library(vegan)

#x=matrix(rnorm(10), nrow = 5)

?rnorm

xcor=runif(10,1,100)

ycor=runif(10,1,100)

x=cbind(xcor,ycor)

stomata\_arrange<- function(x,image\_area){

stomata\_num=dim(x)[1]

PD=spantree(dist(x))$dist/sum(spantree(dist(x))$dist)

constant=1/( dim(x)[1]-1)

stomata\_evenness=(sum(PD[PD<constant])+(dim(x)[1]-1-length(PD[PD<constant]))\*constant-constant)/(1-constant)

######

distance\_to\_gravity=c()

for (i in 1:dim(x)[1]){

distance\_to\_gravity[i] =dist(rbind(x[i,],colMeans(x)))

}

mean\_distance=mean(distance\_to\_gravity)

sum\_deviance=sum(distance\_to\_gravity-mean\_distance)

sum\_abs\_deviance=sum(abs(distance\_to\_gravity-mean\_distance))

stomata\_divergence=(sum\_deviance+mean\_distance)/(sum\_abs\_deviance+mean\_distance)

stomatal\_density=dim(x)[1]/image\_area

theoretical\_distance=1/(2\*(stomatal\_density^0.5))

nearest\_neighbor\_distance=c()

for ( ai in 1: dim(x)[1]){

nearest\_neighbor\_distance[ai]=sort(as.matrix(dist(x))[,ai])[2]

}

obseverd\_distance=sum(nearest\_neighbor\_distance)/dim(x)[1]

stomata\_aggregation=obseverd\_distance/ theoretical\_distance

return(cbind(stomata\_num,stomatal\_density,stomata\_evenness,stomata\_divergence,stomata\_aggregation))

}

library(openxlsx)

#setwd(choose.dir())

#getwd()

setwd("C:/LCC/写作-lcc/气孔概念性论文/正文/投稿版本")

arrange=c()

for (i in 1:9){

data=read.xlsx("nine species .xlsx",i,rowNames=F)

stomata\_arrange(data,342\*256)

arrange=rbind(arrange,stomata\_arrange(data,342\*256))

}

cor.test(arrange[,5],arrange[,4])