Gibberellin Effect on Wild Type Vs. Dwarf Type

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Experimental Design

- There are 4 groups observed
1. Dwarf Type Without Gibberellin
2. Wild Type Without Gibberellin
3. Dwarf Type With Gibberellin
4. Wild Type With Gibberellin
- The Seeds were Presoaked 2/21 for 12 hours
- Seeds were planted 2/22 and observed until 3/22
- The seeds receiving gibberellin received 50 mg every Wednesday
- All plants were watered daily

Results

- On average, wild-type plants that received no gibberellin reached heights greater than all other treatment groups
- On average, dwarf mutant plants that received no gibberellin reached greater heights than both dwarf mutant and wild-type plants that did receive gibberellin
- On average, both wild-type and dwarf mutant plants that received gibberellin experienced less growth than those that did not receive gibberellin

Experimental Error

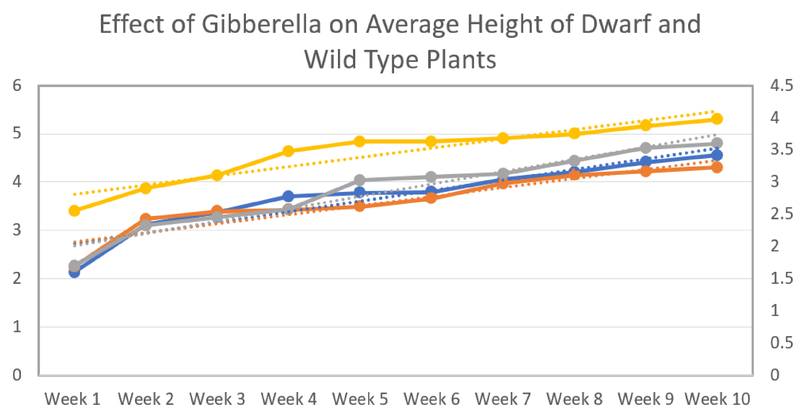
- The scientists left the lid off of the plants during the last two weeks. The plants seemed to grow more during these weeks. This could be an error because we could have had the plants not have a lid on for the whole experiment.
- During spring break, there was a major environment change. Their environment changed from a greenhouse with constant sun to a scientist's house with minimal sun.
- Before we left for spring break, the gibberellin solution was made for the whole spring break before we were making gibberellin solution for each day separately.

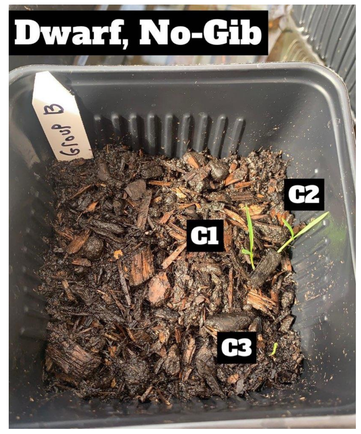
Conclusions

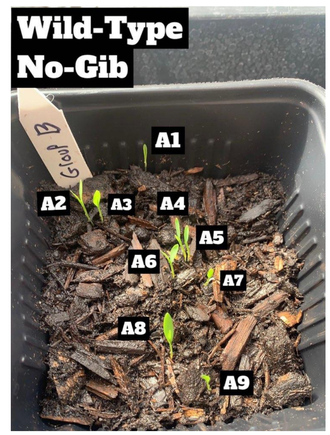
- It can be concluded that the millets grown were not able to process the gibberellin given
- This was shown in the small size difference in the dwarf and wild types
- If more time was allowed for growth, a difference in size may have become more noticeable. This would change the conclusion above.

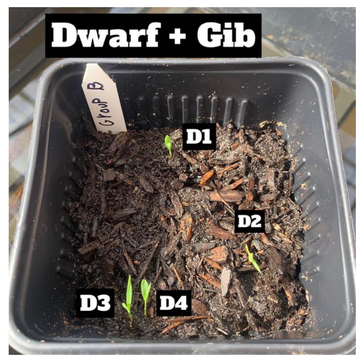
References
Megathlin M. (2023), Grant Proposal, https://lindenwood0-my.sharepoint.com/:w:/r/personal/mm348_lindenwood_edu/_layouts/15/Doc.aspx?sourcedoc=%7B30447D80-3ADF-483C-9984-FD885410430C%7D&file=Grant%20Proposal.docx&wdOrigin=OFFICECOM-WEB.START.SEARCH&ct=1680120905776&action=default&mobileredirect=true

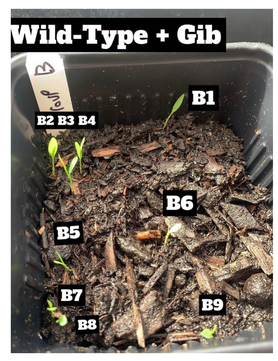
Graphs

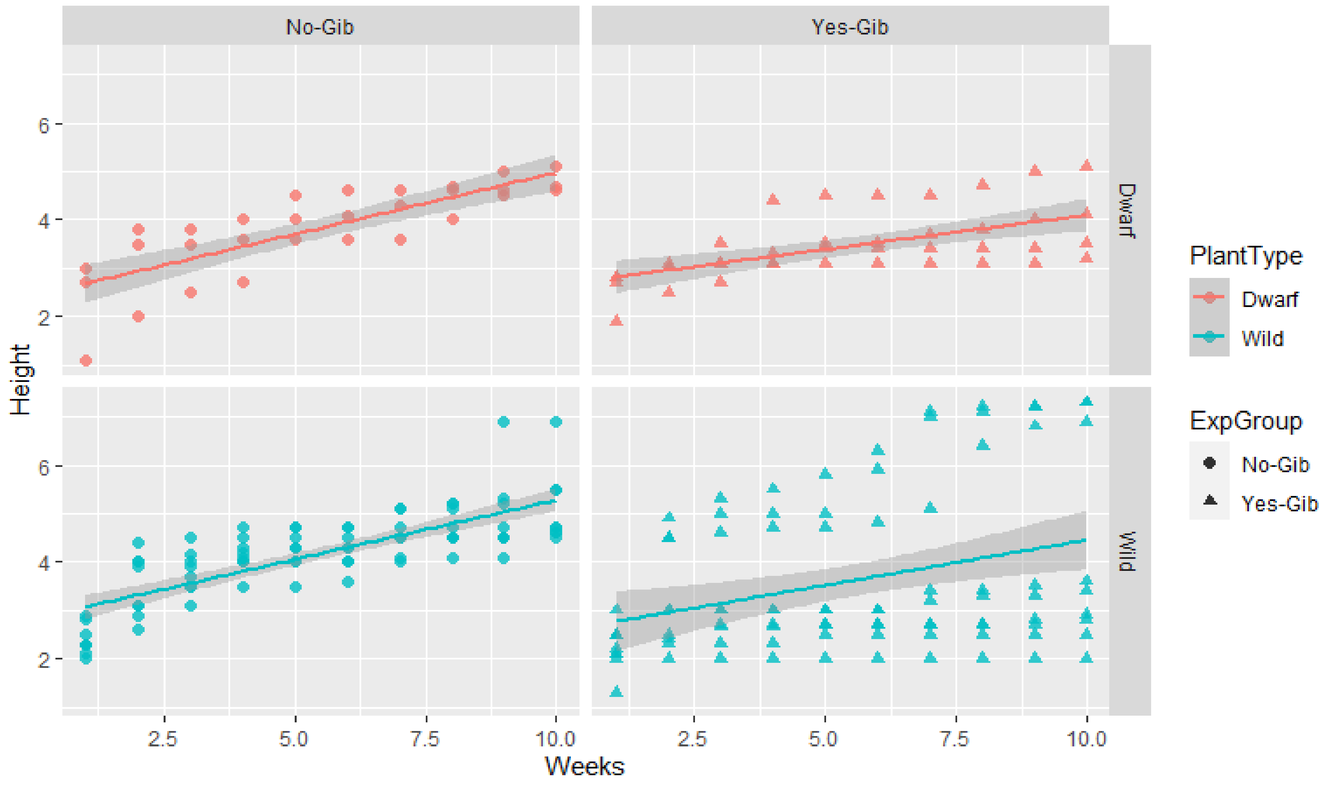




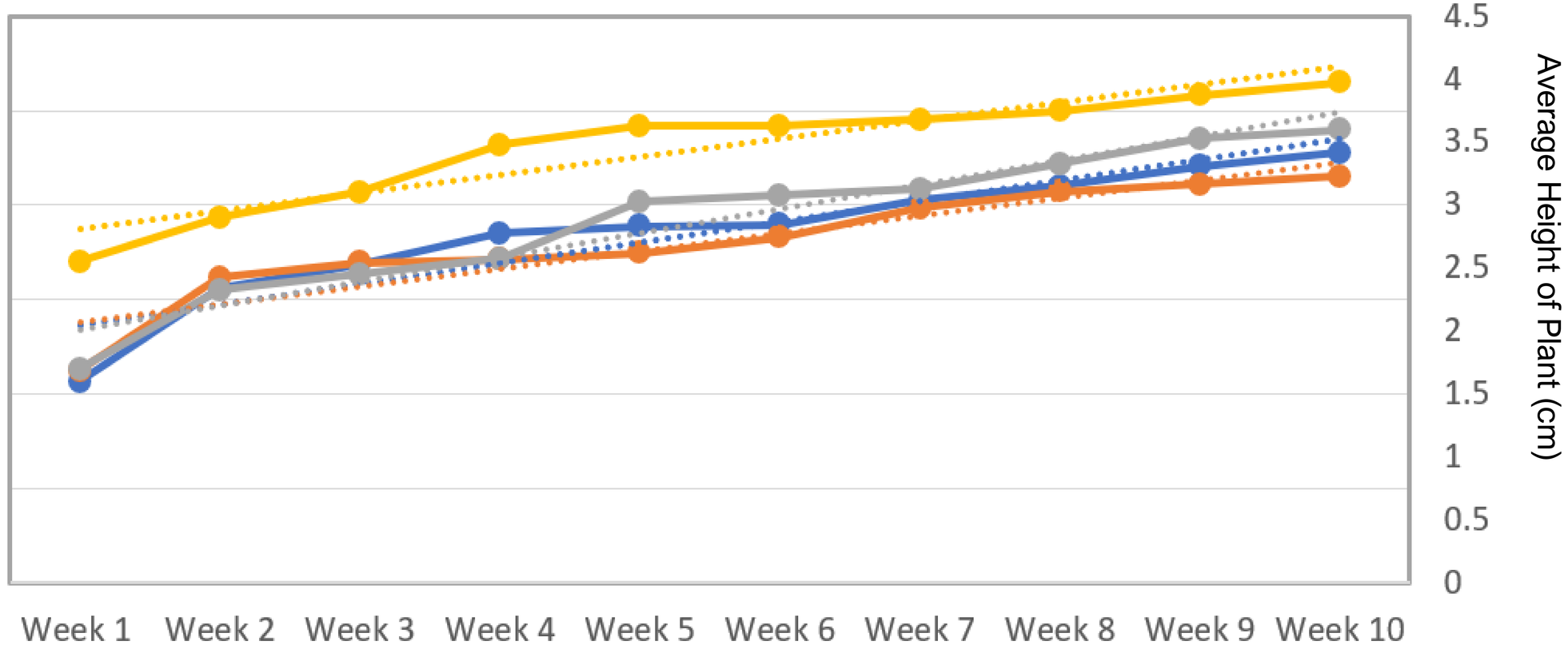


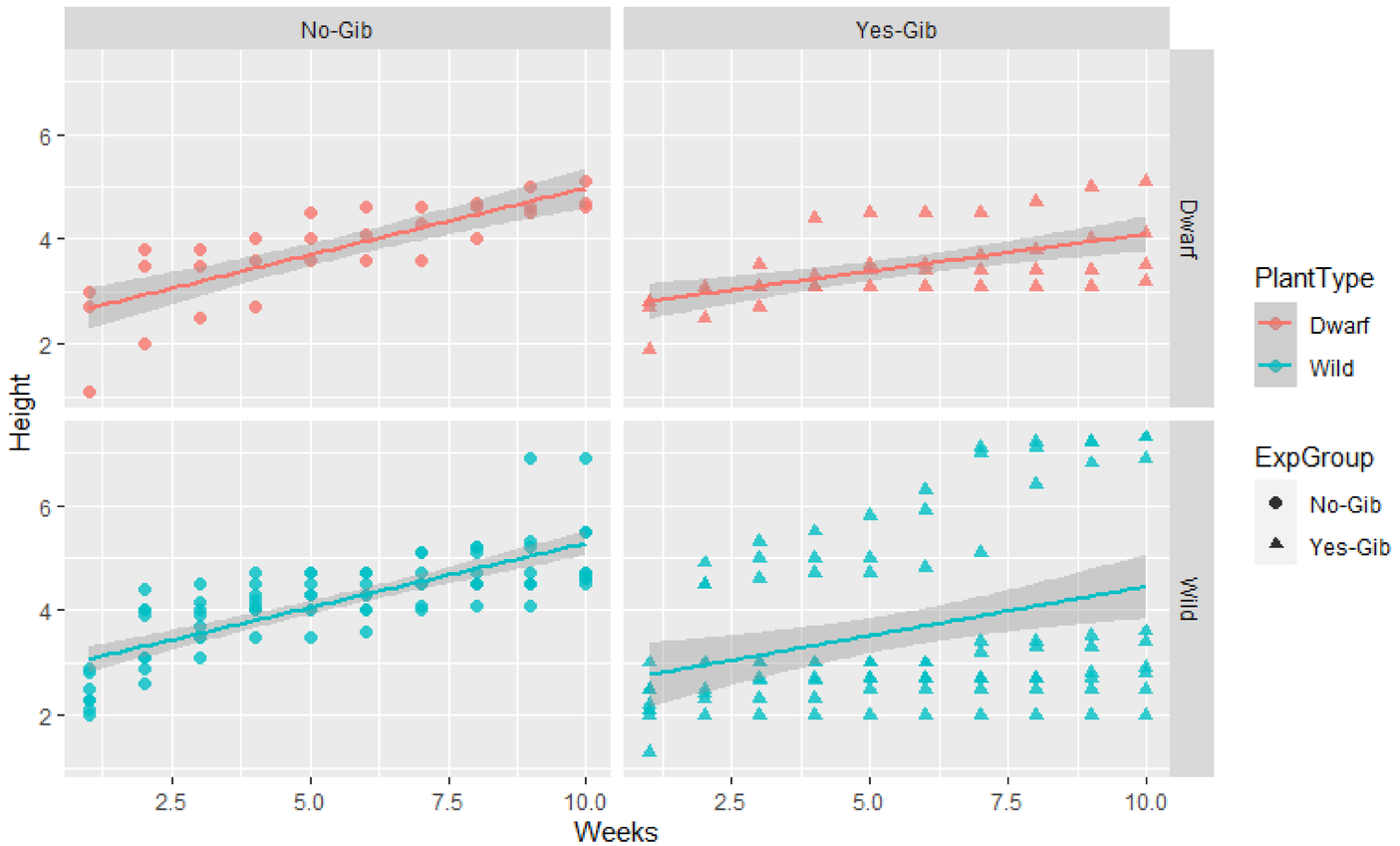






Effect of Gibberella on Average Height of Dwarf and Wild Type Plants






```
> source("C:/Users/Danian/Desktop/R-Files/Bio Collab/PlantBioReg.R", echo=TRUE)
> bioData<-read.table('PlantBio.csv',header= TRUE, sep = ",")
> summary(bioData)
   PlantType          ExpGroup             Week         Height       PlantLabel
 Length:240         Length:240         Min.   : 1.0   Min.   :1.100   Length:240
 Class :character   Class :character   1st Qu.: 3.0   1st Qu.:2.800   Class :character
 Mode  :character   Mode  :character   Median : 5.5   Median :3.600   Mode  :character
                                       Mean   : 5.5   Mean   :3.799
                                       3rd Qu.: 8.0   3rd Qu.:4.525
                                       Max.   :10.0   Max.   :7.300
> str(bioData)
 'data.frame':       240 obs. of  5 variables:
  $ PlantType : chr  "Wild" "Wild" "Wild" "Wild" ...
  $ ExpGroup  : chr  "No-Gib" "No-Gib" "No-Gib" "No-Gib" ...
  $ Week      : int  1 1 1 1 1 1 1 1 2 2 ...
  $ Height    : num  2.8 2.9 2.3 2.3 2.3 2 2.5 2.1 4.4 4 ...
  $ PlantLabel: chr  "A2" "A3" "A4" "A5" ...
> library(ggplot2)
> library(gridExtra)
> library(dplyr)
> library(lattice)
> ggplot(bioData, aes(x=Week,y=Height,color=PlantType,shape=ExpGroup))+
 +      geom_point(size=2,alpha=0.8)+
 +      geom_smooth(method='lm')+
 +     .... [TRUNCATED]
`geom_smooth()` using formula = 'y ~ x'
```

From <http://127.0.0.1:46117/>

https://lindenwood0-my.sharepoint.com/:o:/g/personal/dc563_lindenwood_edu/EpqRNaeb31VDh_CPKd_NGd0BC9q7p_Xt_Wum_qOBLVzVEQ?e=TNxVd0

-Heres a link to the One Note.

-Use data as needed. Below graph is a summary of the data on top. We noticed that the plants with just water itself had a faster growth. More summary in the Excel sheet you shared with us. In there you will also see more graphs of individual plants with control/experiment group. I think the only thing we might need to change is the Axis for the weeks, so we will talk to Dr. Wintz tomorrow to get that taken care of. Let us know if you need anything else!