

# Phenology and production of pollen, nectar, and sugar in 1612 plant species from various environments

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## Abstract

To predict the quantity and quality of food available to pollinators in various landscapes over time, it is necessary to collect detailed data on the pollen, nectar, and sugar production per unit area and the flowering phenology of plants. Similar data are needed to estimate the contribution of plants to the functioning of food webs via the flow of energy and nutrients through the soil–plant–nectar/pollen–consumer pathway. Current knowledge on this topic is fragmented. This database represents the first compilation of data on the various food resources produced by 1612 plant species belonging to 755 genera and 133 families, including crop plants and wild plants, annuals and perennials, animal- and wind-pollinated plants, and weeds and trees growing in different ecosystems under various environmental conditions. The data set consists of 103 parameters related to the traits of plant species and geographical and environmental factors, allowing for precise calculations of the amounts of nectar, pollen, and energy provided by plants and available to consumers in the considered flora or ecosystem on a daily basis throughout the year. These parameters, gathered by us and extracted from the available literature, describe pollen, nectar, and sugar production (where applicable, in mass, volume, and concentration units), honey yield, the timing and duration of flowering, flower longevity, number of plants and flowers per unit area, weather conditions (temperature and precipitation), geographical location, landscape, and syntaxonomy. The data were obtained from various, mostly European, pedoclimatic zones, and the majority of the data were available for plant species and communities present in Central Europe, especially in Poland, where research on floral resources has a long tradition. These data are representative of the whole continent and may be used as a reference for plant communities occurring on continents other than Europe since the database allows for the consideration of differences in the production of resources by a single plant species growing in different communities. This data set provides a unique opportunity to test hypotheses related to the functioning of food webs, nutrient cycling, plant ecology, and pollinator ecology and conservation.

The data are released under a CC-BY-NC-SA license, and this paper must be properly cited when using the database.

**KEYWORDS**

floral rewards, food web, nectar, nectarivory, nutrient cycle, phenology, plant pollinator, pollen, pollination, pollinator decline, pollinivory, sugar

**CONFLICT OF INTEREST**

The authors declare no conflict of interest.

**DATA AVAILABILITY STATEMENT**

The complete data set is available as supporting information. Data are also available in Zenodo at <https://doi.org/10.5281/zenodo.5862277>.

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**SUPPORTING INFORMATION**

Additional supporting information may be found in the online version of the article at the publisher's website.

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