

Supplementary data

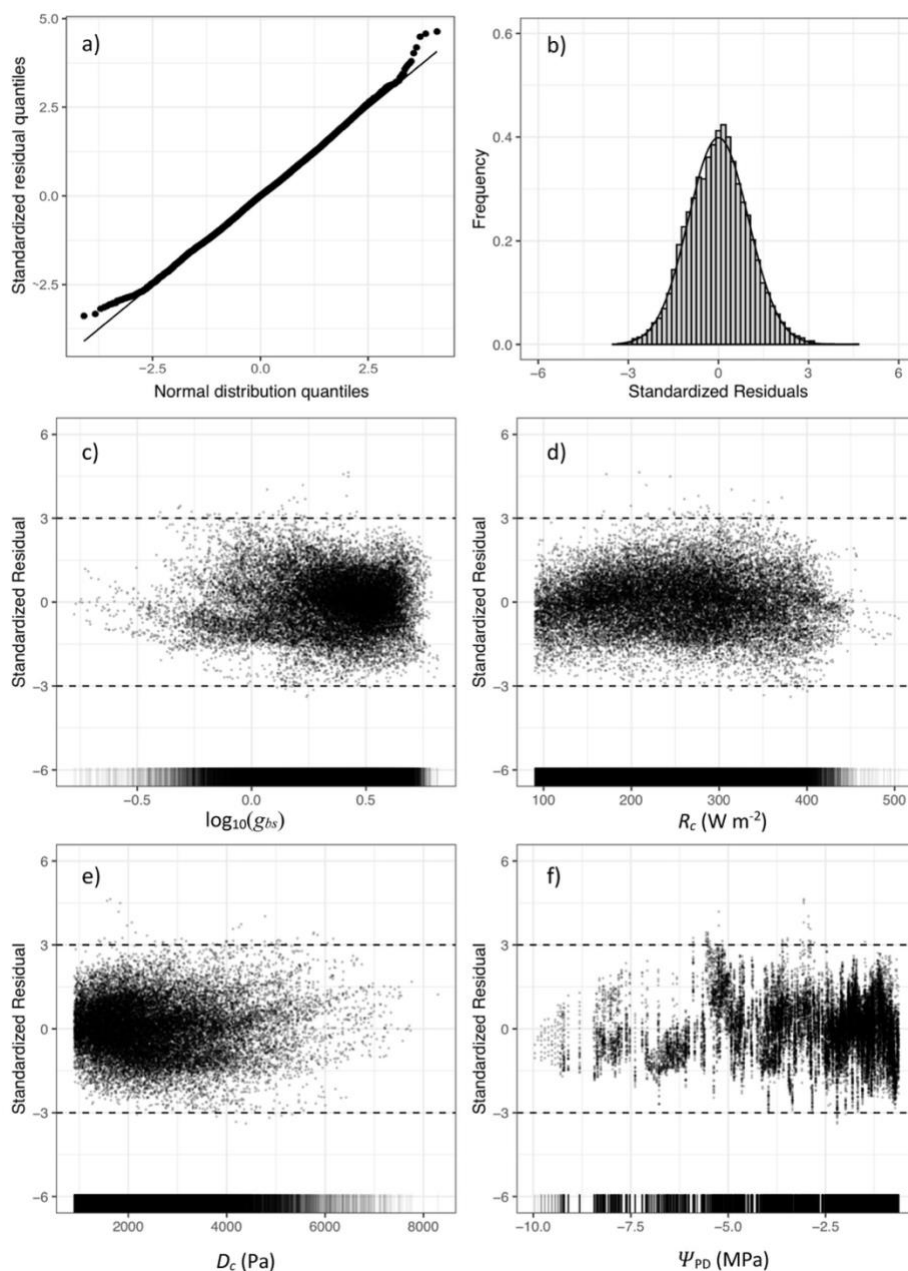


FIGURE S1. Residual plots for final multiple linear regression between $\log_{10}(g_{bs})$ as the response variable and R_c , D_c , and Ψ_{PD} as the predictors without interactions and based on raw data, including a) quantile-quantile plot, b) histogram of standardized residuals, c) standardized residuals versus fitted value plot, and d-f) standardized residuals versus predictor variable plots for R_c , D_c , and Ψ_{PD} respectively.

SUPPLEMENTARY TABLE S1. Summary statistics of raw input data to multiple linear regression analysis with $\log_{10}(gbs)$ (gbsTrans) as the response variable, R_c (kRc), D_c (kDc), and Ψ_{PD} (PDWP) as predictors, and variety (Cepage) as a factor variable.

Cepage	gbsTrans	kRc	kDc	PDWP
CS_N :5288	Min. : -0.8560	Min. : 0.09001	Min. : 0.900	Min. : -9.9613
MERL_N:4752	1st Qu.: 0.1536	1st Qu.: 0.18637	1st Qu.: 1.679	1st Qu.: -3.8817
SEM_B :3634	Median : 0.3839	Median : 0.25449	Median : 2.335	Median : -2.2048
TEMP_N:4213	Mean : 0.3359	Mean : 0.25284	Mean : 2.576	Mean : -2.9126
UB_B :5501	3rd Qu.: 0.5475	3rd Qu.: 0.31422	3rd Qu.: 3.253	3rd Qu.: -1.4139
	Max. : 1.2831	Max. : 0.50441	Max. : 8.294	Max. : -0.6295

SUPPLEMENTARY TABLE S2. Summary statistics of multiple linear regression based on standardized data with $\log_{10}(gbs)$ (gbsTrans) as the response variable, R_c (kRc), D_c (kDc), and Ψ_{PD} (PDWP) as the predictor variables and their interactions, including variety (Cepage) as an interaction factor variable.

```
Call:
lm(formula = gbsTrans ~ ((kRc + kDc + PDWP)^2) * Cepage, data =
allregressdata)

Residuals:
    Min       1Q   Median       3Q      Max
-0.58582 -0.10944 -0.00651  0.10501  0.93325

Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)    0.5383493   0.0187835   28.661 < 2e-16 ***
kRc             1.6059744   0.0737306   21.782 < 2e-16 ***
kDc            -0.0792256   0.0073451  -10.786 < 2e-16 ***
PDWP            0.0483288   0.0032139   15.038 < 2e-16 ***
CepageMERL_N    0.0604980   0.0300394    2.014 0.044026 *
CepageSEM_B     0.1064914   0.0339030    3.141 0.001685 **
CepageTEMP_N    0.1426643   0.0326356    4.371 1.24e-05 ***
CepageUB_B      0.0557405   0.0299336    1.862 0.062596 .
kRc:kDc         -0.2624314   0.0234677  -11.183 < 2e-16 ***
kRc:PDWP        0.1580149   0.0149448   10.573 < 2e-16 ***
kDc:PDWP       -0.0028038   0.0009057   -3.096 0.001965 **
kRc:CepageMERL_N 0.0221705   0.1137785    0.195 0.845507
kRc:CepageSEM_B -1.1624702   0.1399080   -8.309 < 2e-16 ***
kRc:CepageTEMP_N -1.2814367   0.1293469   -9.907 < 2e-16 ***
kRc:CepageUB_B  -0.1064226   0.1093372   -0.973 0.330393
kDc:CepageMERL_N -0.0428890   0.0113140   -3.791 0.000151 ***
kDc:CepageSEM_B -0.0911997   0.0120338   -7.579 3.62e-14 ***
kDc:CepageTEMP_N  0.0519410   0.0119886    4.333 1.48e-05 ***
kDc:CepageUB_B  -0.0941343   0.0113203   -8.316 < 2e-16 ***
PDWP:CepageMERL_N -0.0301985   0.0072680   -4.155 3.26e-05 ***
PDWP:CepageSEM_B -0.0119276   0.0055795   -2.138 0.032546 *
PDWP:CepageTEMP_N  0.0304035   0.0066148    4.596 4.32e-06 ***
PDWP:CepageUB_B  0.0100201   0.0083787    1.196 0.231747
kRc:kDc:CepageMERL_N 0.1995373   0.0344661    5.789 7.16e-09 ***
kRc:kDc:CepageSEM_B  0.4787632   0.0366622   13.059 < 2e-16 ***
kRc:kDc:CepageTEMP_N  0.2975814   0.0359612    8.275 < 2e-16 ***
kRc:kDc:CepageUB_B  0.1938961   0.0337753    5.741 9.54e-09 ***
kRc:PDWP:CepageMERL_N 0.0126250   0.0290154    0.435 0.663484
kRc:PDWP:CepageSEM_B -0.1050146   0.0243759   -4.308 1.65e-05 ***
kRc:PDWP:CepageTEMP_N -0.3117412   0.0281336  -11.081 < 2e-16 ***
kRc:PDWP:CepageUB_B  0.0625507   0.0318471    1.964 0.049531 *
kDc:PDWP:CepageMERL_N 0.0059348   0.0018274    3.248 0.001165 **
kDc:PDWP:CepageSEM_B  0.0104445   0.0014805    7.055 1.78e-12 ***
kDc:PDWP:CepageTEMP_N  0.0310093   0.0018232   17.008 < 2e-16 ***
kDc:PDWP:CepageUB_B -0.0104823   0.0021023   -4.986 6.21e-07 ***
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Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.1645 on 23353 degrees of freedom
Multiple R-squared:  0.7123,    Adjusted R-squared:  0.7119
F-statistic: 1701 on 34 and 23353 DF, p-value: < 2.2e-16
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SUPPLEMENTARY DATA

Gowdy, M., Suter, B., Piri, P., Marguerit, E., Destrac Irvine, A., Gambetta, G., & van Leeuwen, C. (2022). Variety-specific response of bulk stomatal conductance of grapevine canopies to changes in net radiation, atmospheric demand, and drought stress. *OENO One*, 56(2). Retrieved from <https://oeno-one.eu/article/view/5435>.

SUPPLEMENTARY TABLE S3. Summary statistics of multiple linear regression based on standardized data with $\log_{10}(gbs)$ (*gbsTrans*) as the response variable, R_c (kRc), D_c (kDc), and Ψ_{PD} (PDWP) as continuous predictor variables and *variety* (Cepage) as a factor variable, without interaction terms.

```
Call:
lm(formula = gbsTrans ~ (kRc + kDc + PDWP) * Cepage, data =
allregressdata)

Residuals:
    Min       1Q   Median       3Q      Max
-1.88705 -0.37651 -0.02498  0.35470  2.99403

Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)  -0.035583  0.007598  -4.683 2.84e-06 ***
kRc           0.160515  0.008168  19.652 < 2e-16 ***
kDc          -0.560282  0.008729 -64.185 < 2e-16 ***
PDWP         0.511652  0.006442  79.420 < 2e-16 ***
CepageMERL_N  0.424683  0.011267  37.692 < 2e-16 ***
CepageSEM_B  -0.185688  0.013955 -13.306 < 2e-16 ***
CepageTEMP_N  0.202323  0.011551  17.516 < 2e-16 ***
CepageUB_B   -0.221910  0.012455 -17.817 < 2e-16 ***
kRc:CepageMERL_N  0.142248  0.012070  11.785 < 2e-16 ***
kRc:CepageSEM_B  0.064162  0.014001  4.583 4.62e-06 ***
kRc:CepageTEMP_N  0.094227  0.012999  7.249 4.34e-13 ***
kRc:CepageUB_B   0.095883  0.011362  8.439 < 2e-16 ***
kDc:CepageMERL_N  0.002047  0.012254  0.167  0.8673
kDc:CepageSEM_B  -0.021394  0.013063  -1.638  0.1015
kDc:CepageTEMP_N  0.127153  0.012982  9.794 < 2e-16 ***
kDc:CepageUB_B   -0.064630  0.012004  -5.384 7.36e-08 ***
PDWP:CepageMERL_N -0.088986  0.013090  -6.798 1.09e-11 ***
PDWP:CepageSEM_B  -0.053947  0.010549  -5.114 3.18e-07 ***
PDWP:CepageTEMP_N  0.261454  0.012501  20.915 < 2e-16 ***
PDWP:CepageUB_B  -0.026584  0.015179  -1.751  0.0799 .
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Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.5468 on 23368 degrees of freedom
Multiple R-squared:  0.7012,    Adjusted R-squared:  0.701
F-statistic: 2887 on 19 and 23368 DF,  p-value: < 2.2e-16
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SUPPLEMENTARY TABLE S4. Summary statistics of multiple linear regression based on raw data with $\log_{10}(gbs)$ (*gbsTrans*) as the response variable, R_c (kRc), D_c (kDc), and Ψ_{PD} (PDWP) as continuous predictor variables and *variety* (Cepage) as a factor variable, without interaction terms.

```
Call:
lm(formula = gbsTrans ~ (kRc + kDc + PDWP) * Cepage, data =
allregressdata)

Residuals:
    Min       1Q   Median       3Q      Max
-0.57840 -0.11540 -0.00766  0.10872  0.91770

Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)  0.7880385  0.0082781  95.195 < 2e-16 ***
kRc           0.5886853  0.0299549  19.652 < 2e-16 ***
kDc          -0.1469102  0.0022889 -64.185 < 2e-16 ***
PDWP         0.0801736  0.0010095  79.420 < 2e-16 ***
CepageMERL_N -0.0437299  0.0128481  -3.404 0.000666 ***
CepageSEM_B  -0.1265844  0.0140383  -9.017 < 2e-16 ***
CepageTEMP_N  0.0080928  0.0135403  0.598 0.550057
CepageUB_B   -0.1254140  0.0126080  -9.947 < 2e-16 ***
kRc:CepageMERL_N  0.5216920  0.0442672  11.785 < 2e-16 ***
kRc:CepageSEM_B  0.2353142  0.0513494  4.583 4.62e-06 ***
kRc:CepageTEMP_N  0.3455768  0.0476744  7.249 4.34e-13 ***
kRc:CepageUB_B   0.3516471  0.0416687  8.439 < 2e-16 ***
kDc:CepageMERL_N  0.0005368  0.0032132  0.167  0.867311
kDc:CepageSEM_B  -0.0056097  0.0034251  -1.638 0.101477
kDc:CepageTEMP_N  0.0333406  0.0034041  9.794 < 2e-16 ***
kDc:CepageUB_B   -0.0169464  0.0031476  -5.384 7.36e-08 ***
PDWP:CepageMERL_N -0.0139437  0.0020511  -6.798 1.09e-11 ***
PDWP:CepageSEM_B  -0.0084532  0.0016529  -5.114 3.18e-07 ***
PDWP:CepageTEMP_N  0.0409686  0.0019588  20.915 < 2e-16 ***
PDWP:CepageUB_B  -0.0041656  0.0023784  -1.751  0.079882 .
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.1676 on 23368 degrees of freedom
Multiple R-squared:  0.7012,    Adjusted R-squared:  0.701
F-statistic: 2887 on 19 and 23368 DF,  p-value: < 2.2e-16
```