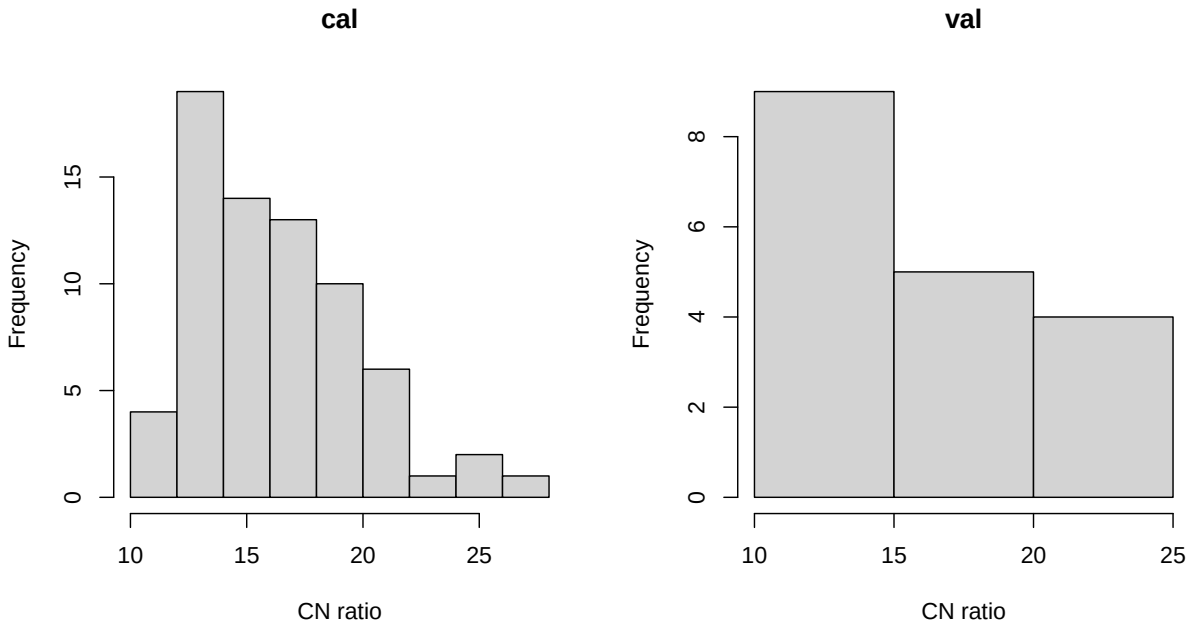
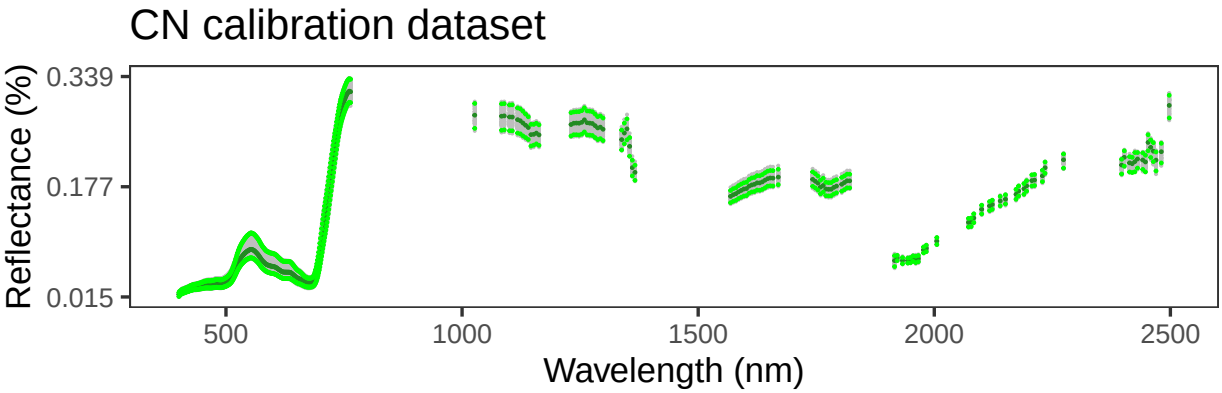
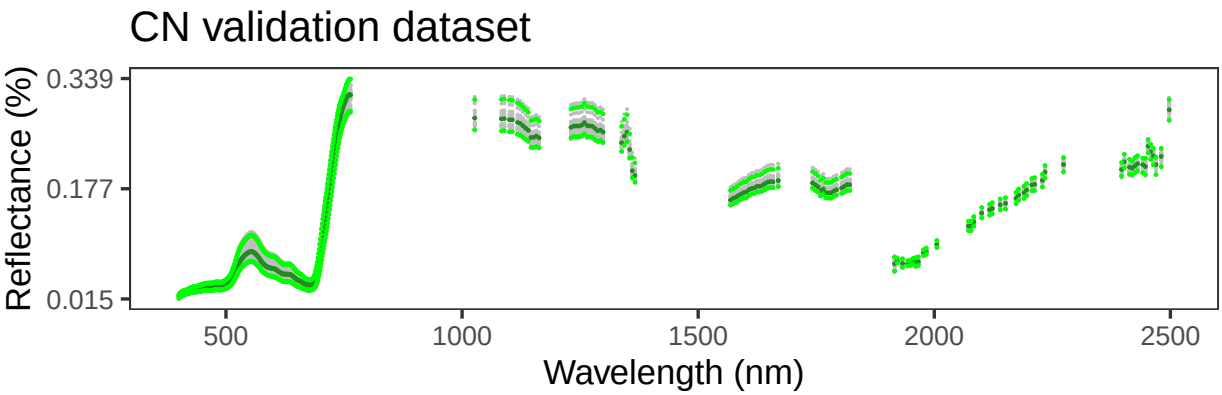
Use side-view HSI data to predict CN ratio

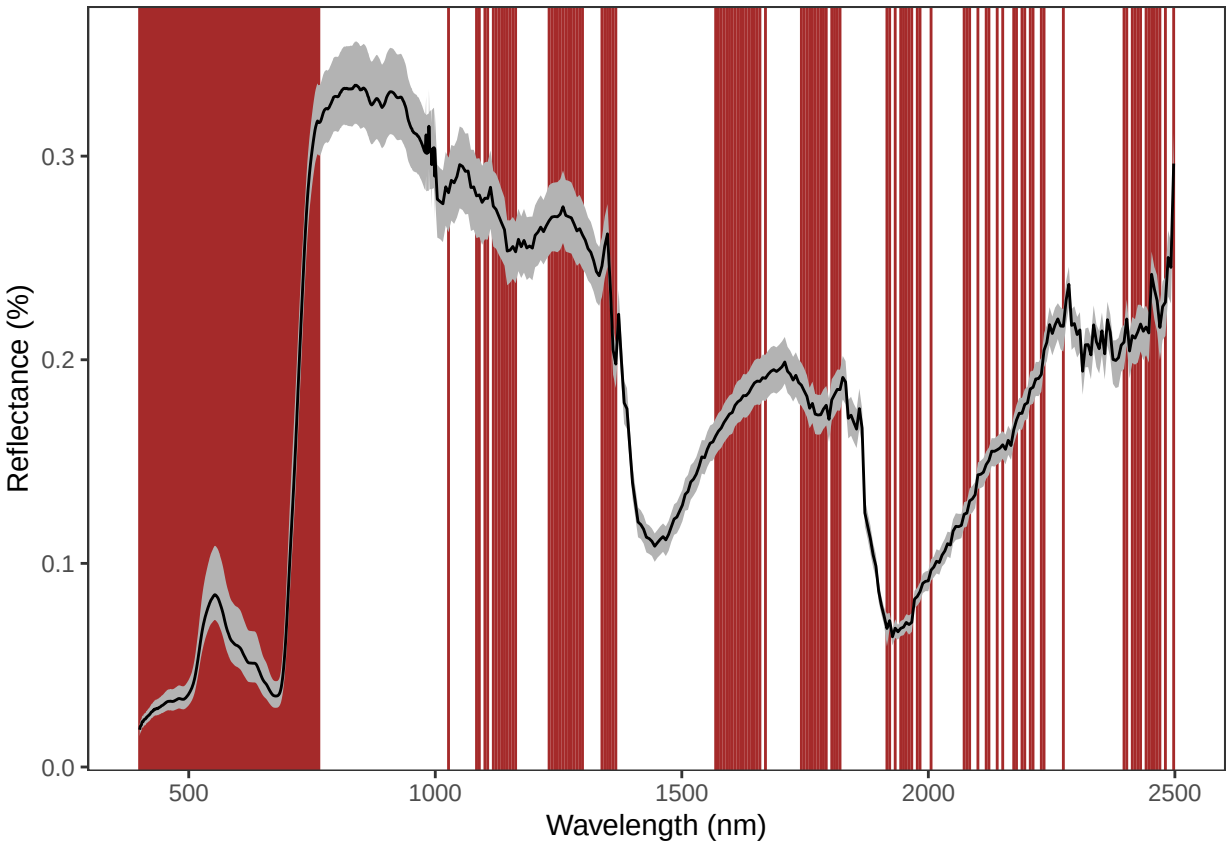
2023-08-08

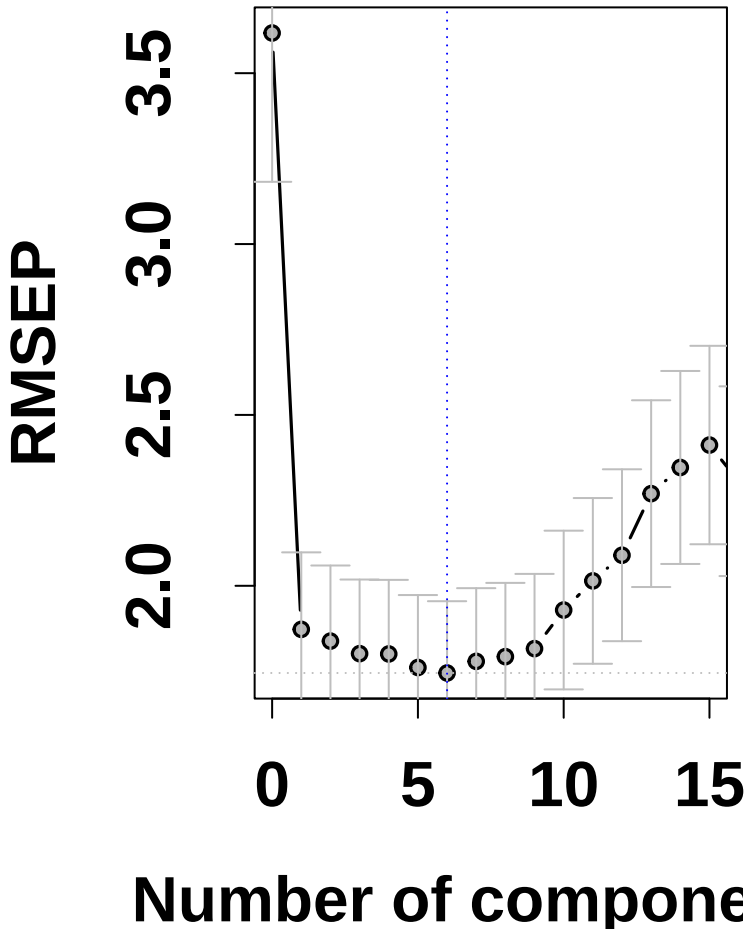
```
## $plsralg
## [1] "oscorespls"

##  [1] "908" "905" "918" "932" "944" "948" "941" "921" "903" "940" "946" "928"
## [13] "937" "923" "917" "947" "912" "916" "930" "934" "922" "924" "925" "927"
## [25] "926" "935" "945" "904" "931" "929" "943" "909" "907" "911" "902" "953"
## [37] "960" "982" "989" "977" "970" "991" "973" "957" "983" "958" "959" "954"
## [49] "950" "966" "962" "995" "981" "987" "975" "990" "974" "955" "969" "984"
## [61] "994" "986" "988" "971" "965" "978" "968" "972" "951" "992"

##  [1] "906" "910" "914" "915" "919" "920" "933" "936" "942" "952" "956" "963"
## [13] "967" "979" "980" "985" "993" "996"

##           value      wv
## 523 -0.01311910 1259.04
## 656 -0.01319705 2005.47
## 622 -0.01335818 1815.27
## 493 -0.01375412 1089.30
## 519 -0.01377071 1236.45
## 729 -0.01416596 2413.61
```




CN calibration dataset
Reflectance (%)
0.339
0.177
0.015
500
1000
1500
2000
2500
Wavelength (nm)

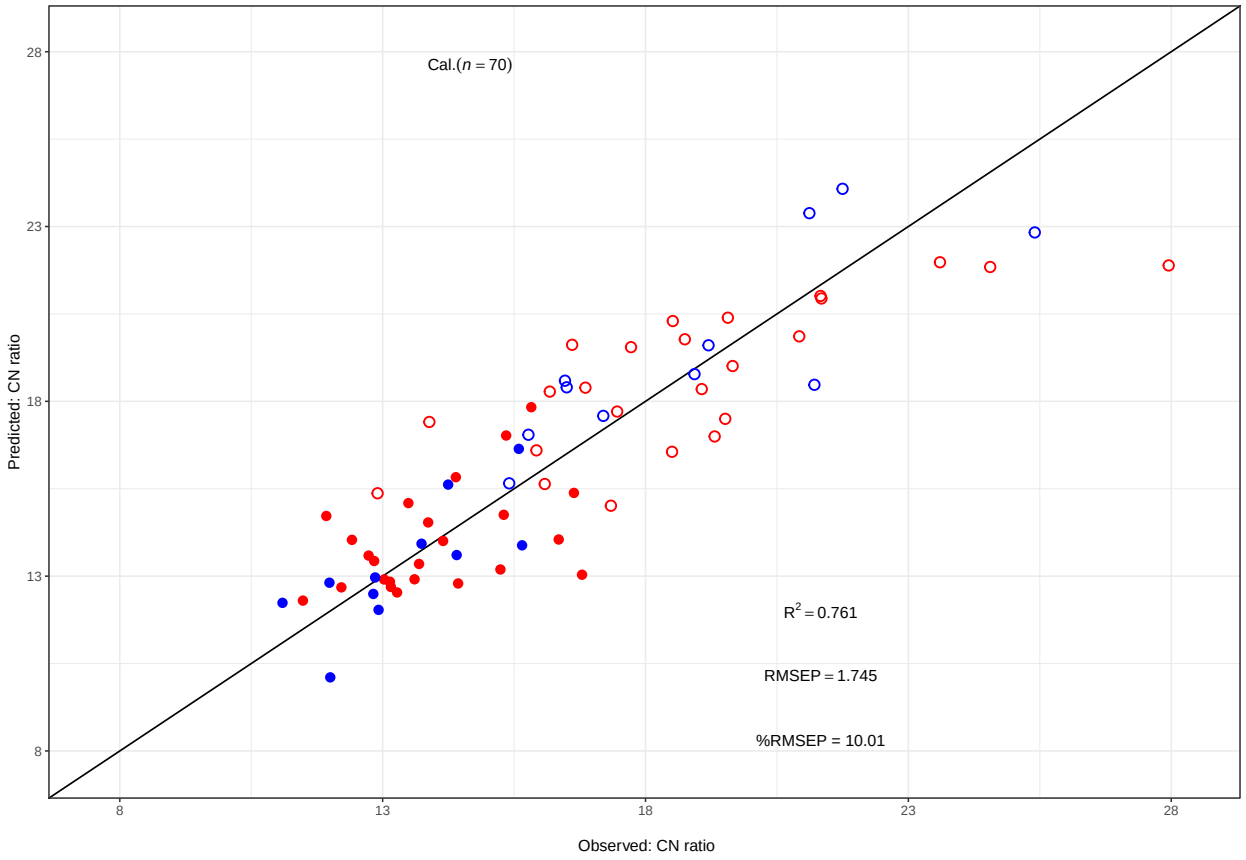

CN validation dataset
Reflectance (%)
0.339
0.177
0.015
500
1000
1500
2000
2500
Wavelength (nm)

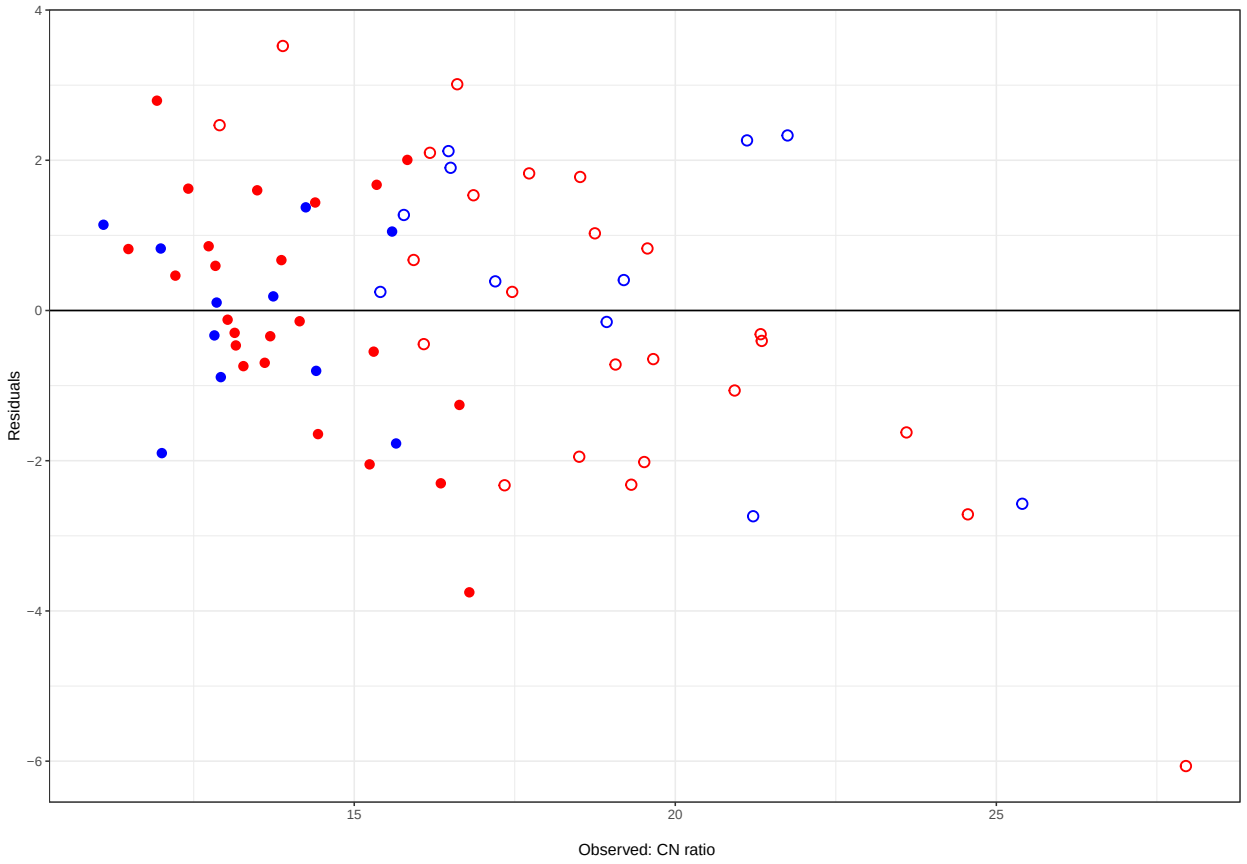

Reflectance (%)
0.0
0.1
0.2
0.3
500
1000
1500
2000
2500
Wavelength (nm)

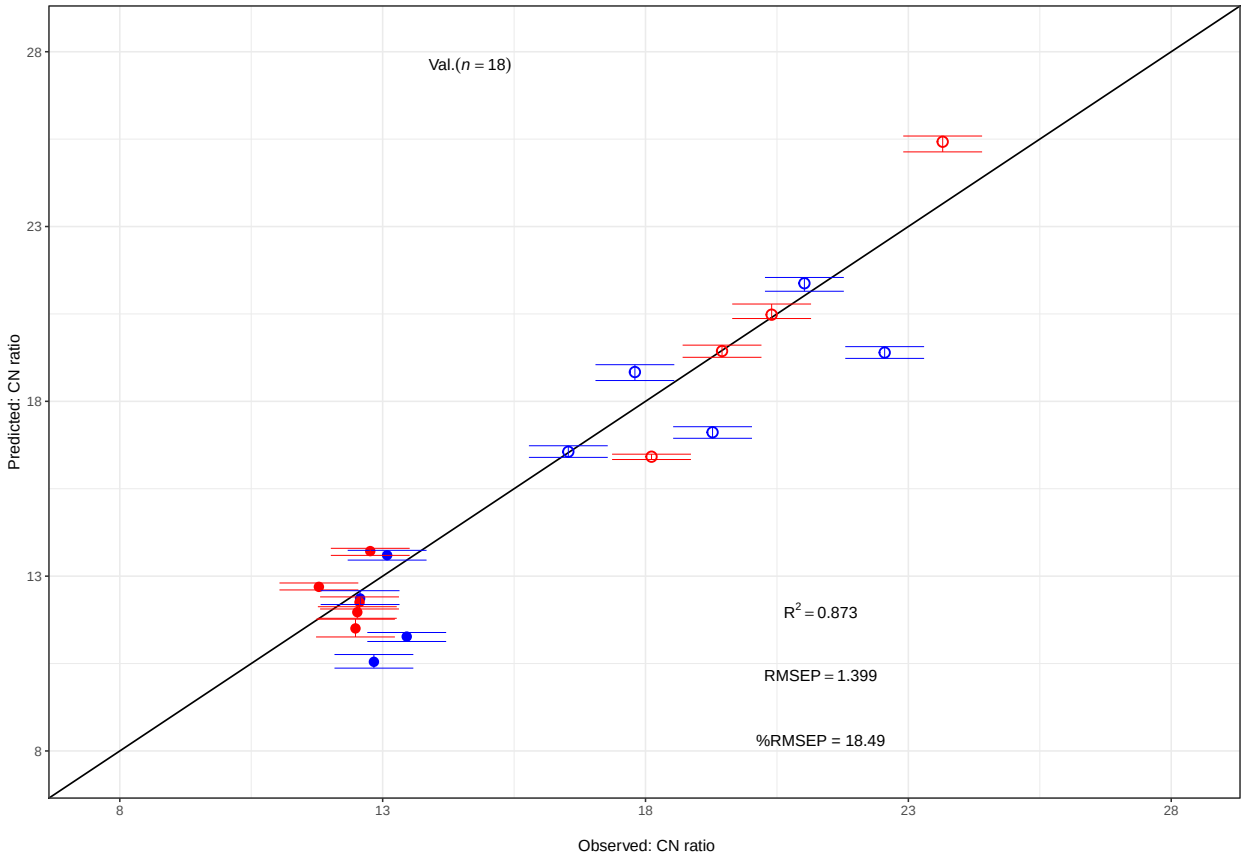


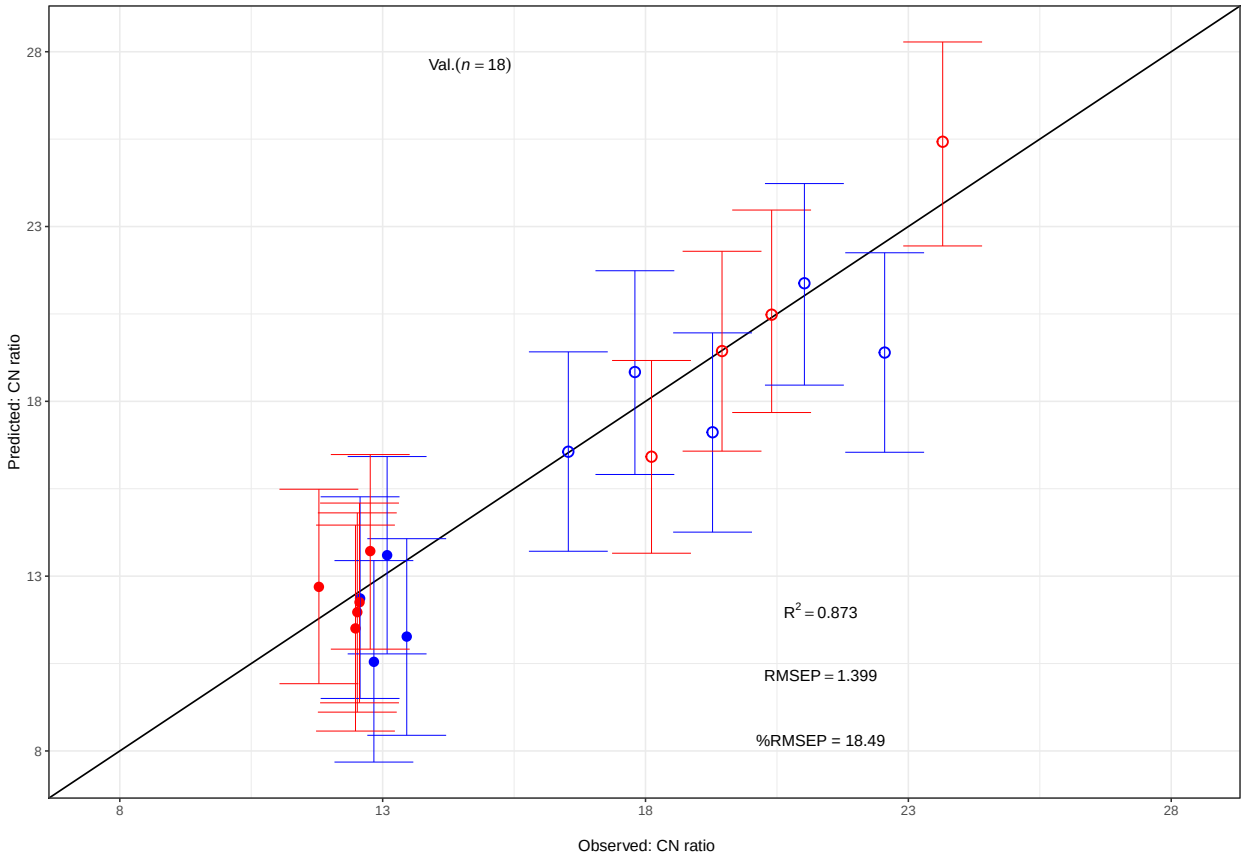

```
##   data_set    R2 RMSEP NRMSEP
## 1      cal 0.761 1.745 10.350
## 2      val 0.873 1.399 11.792
```

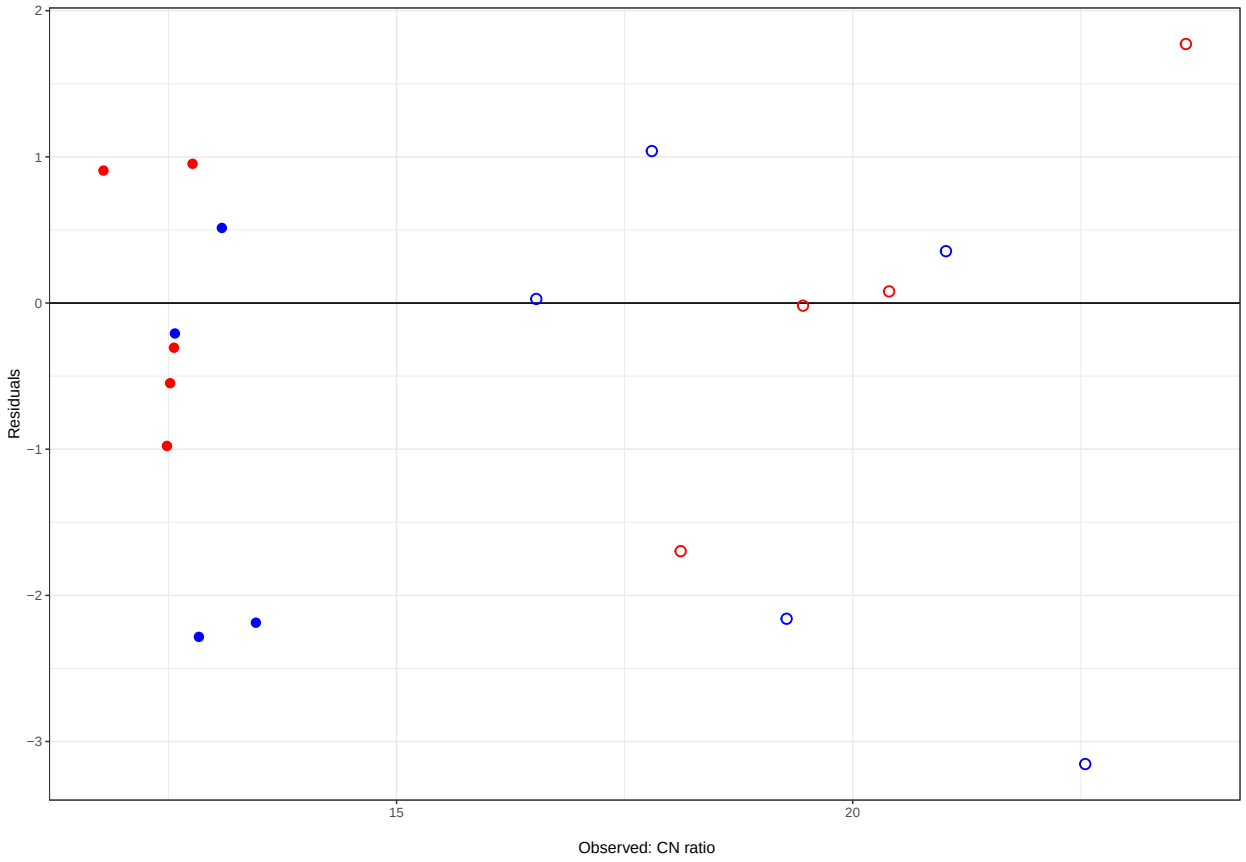
```
##   Observed Predicted  Residuals Treatment Subpop      uci      lci      upi
## 1 12.51760  11.96931 -0.5482848        N1    IND 12.12577 11.79488 14.80986
## 2 11.78692  12.69318  0.9062583        N1    IND 12.80479 12.60526 15.48616
## 3 13.45788  11.27095 -2.1869380        N1    TRJ 11.38775 11.13119 14.07117
## 4 12.83327  10.54927 -2.2840036        N1    TRJ 10.75804 10.36879 13.44467
## 5 13.08472  13.59862  0.5138944        N1    TRJ 13.73818 13.45869 16.42079
## 6 12.57039  12.36215 -0.2082333        N1    TRJ 12.58376 12.18782 15.26940
##         lpi
## 1  9.110789
## 2  9.923878
## 3  8.447772
## 4  7.682157
## 5 10.776076
## 6  9.502178
```


Cal.(n = 70)
R2 = 0.761
RMSEP = 1.745
%RMSEP = 10.01
Predicted: CN ratio
Observed: CN ratio
8
13
18
23
28


Residuals
Observed: CN ratio
4
2
0
−2
−4
−6
15
20
25


Val.(n = 18)
R2 = 0.873
RMSEP = 1.399
%RMSEP = 18.49
Predicted: CN ratio
Observed: CN ratio
8
13
18
23
28


Val.(n = 18)
R2 = 0.873
RMSEP = 1.399
%RMSEP = 18.49
Predicted: CN ratio
Observed: CN ratio
8
13
18
23
28




```
##       Iteration  Intercept X700.08782 X701.35718 X698.81871 X702.6268
## Seg 1         1 -2.4969519   3.839117   4.389884   3.178383  4.933875
## Seg 2         2  0.3028519   4.295831   4.808433   3.671339  5.299545
## Seg 3         3 -1.7166591   3.885232   4.409792   3.256557  4.922361
## Seg 4         4 -2.0705796   4.246870   4.841911   3.527336  5.407404
## Seg 5         5 -0.2964160   3.948775   4.495509   3.296380  5.033481
## Seg 6         6 -0.7267892   4.053054   4.586511   3.410059  5.104401
```

```
##              coefs
## 700.08782 3.940447
## 701.35718 4.462616
## 698.81871 3.312252
## 702.6268  4.973685
## 703.89666 5.409826
## 697.54987 2.670596
```