

Gridded winter soft wheat phenological database for Europe

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PROPERTIES

Creator Food Security Unit of the Joint Research Center (JRC.D.5)

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Description The gridded phenological database contains spatial distribution at 25x25 km grid level of four phenological parameters for modelling winter soft wheat phenological development: TSUM1 (growing degree days from emergence to full flowering), TSUM2 (growing degree days from flowering to physiological maturity), SOWING (sowing dates) and VERNSAT (required duration of exposure to vernalizing temperatures).

The database was constructed through spatial calibration of winter soft wheat phenology across Europe, on the basis of field phenological observations combined with regional cropping calendars. The base temperature to calculate TSUM1 and TSUM2 is 0 °C. The autumn sowing dates are determined as the first day when the 7-day running long-term-average daily temperature drops below 11 °C. Vernalizing temperatures range between -4 °C and 17 °C, which represent minimum and maximum temperatures for effective vernalization, respectively. The optimal vernalization temperatures range between 3 °C and 10 °C. More details on the calibration procedure and the phenological model (including vernalization) can be found in the reference below, which should be also cited when using this dataset.

Ceglar, A., van der Wijngaart, R., de Wit, A., Lecerf, R., Boogaard, H., Seguni, L., van den Berg, M., Toreti, A., Zampieri, M., Fumagalli, D., Baruth, B., 2019. Improving WOFOST model to simulate winter wheat phenology in Europe: Evaluation and effects on yield. *Agricultural Systems*, 168, 168-180.

Disclaimer The developers/maintainers of this dataset do not have any responsibility on its use and on results/products derived from it.

Source <https://www.sciencedirect.com/science/article/pii/S0308521X17309897>

Mars agroclimatic European Grid http://agri4cast.jrc.ec.europa.eu/DataPortal/Resource_Files/SupportFiles/grid25.zip

DIMENSIONS

Grid Projection Lambert Azimuthal Equal Area

Grid E.P.S.G. 3035

Grid Resolution 25 km

Temporal resolution STATIC

INDICATORS

Variables

- TSUM1 (GDD)
 - Temperature sum from emergence to flowering
- TSUM2 (GDD)
 - Temperature sum from flowering to physiological maturity
- SOWING (day of year)
 - Sowing day
- VERNSAT (number of days)
 - Saturated vernalization requirements