

## Accepted Manuscript

Title: Epigenetic stability in Saffron (*Crocus sativus* L.) accessions during four consecutive years of cultivation and vegetative propagation under open field conditions

Authors: Matteo Busconi, Giovanna Soffritti, Lorenzo Stagnati, Adriano Marocco, Javier Marcos Martínez, Marcelino De Los Mozos Pascual, José Antonio Fernandez



PII: S0168-9452(18)30810-0  
DOI: <https://doi.org/10.1016/j.plantsci.2018.09.005>  
Reference: PSL 9943

To appear in: *Plant Science*

Received date: 13-7-2018  
Revised date: 3-9-2018  
Accepted date: 6-9-2018

Please cite this article as: Busconi M, Soffritti G, Stagnati L, Marocco A, Martínez JM, De Los Mozos Pascual M, Fernandez JA, Epigenetic stability in Saffron (*Crocus sativus* L.) accessions during four consecutive years of cultivation and vegetative propagation under open field conditions, *Plant Science* (2018), <https://doi.org/10.1016/j.plantsci.2018.09.005>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

# Epigenetic stability in Saffron (*Crocus sativus* L.) accessions during four consecutive years of cultivation and vegetative propagation under open field conditions

Matteo Busconi<sup>1</sup>, Giovanna Soffritti<sup>1</sup>, Lorenzo Stagnati<sup>1</sup>, Adriano Marocco<sup>1</sup>, Javier Marcos Martínez<sup>2</sup>, Marcelino De Los Mozos Pascual<sup>2</sup>, José Antonio Fernandez<sup>3</sup>

<sup>1</sup>Department of Sustainable Crop Production, Faculty of Agriculture, Food and Environmental Sciences. Università Cattolica del Sacro Cuore, Piacenza (Italy).

<sup>2</sup>Centro de Investigación Agroforestal de Albaladejito, Instituto Regional de Investigación y Desarrollo Agroalimentario y Forestal. Cuenca (Spain).

<sup>3</sup>IDR-Biotechnology and Natural Resources, Universidad de Castilla–La Mancha, Albacete (Spain).

## Highlights

- Saffron germplasm is characterized by low genetic but high phenotypic variability
- Saffron accessions with different geographic origin show high epigenetic variability
- The cultivation in the same field does not uniform epigenotypes to a common profile
- Saffron epigenotypes are highly stable under open field, natural, conditions
- Only a little variation is present within accessions slightly changing the epigenotypes

## Abstract

Saffron (*Crocus sativus* L.) is a sterile species that is vegetatively propagated in the field, year by year, via the production of new corms. While Saffron's genetic variability is extremely low, phenotypic variation is frequently observed in the field and epigenetics could be a possible origin of these alternative phenotypes. Present day knowledge on Saffron epigenetics is very low or absent. In the present paper, to deepen existing knowledge, we focused on the epigenetic differences and stability among 17 Saffron accessions, of different geographic origin, during four consecutive years of vegetative propagation under open field conditions. Before the analysis, the selected accessions have been cultivated in the same field for at least three consecutive years. Despite the low genetic variability and the prolonged co-cultivation in the same environment, Methylation-Sensitive Amplified Fragment Length Polymorphism (MS-AFLP) analysis revealed a very high epigenetic difference among accessions, making it possible to discriminate them based on the epigenetic profiles. During the four years of the study, a little variation has been observed within accessions following different patterns, slightly modifying the accession epigenotypes but not enough to even them to a more uniform profile. These results confirm that, under natural conditions, Saffron epigenotypes are highly stable, supporting a role for epigenetics in phenotypic variability.

Download English Version:

<https://daneshyari.com/en/article/10156975>

Download Persian Version:

<https://daneshyari.com/article/10156975>

[Daneshyari.com](https://daneshyari.com)