Rticles: Scientific Documents with Bookdown R Package

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# Abstract

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**Keywords:** Lorem, ipsum, dolor, sit amet, consectetur.

# Introduction

Lorem ipsum (**???**) dolor sit amet, consectetur adipiscing elit. Integer nec odio. Praesent libero. Sed cursus ante dapibus diam. Sed nisi. Nulla quis sem at nibh elementum imperdiet. Duis sagittis ipsum. Praesent mauris Fusce nec tellus sed augue semper porta. Mauris massa. Vestibulum lacinia arcu eget nulla Class aptent taciti sociosqu ad litora torquent per conubia nostra, per inceptos himenaeos. Curabitur sodales ligula in libero. Sed dignissim lacinia nunc (**???**, **???**).

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# Materials and Methods

The data was analyzed in the statistical software R (R Core Team [2019](#ref-R-base)). The germination analysis and graphics was carried out with the package GerminaR (**???**). Each variable was submitted at analysis of variance (ANOVA) and the mean comparison test used was Student-Newman Keuls (P<0.05)(**???**). For the multivariate analysis, the principal components analysis (PCA) and cluster hierarchical classification analysis (HCPC) will be used (**???**).

The vertical bars represent the means (±SE). The mean differences between the groups are represented by different capital letters and into the group different lowercase letters (SNK, p = 0.05) (**???**).

More information about multivarite analysis in <http://factominer.free.fr/index.html>. Explanation for intepretation and analysis:

**PCA:** <https://www.youtube.com/watch?v=pks8m2ka7Pk&feature=youtu.be>

**HCPC:** <https://www.youtube.com/watch?v=4XrgWmN9erg>

## Data set

The data set used for this analysis is available in the following link: [DATA SET](https://docs.google.com/spreadsheets/d/1QziIXGOwb8cl3GaARJq6Ez6aU7vND_UHKJnFcAKx0VI/edit#gid=137089581)

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# Results

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# load data  
  
library(GerminaR)   
  
fb <- prosopis %>%   
 dplyr::mutate\_at(vars(rep, nacl, temp), as.character)  
  
# germination analysis  
  
gsm <- ger\_summary(SeedN = "seeds", evalName = "D", data = fb)  
str(gsm)  
  
# analisys of variance  
  
av <- aov(formula = GRP ~ nacl\*temp + rep, data = gsm)  
summary(av)  
  
# mean comparision test  
  
mc <- ger\_testcomp(aov = av, comp = c("temp", "nacl"), type = "snk")

## Class aptent taciti

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# Discussion

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# Conclusions

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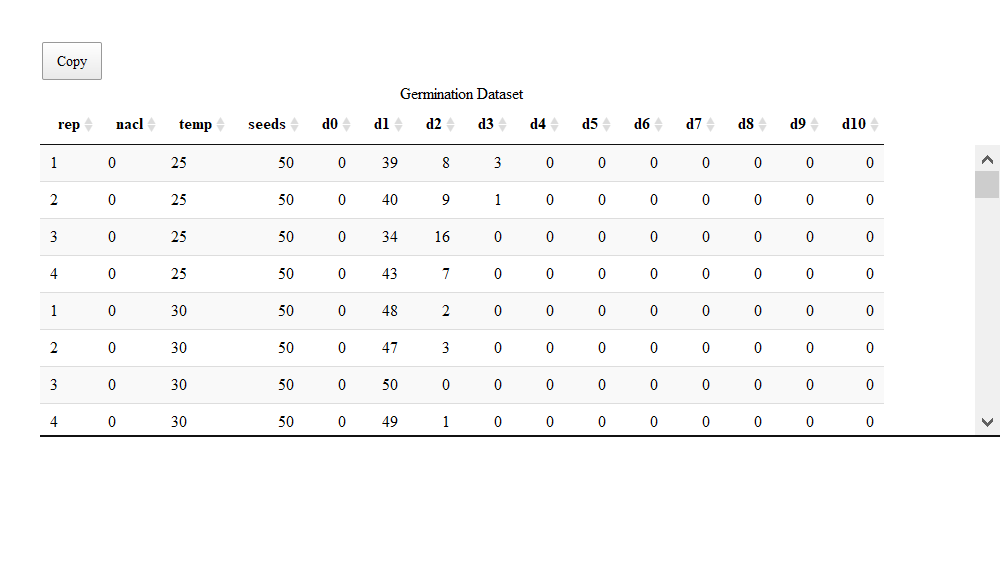
# Acknowledgments

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# Tables

Table 1: Main functions in the GerminaR R package for seed germination variables and graphical analysis.

|  |  |
| --- | --- |
| Function | Description |
| ger\_summary | Calculate ten germination indices maintaining the factors levels for analysis of variance |
| ger\_intime | Calculates and displays cumulative germination data. |
| fplot | Function that allows to graphic the results in bar or line plot. |
| GerminaQuant | Runs the interactive application in offline mode for use on a personal computer. |
| prosopis | Dataset with germination experiment in *Prosopis juliflor* seeds under under different osmotic potentials and temperatures. |



# Figures



Figure 1: Germination experiment with *Prosopis juliflor* under different osmotic potentials and temperatures. A) Bar graph with germination percentage in a factorial analisys. B) Line graph from cumulative germination under different osmotic potentials.



Figure 2: Plant of *Jatropha curcas*. A) Foliage, B) Leaf, C) Fruit.

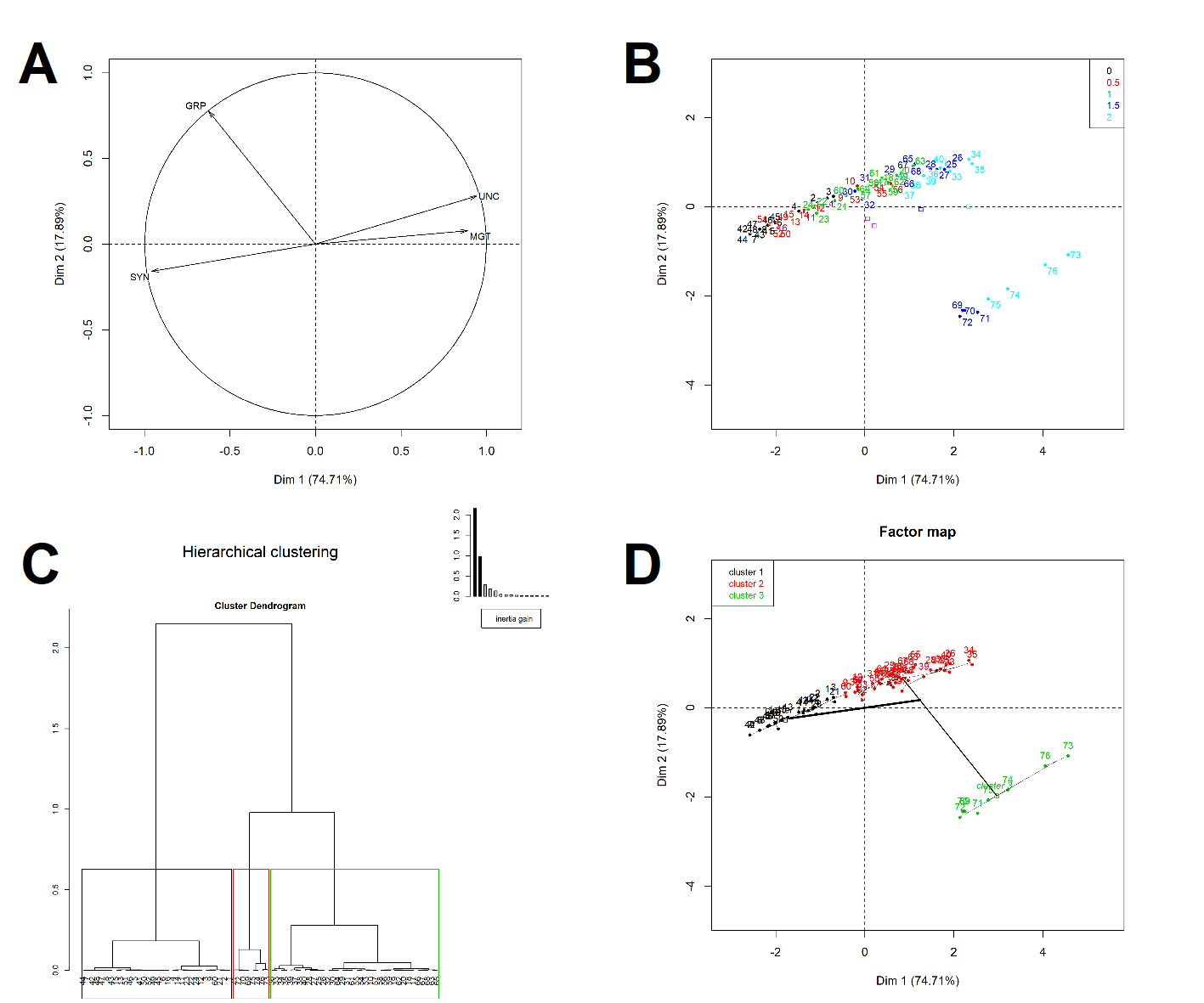


Figure 3: Multivariate Analysis: Principal component Analysis and Hierarchical Clustering Analysis.

# Anexos

# References

R Core Team. 2019. R: A Language and Environment for Statistical Computing (en línea). Vienna, Austria, R Foundation for Statistical Computing. Disponible en <https://www.R-project.org/>.