

Supplementary materials

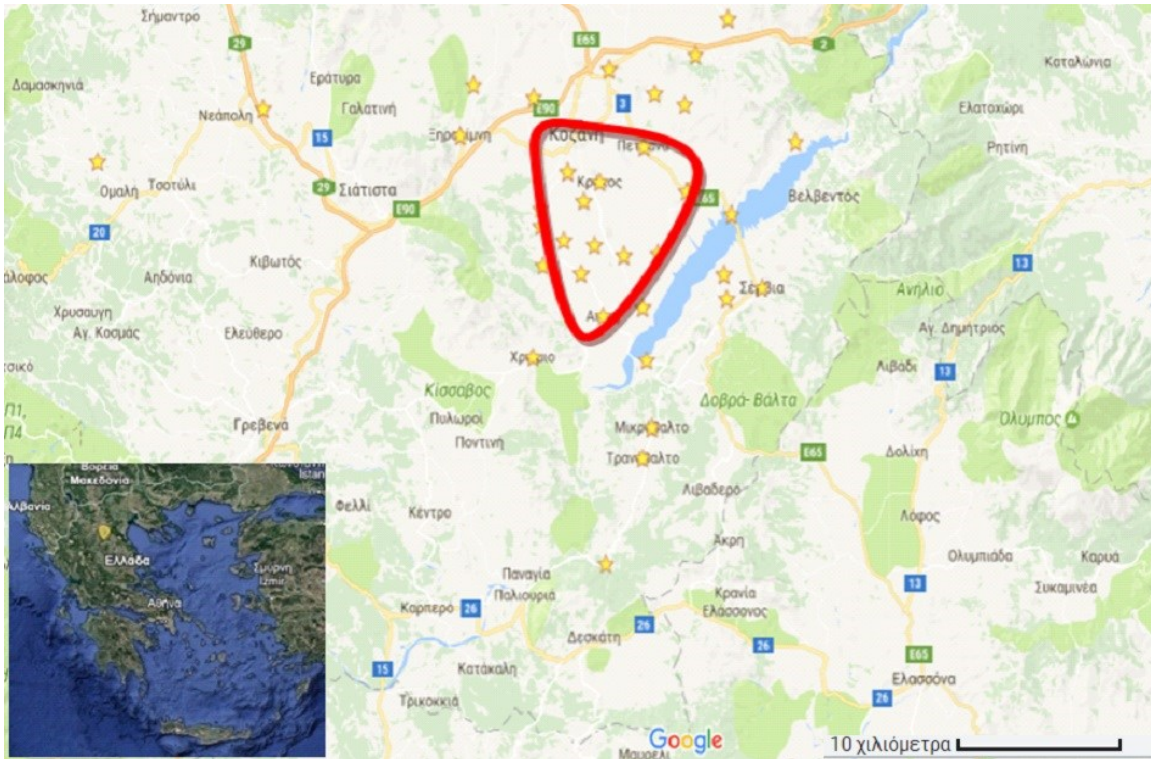


Figure S1. Geographical map of the saffron cultivation area of Kozani (scale by 10 km through Google Earth). The signs bearing a star symbol correspond to the major sites of the registered farms. Most saffron producers originate/reside and operate in the area marked in red (meta-data available from the Cooperative, personal communication)

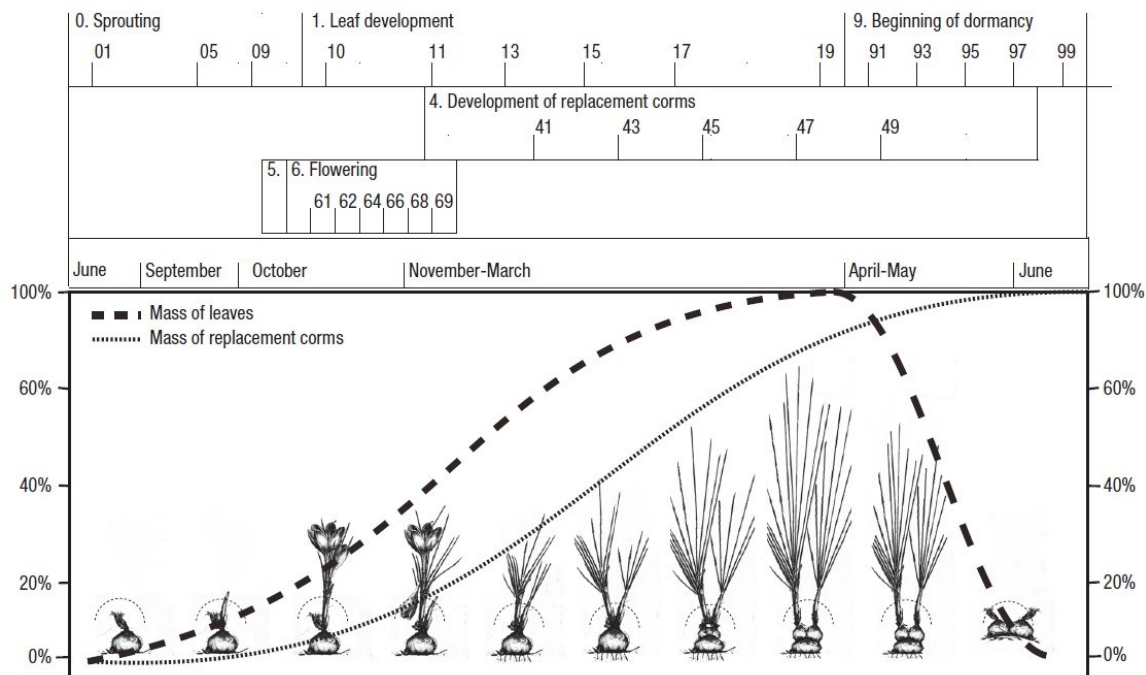


Figure S2. Critical phenological growth stages of the *Crocus sativus* L. plant, according to the BBCH Scale

Note. Reprinted from “Phenological growth stages of saffron plant (*Crocus sativus* L.) according to the BBCH scale,” by Lopez-Corcoles H, Brasa-Ramos A, Montero-García F, Romero-Valverde M, Montero-Riquelme F. Spanish J Agric Res. 2015;13:1–7 (<http://dx.doi.org/10.5424/sjar/2015133-7340>). CC BY.

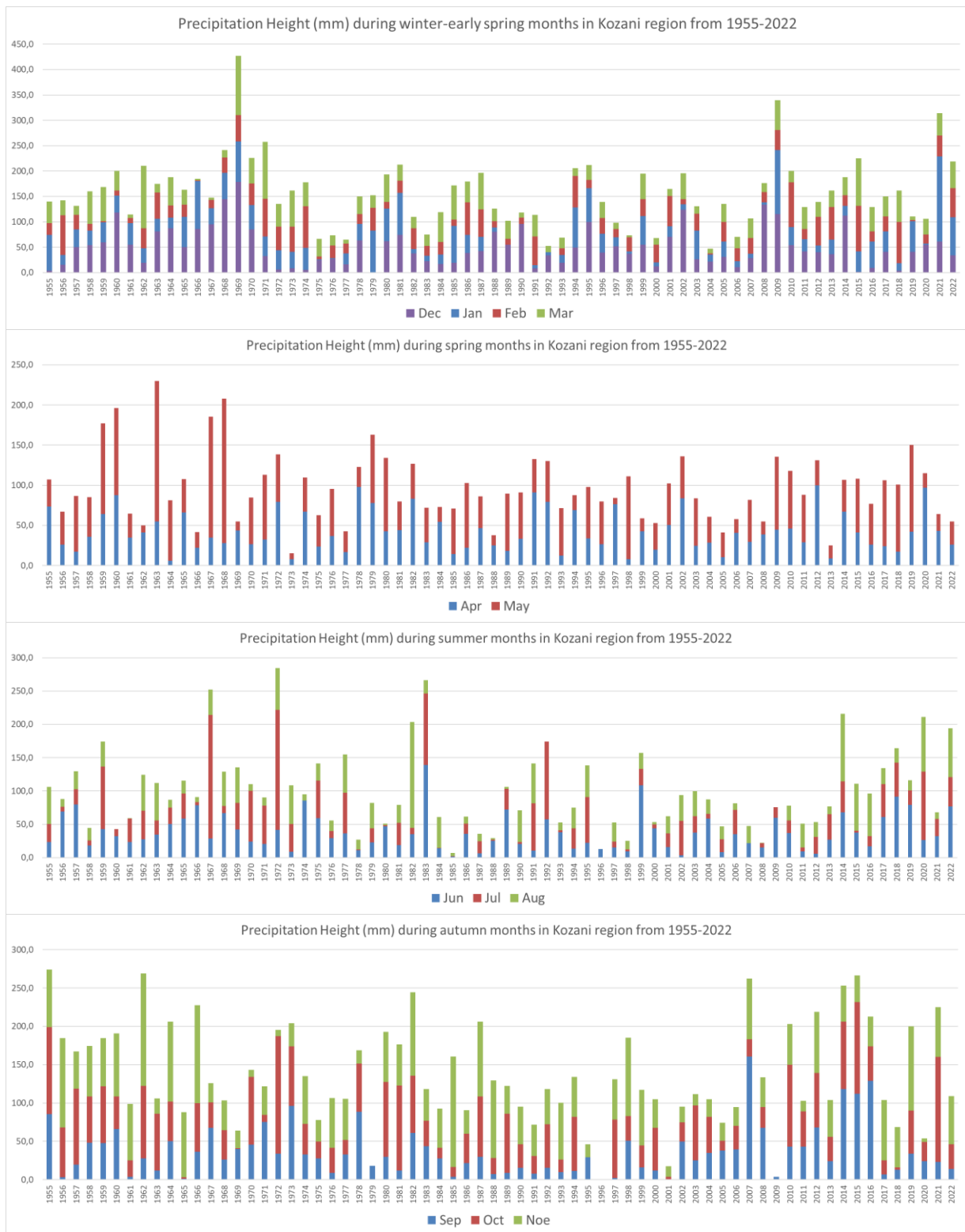


Figure S3. Historical records for monthly precipitation height (mm) in Kozani region from 1955–2022. Data from Kozani station of HNMS (longitude 21.83; latitude 40.2)

Note. Reprinted from “Significant weather and climatic events in Greece [Internet],”

Hellenic National Meteorological Service; 2017–2024 [cited 2023 Dec 20]. Available from: http://www.emy.gr/emv/en/climatology/climatology_extreme. CC BY NC ND.

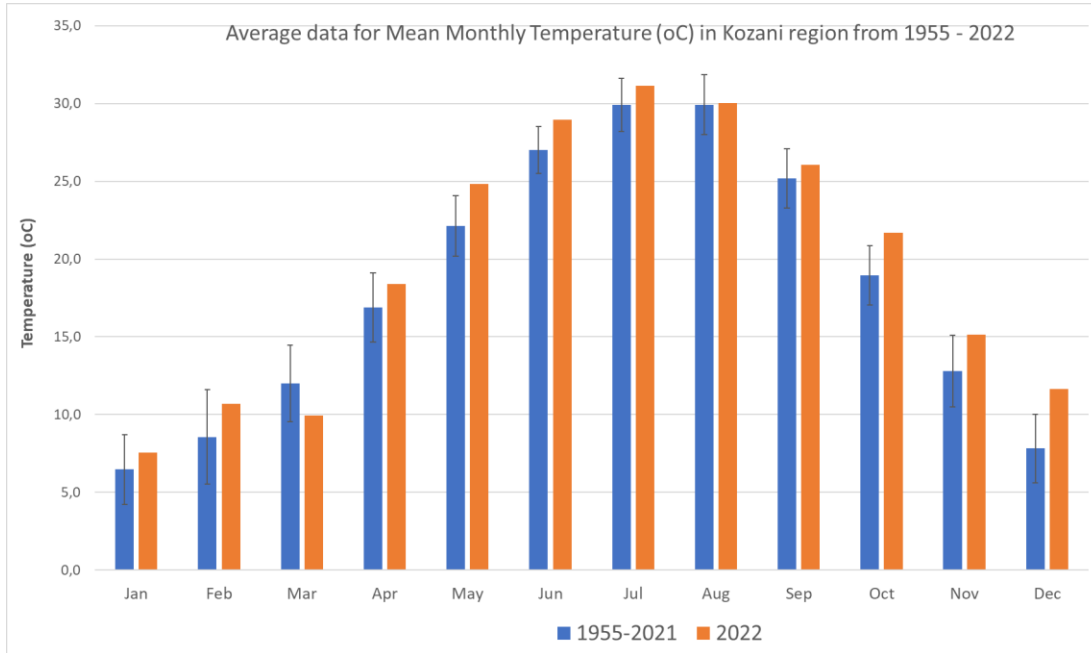


Figure S4. Historical records for the mean monthly temperature variation in the Kozani region from 1955-2021 (blue bars) and the respective values during 2022 (orange bars). Data from the Kozani station of HNMS (longitude 21.83, latitude 40.2)

Note. Reprinted from “Significant weather and climatic events in Greece [Internet],”. Hellenic National Meteorological Service; 2017–2024 [cited 2023 Dec 20]. Available from: http://www.emy.gr/emv/en/climatology/climatology_extreme. CC BY NC ND.

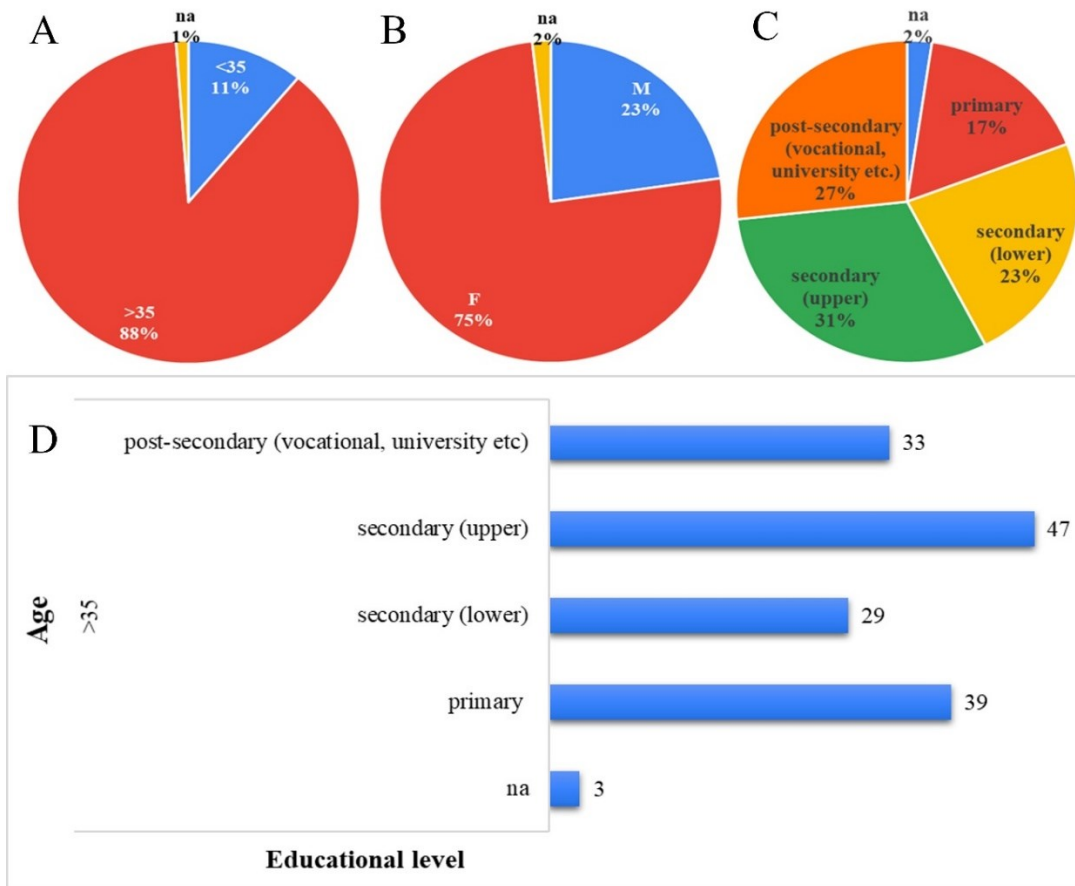


Figure S5. Demographic profile of saffron growers in Kozani. (A) Share of young farmers (< 35 years old) vs. older ones; (B) share of gender; (C) share of educational level; (D) educational profile of older farmers (> 35 years old). The data were processed from 172 survey forms. na: non answered; F: female; M: male

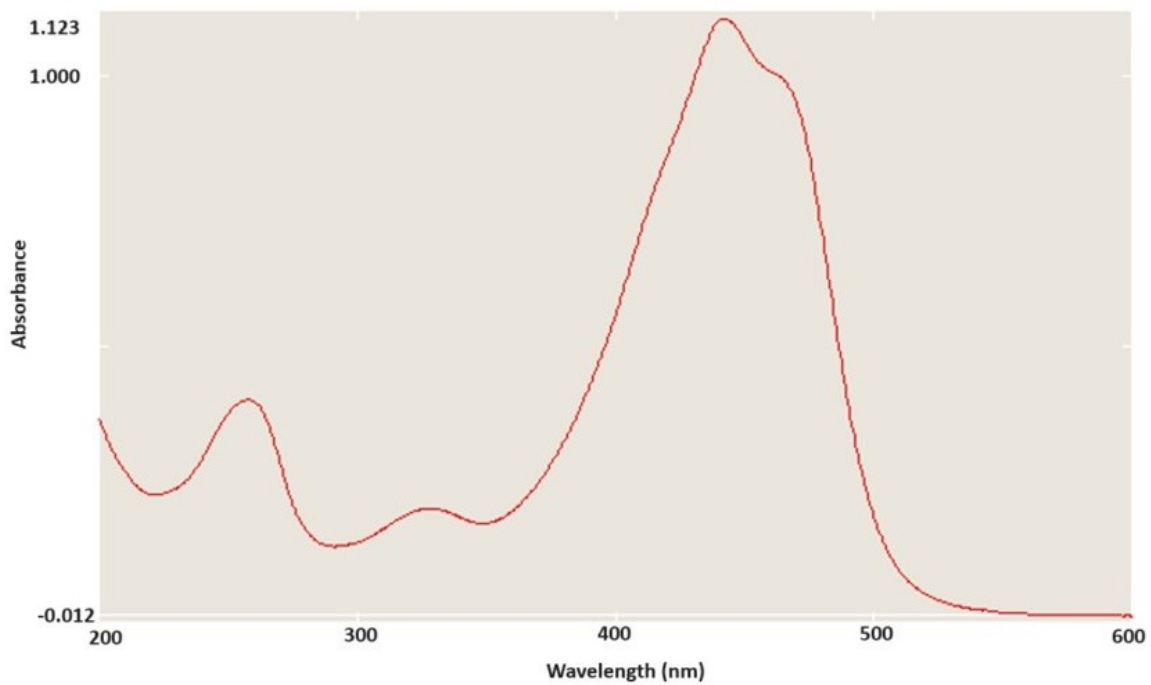


Figure S6. Example of a UV-Vis spectrum of an aqueous extract of saffron that is classified to ISO category I

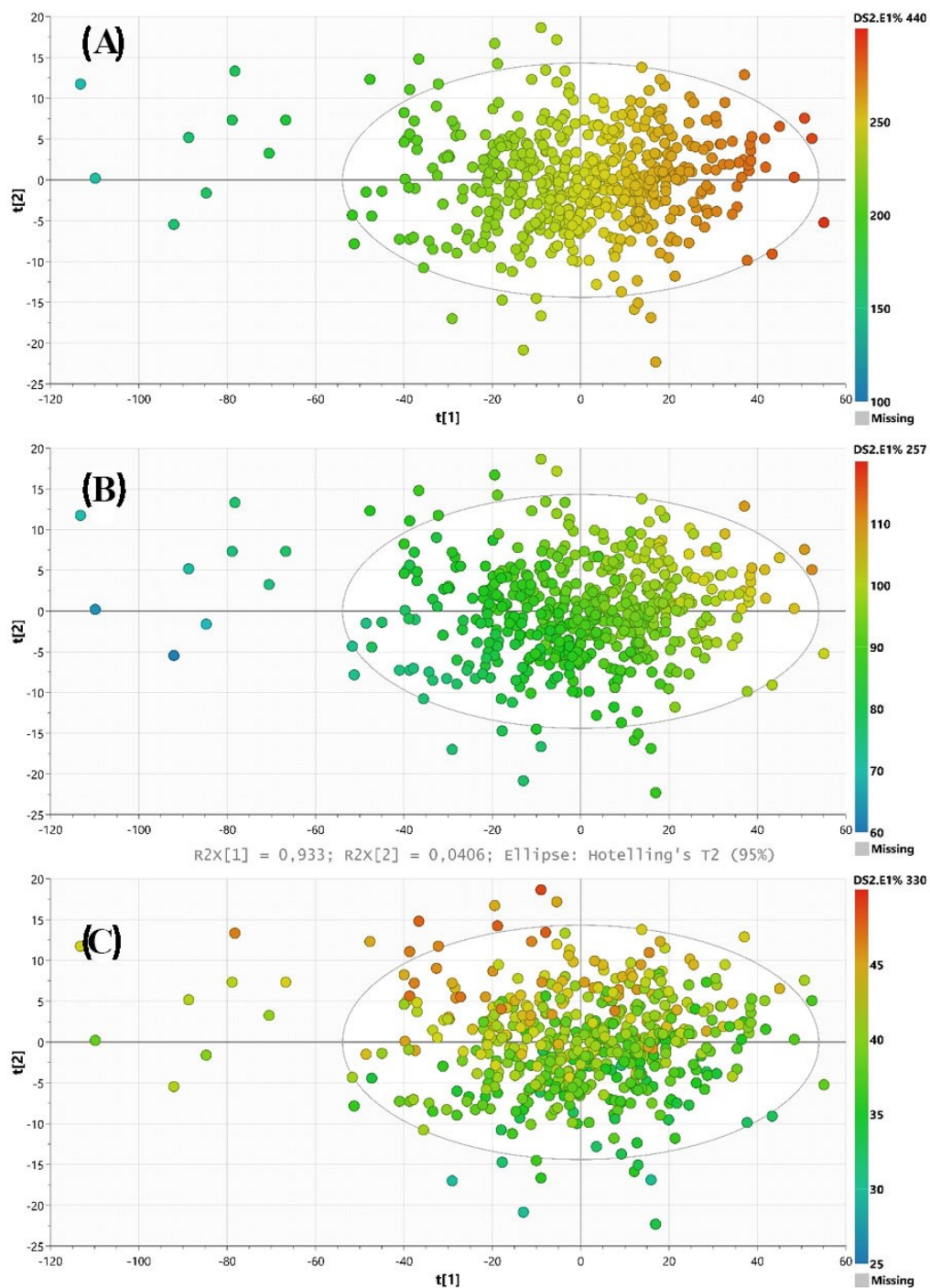


Figure S7. Principal Component Analysis (PCA) of the compositional data for saffron samples ($n = 547$) representing every grower's annual produce during the 2022 harvest period in Kozani region. The $t1/t2$ score scatter plot [$R^2(X) = 97.4\%$] is colored according to (A) coloring; (B) flavor and (C) aroma strength values ($E^{1\%}$ at 440 nm, 257 nm, and 330 nm, respectively) of the test samples under study