Lab-4.R

maria

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```
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# Fecha: 11.03.2021
# Principios de Estadistica
# Laboratorio 4


# Importar datos ------------------------------------------------------

c1.url <-
paste0("https://raw.githubusercontent.com/MariaRamirez12/PRINCIPIOS_ESTADISTICA2021/main/DBH_1.cvs.csv")

inventario <- read.csv(c1.url)
head(inventario)

##   Arbol Fecha Especie Posicion Vecinos Diametro Altura
## 1     1    12       F        C       4     15.3  14.78
## 2     2    12       F        D       3     17.8  17.07
## 3     3     9       C        D       5     18.2  18.28
## 4     4     9       H        S       4      9.7   8.79
## 5     5     7       H        I       6     10.8  10.18
## 6     6    10       C        I       3     14.1  14.90

tail(inventario)

##    Arbol Fecha Especie Posicion Vecinos Diametro Altura
## 45    45    24       C        I       4     10.2  13.93
## 46    46    23       F        I       3     14.4  12.68
## 47    47    24       C        S       6      7.7  10.00
## 48    48    25       C        S       5      9.9   8.69
## 49    49    25       H        D       1     20.4  16.73
## 50    50    24       H        D       3     20.9  16.25

# Funciones para revisar el conjunto de datos -----------------------------

str(inventario)

## 'data.frame':    50 obs. of  7 variables:
##  $ Arbol   : int  1 2 3 4 5 6 7 8 9 10 ...
##  $ Fecha   : int  12 12 9 9 7 10 10 12 16 14 ...
##  $ Especie : chr  "F" "F" "C" "H" ...
```
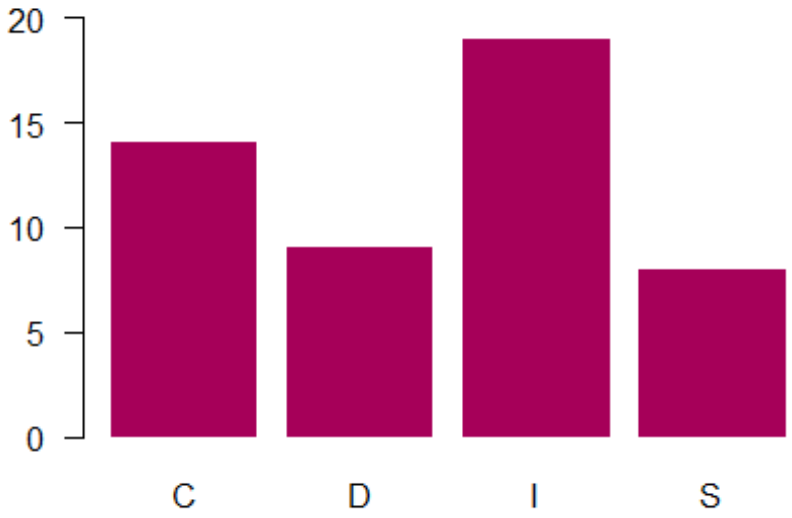
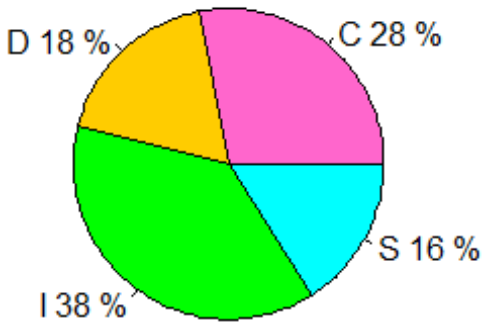

```
##  $ Posicion: chr  "C" "D" "D" "S" ...
##  $ Vecinos : int  4 3 5 4 6 3 2 2 4 5 ...
##  $ Diametro: num  15.3 17.8 18.2 9.7 10.8 14.1 17.1 20.6 18.2 16.1 ...
##  $ Altura  : num  14.78 17.07 18.28 8.79 10.18 ...

dim(inventario)

## [1] 50  7

head(inventario)

##   Arbol Fecha Especie Posicion Vecinos Diametro Altura
## 1     1    12       F        C       4     15.3  14.78
## 2     2    12       F        D       3     17.8  17.07
## 3     3     9       C        D       5     18.2  18.28
## 4     4     9       H        S       4      9.7   8.79
## 5     5     7       H        I       6     10.8  10.18
## 6     6    10       C        I       3     14.1  14.90

tail(inventario)

##    Arbol Fecha Especie Posicion Vecinos Diametro Altura
## 45    45    24       C        I       4     10.2  13.93
## 46    46    23       F        I       3     14.4  12.68
## 47    47    24       C        S       6      7.7  10.00
## 48    48    25       C        S       5      9.9   8.69
## 49    49    25       H        D       1     20.4  16.73
## 50    50    24       H        D       3     20.9  16.25

names(inventario)

## [1] "Arbol"    "Fecha"    "Especie"  "Posicion" "Vecinos"  "Diametro"
"Altura"

colnames(inventario)

## [1] "Arbol"    "Fecha"    "Especie"  "Posicion" "Vecinos"  "Diametro"
"Altura"

names(inventario[  ,4:7])

## [1] "Posicion" "Vecinos"  "Diametro" "Altura"

summary(inventario)

##      Arbol           Fecha         Especie            Posicion
##  Min.   : 1.00   Min.   : 2.00   Length:50          Length:50
##  1st Qu.:13.25   1st Qu.:12.00   Class :character   Class :character
##  Median :25.50   Median :16.00   Mode  :character   Mode  :character
##  Mean   :25.50   Mean   :15.94
##  3rd Qu.:37.75   3rd Qu.:20.75
##  Max.   :50.00   Max.   :25.00
##     Vecinos        Diametro         Altura
```

```
##  Min.   :0.00   Min.   : 7.70   Min.   : 8.47
##  1st Qu.:2.25   1st Qu.:13.88   1st Qu.:11.78
##  Median :3.00   Median :15.70   Median :14.24
##  Mean   :3.34   Mean   :15.79   Mean   :13.94
##  3rd Qu.:4.00   3rd Qu.:18.10   3rd Qu.:16.05
##  Max.   :6.00   Max.   :22.70   Max.   :21.46

is.factor(inventario$Especie)

## [1] FALSE

inventario$Especie <- factor(inventario$Especie)
is.factor(inventario$Especie)

## [1] TRUE

summary(inventario)

##      Arbol           Fecha       Especie   Posicion           Vecinos
##  Min.   : 1.00   Min.   : 2.00   C:22    Length:50          Min.   :0.00
##  1st Qu.:13.25   1st Qu.:12.00   F:14    Class :character   1st Qu.:2.25
##  Median :25.50   Median :16.00   H:14    Mode  :character   Median :3.00
##  Mean   :25.50   Mean   :15.94                              Mean   :3.34
##  3rd Qu.:37.75   3rd Qu.:20.75                              3rd Qu.:4.00
##  Max.   :50.00   Max.   :25.00                              Max.   :6.00
##     Diametro         Altura
##  Min.   : 7.70   Min.   : 8.47
##  1st Qu.:13.88   1st Qu.:11.78
##  Median :15.70   Median :14.24
##  Mean   :15.79   Mean   :13.94
##  3rd Qu.:18.10   3rd Qu.:16.05
##  Max.   :22.70   Max.   :21.46

is.factor(inventario$Posicion)

## [1] FALSE

inventario$Posicion <- factor(inventario$Posicion)
is.factor(inventario$Posicion)

## [1] TRUE

summary(inventario)

##      Arbol           Fecha       Especie Posicion    Vecinos
##  Min.   : 1.00   Min.   : 2.00   C:22    C:14     Min.   :0.00
##  1st Qu.:13.25   1st Qu.:12.00   F:14    D: 9     1st Qu.:2.25
##  Median :25.50   Median :16.00   H:14    I:19     Median :3.00
##  Mean   :25.50   Mean   :15.94           S: 8     Mean   :3.34
##  3rd Qu.:37.75   3rd Qu.:20.75                    3rd Qu.:4.00
##  Max.   :50.00   Max.   :25.00                    Max.   :6.00
##     Diametro         Altura
```

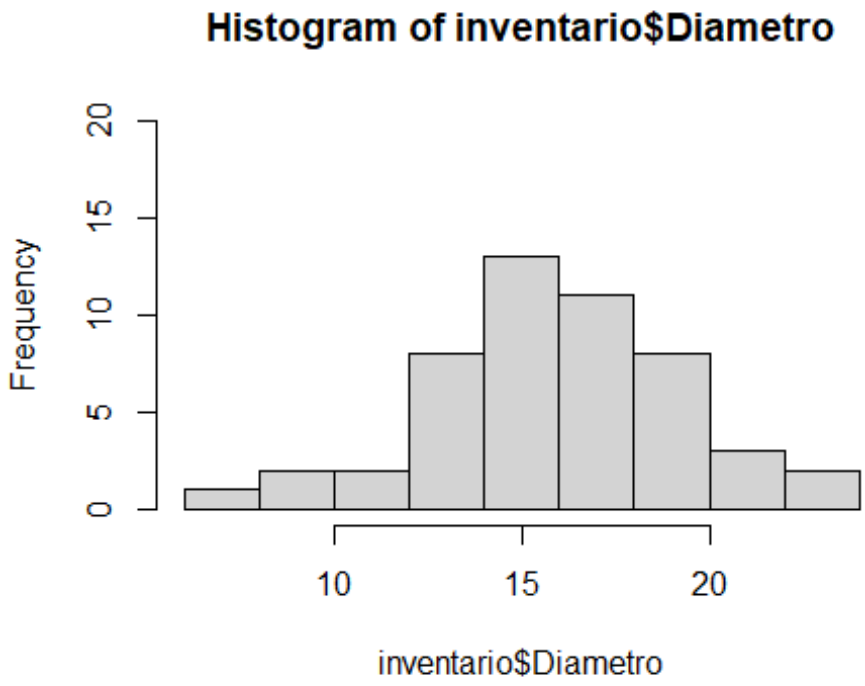
```
##  Min.   : 7.70   Min.   : 8.47
##  1st Qu.:13.88   1st Qu.:11.78
##  Median :15.70   Median :14.24
##  Mean   :15.79   Mean   :13.94
##  3rd Qu.:18.10   3rd Qu.:16.05
##  Max.   :22.70   Max.   :21.46

# Tabla de frecuencias ----------------------------------------------------

freq.pos <- table(inventario$Posicion)
freq.pos

##
##  C  D  I  S
## 14  9 19  8

# Frecuencia relativa -----------------------------------------------------

prop.pos <- freq.pos / sum(freq.pos)
prop.pos

##
##    C    D    I    S
## 0.28 0.18 0.38 0.16

# Frecuencia en porcentajes -----------------------------------------------

prop.porce <- prop.pos * 100
prop.porce

##
##  C  D  I  S
## 28 18 38 16

# Representacion grafica para variables cualitativas ----------------------
--------------------------

barplot(freq.pos, col = "#a60059", border = NA, las = 1, ylim = c(0,20),
cer.names = 0.7)

## Warning in plot.window(xlim, ylim, log = log, ...): "cer.names" is not a
## graphical parameter

## Warning in axis(if (horiz) 2 else 1, at = at.l, labels = names.arg, lty =
## axis.lty, : "cer.names" is not a graphical parameter

## Warning in title(main = main, sub = sub, xlab = xlab, ylab = ylab, ...):
## "cer.names" is not a graphical parameter

## Warning in axis(if (horiz) 1 else 2, cex.axis = cex.axis, ...):
"cer.names" is
## not a graphical parameter
```



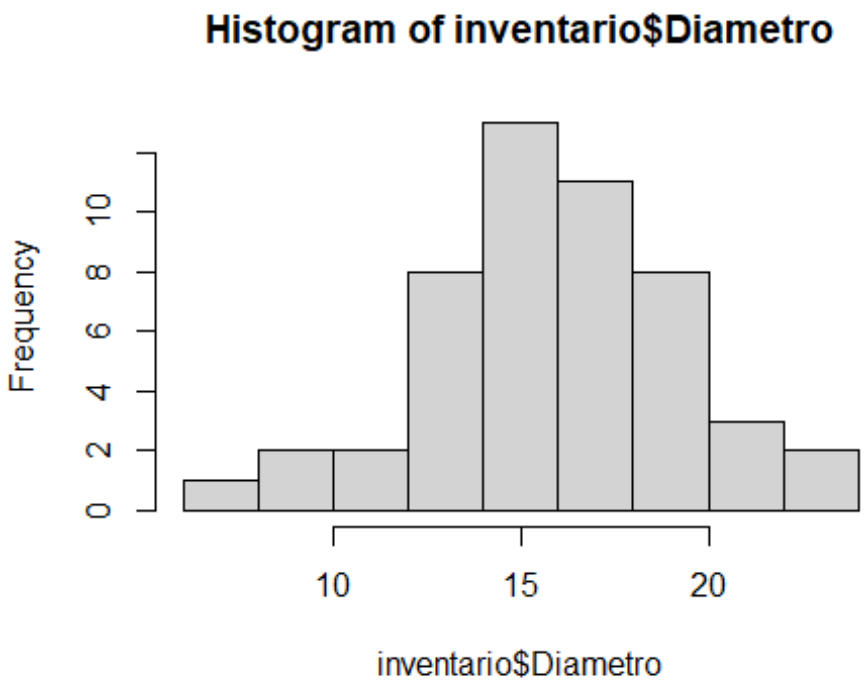

```
pie(freq.pos, labels = paste(levels(inventario$Posicion),
round(prop.porce,2), "%"),
    col = c("#FF66CC", "#FFCC00", "#00FF00", "#00FFFF"))
```



```r
# Representacion grafica para variables cuantitativas  --------------------

hist(inventario$Diametro, ylim = c(0,20))
```




```r
his.dim <- hist(inventario$Diametro)
```

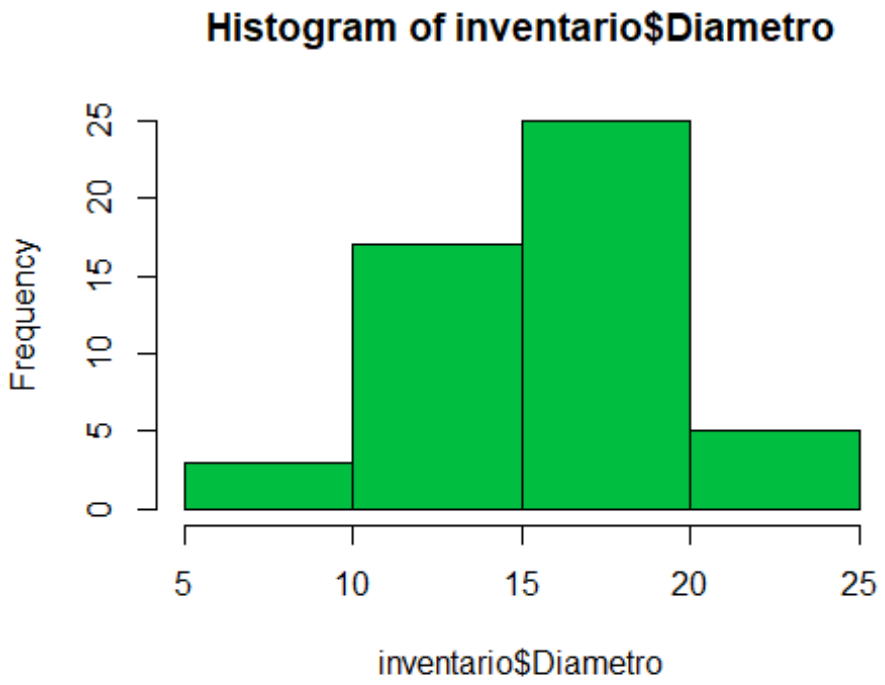



```
his.dim
```

```
## $breaks
##  [1]  6  8 10 12 14 16 18 20 22 24
##
## $counts
## [1]  1  2  2  8 13 11  8  3  2
##
## $density
## [1] 0.01 0.02 0.02 0.08 0.13 0.11 0.08 0.03 0.02
##
## $mids
## [1]  7  9 11 13 15 17 19 21 23
##
## $xname
## [1] "inventario$Diametro"
##
## $equidist
## [1] TRUE
##
## attr(,"class")
## [1] "histogram"
```

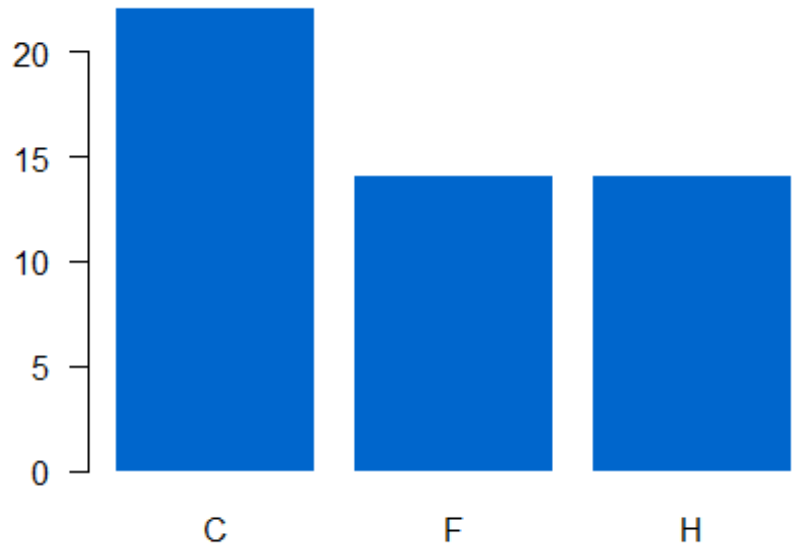
```
hist(inventario$Diametro,
     breaks = c(5, 10, 15, 20, 25),
     col = "#00BF40")
```

```r
hist_3 <- hist(inventario$Diametro,
               breaks = c(5,10,15,20,25),
               col = "#00BF40")
```

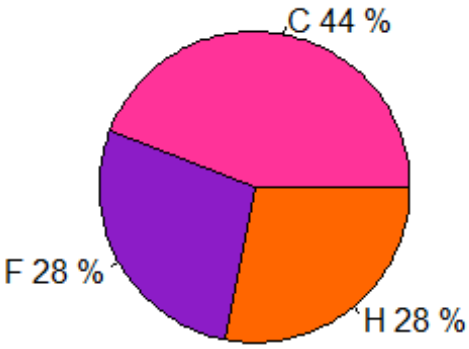



```r
# Datos especie ------------------------------------------------------------

is.factor(inventario$Especie)

## [1] TRUE

inventario$Especie <- factor(inventario$Especie)
is.factor(inventario$Especie)

## [1] TRUE

summary(inventario)

##      Arbol           Fecha       Especie Posicion    Vecinos
##  Min.   : 1.00   Min.   : 2.00   C:22    C:14     Min.   :0.00
##  1st Qu.:13.25   1st Qu.:12.00   F:14    D: 9     1st Qu.:2.25
##  Median :25.50   Median :16.00   H:14    I:19     Median :3.00
##  Mean   :25.50   Mean   :15.94           S: 8     Mean   :3.34
##  3rd Qu.:37.75   3rd Qu.:20.75                    3rd Qu.:4.00
##  Max.   :50.00   Max.   :25.00                    Max.   :6.00
##     Diametro         Altura
##  Min.   : 7.70   Min.   : 8.47
##  1st Qu.:13.88   1st Qu.:11.78
##  Median :15.70   Median :14.24
```

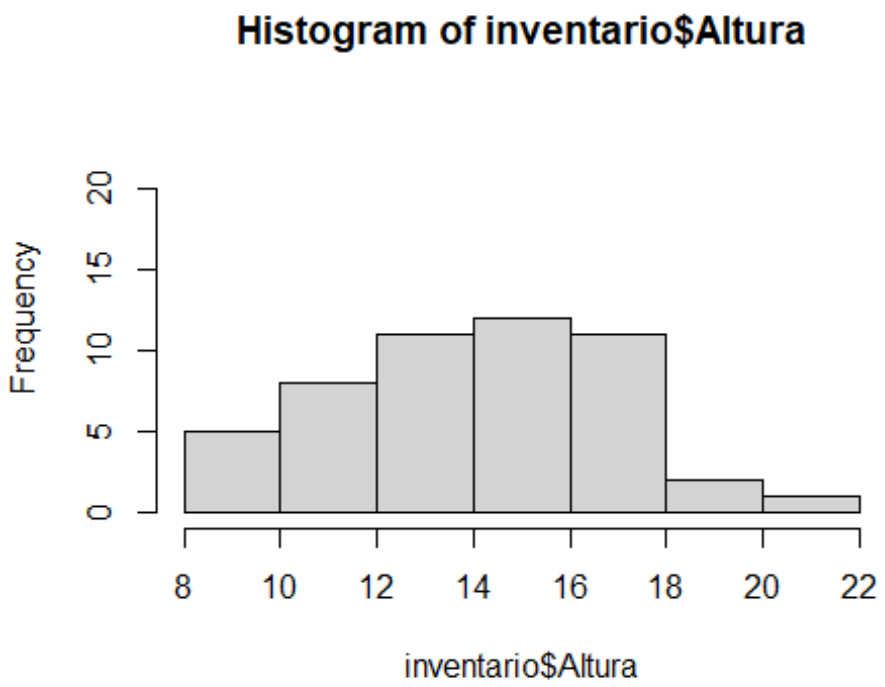
```
##  Mean   :15.79   Mean   :13.94
##  3rd Qu.:18.10   3rd Qu.:16.05
##  Max.   :22.70   Max.   :21.46

# Tabla de frecunecia Especie ----------------------------------------------

freq.pos2 <- table(inventario$Especie)
freq.pos2

##
##  C  F  H
## 22 14 14

# Frecuencia relativa "Especie" ----------------------------------------------

prop.pos2 <- freq.pos2 / sum(freq.pos2)
prop.pos2

##
##    C    F    H
## 0.44 0.28 0.28

# Frecuencia porcentajes "Especie" ----------------------------------------------

prop.porce2 <- prop.pos2 * 100
prop.porce2

##
##  C  F  H
## 44 28 28

# Representacion grafica para variable especie ----------------------------

barplot(freq.pos2, col = "#0066CC", border = NA, las = 1, ylim = c(0,20),
cer.names = 0.7)

## Warning in plot.window(xlim, ylim, log = log, ...): "cer.names" is not a
## graphical parameter

## Warning in axis(if (horiz) 2 else 1, at = at.l, labels = names.arg, lty =
## axis.lty, : "cer.names" is not a graphical parameter

## Warning in title(main = main, sub = sub, xlab = xlab, ylab = ylab, ...):
## "cer.names" is not a graphical parameter

## Warning in axis(if (horiz) 1 else 2, cex.axis = cex.axis, ...):
"cer.names" is
## not a graphical parameter
```



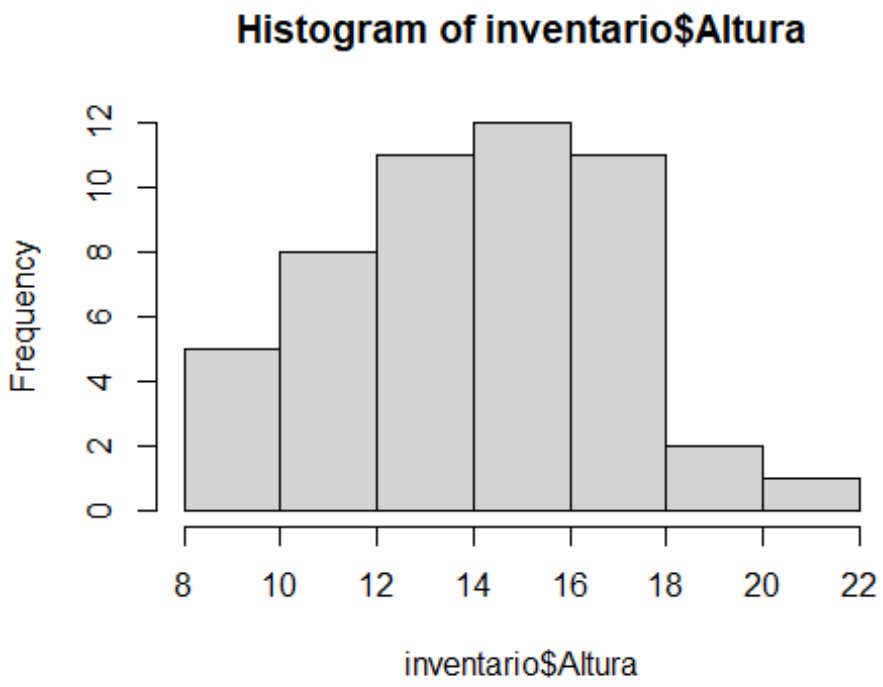

```
pie(freq.pos2, labels = paste(levels(inventario$Especie),
round(prop.porce2,2), "%"),
    col = c("#FF3399", "#8c1cc7", "#FF6600", "#FFFF00"))
```



```r
# Representacion grafica "Altura" ---------------------------------------

hist(inventario$Altura, ylim = c(0,24))
```



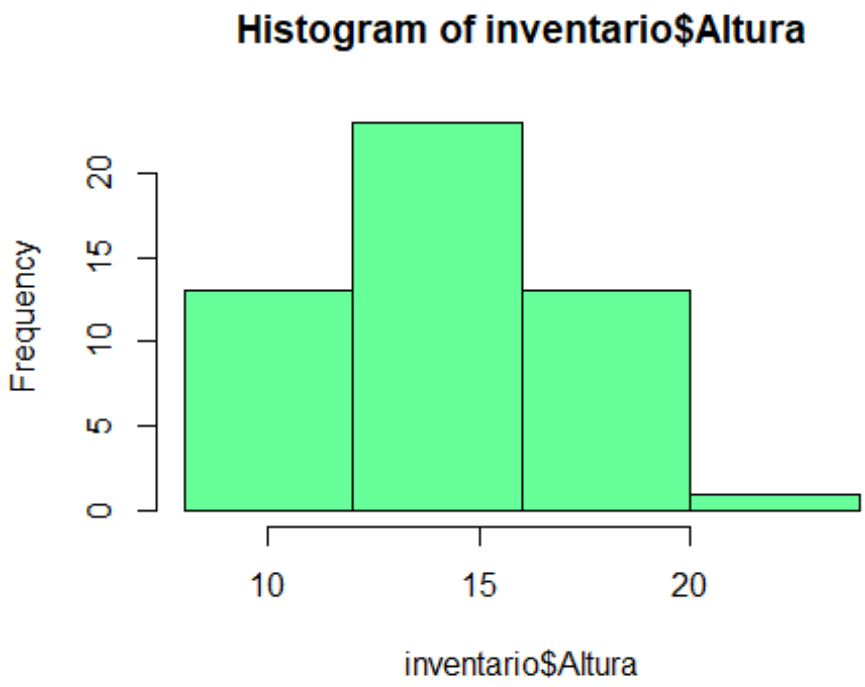

```r
his.alt <- hist(inventario$Altura)
```




```
his.alt
```

```
## $breaks
## [1]  8 10 12 14 16 18 20 22
##
## $counts
## [1]  5  8 11 12 11  2  1
##
## $density
## [1] 0.05 0.08 0.11 0.12 0.11 0.02 0.01
##
## $mids
## [1]  9 11 13 15 17 19 21
##
## $xname
## [1] "inventario$Altura"
##
## $equidist
## [1] TRUE
##
## attr(,"class")
## [1] "histogram"
```

```
hist(inventario$Altura, breaks = c(8, 12, 16, 20, 24), col = "#66FF99")
```




```r
hist_4 <- hist(inventario$Altura,
               breaks = c(8, 12, 16, 20, 24),
               col = "#FFCC66")
```