

## Intersexual differences in common mistletoe (*Viscum album* L.)

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Common mistletoe (*Viscum album*) is an evergreen hemiparasitic plant widely distributed across Europe. The subspecies *V. album* subsp. *album* occurs on numerous deciduous trees and shrubs, among which apple trees (*Malus* spp.) are one of the most frequently colonized hosts. In addition to hemiparasitism, an important biological characteristic of mistletoe is its dioecy, meaning that male and female reproductive organs occur on separate plants. This trait has important consequences at the population and species levels and, together with hemiparasitism, forms a unique biological system.

The aim of this study was to determine the extent to which secondary sexual dimorphism occurs in mistletoe. The study was conducted on male and female mistletoe plants growing on apple trees in the Arboretum of the Institute of Dendrology, Polish Academy of Sciences in Kórnik, Poland. In the first stage, all individuals in the population were counted and the proportion of each sex, their age, and morphological parameters were determined. The content of photosynthetic pigments was also measured at the beginning of the growing season, when mistletoe flowering coincides with the winter dormancy of host trees. In the second stage, photosynthetic pigment content was measured throughout the growing season.

The results show that male individuals are on average smaller than female individuals, with significantly shorter main shoots and smaller clump width and height. Although the age of males and females did not differ significantly, females were more numerous in the population. Female plants also showed higher chlorophyll content during winter and spring. In spring, the chlorophyll *a* to *b* ratio was significantly higher in females, although measurements taken throughout the year showed that these differences decrease in later seasons. During winter and spring, the sexes also differed in the ratio of chlorophyll to carotenoids, which may explain the stronger yellowing previously observed in male individuals.

These results suggest that male and female mistletoe plants use different resource allocation strategies. Male individuals may experience physiological weakening during flowering due to the high energetic cost of producing flowers. Lower pigment content in males during winter and spring may indicate reduced efficiency in acquiring resources from the dormant host or greater sensitivity to environmental stress in colder months.