FEEDING THE PLANET: PLANT SCIENCE AND BREEDING
FOR THE FUTURE OF AGRICULTURE

JOINT CONGRESS
SIBV - SIGA

8-11 SEPTEMBER 2015
MILANO
University of Milano

PROGRAMME

POSTER LIST

Proceedings of the Joint Congress SIBV-SIGA
Milano, Italy – 8/11 September, 2015
ISBN **978-88-904570-5-0**

Poster Communication Abstract – 2.23

CHARACTERIZATION OF WATER RELATION TRAITS IN WILD SICILIAN POPULATIONS OF BRASSICA

ODDO E., INZERILLO S., GERACI A.

Department of Biological, Chemical and Pharmaceutical Sciences and Technologies, University of Palermo, Via Archirafi 38, 90123 Palermo (Italy)

Brassica, Sicily, wild relatives, water relations, stress tolerance

The genus *Brassica* comprises very variable species, both morphologically and genetically, several of which are widely cultivated as health-promoting, economically important crops, such as broccoli, cabbage and kale (1). Sicily is one of the main centers of diversification for wild species belonging to the same cytodeme of *Brassica oleracea* L. (*Brassica* sect. *Brassica*, 2*n* = 18). The Sicilian taxa can hybridize with cultivated forms so they represent a useful genetic resource for the improvement of cultivated varieties, particularly under stress conditions (2).

Drought and salinity are a world-wide problem in agriculture, resulting in reduced growth and yield. Wild *Brassica* species are adapted to arid and saline environments and their genotypic diversity could be exploited for traits of agronomic importance, using a physiologically based selection approach (3).

The aim of our work is to investigate the variability in water relation traits among wild *Brassica* relatives, grown in pots in the open under the same environmental conditions. The ecophysiology of the Sicilian taxa has not yet been investigated, so among the taxa occurring in Sicily and in the small surrounding islands we focused on *B. macrocarpa* Guss. (endemic to the Egadi Islands), *B. rupestris* Rafin subsp. *rupestris*, and *B. villosa* Biv. subsp. *bivoniana* (Mazzola et Raimondo) Raimondo et Mazzola. *B. rupestris* and *B. villosa* are endemic to North-West Sicily (4). Their habitats consist of limestone cliffs from sea level until 1000–1200 m a.s.l.

Pre-dawn and midday leaf water potentials (ψ_{leaf}) were measured with a pressure chamber and stomatal conductance (g_s) was measured in the early morning and at midday with a porometer. Pressure-volume curves were constructed by the bench dehydration method to obtain leaf water potential at turgor loss point (ψ_{tlp}), osmotic potential at full rehydration (π_0) and bulk modulus of elasticity (ε_{max}). The above traits were chosen for a first investigation because stomatal conductance contributes to both gas exchange efficiency and water use efficiency, and yield under water deficit is related to osmotic adjustment in leaf tissues (5). The three species investigated showed differences in their resistance to drought and water-relation traits that may be of interest to improve the cultivated relatives widely used in human diet.

(1) Gomez-Campo C. 1999. Biology of Brassica Coenospecies. Elsevier.
(2) Geraci A, Chèvre A, Divaret I, Eber F, Raimondo FM. 2004. Genet Resour Crop Evol 51: 137–146.
(3) Munns R, Husain S, Rivelli AR, James RA, Condon AG, Lindsay MP, Lagudah ES, Schachtman DP, Hare RA. 2002. Plant and Soil 247: 93-105.
(4) Raimondo FM & Geraci A. 2002. Fl. Medit. 12: 439-441.
(5) Jackson LE.1997. Ecology in Agriculture. Academic Press