Proceedings of the LXII SIGA Annual Congress
Verona, Italy – 25/28 September, 2018
ISBN **978-88-904570-8-1**

Poster Communication Abstract – 4.24

CONSERVATION OF GENETIC RESOURCES OF SAFFRON (*CROCUS SATIVUS* L.): A SUSTAINABLE CROP WITH POTENTIAL MEDICINAL APPLICATIONS

SOFFRITTI G.*, BUSCONI M.*, ROLDAN M.**, DE LOS MOZOS M.***, FERNANDEZ J.A.**

*) Department of Sustainable Crop Production, Università Cattolica del Sacro Cuore, Piacenza (Italy)
**) IDR-Biotechnology & Natural Resources, Universidad de Castilla-La Mancha, Albacete (Spain)
***) Centro de Investigación Agraria de Albaladejito, Consejería de Agricultura de Castilla-La Mancha, Cuenca (Spain)

saffron, biodiversity, ex situ conservation, CROCUSBANK, genetic erosion

Saffron is made from the dried stigmas of the saffron flower (*C. sativus* L.), a triploid sterile plant that is vegetatively propagated by means of corms. Saffron is mostly used as spice (the most expensive food product) and food colorant and, less extensively, as a textile dye or perfume. However, due to its analgesic and sedative properties folk herbal medicines have used saffron for the treatment of numerous illnesses for centuries. Nowadays strong research is being carried out on saffron nutraceutical, chemopreventive, and pharmaceutical properties. Saffron is currently being cultivated in Iran, India, Greece, Morocco, Spain, Italy, Afghanistan and China. While the world's saffron production is estimated in more than 200 tons per year, Iran is said to produce 80 percent of this total. Saffron crop is suited to water deficit areas and it is well adapted to low input cropping systems. The loss of land surface dedicated to saffron crop in many areas has resulted in a corresponding genetic erosion. Sterility in saffron limits the application of conventional breeding approaches for its further improvement. Besides different commercial products are known that could suggest the existence of different saffron ecotypes or commercial varieties, the actual genetic variability present in *C. sativus* at worldwide scale is currently unknown. In order to stop this loose of biodiversity the CROCUSBANK Project (funded by European Union AGRI GEN RES 2006-2011) pursued to create, characterise and exploit a germplasm collection (bank) in Crocus species, including saffron, at a world global scale.

The main goals of the CROCUSBANK are: (i) First, to collect and reproduce saffron bulbs, coming from all the countries that cultivate saffron, for direct use of this plant material in selection programmes all over the world; and (ii) Second, to create a collection of saffron allies for conservation, since they are endangered and threatened taxa and populations in Crocus, and for research in taxonomy and evolution, genetics, physiology, ecology and agronomy. These Crocus species are exploitable sources of resistances and other agronomical interesting traits to be transferred to saffron, through appropriate breeding programmes and technological tools.

The CROCUSBANK Project created the World Saffron and Crocus Collection (WSCC), a unique collection for conservation, which contains a representation of genetic variability present in saffron crop and its relatives at global scale. The Project also characterised and evaluated the WCSS, including morphological, phenological, cytological, phytochemical, molecular and

physiological traits and created a DNA bank. All the accessions and descriptors are available in a database.