Análisis de componentes principales en Calafate (*Berberis mycrophylla*)

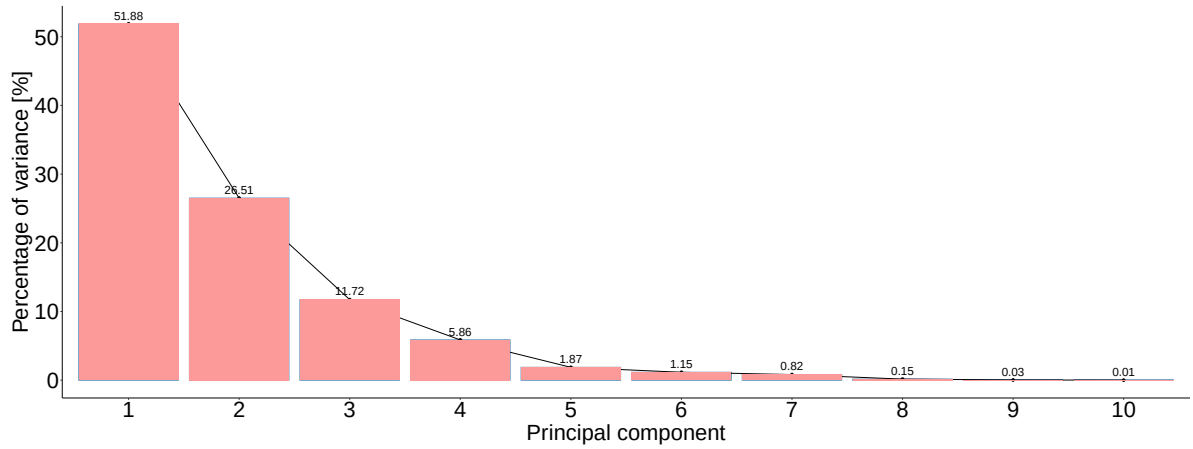
Variables respuesta:

TFS: Total fruiting shoots per plant
FNP: Fruit number per plant
FFWP: Fresh fruit weight per plant
FFW: Fresh fruit weight
DFW: Dry fruit weight
EFD: Equatorial fruit diameter
PFD: Polar fruit diameter
FC: Color del fruto **FF**: Fruit firmness
NPR: Tasa de fotosíntesis (irradiancia=500)

Resultado PCA

```
## Importance of components:
##                           PC1    PC2    PC3     PC4     PC5     PC6    PC7     PC8     PC9    PC10
## Standard deviation     2.2778 1.6281 1.0828 0.76547 0.43251 0.33876 0.2864 0.12441 0.05225 0.02255
## Proportion of Variance 0.5188 0.2651 0.1172 0.05859 0.01871 0.01148 0.0082 0.00155 0.00027 0.00005
## Cumulative Proportion  0.5188 0.7839 0.9012 0.95974 0.97845 0.98992 0.9981 0.99968 0.99995 1.00000
```

Scree plot para ver la varianza explicada por cada Principal component



Contribuciones de las variables para CP1

Contribuciones de las variables para CP2

```
##       PFD       TFS       FNP      FFWP       FFW       EFD       DFW        FC        FF       NPR
## 16.867352 15.853562 15.060285 12.737096 11.847295 10.864138  9.875528  3.206205  2.480036  1.208502
```

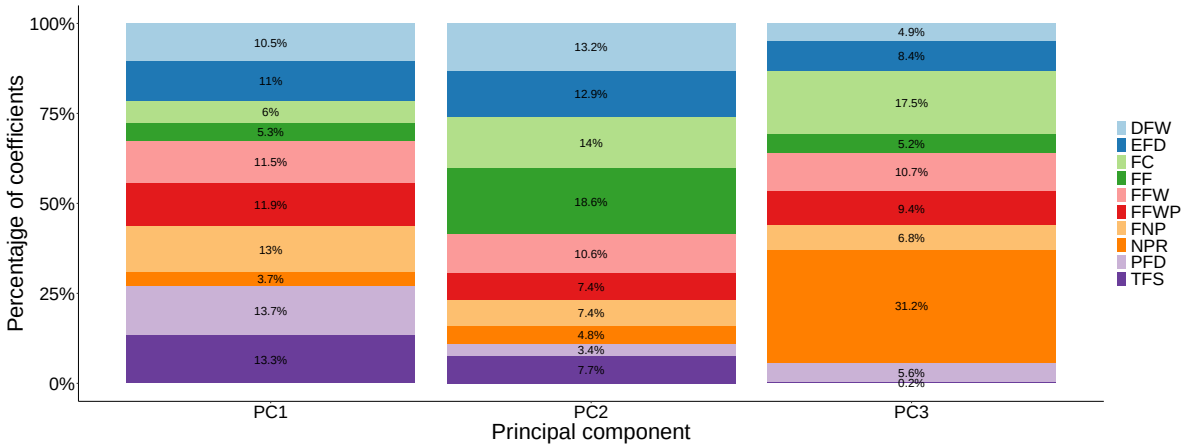
```
##          FF          FC         DFW         EFD         FFW         TFS         FNP        FFWP         NPR
## 28.8503686 16.3677209 14.5320653 13.9601643  9.4003012  4.9076078  4.5666750  4.5445801  1.8907620
##         PFD
##  0.9797548
```

```
##          NPR           FC          FFW         FFWP          EFD          FNP          PFD
## 57.909876917 18.206669873  6.814978175  5.255768439  4.153292131  2.763444267  1.870427459  1.586549
##          DFW          TFS
##  1.436170038  0.002823075
```

Contribución acumulada de cada variable a CP1 y CP2

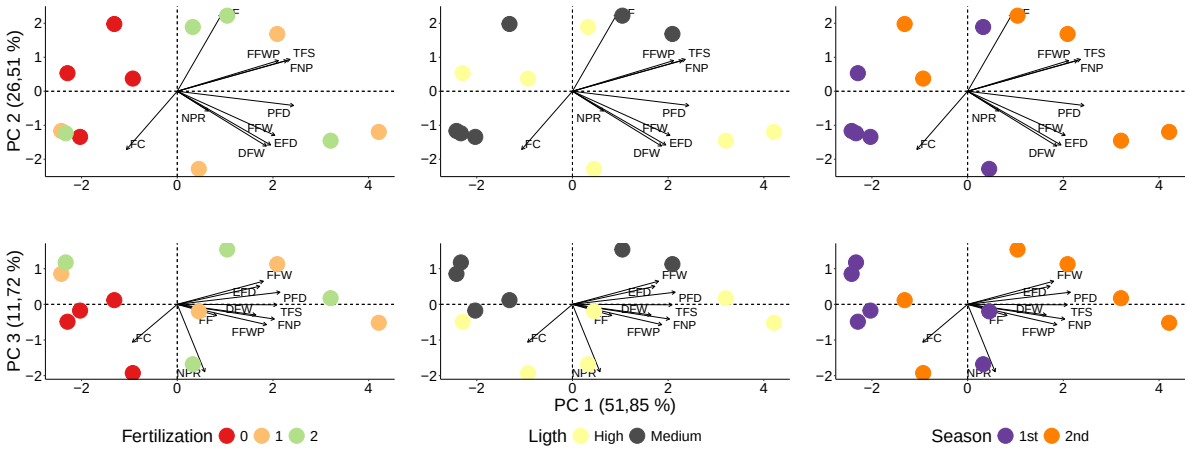
```
##         FF        EFD        DFW        FFW        TFS        FNP         FC        PFD       FFWP        NPR
## 31.330405 24.824302 24.407593 21.247596 20.761170 19.626960 19.573926 17.847106 17.281677  3.099264
```

Proporción de contribución de cada variable a PC1, PC2 y PC3

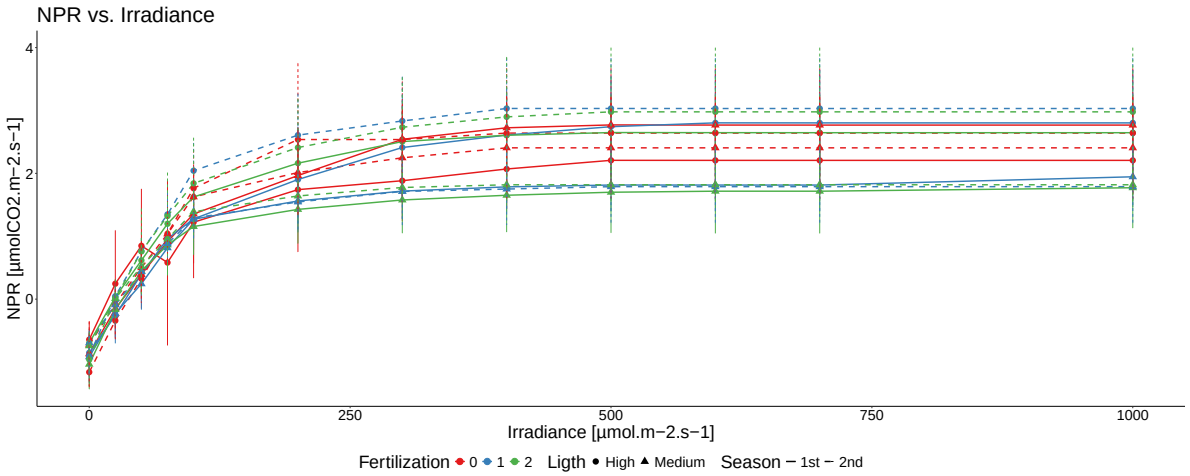


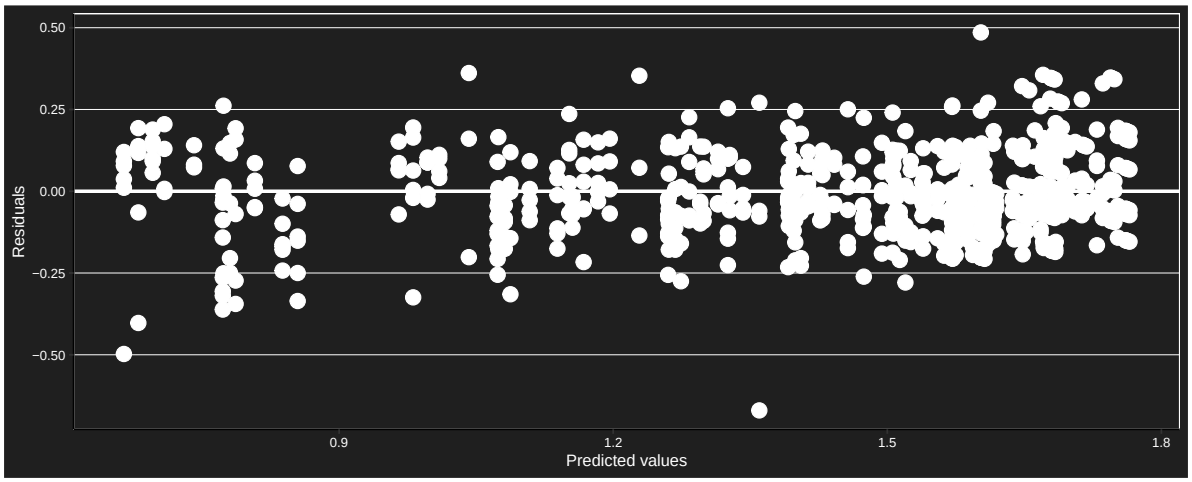
Biplots de PCA CP1 VS CP2

Biplots de PCA CP1 VS CP3



Análisis univariado Tasa de fotosíntesis (NPR)

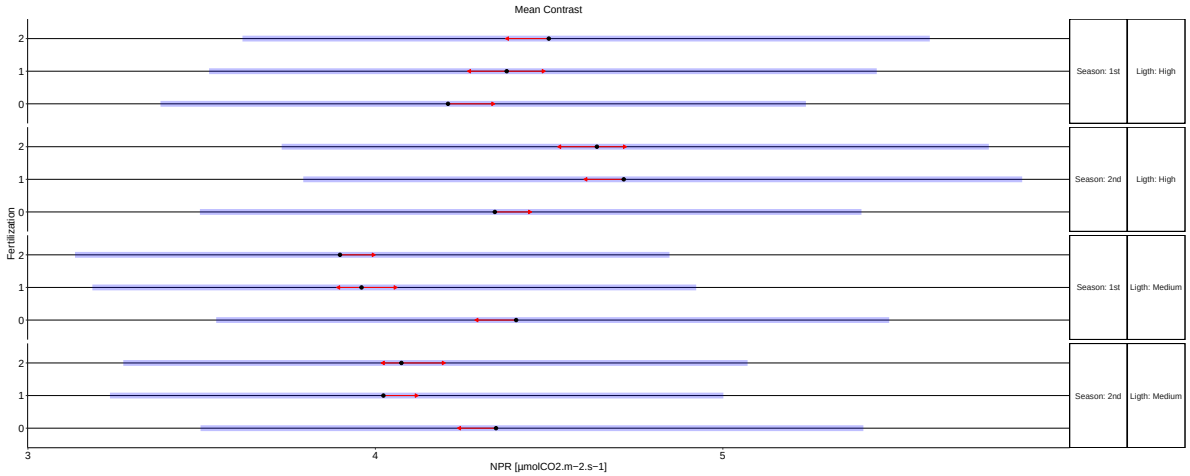





```
## Analysis of Deviance Table (Type II Wald chisquare tests)
##
## Response: NPR_aj
##                              Chisq Df Pr(>Chisq)
## Fertilization               2.1554  2  0.3403858
## Ligth                      82.7143  1  < 2.2e-16 ***
## Season                     10.9737  1  0.0009241 ***
## Fertilization:Ligth        62.0704  2  3.323e-14 ***
## Fertilization:Season        2.7550  2  0.2522128
## Ligth:Season                2.8654  1  0.0905017 .
## Fertilization:Ligth:Season  2.8460  2  0.2409955
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

## $emmeans
## Ligth = High, Season = 1st:
##  Fertilization response       SE  df asymp.LCL asymp.UCL
##  0             4.209045 0.4701398 Inf  3.381478  5.239148
##  1             4.378010 0.4863772 Inf  3.521373  5.443038
```

```
##  2             4.499106 0.5006865 Inf  3.617426  5.595680
##
## Ligth = Medium, Season = 1st:
##  Fertilization response        SE  df asymp.LCL asymp.UCL
##  0             4.405079 0.4902337 Inf  3.541807  5.478762
##  1             3.960158 0.4398811 Inf  3.185399  4.923354
##  2             3.898135 0.4330483 Inf  3.135421  4.846384
##
## Ligth = High, Season = 2nd:
##  Fertilization response        SE  df asymp.LCL asymp.UCL
##  0             4.343862 0.4819364 Inf  3.494927  5.399007
##  1             4.714838 0.5237293 Inf  3.792402  5.861640
##  2             4.637571 0.5151469 Inf  3.730252  5.765581
##
## Ligth = Medium, Season = 2nd:
##  Fertilization response        SE  df asymp.LCL asymp.UCL
##  0             4.347186 0.4828749 Inf  3.496704  5.404526
##  1             4.023099 0.4468635 Inf  3.236041  5.001583
##  2             4.074973 0.4547397 Inf  3.274435  5.071228
##
## Confidence level used: 0.95
## Intervals are back-transformed from the log scale
##
## $contrasts
## Ligth = High, Season = 1st:
##  contrast                            ratio         SE  df null z.ratio p.value
##  Fertilization0 / Fertilization1 0.9614061 0.02362414 Inf    1  -1.602  0.2449
##  Fertilization0 / Fertilization2 0.9355292 0.02379252 Inf    1  -2.620  0.0239
##  Fertilization1 / Fertilization2 0.9730844 0.02200772 Inf    1  -1.206  0.4493
##
## Ligth = Medium, Season = 1st:
##  contrast                            ratio         SE  df null z.ratio p.value
##  Fertilization0 / Fertilization1 1.1123494 0.02507709 Inf    1   4.723  <.0001
##  Fertilization0 / Fertilization2 1.1300480 0.02555829 Inf    1   5.406  <.0001
##  Fertilization1 / Fertilization2 1.0159109 0.02191280 Inf    1   0.732  0.7446
##
## Ligth = High, Season = 2nd:
##  contrast                            ratio         SE  df null z.ratio p.value
##  Fertilization0 / Fertilization1 0.9213174 0.01914156 Inf    1  -3.944  0.0002
##  Fertilization0 / Fertilization2 0.9366674 0.01946111 Inf    1  -3.149  0.0047
##  Fertilization1 / Fertilization2 1.0166610 0.02185109 Inf    1   0.769  0.7222
##
## Ligth = Medium, Season = 2nd:
##  contrast                            ratio         SE  df null z.ratio p.value
##  Fertilization0 / Fertilization1 1.0805564 0.02322576 Inf    1   3.605  0.0009
##  Fertilization0 / Fertilization2 1.0668012 0.02563643 Inf    1   2.691  0.0195
##  Fertilization1 / Fertilization2 0.9872702 0.02372400 Inf    1  -0.533  0.8550
##
## P value adjustment: tukey method for comparing a family of 3 estimates
## Tests are performed on the log scale
```


Mean Contrast
Fertilization
NPR [µmolCO2.m−2.s−1]
Season: 1st
Ligth: High
Season: 2nd
Ligth: High
Season: 1st
Ligth: Medium
Season: 2nd
Ligth: Medium