**Spangenberg, J.E, Schweizer, M., and Zufferey, V. 2020.**

**Shifts in carbon and nitrogen stable isotope composition and epicuticular lipids in leaves reflect early water-stress in vineyards**

**Supporting Information Table S3.** Predawn leaf water potential (Ψpd), leaf gas exchange parameters, and 13C of must sugars from Chasselas and Pinot noir vines grown in 2014 under different soil water treatment (Agroscope experimental station, Leytron, Switzerland). Leaf gas exchange data from Zufferey et al. (2017, 2018), must 13C data from Spangenberg *et al.* (2017) anf Spangenberg & Zufferey (2018). All data shown are the mean ± SE of 4 to 6 measurements (n = 4–6).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***Parameter*** | | **Chasselas** |  |  | **Pinot noir** |  |  |
| **DOY/Stage a** | | **DI b** | **NI** | **NIP** | **DI** | **NI** | **NIP** |
| *Ψpd* (MPa) c |  | |  |  |  |  |  |
| 169/Flowering | –0.08 ± 0.02 | | –0.11 ± 0.02 | –0.13 ± 0.02 | –0.08 ± 0.02 | –0.09 ± 0.02 | –0.10 ± 0.02 |
| 206/Pea size | –0.06 ± 0.02 | | –0.13 ± 0.03 | –0.19 ± 0.03 | –0.06 ± 0.02 | –0.11 ± 0.03 | –0.15 ± 0.03 |
| 233/Veraison | –0.07 ± 0.02 | | –0.12 ± 0.01 | –0.30 ± 0.02 | –0.07 ± 0.02 | –0.10 ± 0.01 | –0.31 ± 0.01 |
| 269/Harvest | –0.08 ± 0.02 | | –0.10 ± 0.02 | –0.26 ± 0.02 | –0.08 ± 0.02 | –0.10 ± 0.02 | –0.24 ± 0.02 |
| *Leaf temperature (°C)* | | | |  |  |  |  |
| 166/Flowering | 23.8 ± 0.2 | | 23.8 ± 0.2 | 24.0 ± 0.3 | 25.4 ± 0.2 | 25.6 ± 0.2 | 26.1 ± 0.3 |
| 206/Pea size | 26.0 ± 0.2 | | 26.2 ± 0.3 | 26.3 ± 0.3 | 27.4 ± 0.3 | 27.7 ± 0.4 | 28.0 ± 0.3 |
| 233/Veraison | 28.2 ± 0.3 | | 28.3 ± 0.3 | 28.4 ± 0.2 | 28.2 ± 0.4 | 28.3 ± 0.3 | 28.4 ± 0.2 |
| 269/Harvest | 27.0 ± 0.3 | | 27.1 ± 0.3 | 27.2 ± 0.3 | 27.3 ± 0.3 | 27.2 ± 0.3 | 27.5 ± 0.2 |
| *Stomatal conductance, g*s *(mmol CO2 m–2s­–1)* | | | |  |  |  |  |
| 166/Flowering | 366 ± 15 | | 350 ± 14 | 348 ± 15 | 380 ± 10 | 388 ± 13 | 368 ± 12 |
| 206/Pea size | 380 ± 12 | | 362 ± 10 | 355 ± 9 | 370 ± 10 | 379 ± 11 | 360 ± 10 |
| 233/Veraison | 351 ± 10 | | 340 ± 12 | 310 ± 11 | 366 ± 9 | 360 ± 11 | 330 ± 11 |
| 269/Harvest | 270 ± 15 | | 255 ± 12 | 205 ± 10 | 310 ± 10 | 268 ± 12 | 225 ± 10 |
| *Mesophyll resistance, r*m *(bar mol–1)* | | | |  |  |  |  |
| 166/Flowering | 12.0 ± 1.2 | | 10.9 ± 1.5 | 11.0 ± 1.2 | 10.0 ± 0.9 | 10.5 ± 1.5 | 10.6 ± 1.2 |
| 206/Pea size | 12.5 ± 2.0 | | 11.3 ± 2.0 | 11.9 ± 3.0 | 12.0 ± 2.0 | 12.3 ± 3.0 | 12.9 ± 2.0 |
| 233/Veraison | 11.8 ± 3.0 | | 12.5 ± 3.0 | 15.8 ± 5.0 | 14.2 ± 2.0 | 14.0 ± 5.0 | 16.9 ± 3.0 |
| 269/Harvest | 22.5 ± 1.0 | | 22.5 ± 0.5 | 28.0 ± 3.0 | 20.5 ± 1.0 | 21.0 ± 0.3 | 25.5 ± 4.0 |
| *Net photosynthetic rate, A (µmol CO2 m–2s­–1)* | | | |  |  |  |  |
| 166/Flowering | 16.8 ± 0.3 | | 17.2 ± 0.4 | 17.1 ± 0.5 | 17.9 ± 0.3 | 18.1 ± 0.3 | 18.1 ± 0.2 |
| 206/Pea size | 17.2 ± 0.3 | | 17.4 ± 0.2 | 16.8 ± 0.2 | 17.7 ± 0.2 | 17.5 ± 0.2 | 16.6 ± 0.2 |
| 233/Veraison | 16.0 ± 0.3 | | 15.5 ± 0.2 | 13.2 ± 0.3 | 16.2 ± 0.2 | 15.2 ± 0.2 | 13.3 ± 0.4 |
| 269/Harvest | 12.2 ± 0.3 | | 10.2 ± 0.5 | 9.1 ± 0.3 | 13.8 ± 0.3 | 11.8 ± 0.5 | 10.5 ± 0.4 |
| *Transpiration, E (mmol H2O m–2s­–1)* | | | |  |  |  |  |
| 166/Flowering | 6.1 ± 0.3 | | 6.1 ± 0.3 | 6.0 ± 0.2 | 6.2 ± 0.2 | 6.3 ± 0.3 | 6.2 ± 0.2 |
| 206/Pea size | 6.1 ± 0.3 | | 6.0 ± 0.2 | 5.7 ± 0.3 | 6.3 ± 0.3 | 6.1 ± 0.2 | 5.7 ± 0.2 |
| 233/Veraison | 5.7 ± 0.3 | | 5.5 ± 0.2 | 5.0 ± 0.3 | 5.8 ± 0.3 | 5.7 ± 0.2 | 5.2 ± 0.3 |
| 269/Harvest | 3.3 ± 0.3 | | 3.0 ± 0.3 | 2.4 ± 0.3 | 3.5 ± 0.3 | 3.1 ± 0.3 | 2.8 ± 0.3 |
| *Intrinsic water use efficiency, WUEi (A/gs)* | | | |  |  |  |  |
| 166/Flowering | 0.045 ± 0.010 | | 0.049 ± 0.010 | 0.049 ± 0.010 | 0.047 ± 0.010 | 0.046 ± 0.010 | 0.050 ± 0.010 |
| 206/Pea size | 0.045 ± 0.010 | | 0.048 ± 0.010 | 0.046 ± 0.010 | 0.048 ± 0.010 | 0.046 ± 0.010 | 0.046 ± 0.020 |
| 233/Veraison | 0.046 ± 0.010 | | 0.045 ± 0.010 | 0.043 ± 0.010 | 0.044 ± 0.010 | 0.042 ± 0.010 | 0.040 ± 0.010 |
| 269/Harvest | 0.045 ± 0.010 | | 0.040 ± 0.010 | 0.044 ± 0.010 | 0.045 ± 0.010 | 0.044 ± 0.010 | 0.046 ± 0.010 |
| *13Csugars/VPDB (mUr or ‰)* | | | |  |  |  |  |
|  | –27.26 ± 0.11 | | –26.83 ± 0.07 | –26.54 ± 0.13 | –27.16 ± 0.02 | –26.47 ± 0.03 | –26.65 ± 0.12 |

a DOY = days of the year

b DI = drip irrigation (9 L water m–2 per week between flowering and veraison), NI = no irrigation, NIP = no irrigation and plastic-covered soil.

c *Ψpd*  = predawn leaf water potential from bloom to harvest