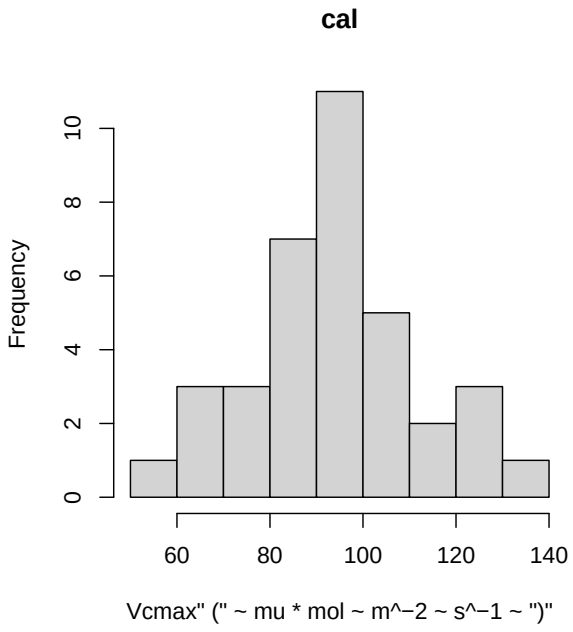
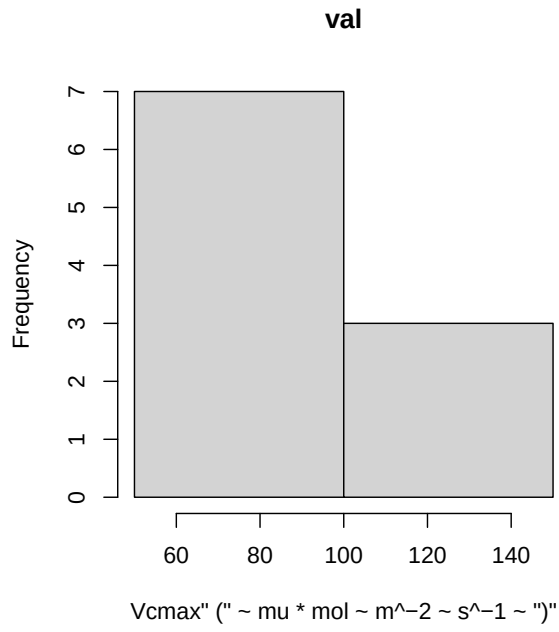
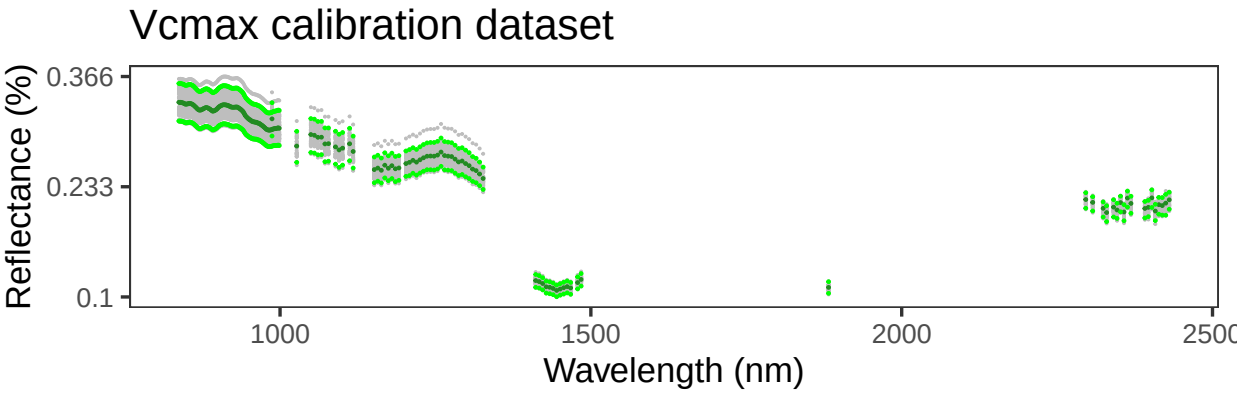
Use side-view HSI data to predict Vcmax on W9

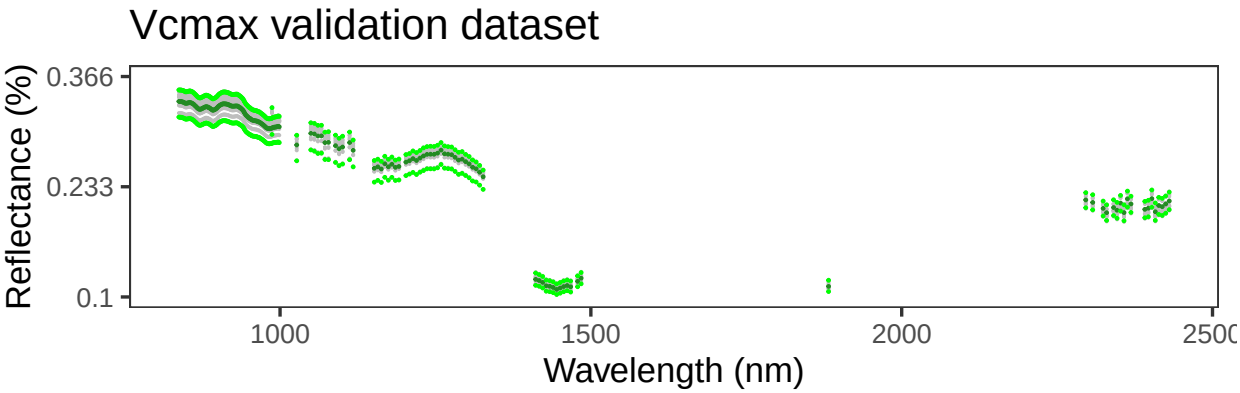
2023-08-08

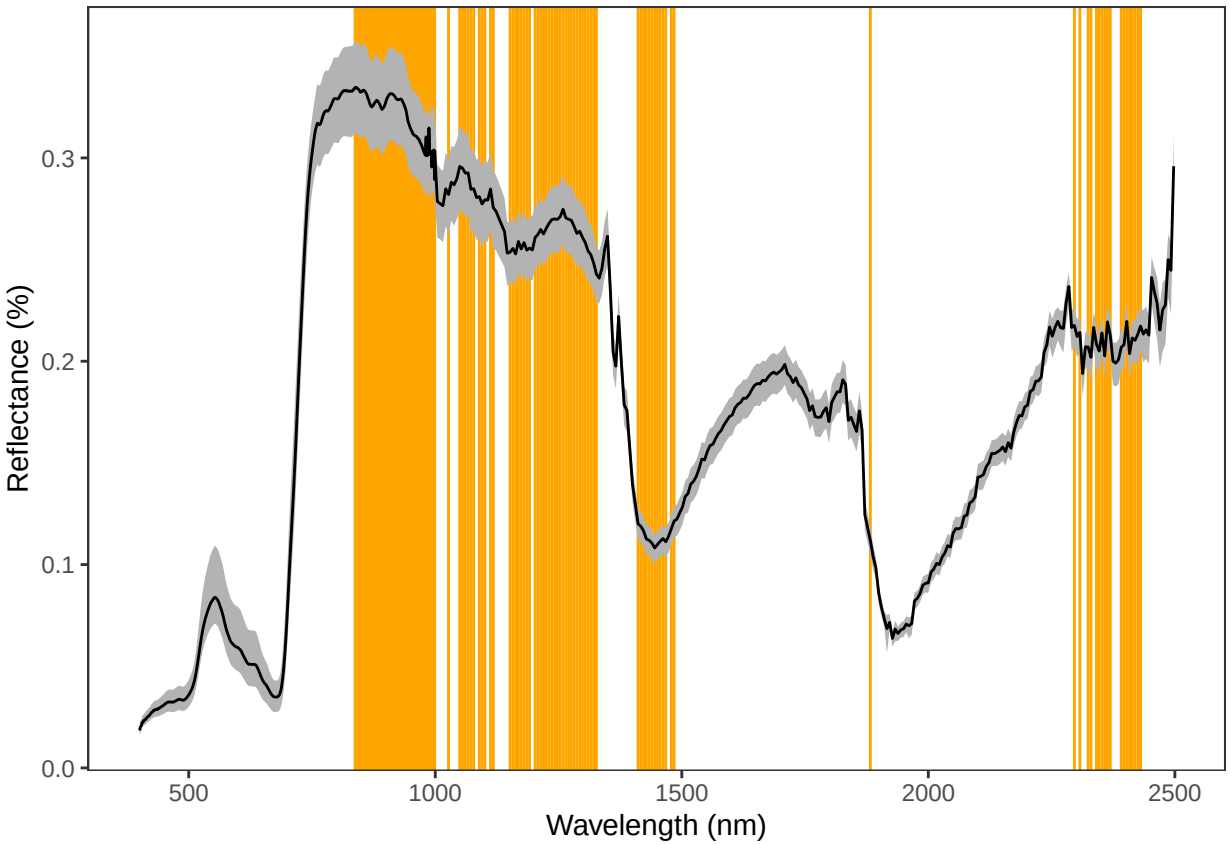
```
## $plsralg
## [1] "oscorespls"

##  [1] "933" "942" "944" "923" "909" "948" "910" "934" "941" "947" "908" "939"
## [13] "932" "924" "946" "938" "935" "940" "929" "906" "990" "983" "991" "974"
## [25] "956" "994" "993" "992" "957" "955" "969" "959" "954" "987" "985" "989"

##  [1] "913" "918" "926" "927" "930" "931" "962" "963" "982" "986"

##          value       wv
## 488 0.07199225 1060.940
## 482 0.07095628 1026.880
## 350 0.06972593  837.354
## 550 0.06969660 1411.250
## 716 0.06950817 2340.890
## 493 0.06940931 1089.300
```

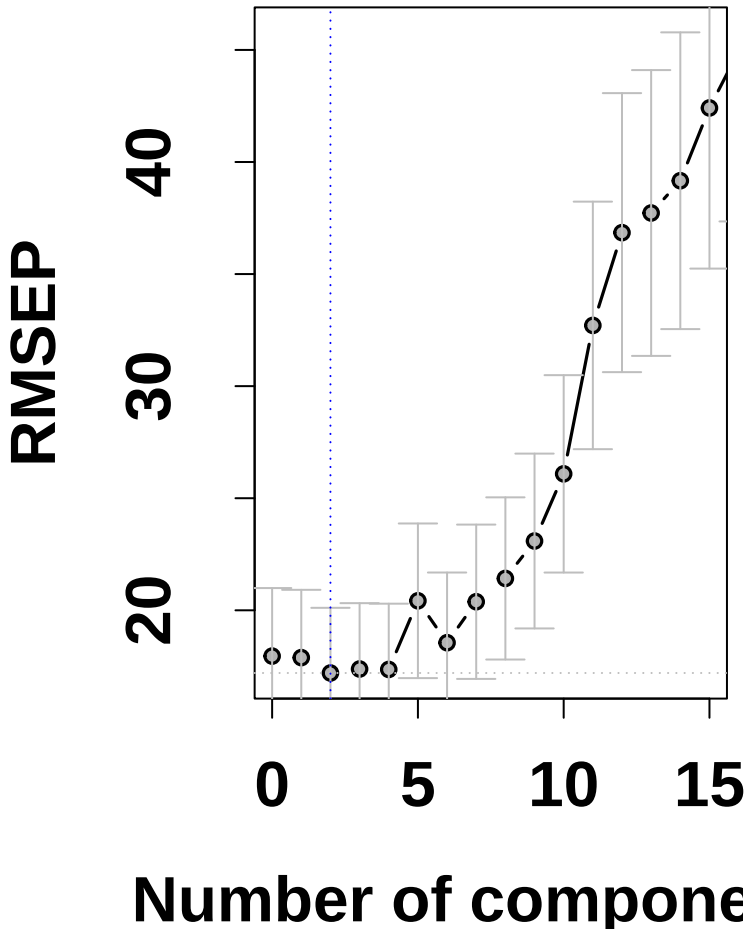





Vcmax calibration dataset
Reflectance (%)
0.366
0.233
0.1
1000
1500
2000
2500
Wavelength (nm)

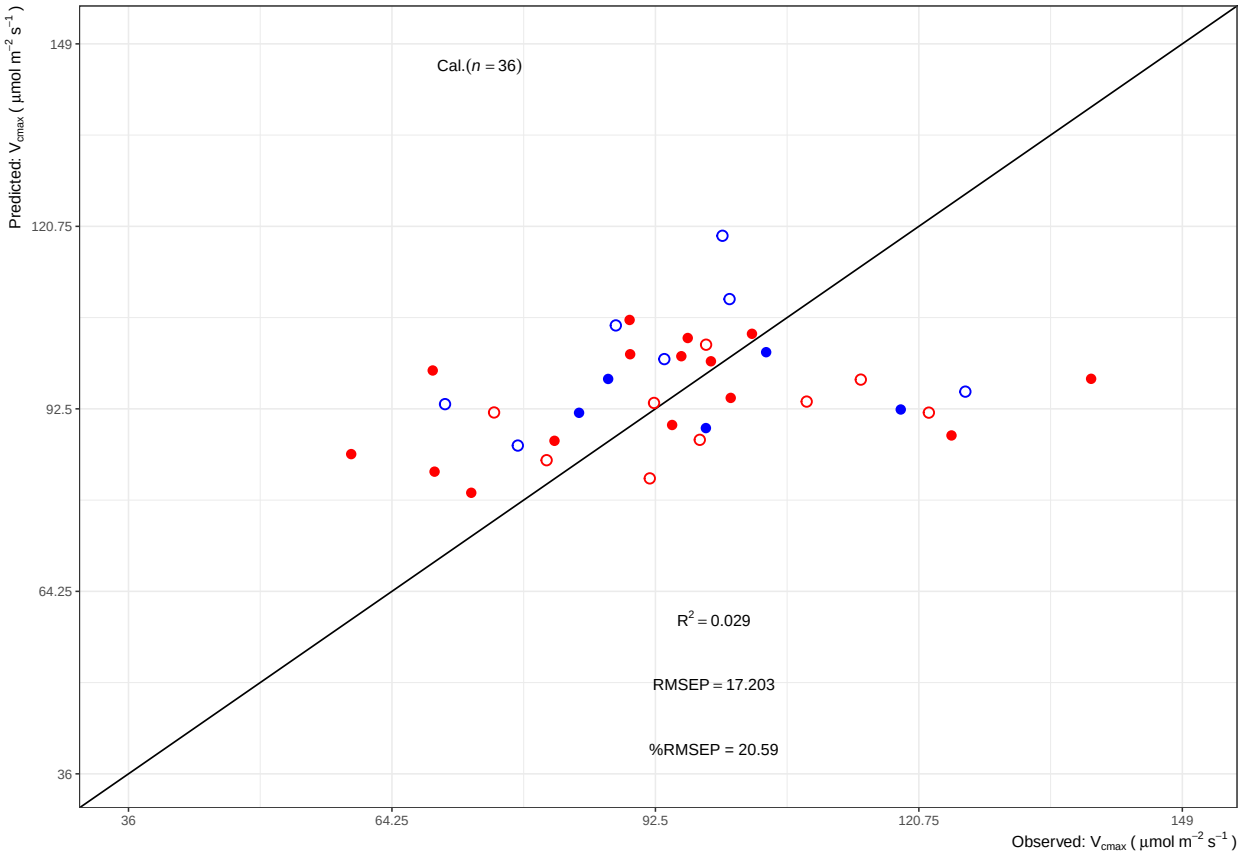

Vcmax validation dataset
Reflectance (%)
0.366
0.233
0.1
1000
1500
2000
2500
Wavelength (nm)

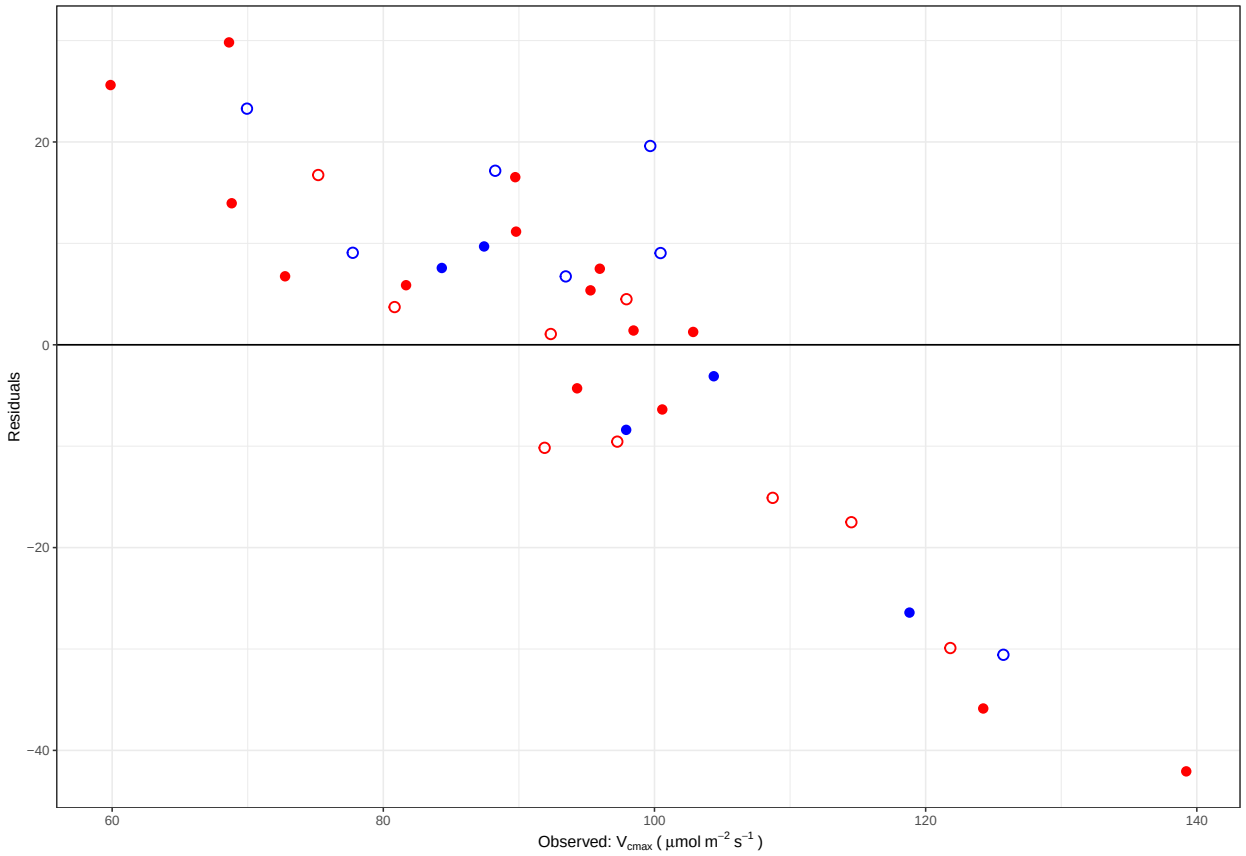

Reflectance (%)
0.0
0.1
0.2
0.3
500
1000
1500
2000
2500
Wavelength (nm)

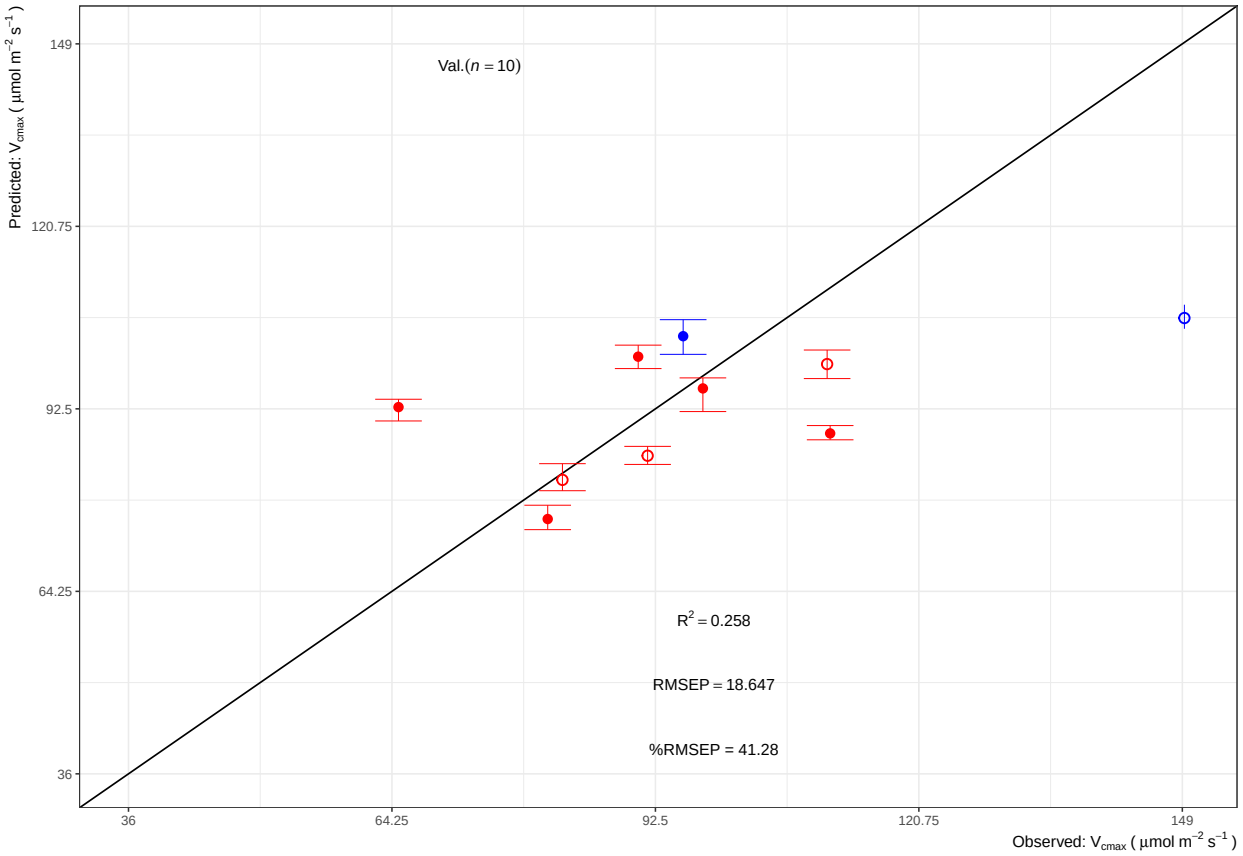


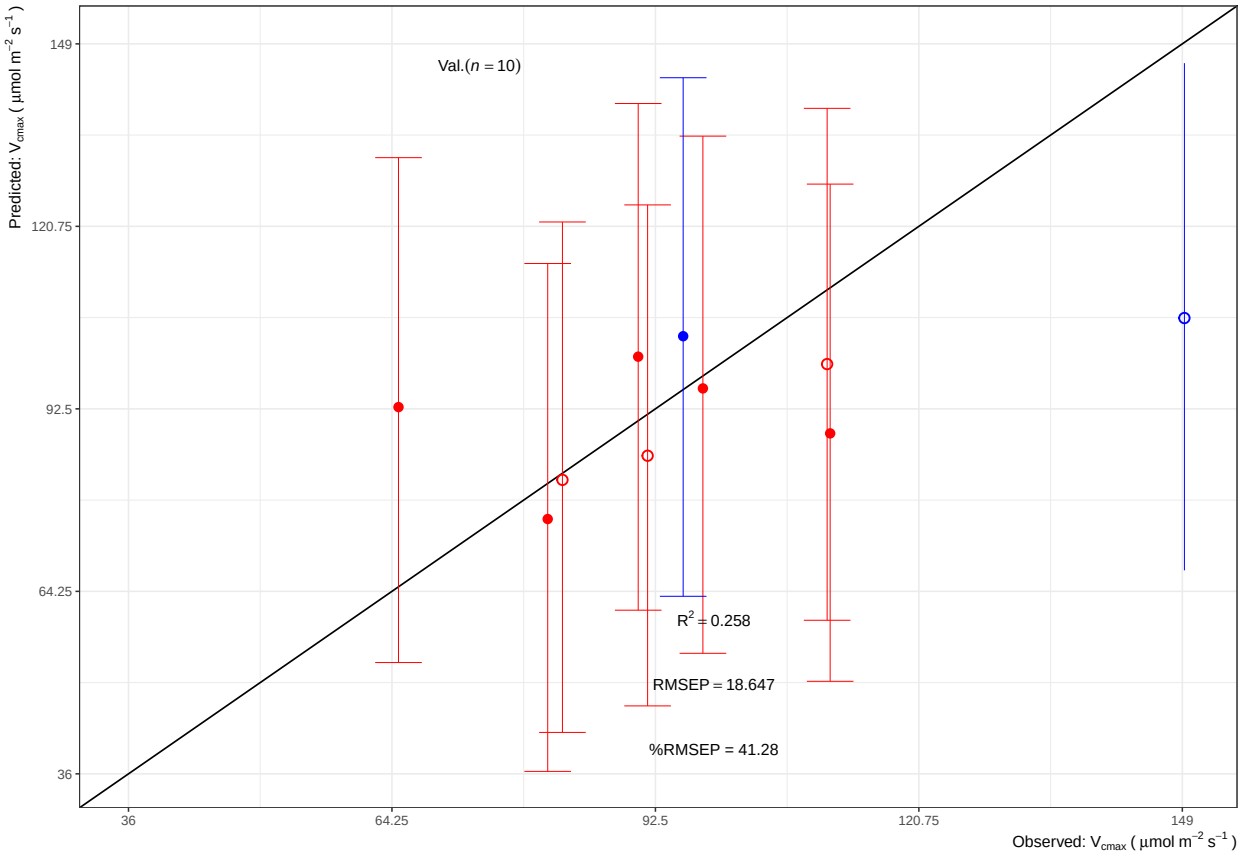

```
##   data_set    R2  RMSEP NRMSEP
## 1      cal 0.029 17.203 21.683
## 2      val 0.258 18.647 22.127
```

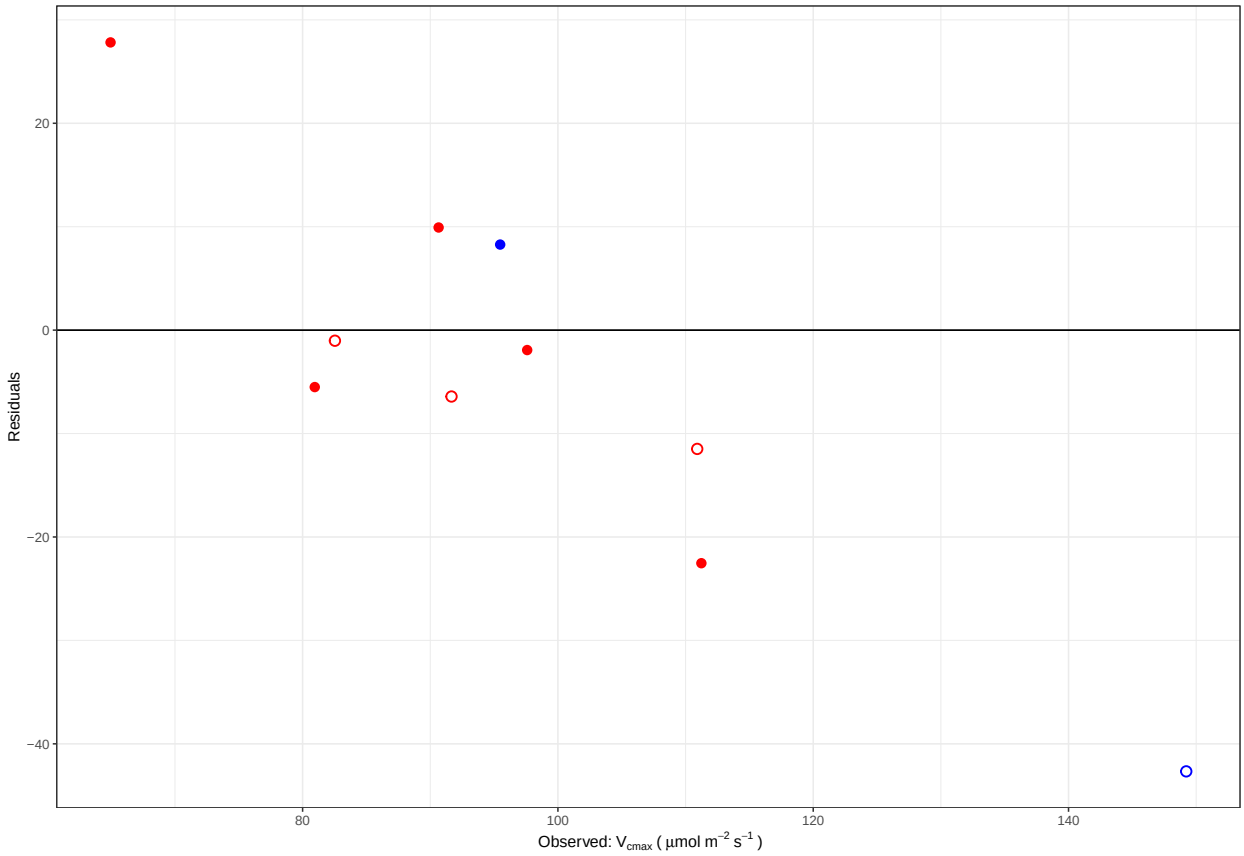
```
##    Observed Predicted  Residuals Treatment Subpop       uci       lci      upi
## 1 111.23689  88.70182 -22.535073        N1    IND  89.90976  87.70544 127.2887
## 2  97.59220  95.66523  -1.926967        N1    IND  97.29300  92.08057 134.7153
## 3  90.65333 100.57739   9.924054        N1    IND 102.36326  98.73330 139.7624
## 4  95.47547 103.74807   8.272592        N1    TRJ 106.30402 100.93548 143.7558
## 5  80.95093  75.44544  -5.505486        N1    IND  77.58142  73.79925 114.9989
## 6  64.95184  92.77064  27.818805        N1    IND  93.98511  90.62518 131.3834
##        lpi
## 1 50.32649
## 2 54.65829
## 3 61.33416
## 4 63.48369
## 5 36.38178
## 6 53.22685
```


Cal.(n = 36)
R2 = 0.029
RMSEP = 17.203
%RMSEP = 20.59
Predicted: Vcmax (µmol m−2 s−1)
Observed: Vcmax (µmol m−2 s−1)
149
120.75
92.5
64.25
36
36
64.25
92.5
120.75
149


20
0
−20
−40
Residuals
60
80
100
120
140
Observed: V_{cmax} (µmol m^{-2} s^{-1})


Val.(n = 10)
R2 = 0.258
RMSEP = 18.647
%RMSEP = 41.28
Predicted: Vcmax (µmol m−2 s−1)
Observed: Vcmax (µmol m−2 s−1)
149
120.75
92.5
64.25
36
36
64.25
92.5
120.75
149


Val.(n = 10)
R2 = 0.258
RMSEP = 18.647
%RMSEP = 41.28
Predicted: Vcmax (µmol m−2 s−1)
Observed: Vcmax (µmol m−2 s−1)
149
120.75
92.5
64.25
36
36
64.25
92.5
120.75
149




```
##       Iteration Intercept  X2402.42  X2413.61   X2419.2  X2391.23
## Seg 1         1  477.7508 -55.55602 -44.27448 -44.95248 -42.30544
## Seg 2         2  490.6524 -59.12910 -47.95257 -48.71692 -45.71684
## Seg 3         3  483.0508 -58.33360 -46.91692 -47.64969 -44.69152
## Seg 4         4  412.0855 -37.06777 -27.46940 -28.02345 -24.85613
## Seg 5         5  483.4174 -58.16643 -46.94698 -47.79018 -44.60652
## Seg 6         6  459.7240 -52.64051 -40.82987 -40.94561 -40.34444
```

```
##             coefs
## 2402.42 -56.82049
## 2413.61 -45.68956
## 2419.2  -46.40553
## 2391.23 -43.51124
## 1259.04 -18.55606
## 2357.67 -55.29782
```