

## GENETIC DIVERSITY AND INTROGRESSION IN MAIZE LANDRACES FROM CENTRAL ITALY

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In Europe, flint maize landraces are still cultivated, particularly in marginal areas where traditional farming is often practised. In Italy, their cultivation is generally linked to the production of ‘polenta’, for which dent corn is not suitable from a quality point of view. We have studied the evolution of maize landraces from central Italy over 50 years of *on-farm* cultivation, when dent hybrid varieties were introduced and their use was widespread. We have compared an ‘old’ collection, conducted during the 1950s before the introduction of hybrids, with a recent collection of maize landraces. We have included a collection of maize landraces from northern Italy, flint and dent hybrids and inbred lines as controls. 21 microsatellites and 170 AFLP molecular markers were used. Our results show that the maize landraces collected in the last 5-10 years have evolved directly from the flint landrace gene pool cultivated in central Italy before the introduction of modern hybrids. The population structure, diversity and linkage disequilibrium analyses show a significant amount of introgression from hybrid varieties into the recent landrace collection. However, the recent landraces did not show genetic erosion, despite the drastic reduction in the cultivation of maize landraces after the introduction of the maize hybrids. This result suggests that *in-situ* conservation of landraces is an efficient strategy for the preservation of genetic diversity. Finally, the level of introgression detected was very variable among the recent accessions (farmer’s fields), with most of them (58%) showing a very low level of introgression. This suggests that co-existence between different types of agriculture is possible, with the adoption of more correct practices that are aimed at avoiding introgression from undesired genetic sources.