Germany between 1880-2009
INSERT_DATE	DATE	NOT NULL	Date of insertion
MODIFY_DATE	DATE	NOT NULL	Last modification date

Primary key is (DWD_STAT_ID, PHASE_ID, OBS_DAY, OBS_YEAR), Foreign key is wild_pheno_def(PHASE_ID).

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