Introduction to **agricolae**

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Contents

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1 Introduction

The package **agricolae** offers a broad functionality in the design of experiments, especially for experiments in agriculture and improvements of plants, which can also be used for other purposes. It contains the following designs: lattice, alpha, cyclic, balanced incomplete block designs, complete randomized blocks, Latin, Graeco-Latin, augmented block designs, split plot and strip plot. It also has several procedures of experimental data analysis, such as the comparisons of treatments of Waller-Duncan, Bonferroni, Duncan, Student-Newman-Keuls, Scheffe, Ryan, Einot and Gabriel and Welsch multiple range test or the classic LSD and Tukey; and non-parametric comparisons, such as Kruskal-Wallis, Friedman, Durbin, Median and Waerden, stability analysis, and other procedures applied in genetics, as well as procedures in biodiversity and descriptive statistics, Mendiburu (2009)

1.1 Installation

The main program of **R** should be already installed in the platform of your computer *(Windows, Linux or MAC)*. If it is not installed yet, you can download it from the R project https://www.r-project.org/ of a repository CRAN.

```
install.packages("agricolae")
```

Once the `agricolae` package is installed, it needs to be made accessible to the current **R** session by the command:

```
library(agricolae)
```

For online help facilities or the details of a particular command (such as the function `waller.test`) you can type:

```
help(package="agricolae")
help(waller.test)
```

For a complete functionality, `agricolae` requires other packages

MASS:	for the generalized inverse used in the function `PBIB.test`
nlme:	for the methods REML and LM in `PBIB.test`
klaR:	for the function `triplot` used in the function `AMMI`
cluster:	for the use of the function `consensus`
AlgDesign:	for the balanced incomplete block design `design.bib`

1.2 Use in R

Since **agricolae** is a package of functions, these are operational when they are called directly from the console of **R** and are integrated to all the base functions of **R**. The following orders are frequent:

```
detach(package:agricolae) # detach package agricole
library(agricolae) # Load the package to the memory
designs<-apropos("design")
print(designs[substr(designs,1,6)=="design"], row.names=FALSE)
```

```
 [1] "design.ab"      "design.alpha"   "design.bib"     "design.crd"
 [5] "design.cyclic"  "design.dau"     "design.graeco"  "design.lattice"
 [9] "design.lsd"     "design.rcbd"    "design.split"   "design.strip"
[13] "design.youden"
```

```
For the use of symbols that do not appear in the keyboard in Spanish, such as:

~, [, ], &, ^, |. <, >, {, }, \% or others, use the table ASCII code.
```

```
library(agricolae) # Load the package to the memory:
```

In order to continue with the command line, do not forget to close the open windows with any R order. For help:

```
help(graph.freq)
? (graph.freq)
str(normal.freq)
example(join.freq)
```

1.3 Data set in agricolae

```
A<-as.data.frame(data(package="agricolae")$results[,3:4])
A[,2]<-paste(substr(A[,2],1,35),"..",sep=".")
head(A)
```

```
            Item                                  Title
1            CIC    Data for late blight of potatoes...
2        Chz2006         Data amendment Carhuaz 2006...
3  ComasOxapampa         Data AUDPC Comas - Oxapampa...
4             DC Data for the analysis of carolina g...
```

```
5 Glycoalkaloids                 Data Glycoalkaloids...
6        Hco2006         Data amendment Huanuco 2006...
```

References

Mendiburu, F. de (2009). Una herramienta de análisis estadístico para la investigación agrícola.