# Sample Size (Power)

*Adriana Souza*

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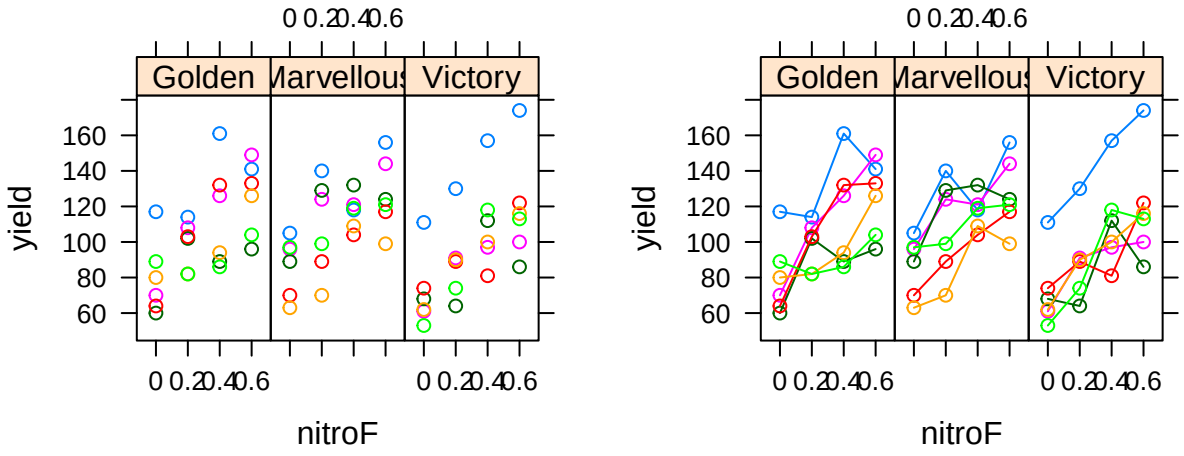
## Split Plot ANOVA

A split plot design is a mixed design in which there are some repeated measures factor(s) and some between-subjects factor(s).

```
## Observations: 72
## Variables: 6
## $ replicate  <fct> I, I, I, I, I, I, I, I, I, I, I, I, II, II, II, II,...
## $ variety    <fct> Victory, Victory, Victory, Victory, Golden, Golden,...
## $ nitro      <dbl> 0.0, 0.2, 0.4, 0.6, 0.0, 0.2, 0.4, 0.6, 0.0, 0.2, 0...
## $ yield      <int> 111, 130, 157, 174, 117, 114, 161, 141, 105, 140, 1...
## $ whole.plot <fct> I:Victory, I:Victory, I:Victory, I:Victory, I:Golde...
## $ nitroF     <fct> 0, 0.2, 0.4, 0.6, 0, 0.2, 0.4, 0.6, 0, 0.2, 0.4, 0....
```



We have three levels of a repeated measures factor (Victory, Golden, Marvellous) and four levels of a between-subjects factor, treatment (control, kill, removal + mulch, mulch), and 6 plots.

We also need to specify the error term for variety correctly.

```
##   PlotID PlotVolume
## 1      1  0.4210143
## 2      2  0.2354974
## 3      3  0.2779573
## 4      4  0.3314584
## 5      5  0.7993876
## 6      6  0.2899681
```

```
#n_control <- length(unique(data$plot))
#n_subplots <- length(unique(data$variety))
#n_total <- n_control * n_subplots

#mean_control_biomass <-
#total_biomass <-

#effect_size <- (total_biomass - mean_control_biomass)/mean_control_biomass

# r <-
# n <-
# sigma_sq <-
# alpha <-

#power<- ((r-n)/n)*((sigma_sq*alpha)/effect_size)
```