CodingChallenge4

Katie Clouse

2025-02-27

Manuscript Link

Link to manuscript

Question 1

A YAML header is the top 6 lines of the document that explains the logistic information of the document. Literate programming deals with combining codes and descriptive language in the document so you can have a more inclusive type of document. By having literate programming in R, you can include way more information than just R.

Question 2 (reading in mycotoxin data)

```
mico.data <- read.csv("C:/Users/katie/Downloads/MycotoxinData.csv", na.strings = "na")
cbbPalette <- c("#000000", "#E69F00", "#56B4E9", "#009E73", "#F0E442", "#0072B2", "#D55E00", "#CC79A7")
```

Loading in the packages

```
options(repos = c(CRAN = "https://cloud.r-project.org"))
install.packages("ggpubr")
```

```
## Installing package into 'C:/Users/katie/AppData/Local/R/win-library/4.4'
## (as 'lib' is unspecified)
```

```
## package 'ggpubr' successfully unpacked and MD5 sums checked
##
## The downloaded binary packages are in
##  C:\Users\katie\AppData\Local\Temp\RtmpGShKIW\downloaded_packages
```

```
library(knitr)
```

```
## Warning: package 'knitr' was built under R version 4.4.2
```

```r
library(ggplot2)
library(rmarkdown)
```

```
## Warning: package 'rmarkdown' was built under R version 4.4.2
```

```r
library(ggplot2)
library(tidyverse)
```

```
## Warning: package 'tidyverse' was built under R version 4.4.2
```

```
## Warning: package 'dplyr' was built under R version 4.4.2
```

```
## -- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
## v dplyr     1.1.4     v readr     2.1.5
## v forcats   1.0.0     v stringr   1.5.1
## v lubridate 1.9.3     v tibble    3.2.1
## v purrr     1.0.2     v tidyr     1.3.1
```

```
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

```r
library(ggrepel)
```

```
## Warning: package 'ggrepel' was built under R version 4.4.2
```

```r
install.packages("ggarrange")
```

```
## Installing package into 'C:/Users/katie/AppData/Local/R/win-library/4.4'
## (as 'lib' is unspecified)
```

```
## Warning: package 'ggarrange' is not available for this version of R
##
## A version of this package for your version of R might be available elsewhere,
## see the ideas at
## https://cran.r-project.org/doc/manuals/r-patched/R-admin.html#Installing-packages
```

```r
library(ggpubr)
```

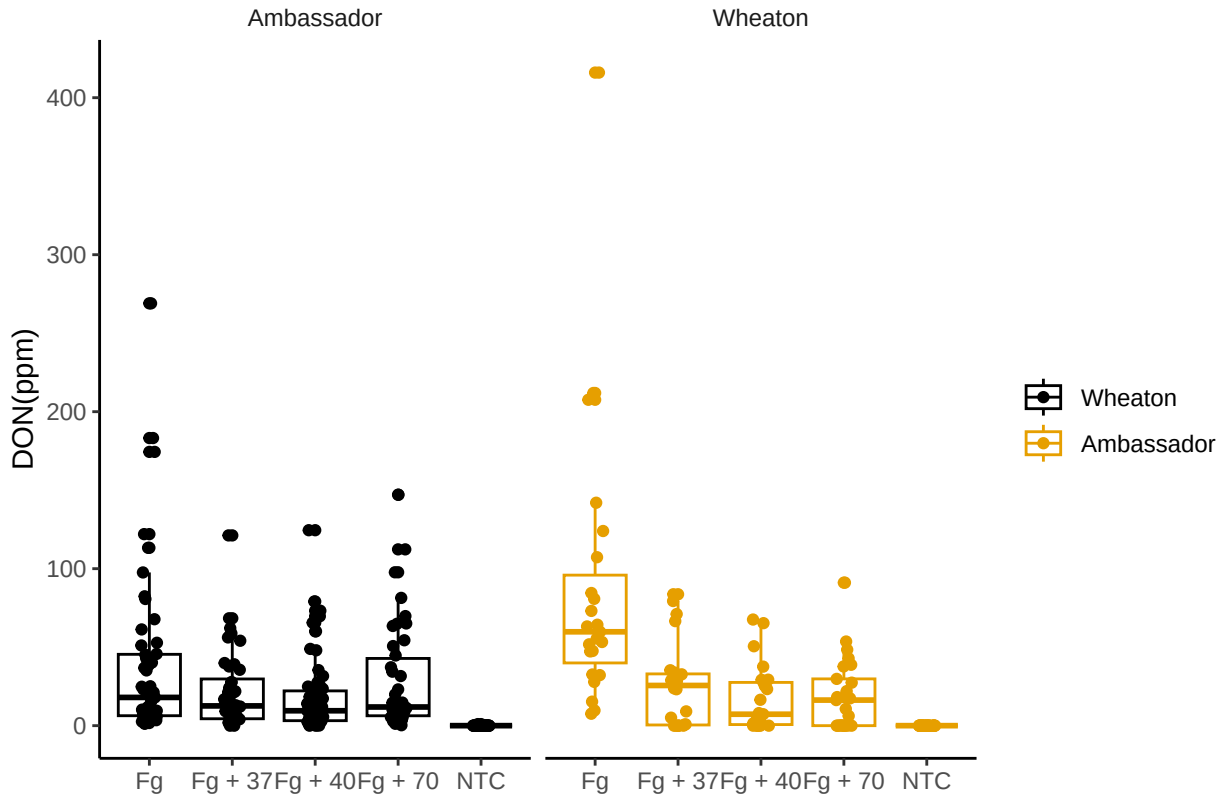
```
## Warning: package 'ggpubr' was built under R version 4.4.2
```

Coding from Coding Challenge 3

```r
mico.ques1 <- ggplot(mico.data, aes(x = Treatment, y = DON, color = Cultivar)) + #this defines the aest
  geom_boxplot(position = position_dodge()) + # this provides boxplots that do not overlap
  geom_point(position = position_jitterdodge(jitter.width = 0.2, dodge.width = 0.6)) + #this allows dat
  ylab("DON(ppm)")+ #this labels the y axis
  xlab("") + #this labels teh x axis
  scale_color_manual(values = cbbPalette, name = "", labels = c("Wheaton", "Ambassador")) + # this give
  theme_classic() + #this is a classic theme for the plot
  theme(strip.background = element_blank(), legend.position = "right") + #this puts the legend to the r
  facet_wrap(~Cultivar) #this create separate panels for the cultivar
print(mico.ques1)
```

```
## Warning: Removed 8 rows containing non-finite outside the scale range
## (‘stat_boxplot()‘).
```

```
## Warning: Removed 8 rows containing missing values or values outside the scale range
## (‘geom_point()‘).
```

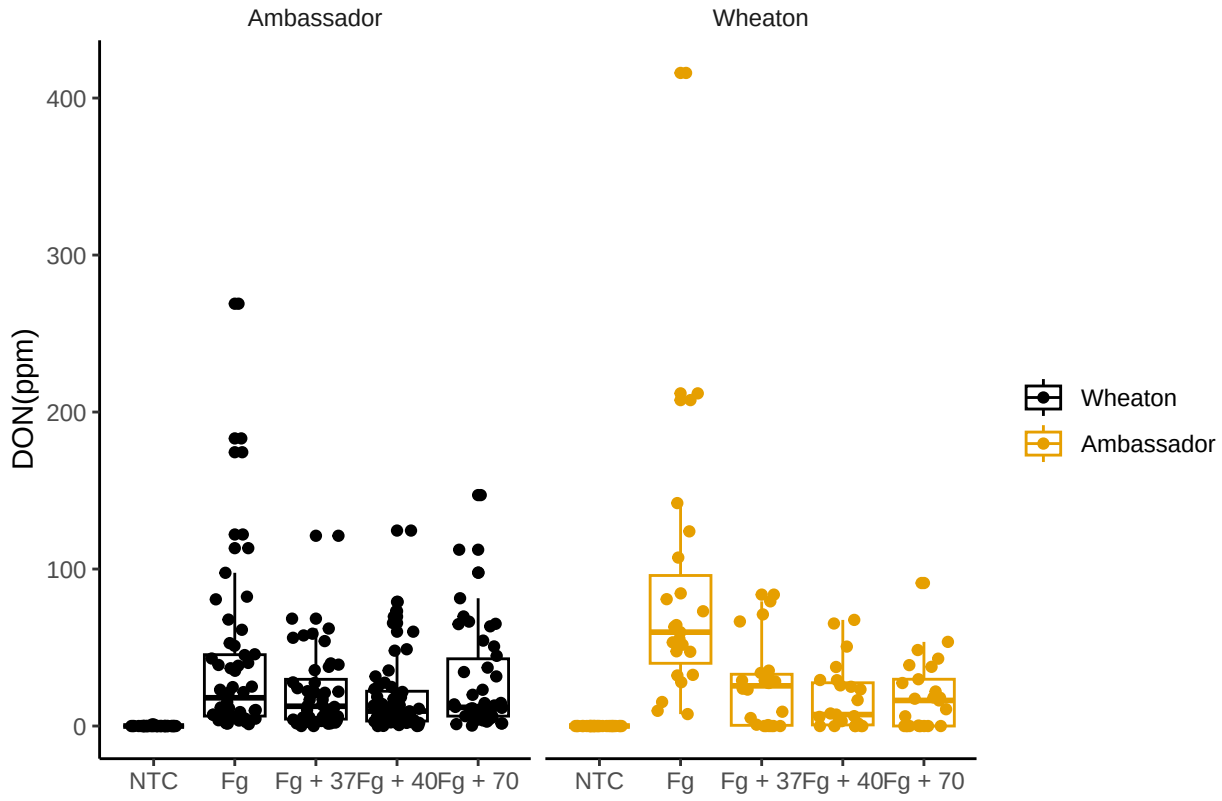



```r
#### Question 2 answers ####

mico.data$Treatment <- factor(mico.data$Treatment, levels = c("NTC", "Fg", "Fg + 37", "Fg + 40", "Fg + 

mico.ques2 <- ggplot(mico.data, aes(x = Treatment, y = DON, color = Cultivar)) +
  geom_boxplot(position = position_dodge(.6)) + #this adjusts the position of the horizontal bars
  geom_point(position = position_jitterdodge(.6)) + #this allows the data points to be not overlapping
```

```
  ylab("DON(ppm)")+
  xlab("") +
  scale_color_manual(values = cbbPalette, name = "", labels = c("Wheaton", "Ambassador")) +
  theme_classic() +
  theme(strip.background = element_blank(), legend.position = "right") +
  facet_wrap(~Cultivar)
print(mico.ques2)
```

```
## Warning: Removed 8 rows containing non-finite outside the scale range
## (`stat_boxplot()`).
```

```
## Warning: Removed 8 rows containing missing values or values outside the scale range
## (`geom_point()`).
```




```
#### Question 3 answers ####

mico.ques3 <- ggplot(mico.data, aes(x = MassperSeed_mg, y = X15ADON, color = Cultivar)) + #this is when
  geom_boxplot(position = position_dodge(.85)) +
  geom_point(position = position_jitterdodge(.05)) +
  ylab("X15ADON")+
  xlab("Seed Mass (mg)") +
  scale_color_manual(values = cbbPalette, name = "", labels = c("Wheaton", "Ambassador")) +
  theme_classic() +
  theme(strip.background = element_blank(), legend.position = "right") +
```

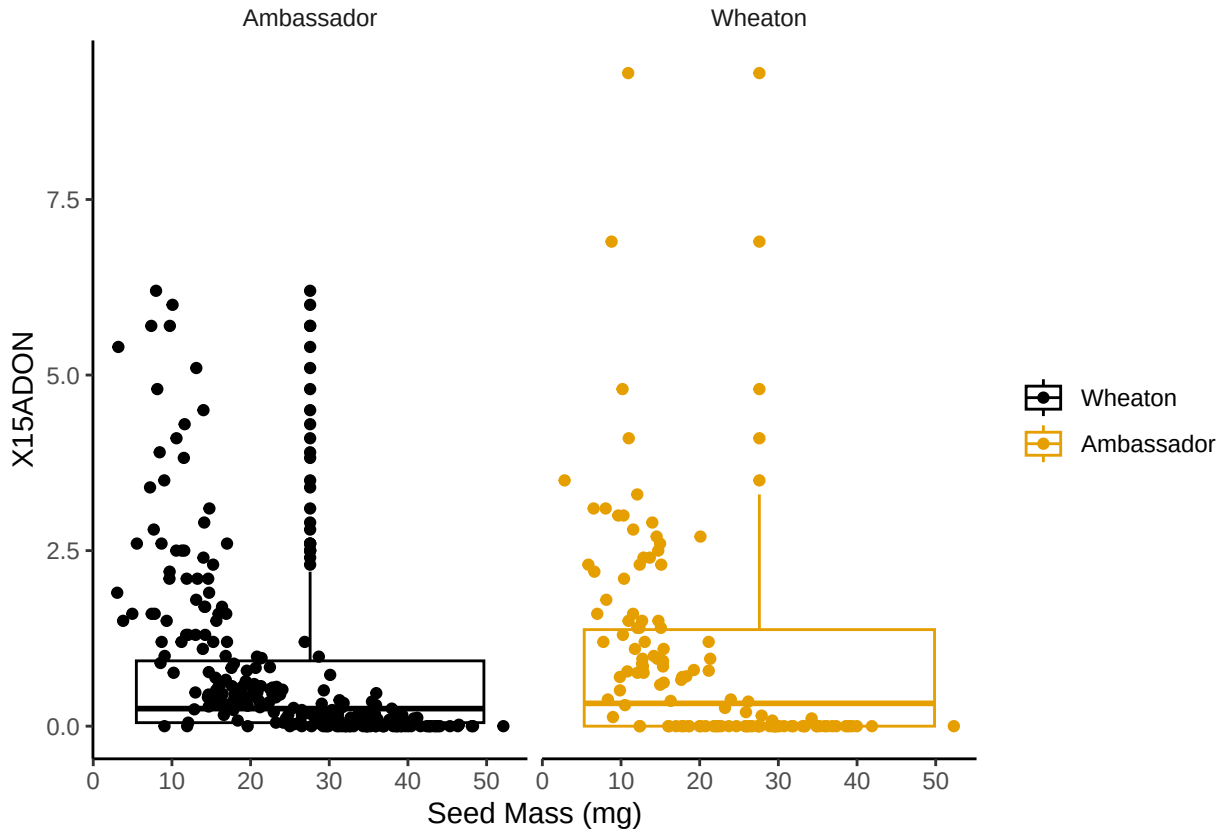
```
  facet_wrap(~Cultivar)
print(mico.ques3)
```

```
## Warning: Removed 2 rows containing missing values or values outside the scale range
## (`stat_boxplot()`).
```

```
## Warning: Removed 8 rows containing non-finite outside the scale range
## (`stat_boxplot()`).
```

```
## Warning: `position_jitterdodge()` requires non-overlapping x intervals.
## `position_jitterdodge()` requires non-overlapping x intervals.
```

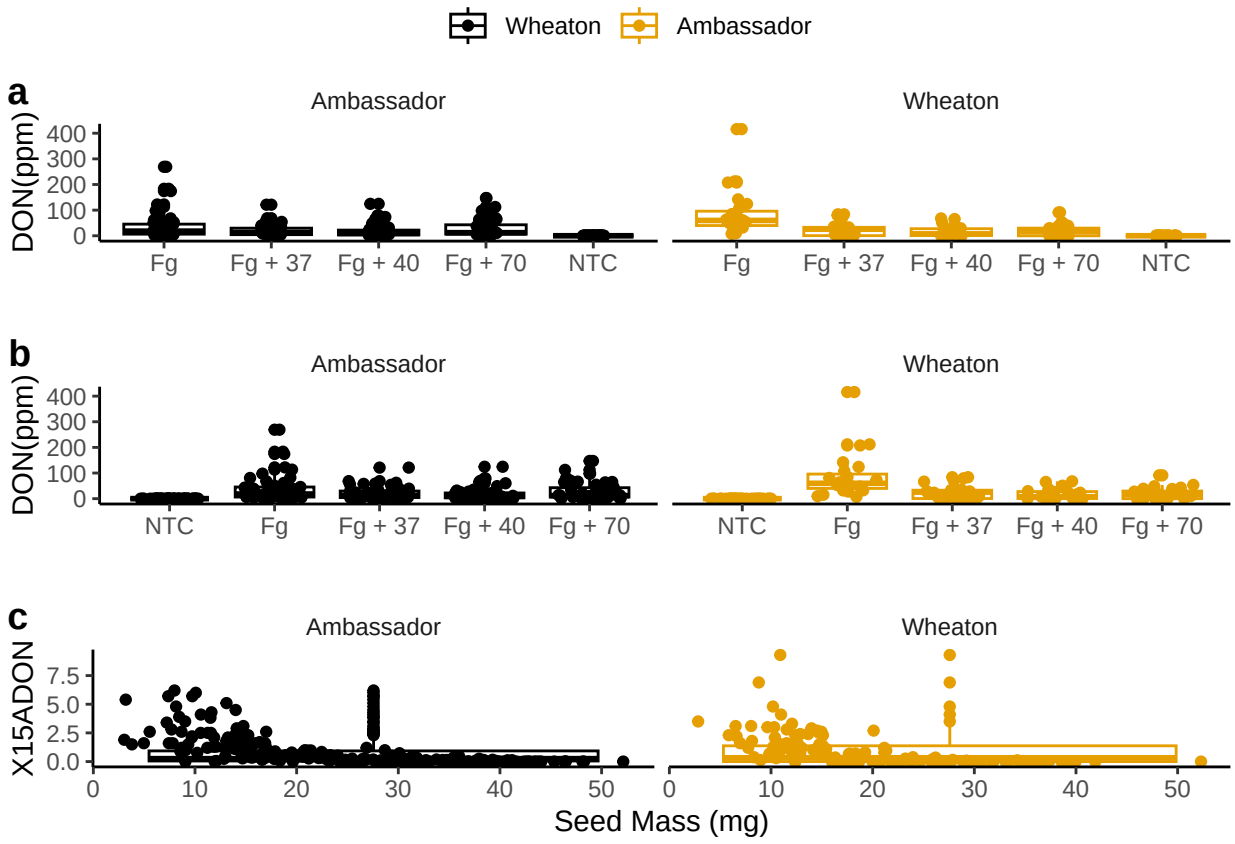
```
## Warning: Removed 10 rows containing missing values or values outside the scale range
## (`geom_point()`).
```




```
#### Question 4 answers ####

figure1 <- ggarrange(mico.ques1,
                     mico.ques2,
                     mico.ques3,
                     labels = "auto", #this labels the plots as A, B, C
                     nrow = 3,
                     ncol =  1,
                     common.legend = T) #this allows you to put several plots stacked on top of one ano
```

```
## Warning: Removed 8 rows containing non-finite outside the scale range
## (`stat_boxplot()`).

## Warning: Removed 8 rows containing missing values or values outside the scale range
## (`geom_point()`).

## Warning: Removed 8 rows containing non-finite outside the scale range
## (`stat_boxplot()`).

## Warning: Removed 8 rows containing missing values or values outside the scale range
## (`geom_point()`).

## Warning: Removed 8 rows containing non-finite outside the scale range
## (`stat_boxplot()`).

## Warning: Removed 8 rows containing missing values or values outside the scale range
## (`geom_point()`).

## Warning: Removed 2 rows containing missing values or values outside the scale range
## (`stat_boxplot()`).

## Warning: Removed 8 rows containing non-finite outside the scale range
## (`stat_boxplot()`).

## Warning: `position_jitterdodge()` requires non-overlapping x intervals.
## `position_jitterdodge()` requires non-overlapping x intervals.

## Warning: Removed 10 rows containing missing values or values outside the scale range
## (`geom_point()`).
```

```
print(figure1)
```




```
# the common.legend function allows you to utilize only one legend for different plots
```

```
#### Question 5 answers ####

mico.ques.ttest1 <- mico.ques1 +
  geom_pwc(aes(group = Treatment, method = "t_test", label = "p.adj.format")) #the geom_pwc is a pairwi
```

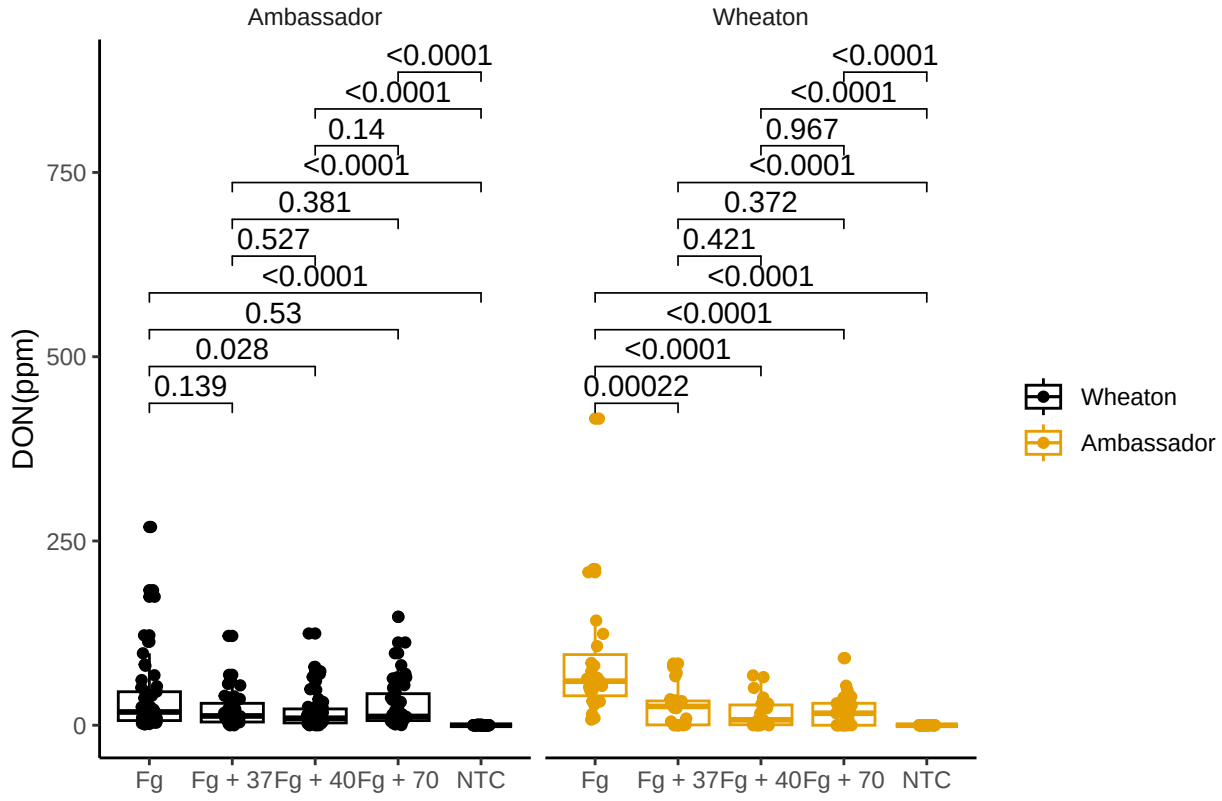
```
## Warning in geom_pwc(aes(group = Treatment, method = "t_test", label =
## "p.adj.format")): Ignoring unknown aesthetics: method
```

```
print(mico.ques.ttest1)
```

```
## Warning: Removed 8 rows containing non-finite outside the scale range
## (`stat_boxplot()`).
```

```
## Warning: Removed 8 rows containing non-finite outside the scale range
## (`stat_pwc()`).
```

```
## Warning: Removed 8 rows containing missing values or values outside the scale range
## (`geom_point()`).
```




```
mico.ques.ttest2 <- mico.ques2 +
  geom_pwc(aes(group = Treatment, method = "t_test", label = "p.adj.format"))
```

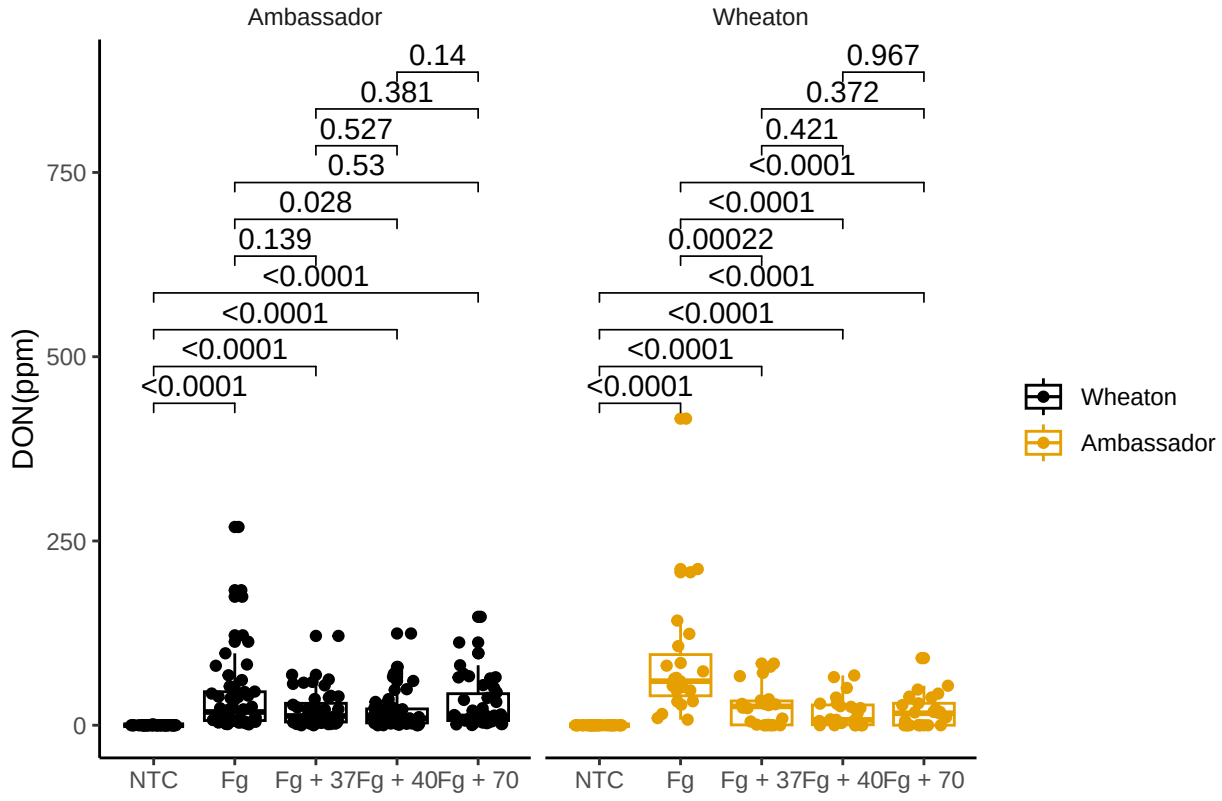
```
## Warning in geom_pwc(aes(group = Treatment, method = "t_test", label =
## "p.adj.format")): Ignoring unknown aesthetics: method
```

```
print(mico.ques.ttest2)
```

```
## Warning: Removed 8 rows containing non-finite outside the scale range
## (`stat_boxplot()`).
```

```
## Warning: Removed 8 rows containing non-finite outside the scale range
## (`stat_pwc()`).
```

```
## Warning: Removed 8 rows containing missing values or values outside the scale range
## (`geom_point()`).
```




```
mico.ques.ttest3 <- mico.ques3 +
  geom_pwc(aes(group = MassperSeed_mg, method = "t_test", label = "p.adj.format"))
```

```
## Warning in geom_pwc(aes(group = MassperSeed_mg, method = "t_test", label =
## "p.adj.format")): Ignoring unknown aesthetics: method
```

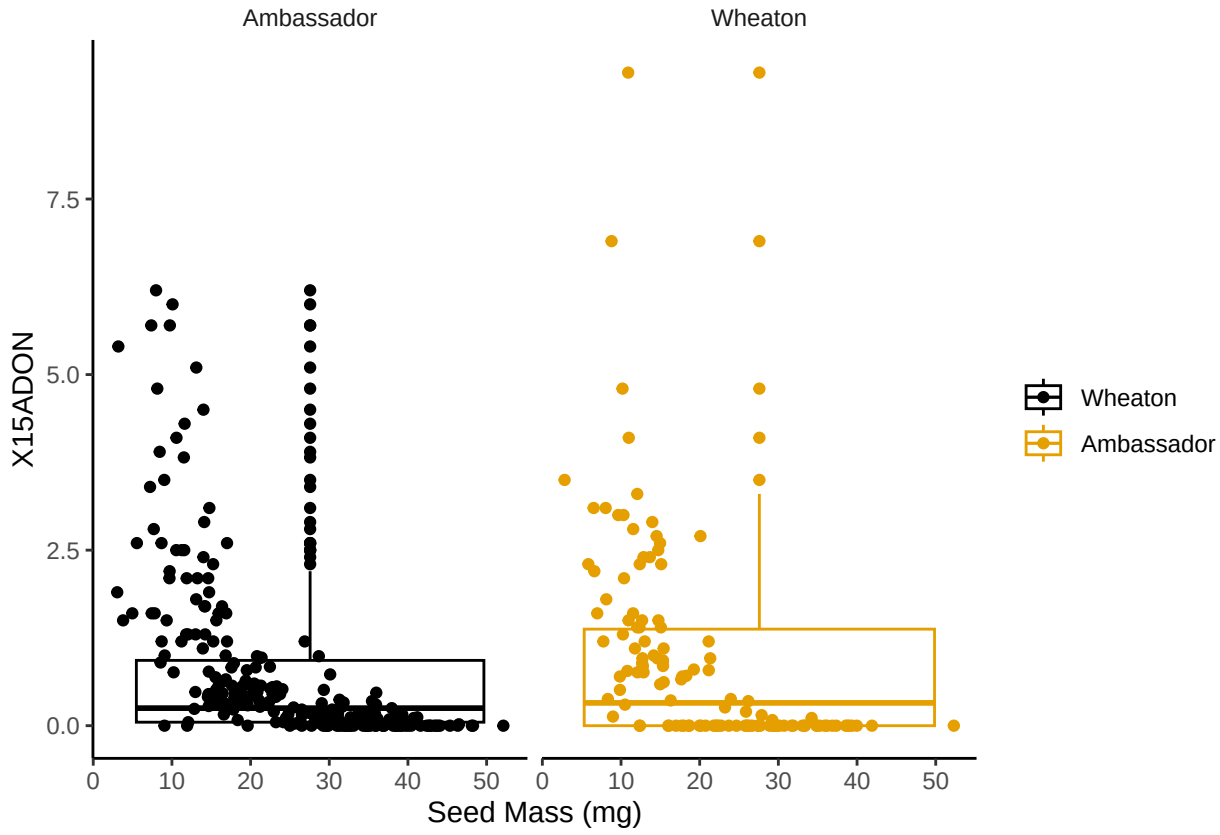
```
print(mico.ques.ttest3)
```

```
## Warning: Removed 2 rows containing missing values or values outside the scale range
## (`stat_boxplot()`).

## Warning: Removed 8 rows containing non-finite outside the scale range
## (`stat_boxplot()`).

## Warning: Removed 10 rows containing non-finite outside the scale range
## (`stat_pwc()`).

## Warning: Computation failed in `stat_pwc()`.
## Caused by error in `mutate()`:
## i In argument: `data = map(.data$data, .f, ...)`.
## Caused by error in `map()`:
## i In index: 1.
## Caused by error in `utils::combn()`:
## ! n < m
```

```
## Warning: Computation failed in `stat_pwc()`.
## Caused by error in `mutate()`:
## i In argument: `data = map(.data$data, .f, ...)`.
## Caused by error in `map()`:
## i In index: 1.
## Caused by error in `utils::combn()`:
## ! n < m
```

```
## Warning: `position_jitterdodge()` requires non-overlapping x intervals.
## `position_jitterdodge()` requires non-overlapping x intervals.
```

```
## Warning: Removed 10 rows containing missing values or values outside the scale range
## (`geom_point()`).
```




```
figure2 <- ggarrange(mico.ques.ttest1,
                     mico.ques.ttest2,
                     mico.ques.ttest3,
                     labels = "auto",
                     nrow = 3,
                     ncol = 1,
                     common.legend = T)
```

```
## Warning: Removed 8 rows containing non-finite outside the scale range
## (`stat_boxplot()`).
```

```
## Warning: Removed 8 rows containing non-finite outside the scale range
## (‘stat_pwc()‘).

## Warning: Removed 8 rows containing missing values or values outside the scale range
## (‘geom_point()‘).

## Warning: Removed 8 rows containing non-finite outside the scale range
## (‘stat_boxplot()‘).

## Warning: Removed 8 rows containing non-finite outside the scale range
## (‘stat_pwc()‘).

## Warning: Removed 8 rows containing missing values or values outside the scale range
## (‘geom_point()‘).

## Warning: Removed 8 rows containing non-finite outside the scale range
## (‘stat_boxplot()‘).

## Warning: Removed 8 rows containing non-finite outside the scale range
## (‘stat_pwc()‘).

## Warning: Removed 8 rows containing missing values or values outside the scale range
## (‘geom_point()‘).

## Warning: Removed 2 rows containing missing values or values outside the scale range
## (‘stat_boxplot()‘).

## Warning: Removed 8 rows containing non-finite outside the scale range
## (‘stat_boxplot()‘).

## Warning: Removed 10 rows containing non-finite outside the scale range
## (‘stat_pwc()‘).

## Warning: Computation failed in ‘stat_pwc()‘.
## Caused by error in ‘mutate()‘:
## i In argument: ‘data = map(.data$data, .f, ...)‘.
## Caused by error in ‘map()‘:
## i In index: 1.
## Caused by error in ‘utils::combn()‘:
## ! n < m

## Warning: Computation failed in ‘stat_pwc()‘.
## Caused by error in ‘mutate()‘:
## i In argument: ‘data = map(.data$data, .f, ...)‘.
## Caused by error in ‘map()‘:
## i In index: 1.
## Caused by error in ‘utils::combn()‘:
## ! n < m

## Warning: ‘position_jitterdodge()‘ requires non-overlapping x intervals.
## ‘position_jitterdodge()‘ requires non-overlapping x intervals.
```

```
## Warning: Removed 10 rows containing missing values or values outside the scale range
## (`geom_point()`).
```

```
print(figure2)
```