S8/P3: GENETIC CHARACTERIZATION AND PUNGENCY ANALYSIS IN A COLLECTION OF ONION LANDRACES FROM NW SPAIN

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Onions (*Allium cepa* L.) are one of the oldest cultivated vegetables all around the world, where they are considered as the second most valuable horticultural crop, following only tomato. Spain is the second producer of onion in Europe with a growing area of ca. 25,000 ha. About the 5 % of this surface is located in Galicia (NW Spain), where this crop represents the fourth most important vegetable according to cultivated area and production (www.magrama.gob.es). In Galicia, onions are mainly present as a collection of distinctive landraces, tradicionally preserved by local growers due to their high quality and good acceptance in local markets.
Twenty local onion varieties were collected in 1998 at the main productive regions in NW Spain and they are kept at the CIAM (Centro de Investigaciones Agrarias de Mabegondo) germplasm bank. This collection of onions was previously evaluated for agro-morphological traits, showing excellent organoleptic qualities (Rivera-Martínez et al. 2005). Such results point to these Galician landraces as a potentially valuable reservoir of interesting traits which have not been fully exploited and that might highly contribute to increase the primary genepool of current onion cultivars. An evaluation of the diversity represented by this genetic resource is necessary in order to facilitate its use in future cultivar development by breeders.
In the current work, eighteen of these lines were evaluated with a set of seventeen microsatellite markers previously described in the literature. Analysis of pungency, based on the pyruvic acid content, was also assayed. Genetic data revealed a good level of polymorphism among tested markers, with PIC (Polymorphic Information Content) values ranging from 0.29 to 0.69 and a mean number of alleles per locus of three. The onions collection showed a wide range of heterozigosity, with all genotypes exhibiting at least one heterozigous locus. Cluster analysis grouped all lines with a similarity of 0.55. Preliminary observations suggest that landraces are grouped irrespective of their local origin and that clustering pattern is more on the basis of morphological traits. Analysis of pyruvic acid also point to a high frequency of heterozygosity whithin the lines analyzed. Considering the mean values obtained from ten independent bulbs, five onion landraces could be classified as “extra-sweet”, four as “sweet”, seven “of moderate pungency” and two as “pungent”.

Rivera-Martínez et al. (2005). Spanish J Agric Res, 3(1): 90-97

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