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GENETIC DIVERSITY AND INTROGRESSION IN MAIZE LANDRACES FROM CENTRAL-ITALY

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Maize landraces are still cultivated in many countries in Europe and they are often linked to specific adaptations to particular farming systems and environments. Some landraces are also associated with the production of traditional local food. In Italy, the flint corn landraces are still cultivated in most regions, particularly in the mountain areas where traditional farming is still practised. Landraces represent a valuable source of genetic variation and an important cultural heritage. In this study, we have investigated the population structure of maize landraces from the Marche region and have estimated the impacts of introgression from modern hybrid varieties. We used assignment-based approaches that ascertain population membership of individuals or groups of individuals using genetic information. Two samples of maize landraces collected in two different periods, one in 1950 before the introduction of hybrids and the other in 2000, were compared with a sample of the main temperate maize inbred lines and modern hybrid varieties. We have considered 43 accessions of maize landraces from Marche collected in 1950, and 20 accessions collected in 2000, with 11 accessions of landraces from North Italy that have been used for flint corn breeding, along with 8 flint and dent modern hybrid varieties, 22 main temperate corn inbred lines 19 dent, 2 flint and 1 pop corn; for a total of 218 individuals. We have analysed all the material using 20 microsatellite *loci* (2 per chromosome) and 170 AFLP markers. The data were analysed using different approaches. SSR data were analysed using the STRUCTURE software to infer the number of populations comparing the posterior probability for the five different populations that we specified *a priori*.

Most of the modern maize landraces appear to have maintained their genetic identity, despite 50 years of wide cultivation of hybrid varieties; however, in several cases we also detected a significant introgression from hybrid varieties.