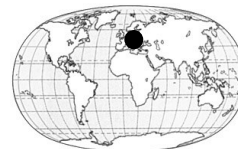


Lenka MORAVCOVÁ<sup>1</sup>, Lukáš KRINKE<sup>2</sup>, Petr PYŠEK<sup>1,3</sup>, Vojtěch JAROŠÍK<sup>3,1</sup>,  
Irena PERGLOVÁ<sup>1</sup>, Jan PERGL<sup>1</sup>



<sup>1</sup> Institute of Botany, Academy of Sciences of the Czech Republic, 252 43 Průhonice,  
Czech Republic

<sup>2</sup> Department of Botany, Faculty of Sciences, Charles University, Benátská 2, 128 01 Praha 2,  
Czech Republic

<sup>3</sup> Department of Ecology, Faculty of Sciences, Charles University, Vinicná 7, 128 01 Praha 2,  
Czech Republic

## SOIL SEED BANK DYNAMICS AND SEED BEHAVIOR IN *HERACLEUM*

### *MANTEGAZZIANUM*

Soil seed bank and seed germination characteristics of *H. mantegazzianum*, native to W Caucasus and invasive in Europe, were studied. For the seed bank study, soil samples were taken in October (after fruit release), March (before germination) and July (before fruit release) in 7 heavily invaded sites in W Bohemia, Czech Republic. Numbers of seed (total, dormant, non-dormant, living, dead) significantly differed among autumn, spring and summer. The proportion of non-dormant seed among living was only 0.3% in autumn, indicating exclusively spring germination. After cold stratification in winter, non-dormant seed contributed 87.5% in spring and after massive germination decreased to 2.9% in summer. Total seed bank, pooled across localities, was 6719-4119 per m<sup>2</sup> in autumn, 4907-2278 in spring and 1301-1036 in summer. For living seed, it was 3759-2906 in autumn, 2044-1198 in spring, and 192-165 in summer. These results suggest that only 8.5-7.0% of living seeds that were present in autumn can persist in the soil seed bank until the next summer. In a common garden experiment, ca 90% of seeds buried in autumn germinated early in the following spring. About 9% of buried seed survived until the next autumn and less than 3% survived for two years. This, together with 95% seed concentrated in the upper 5 cm soil layer (but some do occur in deeper layers), indicates a short-term persistent seed bank in *H. mantegazzianum* (*sensu* Thompson et al. 1997). Germination experiments showed that at low temperatures seeds germinated better and that it takes longer time to germinate than at higher temperatures. This result, together with the fact that seeds in the field only germinate in spring, suggests that high summer temperatures prevent seed germination later in the season. Seeds that remain dormant buried in the soil seed bank can reappear next spring.

keywords: seed bank, germination, dormancy, longevity