

Supplementary

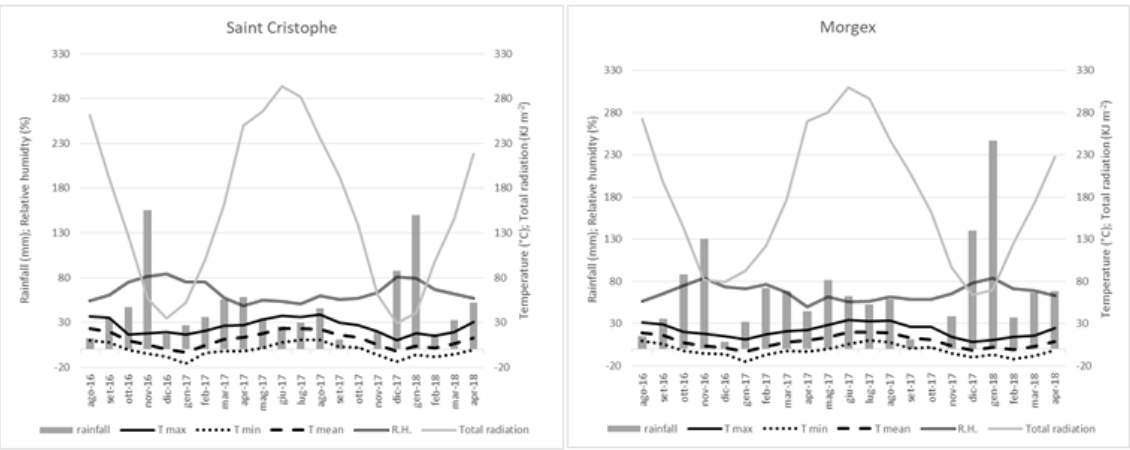


Figure S1. Climatic conditions of the Alpine experimental sites.

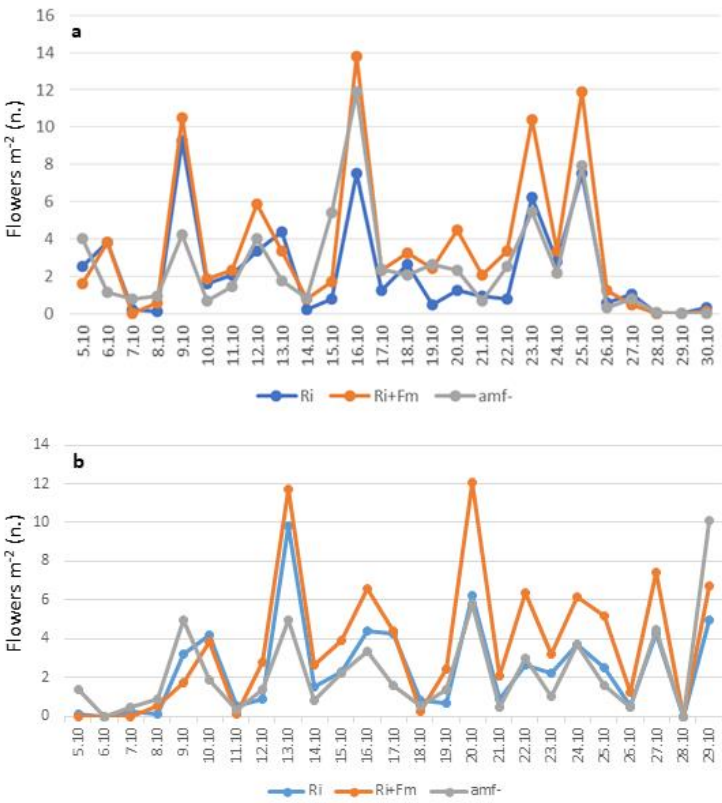


Figure S2. Effects of AMF inoculum composed by *Rhizophagus intraradices* and *Funnelformis mosseae* (Ri + Fm), *R. intraradices* alone (Ri), or control (AMF-) on flower production m² during the first (a) and second (b) cultivation cycle.

Table S1. Physical and chemical properties of the soils collected in the three saffron experimental fields located in the municipality of Saint Cristophe and Morgex (north west Italy).

		Saint Cristophe	Morgex
Texture	Clay (%)	3.7	3.8
	Fine Silt (%)	21.8	21.0
	Coarse Silt (%)	20.2	14.4
	Fine Sand (%)	24.3	25.0
	Coarse Sand (%)	29.9	35.8
Bulk density (g L ⁻¹)		1123.7	1075.6
Moisture (%)		17.3	20.2
P Olsen (mg Kg ⁻¹)		69.2	113.0
pH		6.9	7.4
Electrical conductivity (μS/cm ⁻¹)		316	243
N tot (%)		0.31	0.23
C tot (%)		3.50	3.79
Cation-exchange capacity (meq 100g ⁻¹)		19.2	15.7
Exchangeable Ca (meq 100g ⁻¹)		17.31	16.61
Exchangeable K (meq 100g ⁻¹)		1.47	0.53
Exchangeable Mg (meq 100g ⁻¹)		1.90	0.76

Table S2. Characteristics of the HPLC methods applied to analyse the bioactive compounds present in the studied saffron samples.

HPLC Method	Class	Standard	Stationary Phase	Mobile Phase	Flow (mL min ⁻¹)	Time (min)	Gradient	Wavelength (nm)
α	Cinnamic acids	caffeic acid chlorogenic acid coumaric acid ferulic acid hyperoside isoquercitrin	KINETEX – C18 column (4.6 × 150mm, 5 µm)	A: 10mM KH ₂ PO ₄ /H ₃ PO ₄ , pH=2.8 B: CH ₃ CN	1.5	20 + 2 (CT)	yes	330
	Flavonols	quercetin quercitrin rutin						
β	Benzoic acids	ellagic acid gallic acid	KINETEX – C18 column (4.6 × 150mm, 5 µm)	A: H ₂ O/CH ₃ OH/HCOOH (5:95:0.1 v/v/v), pH=2.5 B: CH ₃ OH/HCOOH (100:0.1 v/v)	0.6	23 + 2 (CT)	yes	280
	Catechins	catechin epicatechin						
	Tannins	castalagin vescalagin						
γ	Carotenoids	crocin I crocin II safranal	KINETEX – C18 column (4.6 × 150mm, 5 µm)	A: H ₂ O B: CH ₃ CN	0.6	35 + 10 (CT)	yes	310, 441
δ	Vitamin C	ascorbic acid dehydroascorbic acid	KINETEX – C18 column (4.6 × 150mm, 5 µm)	A: 5 mM C ₁₆ H ₃₃ N(CH ₃) ₃ Br/50 mM KH ₂ PO ₄ , pH=2.5 B: CH ₃ OH	0.9	10 + 5 (CT)	no	261, 348

* CT = conditioning time. Method α —gradient analysis: 5% B to 21% B in 17 min + 21% B in 3 min + 2 min of conditioning time. Method β —gradient analysis: 3% B to 85% B in 22 min + 85% B in 1 min + 2 min of conditioning time. Method χ - gradient analysis: 5%B to 95%B in 30 min + 95%B to 5%B in 5 min + 10 min of conditioning time. Method δ - isocratic analysis: 10 min + 5 min of conditioning time.