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Poster Abstract - C.17

IN SITU CONSERVATION OF MAIZE LANDRACES IN EUROPE

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Maize *landraces* are still cultivated in different parts of Europe, probably due to their specific adaptations to traditional farming systems and their association with the production of traditional foods (e.g. polenta in Italy). In contrast to both conventional and genetically modified (GM) maize, this dynamic conservation of landraces implies that seeds are produced on the farms year after year. Within the EC Sixth Framework Programme, the ongoing SIGMEA (Sustainable Introduction of Genetically Modified Crops into European Agriculture) project (http://sigmea.dyndns.org/) is designed to identify the distribution of the cultivation of maize landraces in Europe and to determine the impact of past gene introgression from hybrid varieties into landraces, in order to define the potential impact of the introduction of GM organisms into European agriculture. Here, we present two study cases, of which one concerns *in situ* conservation of maize landraces in the Maramures Region of Romania, while the second is comparing recent (2000) and older (1950) accessions of maize landraces collected from the Marche Region in Italy. Following a survey in 2002 by the Suceava genebank team in the Maramures area, 49 landraces of maize were identified and collected from 15 villages. Improved maize cultivars have been introduced into the area, which belong to the dentiformis variety, although old types are regarded as having better gastronomic qualities and are preferred for their nutrition.

The analysis of genetic diversity of maize *landraces* from Marche, Italy, was conducted using two samples of maize *landraces*, one collected in 1950 by the Istituto per la Cerealicoltura di Bergamo (47 accessions, 90 genotypes) and the other in 2000 by DiSA-Università Politecnica delle Marche (20 accessions, 77 genotypes). The study also includes one sample of traditional *landraces* characteristic of North Italy (7 accessions, 14 genotypes) and a sample of modern hybrid varieties of 6 flint and 2 dent corns. All of the materials were analysed using 6 AFLP primer combinations and 6 SSR *loci*. A subset (73) of accessions were also compared in a field trial and evaluated for phenotypic traits.

The molecular analysis indicates that the two samples of maize *landraces* from Marche collected the time period that spans about 50 years are highly inter-related, and they are clearly different from both the flint and dent corn hybrid varieties. On the other hand, the phenotypic evaluation shows that the recent collections of *landraces* are intermediate between the old collections and the modern hybrid varieties. Overall, our results indicate that gene flow between *landraces* and hybrid varieties has not affected the genetic structure of maize *landraces* from Marche, even if the results of the phenotypic traits suggest the occurrence of moderate introgression from hybrid varieties as well as the occurrence of farmer selection for useful agronomic variants.