ANALYSIS OF VERMENTINO PLANTS WITH SYMPTOMS OF CHLOROTIC MOTTLING AND LEAF DEFORMATION DISEASE BY MOLECULAR TEST AND FLUORIMETRIC INDICES

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Introduction

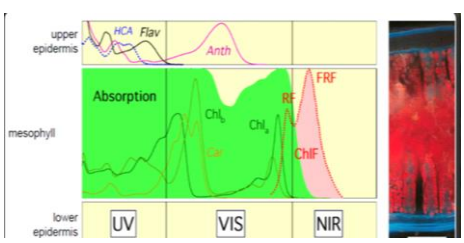
Grapevine Pinot gris virus (GPGV) is a single stranded RNA of the genus *Trichovirus* infecting grapevine and associated with stunting, chlorotic mottling and leaf deformation.



Matherial and methods

Monitoring was performed in a Vermentino vineyard (north Sardinia, Italy) trained to characterize GPGV disease symptoms. In the summer 2021, 50 leaves by respective plants were identified by visual approach in the field and classified in two groups 30 symptomatic (S) and 20 asymptomatic (A); the virus etiology detection was carried out by molecular test (RT-PCR Invitrogen). To detect out infected plant with an early and non-destructive analysis, the use of fluorescence analysis by a proximal sensor were supposed and the same leaves were tested by a fluorometric proximal sensor, Multiplex 3.6 (FORCE-A, Orsay, France) using these indices: Sample Fluorescence Ratio (SFR_RG), linked to chlorophyll content; FLAV, linked to flavonols content; NBI_G and NBI_R, linked to the total nitrogen content; BRR_FRF, an index with multiple applications, both in terms of maturation and presence of stress; FER_RG and FER_RB, correlated to anthocyanins content devoid of chlorophyll. These indices were analysed by ANOVA using the statistical software RStudio**.**

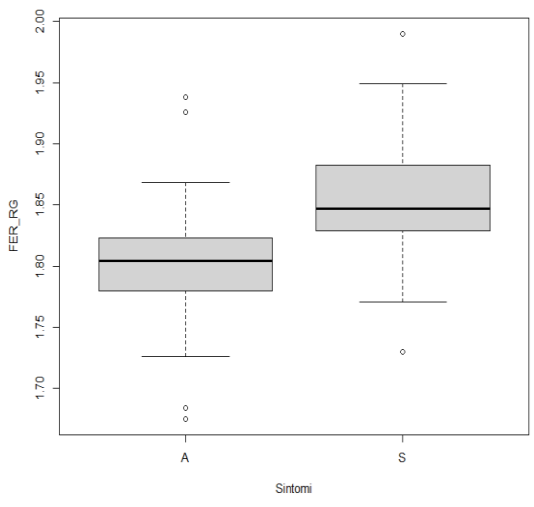




Results

The molecular test RT-PCR showed the presence of the GPGV in all 50 samples (30 S and 20 A).

As regard the fluorescence analysis, statistical differences between the A and S plants were found using FER_RG and FER_RB index. It has been observed that this index is significantly higher in S plants, indicating a lower chlorophyll content than in the A plants. By performing the inverse of the FER_RG index (FER_RG$^{\Delta-1}$), the corresponding index relating to the content of chlorophyll was obtained, which identifies a higher index in asymptomatic plants than in symptomatic ones.



Conclusions

Comparing the results obtained from RT-PCR tests with fluorimetric analyzes, it emerged that there is a significant correlation between symptomatic and asymptomatic plants through the indices relating to the anthocyanins content FER_RB and FER_RG