####Ploting for Fusarium wilt disease severity and FOL abundance in the rhizosphere soil transplant experiment#####

############# Fusarium wilt disease severity ################

library (ggplot2); library(ggpubr)

Data.FD <-read.table("Disease.FD.txt", row.names=1, sep="\t", header=T, blank.lines.skip=F, check.names=F)

p.DI.FD <- **ggplot**(Data.FD, aes(x= **factor**(Cultivar, levels=c('D72', 'Z19')) , y=DI,

fill=**factor**(Trt, levels=c('D72-Control', 'D72-Sys', 'Z19-Control', 'Z19-Sys')) )) +

**stat\_summary**(fun=mean, position=position\_dodge(), color="transparent", width=0.70, linewidth=0, geom="bar")+

**stat\_summary**(fun.data=mean\_se, geom="errorbar", position=position\_dodge(0.70),

width=0.40, linewidth =0.75, colour="black") +

scale\_y\_continuous (limits=c(0, 90), expand=c(0, 0.01)) +

scale\_fill\_manual(values = c("cyan", "cyan4", "chartreuse", "darkolivegreen"), guide= "none") +

labs(x=NULL, y="Disease severity") +

theme\_bw() +

theme(panel.grid=element\_blank(), axis.text=element\_text(size=9, color="black"), axis.title=element\_text(size=12) )

p.DI.FD

library(car); library(lsmeans); library(multcomp)

mydata <- Data.FD

model<-lm(DI ~ Trt.Cul, data= mydata); #summary(model); #Anova(model, type="II")

marginal=lsmeans(model, ~ Trt.Cul); #pairs(marginal, adjust="fdr")

cld(marginal, alpha=0.05, Letters=letters, adjust="fdr", reversed=T)  
Anova(model, type="II")

#########FOL abundance############################

Data.FD $FOL <- log10 (Data.FD$FOL)

p.DI.FOL <- **ggplot**(Data.FD, aes(x= **factor**(Cultivar, levels=c('D72', 'Z19')) , y=FOL,

fill=**factor**(Trt, levels=c('D72-Control', 'D72-Sys', 'Z19-Control', 'Z19-Sys')) )) +

**stat\_summary**(fun=mean, position=position\_dodge(), color="transparent", width=0.70, linewidth=0, geom="bar")+

**stat\_summary**(fun.data=mean\_se, geom="errorbar", position=position\_dodge(0.70),

width=0.40, linewidth =0.75, colour="black") +

scale\_fill\_manual(values = c("cyan", "cyan4", "chartreuse", "darkolivegreen"), guide= "none") +

labs(x=NULL, y="FOL abundance (log10 copies/g soil)") +

theme\_bw() +

theme(panel.grid=element\_blank(), axis.text=element\_text(size=9, color="black"), axis.title=element\_text(size=12) )

p.DI.FOL

p.DI.FOL.0 <- p.DI.FOL +coord\_cartesian(ylim = c(3.5, 5.1))

p.DI.FOL.0

library(car); library(lsmeans); library(multcomp)

mydata <- Data.FD

model<-lm(FOL ~ Trt.Cul, data= mydata); #summary(model); #Anova(model, type="II")

marginal=lsmeans(model, ~ Trt.Cul); #pairs(marginal, adjust="fdr")

cld(marginal, alpha=0.05, Letters=letters, adjust="fdr", reversed=T)