Aims of the Thesis

The thesis is part of an ongoing project focused on hybridization in the wheat (*Triticum aestivum*)–*Elytrigia intermedia*–*E. repens* species complex. This complex represents a real model of crop–weed (wild relative) system with potential gene flow. The aim of the project is to detect and possibly to evaluate the frequency of gene flow from wheat into its wild relative, *E. intermedia*. Such study could provide a crucial background for potential risk assessment of the release of genetically modified wheat into the environment. Wheat is often crossed with *E. intermedia* in order to transfer some desirable traits of the wild grass into the wheat genome. Such hybridization is routinely performed under laboratory conditions; however, it has not yet been observed under natural conditions. Since *E. intermedia* crosses with *E. repens*, it may serve as a bridge species for gene flow from wheat into the weedy *E. repens*. Knowledge of the frequency of hybridization between both *Elytrigia* congeners with its consequences is thus of high interest and is the main objective of the thesis. The aims of the thesis can be summarized as follows: (1) to evaluate cytological variability of *Elytrigia repens* and *E. intermedia* in natural populations in the Czech Republic; (2) to establish reliable diagnostic markers for species and hybrid identification; (3) to evaluate the frequency of hybridization between *E. repens* and *E. intermedia* in natural populations; (4) to evaluate ecological and evolutionary consequences of natural hybridization.