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Czech J. Genet. Plant Breed.

Dotlačil L.: Genetic resources of barley and oat characterised by microsatellites

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Barley (*Hordeum vulgare* L.) and oat (*Avena sativa* L.) are important crop species. 1865 accessions of winter barley, 2707 accessions of spring barley and 1998 accessions of oat are maintained in RICP Gene bank. The expert core collection is used to be established as a tool for germplasm study, conservation of genetic variability and for the identification of useful genes. The main aim of this study was to evaluate genetic diversity of barley and oat genotypes within the expert core collections. Genetic variation of 176 barley accessions was analyzed using 26 microsatellite loci, covering all 6 chromosomes. 330 oat accessions were analyzed using 26 microsatellite loci that

are mapped only into linkage groups. For 26 barley microsatellite loci, 328 alleles were detected. The average number of alleles per locus was 12.6. In oat, for 26 oat microsatellite loci, 353 alleles were detected. The average number of alleles per locus was 13.6. The average DI (diversity index) was 0.11 in barley and 0.09 in oat. Dendrogram and PCA (Principal Component Analysis) based on microsatellite data showed a different influence of the place of origin, age of variety and pedigree on grouping into clusters. PCA showed that the breeding process had a negative impact on the level of genetic diversity and therefore there is a necessity of barley and oat germplasm conservation.

Keywords:
barley; oat; microsatellites; genetic diversity

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