

Prickly lettuce - enormous source of variation unexploited in lettuce breeding

Aleš Lebeda, Eva Křístková, Miloslav Kitner, Barbora Mieslerová, Pavla Korbelová, Michaela Jemelková

Palacký University in Olomouc, Faculty of Science, Department of Botany, Šlechtitelů 11, 783 71 Olomouc-Holice, Czech Republic



Figure 1. Natural habitats of prickly lettuce: fields, ruderal areas, pavement by houses.



Figure 3. Morphology of prickly lettuce: variability in leaf shape, and distribution of trichomes on leaves and inflorescence.



Figure 4. Morphology of prickly lettuce: variability in anthocyanin distribution in inflorescence.

Prickly lettuce (*Lactuca serriola* L.), weedy plant species (Figure 1) and close wild relative to cultivated *Lactuca sativa* L. is used in lettuce breeding as an important donor of valuable traits (e.g. resistance) since twenties (Lebeda et al. 2007).

Accessions in world germplasm collections cover only a limited area of its world round distribution. Data on *L. serriola* natural distribution and biodiversity are missing (Lebeda et al. 2009a) as well as those on prickly lettuce variation.

Research activities of authors include ecogeographical studies and seed collecting, elaboration of regeneration protocols, morphological and phenological characterization, evaluation of response to downy- and powdery- mildews and study of AFLP polymorphism.

Original data on ecology and distribution of *L. serriola* in Europe (Lebeda et al. 2001), North America (Lebeda et al. 2012) and Near East were obtained, new seed samples were acquired for further studies (Figure 2).

Large phenotypical and phenological variation among samples related to their geographic origin was recognized (Lebeda et al. 2007, 2009a) (Figures 3 and 4).

Enormous variation in the reaction patterns to downy- and powdery mildews (Figures 4 and 5) was recognized and new sources of resistance to economically important races of both mildews (Lebeda et al. 2008).

According to the relative DNA content *L. serriola* is grouped with *L. dregeana*, *L. angustana*, *L. perennis* (Lebeda et al. 2007).

The composition of sesquiterpene lactones in leaves is similar to those in *L. sativa* and *L. dregeana* (Lebeda et al. 2009a).

Samples originating from various ecogeographical conditions (Near East vs. Mediterranean Basin) differ significantly in their polymorphism (AFLP) and they are genetically different (Lebeda et al. 2009b).

L. serriola was crossed with *L. sativa*, and F1 hybrids were fully fertile (Figure 7) (not published).

Dear colleagues, we invite you by this poster to read in more details various aspects of prickly lettuce infraspecific variability in our papers for your inspiration and for the exploitation of this knowledge in further biodiversity research and lettuce breeding.



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Figure 2. Collecting missions and field studies of prickly lettuce ecology and distribution.



Figure 5. Lettuce downy mildew (*Bremia lactucae*): infected leaves of prickly lettuce collected in natural habitats, disease symptoms on adaxial and abaxial leaf sides, lettuce seedlings with sporulating sporangioophores in *in-vitro* tests.

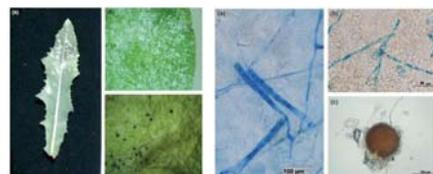


Figure 6. Lettuce powdery mildew (*Golovinomyces cichoracearum*): symptoms on prickly lettuce leaf, details of mycelium, and fruiting body (Lebeda and Mieslerová 2011).

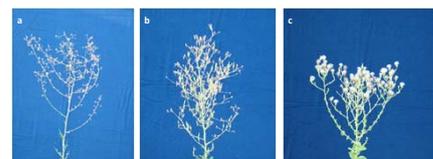


Figure 7. Type of composed inflorescences of interspecific hybrid (b) *L. serriola* (a) \times *L. sativa* (c).

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