Producto 4. Ejercicio 3 (ejemplo de solución)

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Cargar datos fuente

```
arbolado <- read.csv("datos/Datos_del_censo.csv")
dim(arbolado)
```

```
## [1] 4785    8
```

Generar lista de esecies de árboles preliminar

```
lista_especies <- unique(as.character(arbolado$Especie))
length(lista_especies)
```

```
## [1] 150
```

Definir funciones auxiliares

Paso opcional, se requiere para depuración de nombres de especies

```
# función para quitar los espacios en principio y al final de una cadena de texto
trim <- function(x) gsub("^\\s+|\\s+$", "", x)

# función para poner primera letra de una cadena de texto como mayuscula y otras como minuscu
las
simpleCap <- function(x) {
    paste(toupper(substr(x, 1, 1)), tolower(substr(x, 2, nchar(x))), sep="")
}
```

Depurar nombres de las especies de árboles

Paso opcional, se requiere para depuración de nombres de las especies

```
arbolado$Especie <- sapply(as.character(arbolado$Especie), simpleCap)
arbolado$Especie <- sapply(arbolado$Especie, trim)

lista_depurada_especies <- unique(arbolado$Especie)
arbolado$Especie <- as.factor(arbolado$Especie)
length(lista_depurada_especies)
```

```
## [1] 144
```

Generación de las graficas por especie de acuerdo con las especificaciones del ejercicio 3

```
for(i in 1:length(lista_depurada_especies)){

    # seleccionar registros que corresponden a una especie determinada
    tabla_especie <- arbolado[arbolado$Especie == lista_depurada_especies[i],]

    # verificar que número de árboles de la especie es mayór que 50
    if(dim(tabla_especie)[1] > 50) {

       # imprimir nombre de especie y número de árboles (utilizando formateo HTML)
       # paso opcional, se puede sustituir con cat(lista_depurada_especies[i])
       cat("<p style=\"page-break-before: always\">")
       cat(paste("<h3><i>",lista_depurada_especies[i],"</i></h3>"))
       cat(paste('<pre class="r"><code>',"n =",dim(tabla_especie)[1],"</code></pre>"))


       # especificar lienzo para cuatro de graficas 2 x 2
       # paso opcional, se requiere para colocar catro graficas en un solo cuadro
       par(mfcol = c(2, 2))

       # dibujar cuatro gráficas por especie
       boxplot(tabla_especie$Alt,
          col = "coral", main = "Estatura de árboles", ylab = "Estatura (m)")

       boxplot(tabla_especie$DTr,
          col = "lightblue", main = "Diametro del tronco", ylab = "Diametro de tronco (cm)")

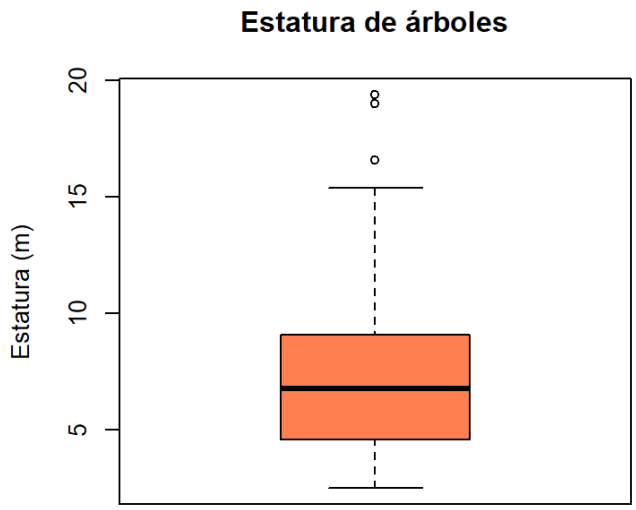

        hist(tabla_especie$Alt,
          col = "coral",  main = "Histograma de estatura de árboles",
          ylab = "Número de árboles", xlab = "Rangos de estatura (m)")

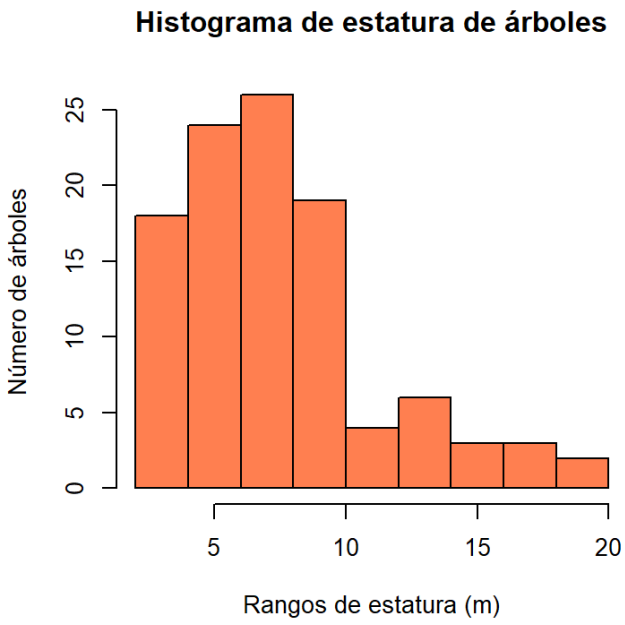
        hist(tabla_especie$DTr,
          col = "lightblue",  main = "Histograma de DAP",
          ylab = "Número de árboles", xlab = "Rangos de DAP (cm)")
        cat("</p>")

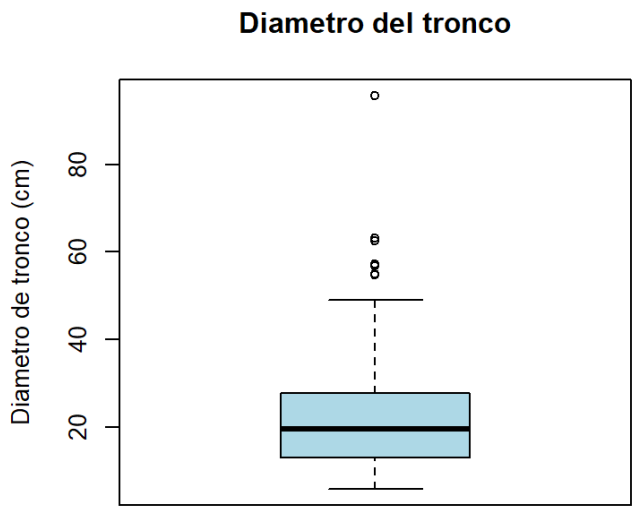
    }
}
```

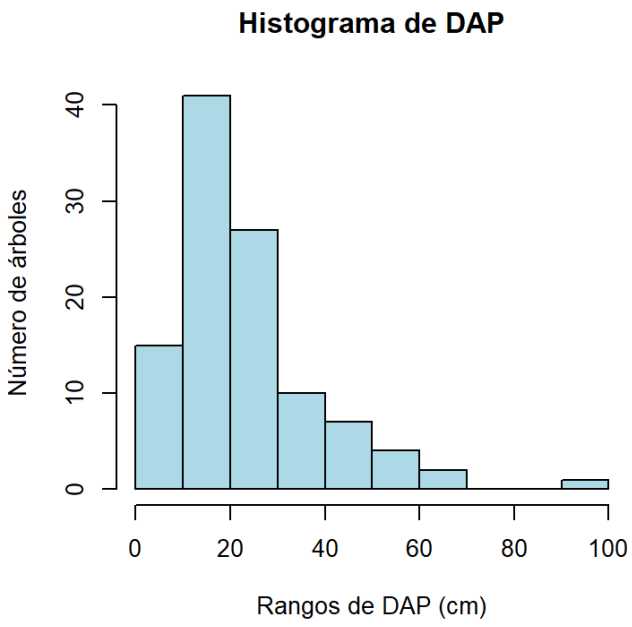
Pithecellobium dulce

```
n = 107
```





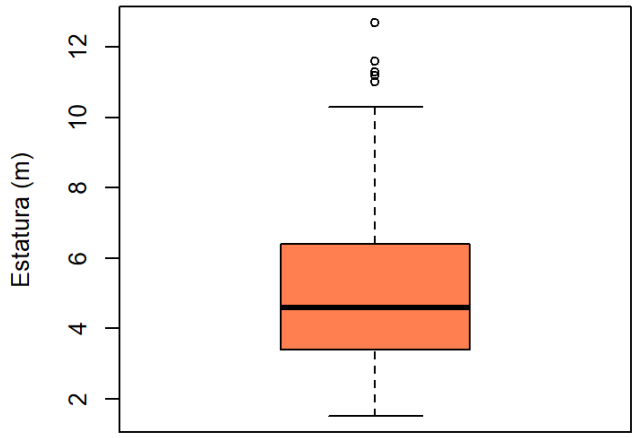




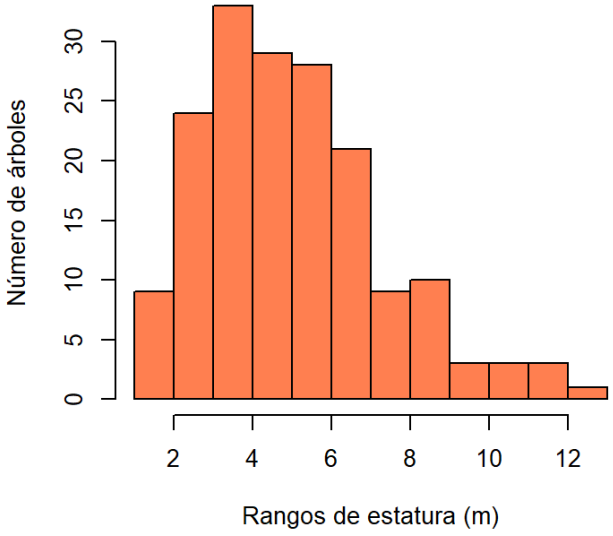
Acacia macracantha

```
n = 176
```

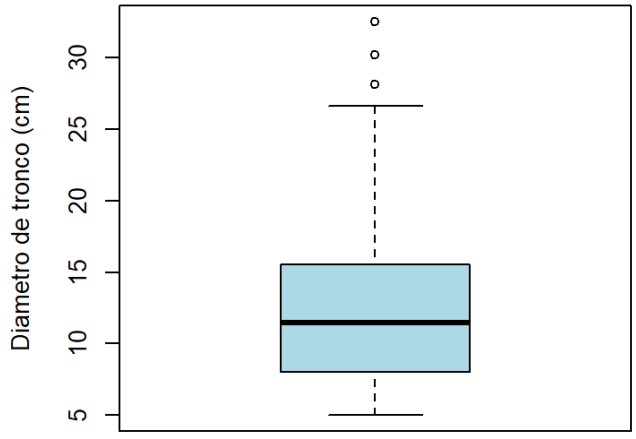
Estatura de árboles



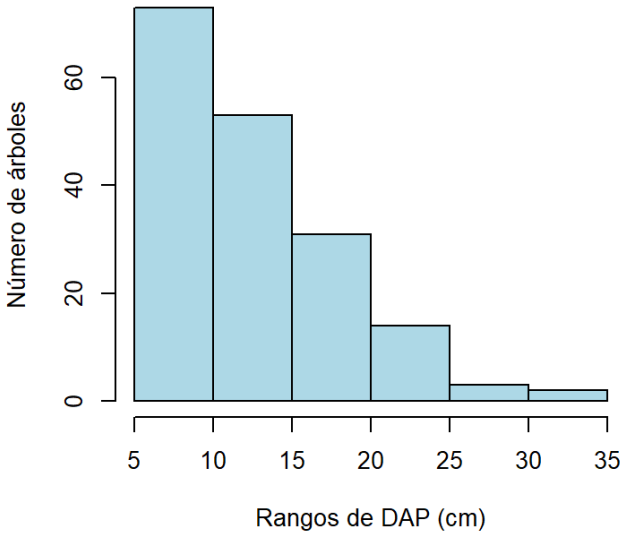
Histograma de estatura de árboles



Diametro del tronco

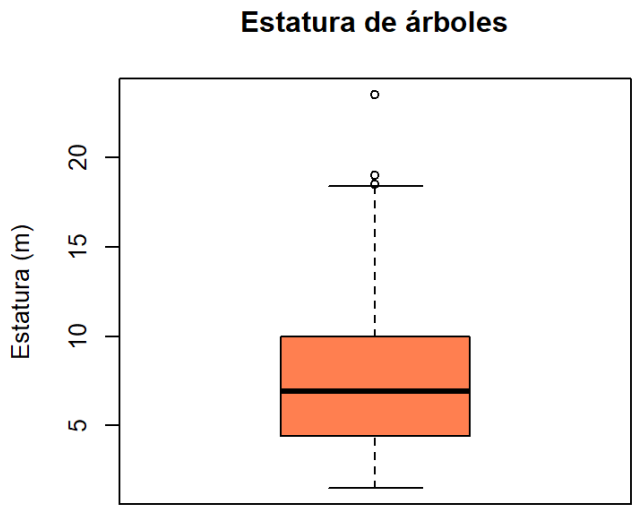


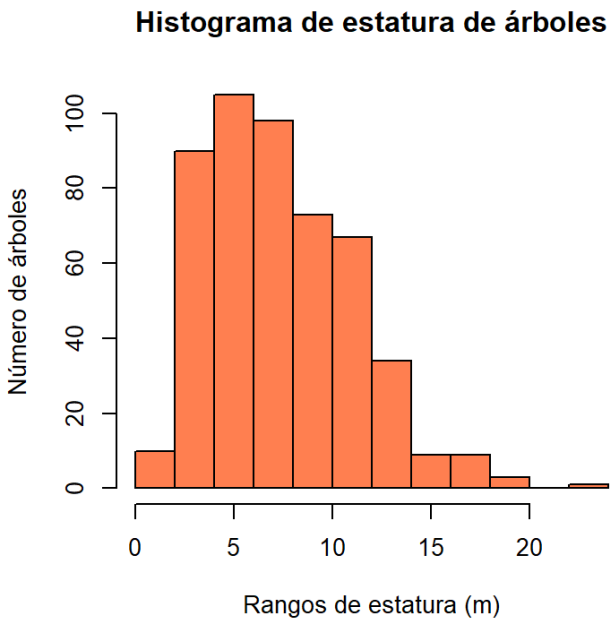
Histograma de DAP

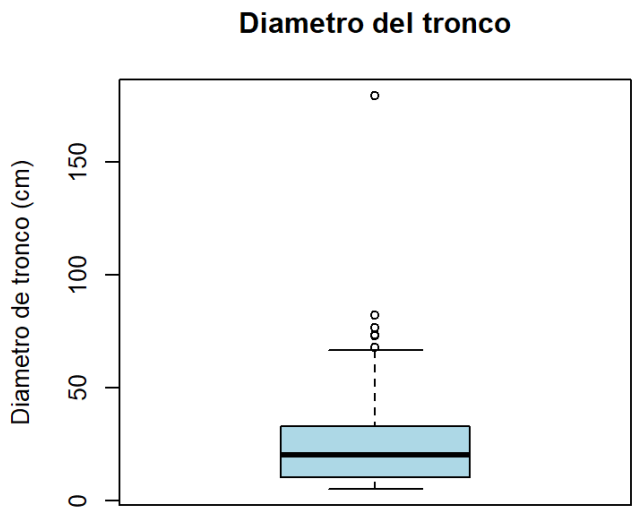


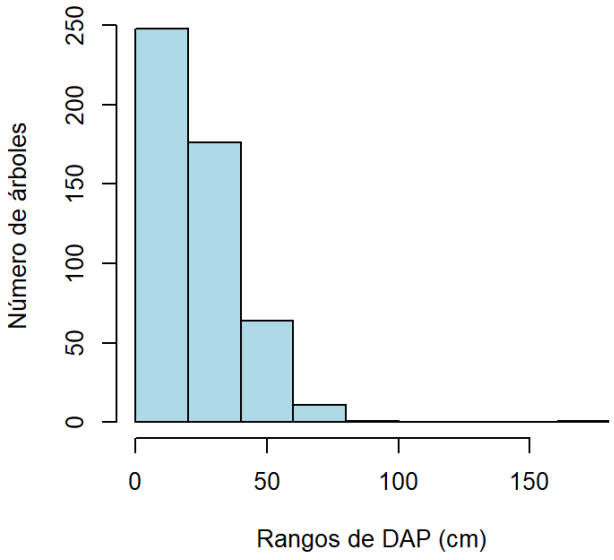
Pithecellobium lanceolatum

```
n = 501
```



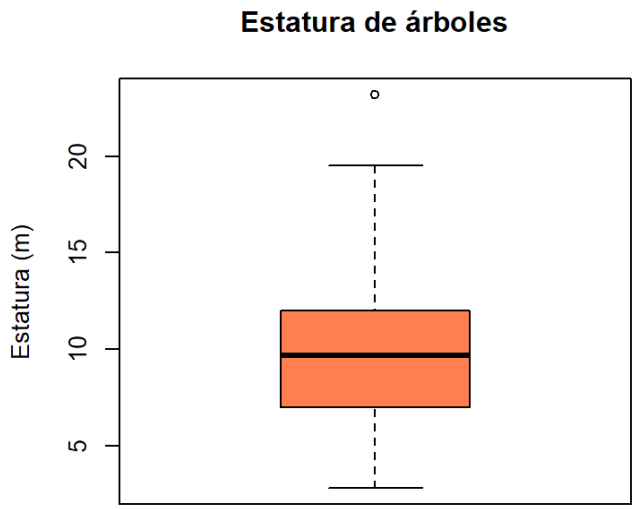


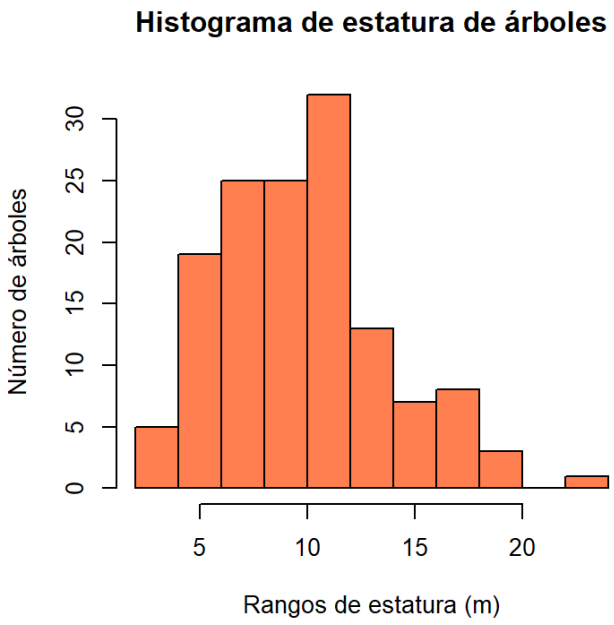


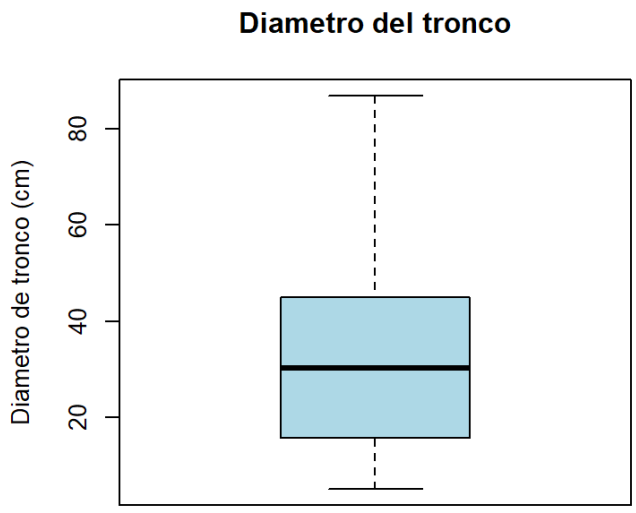


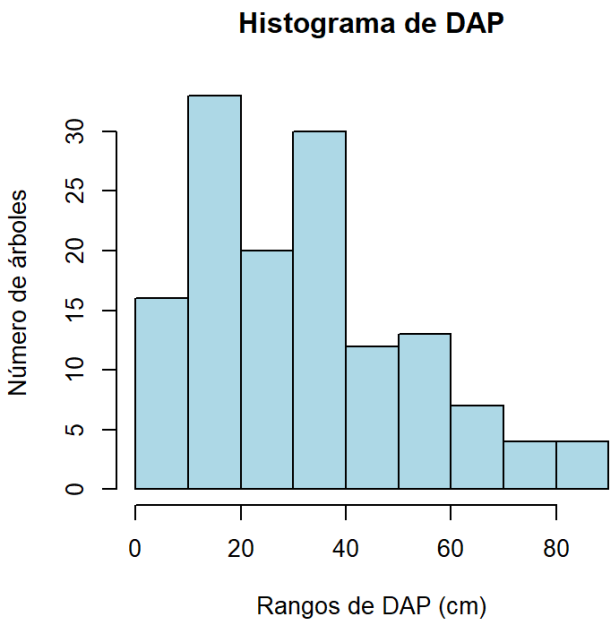
Salix bonplandiana

```
n = 139
```



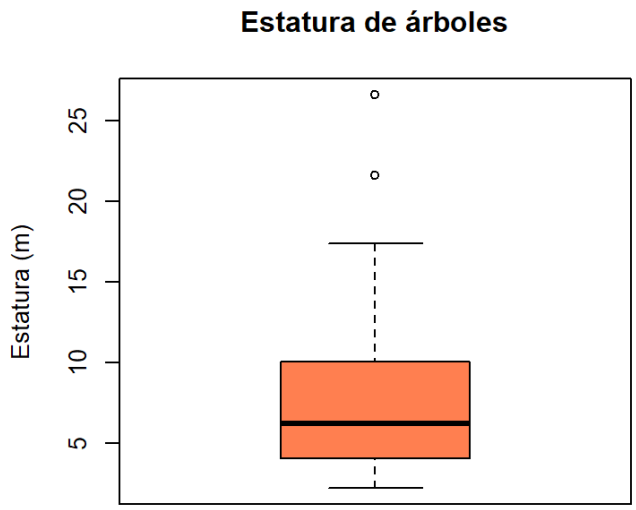


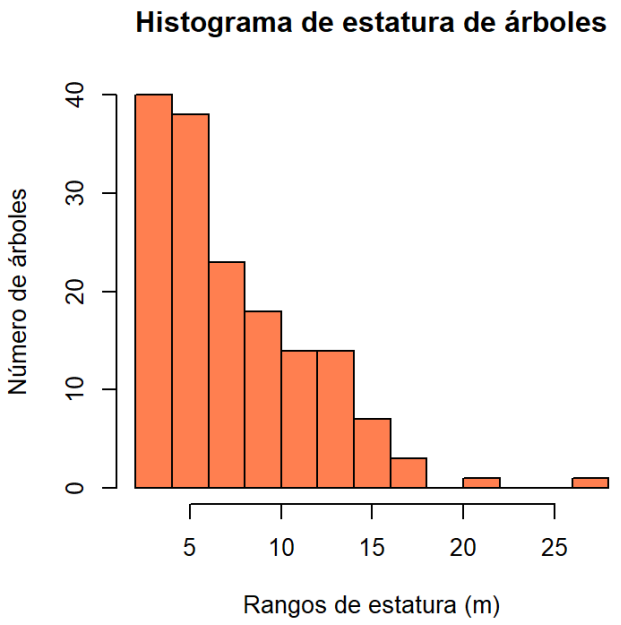


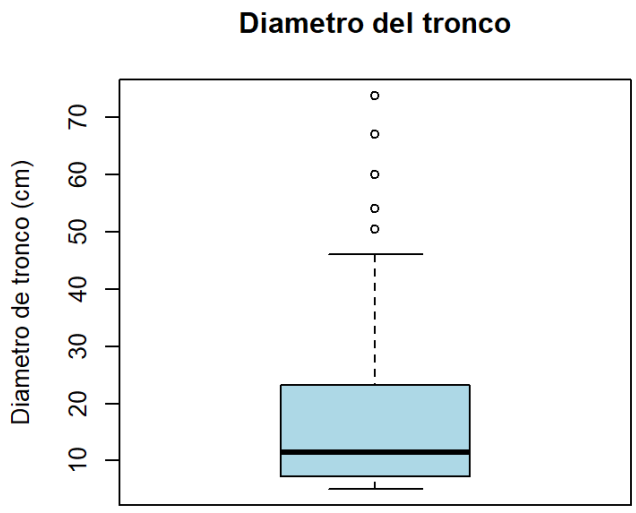


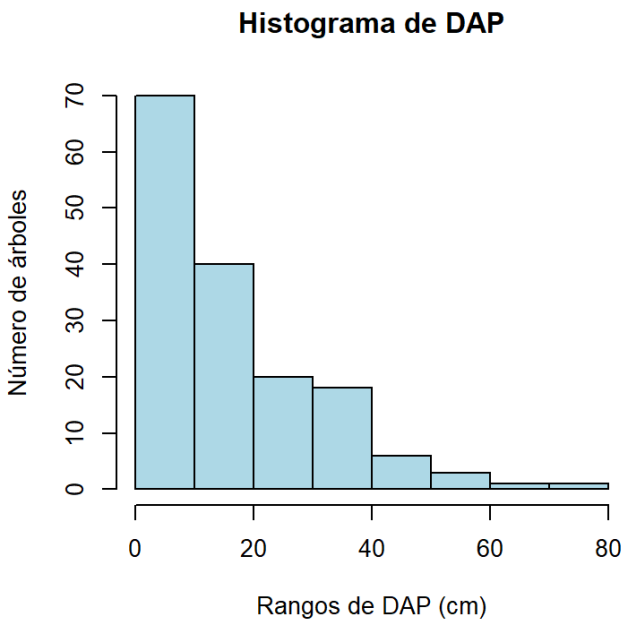
Tabebuia rosea

```
n = 159
```



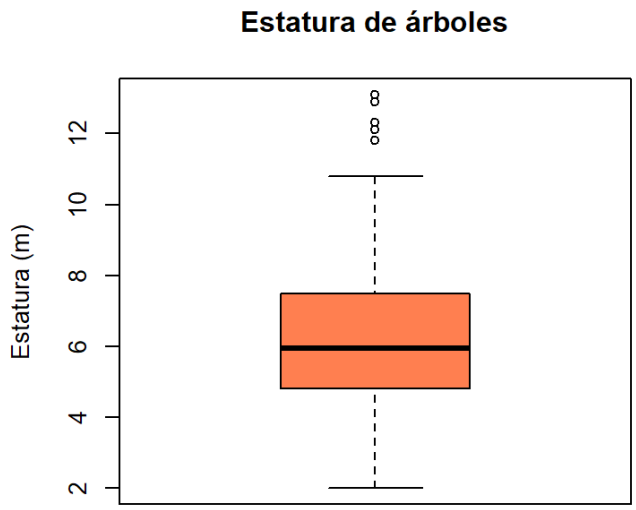


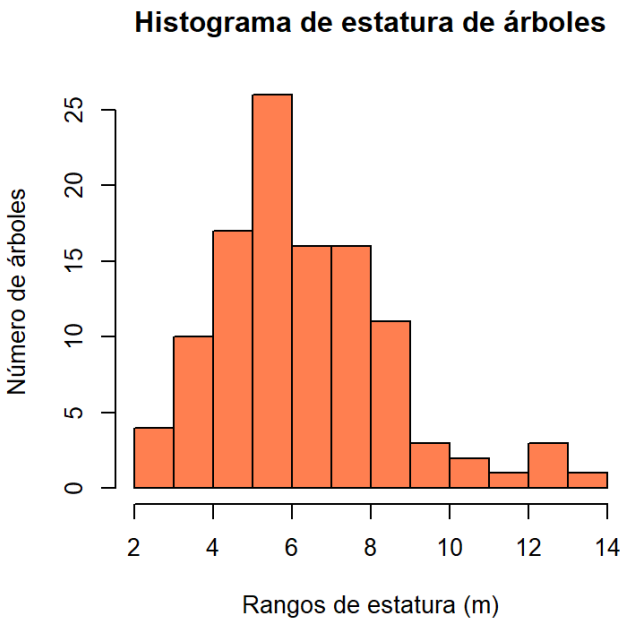


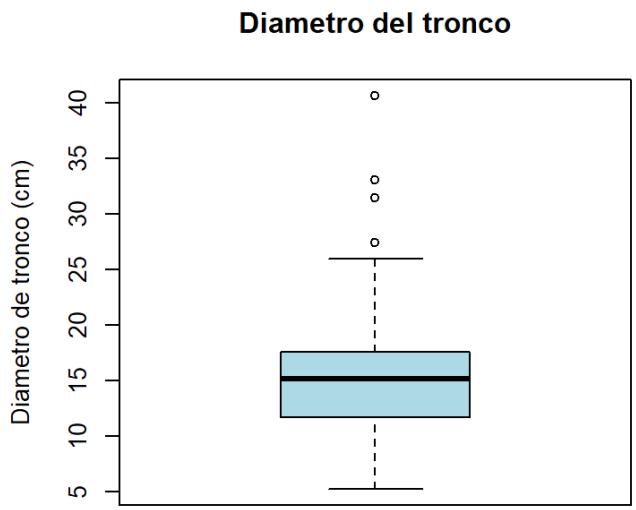


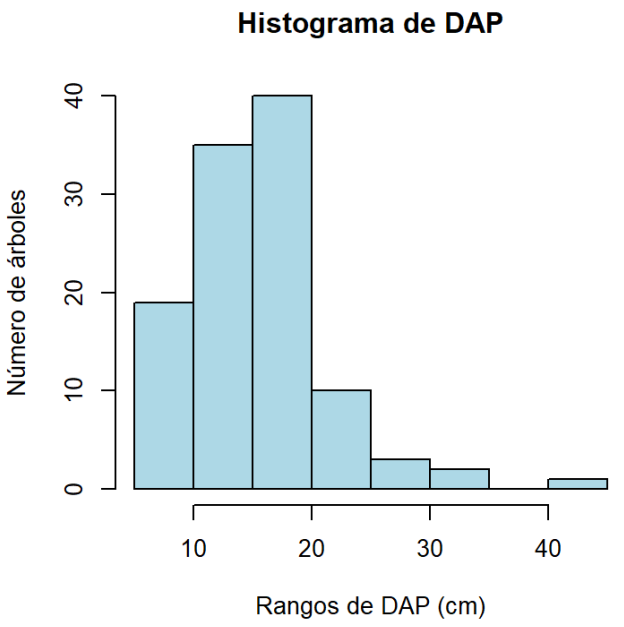
Terminalia catappa

```
n = 110
```



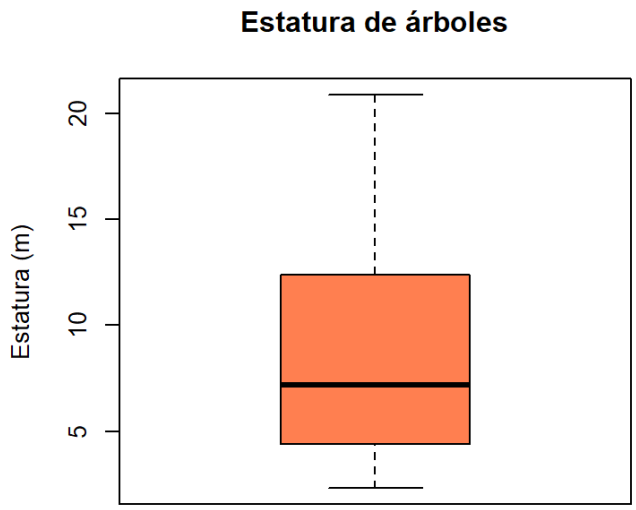


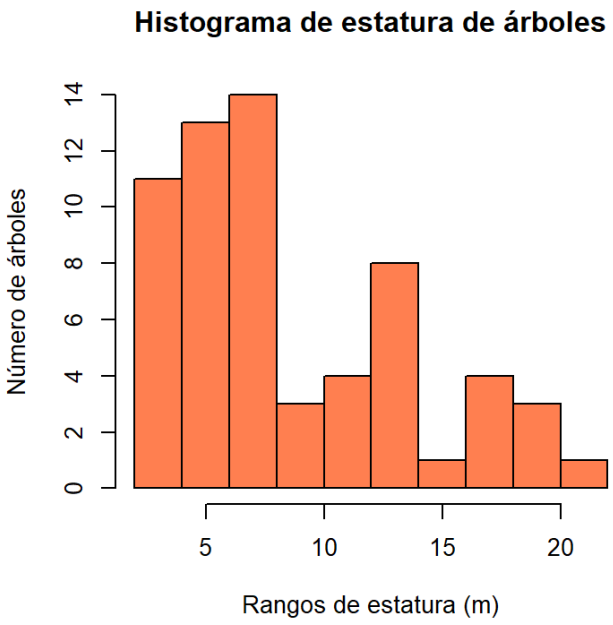


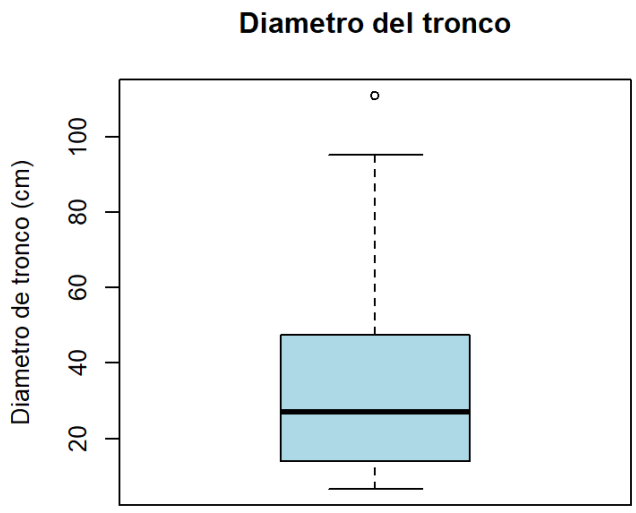


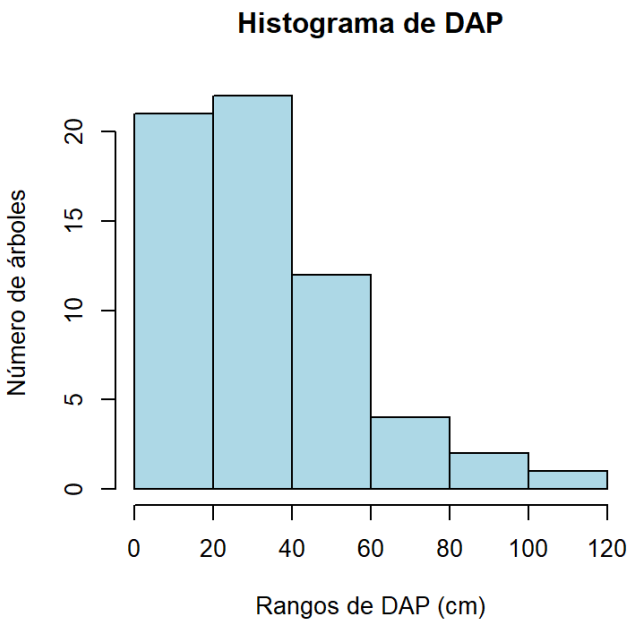
Enterolobium cyclocarpum

```
n = 62
```



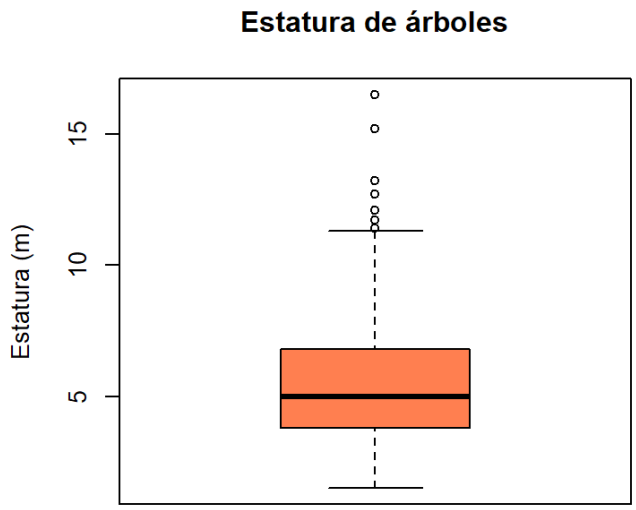


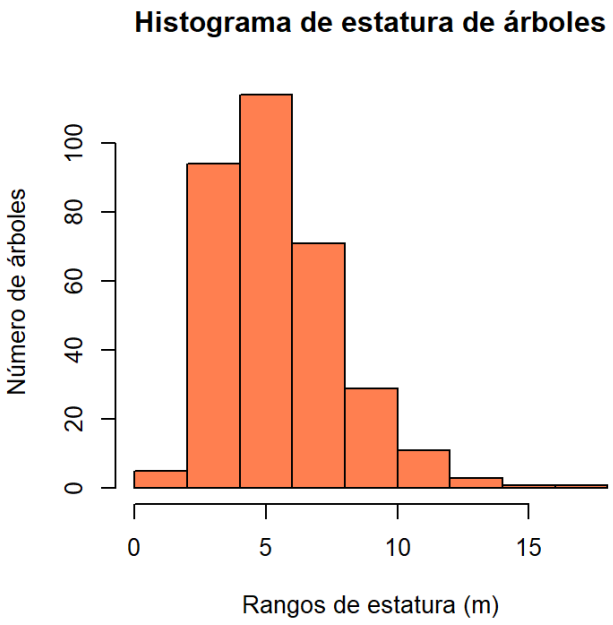


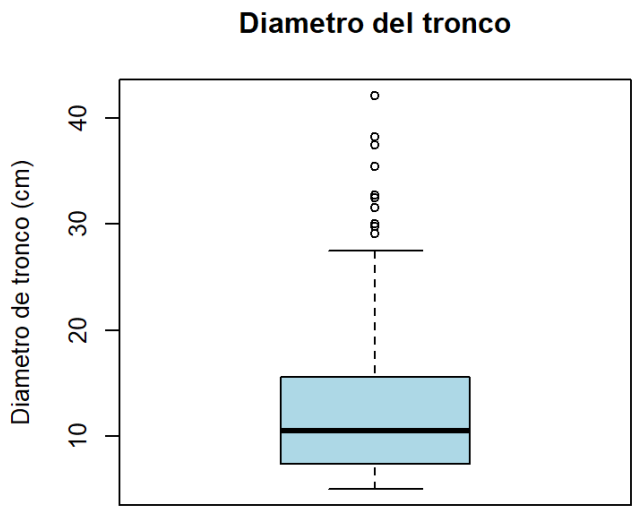


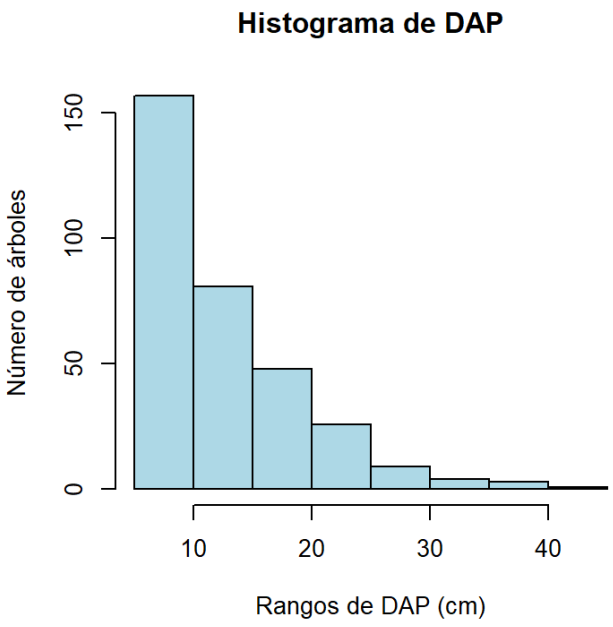
Guazuma ulmifolia

```
n = 329
```



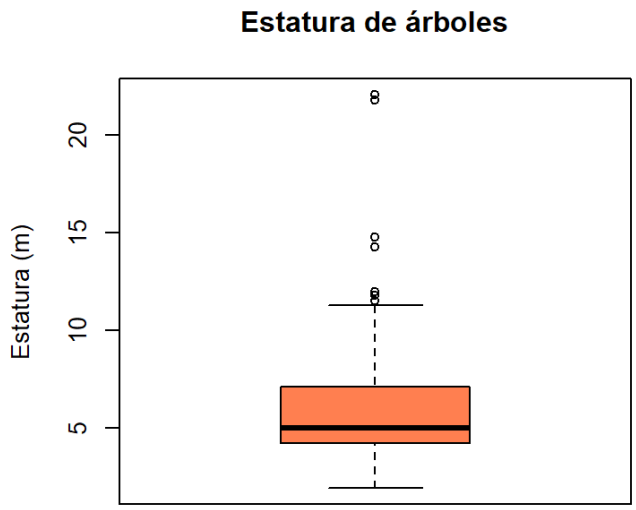


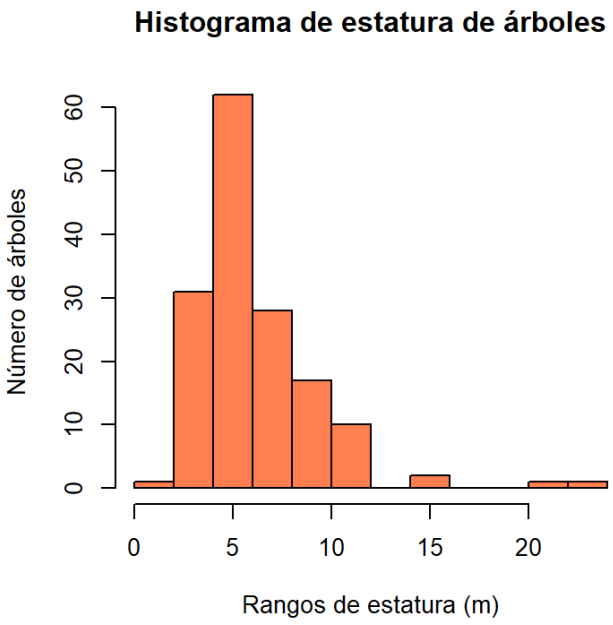


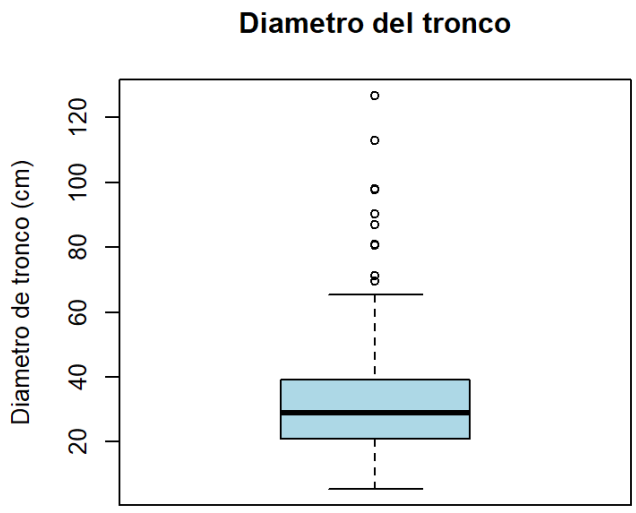


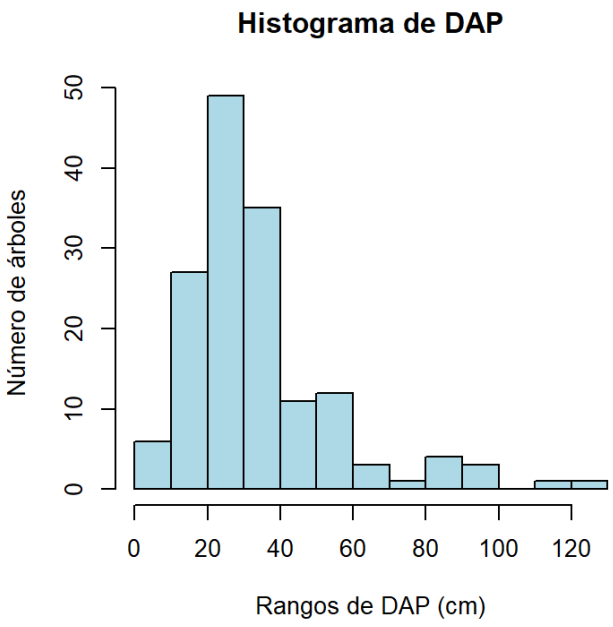
Ficus benjamina

```
n = 153
```



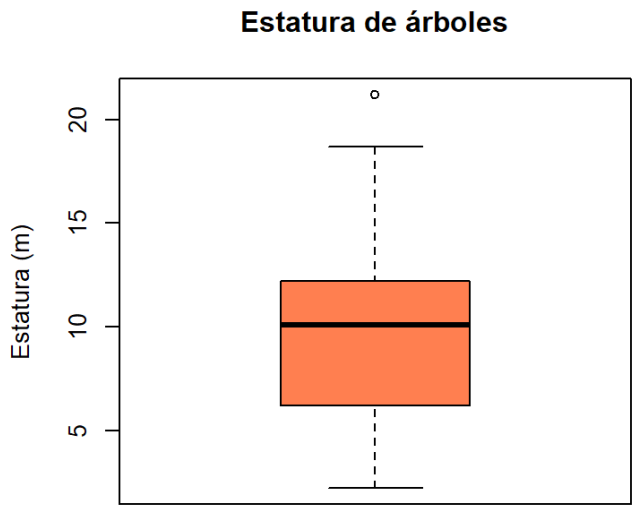


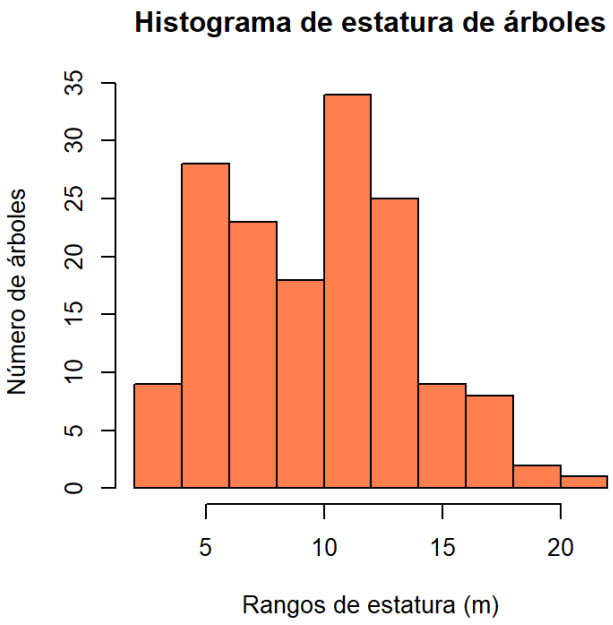


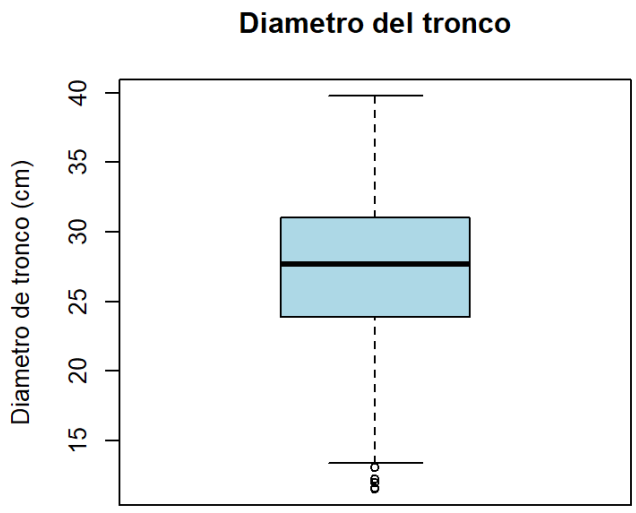


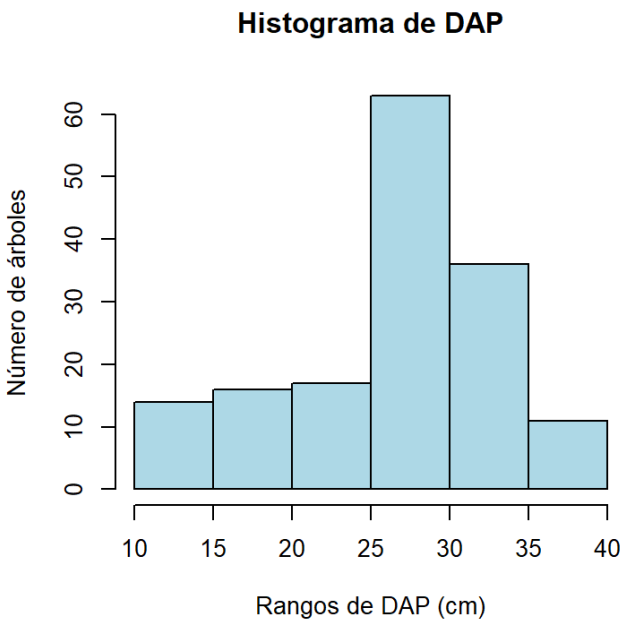
Cocus nucifera

```
n = 157
```



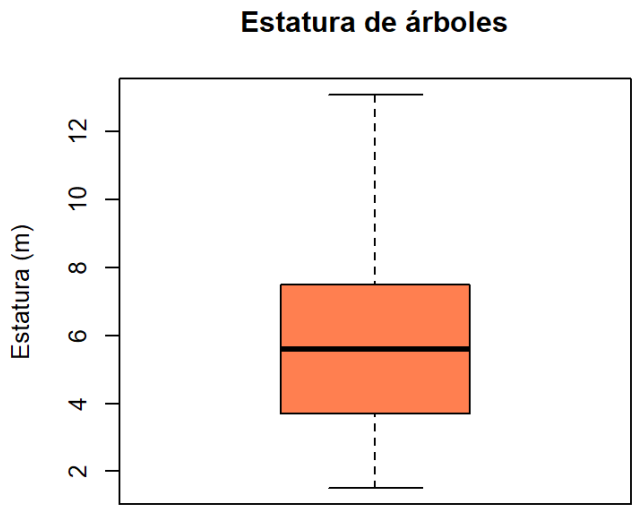


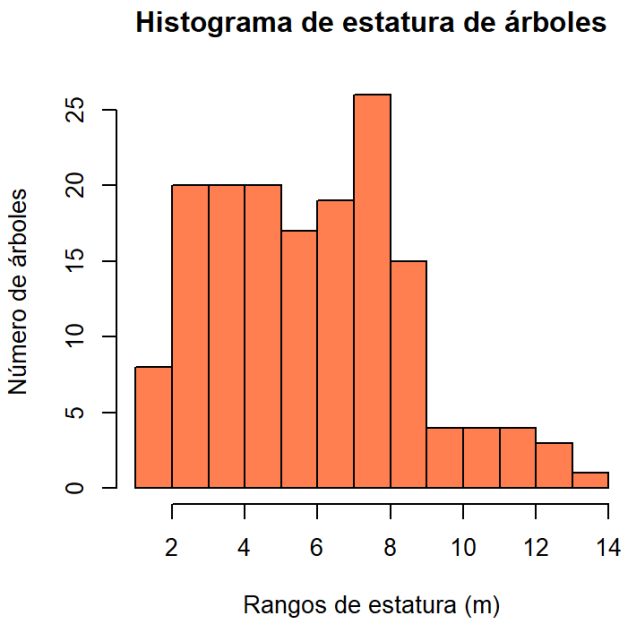


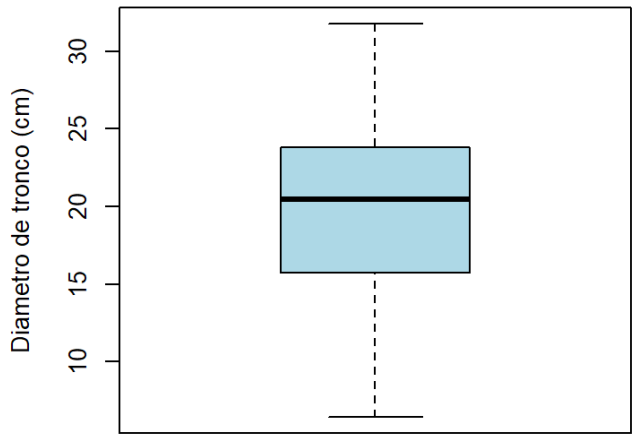


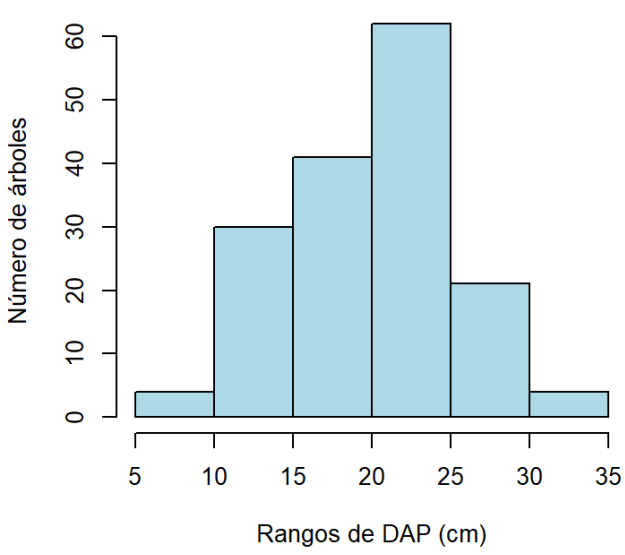
Arecastrum romanzoffianum

```
n = 162
```



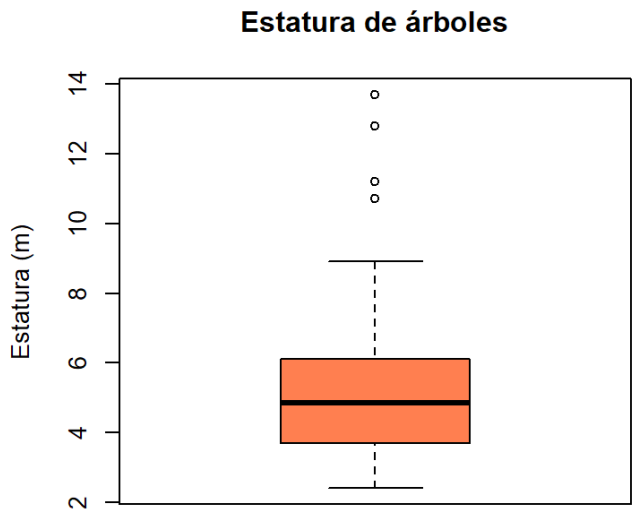


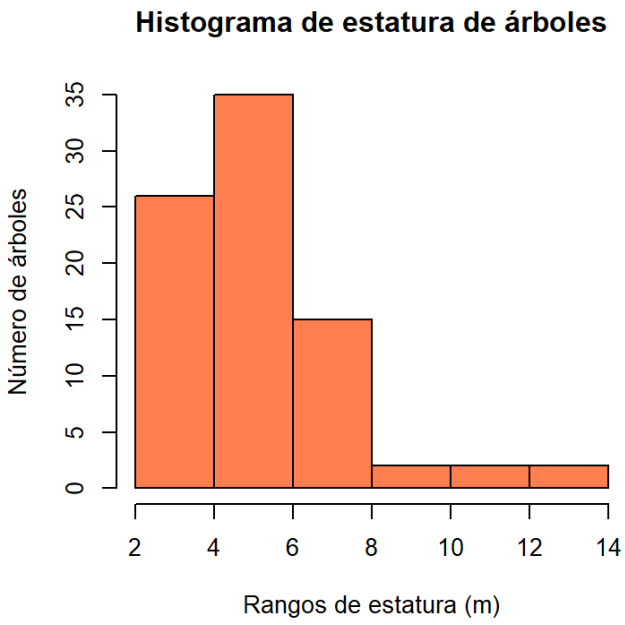


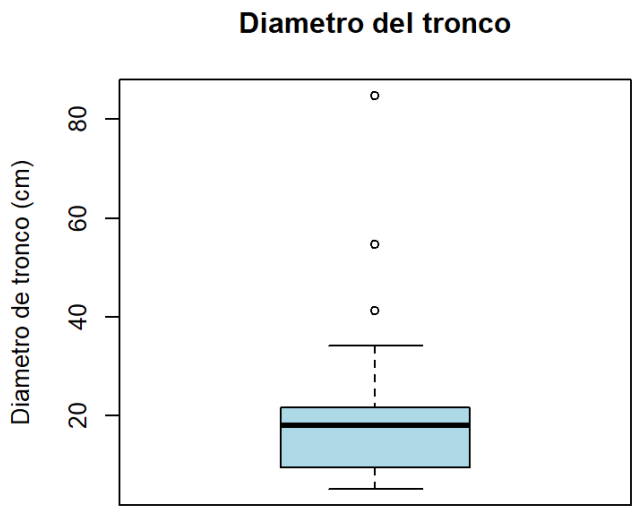


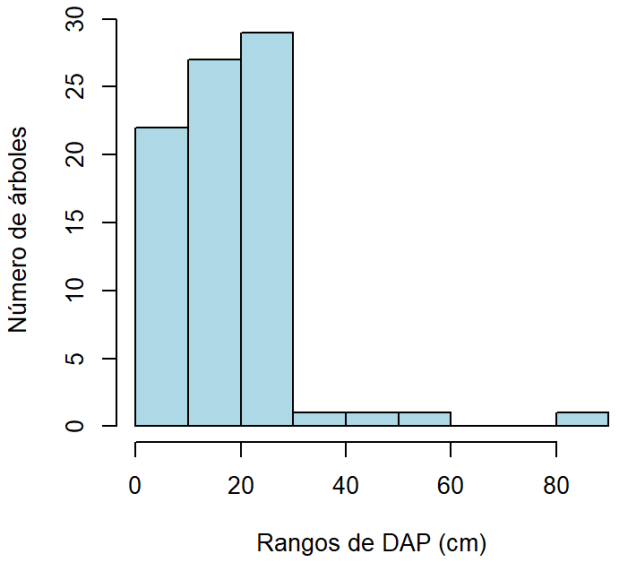
Dypsis lutescens

```
n = 82
```



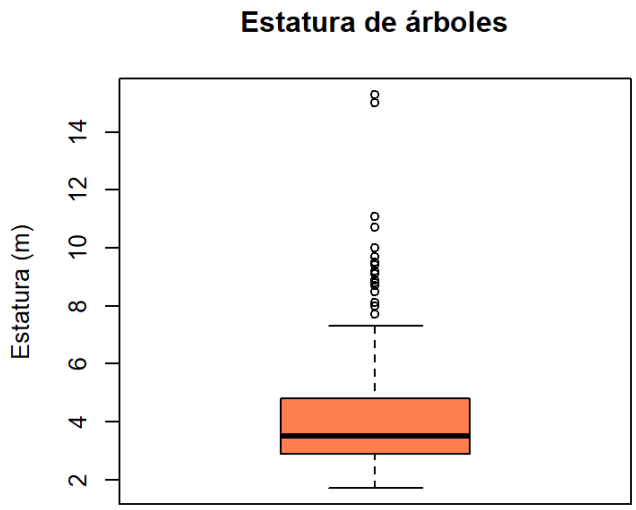


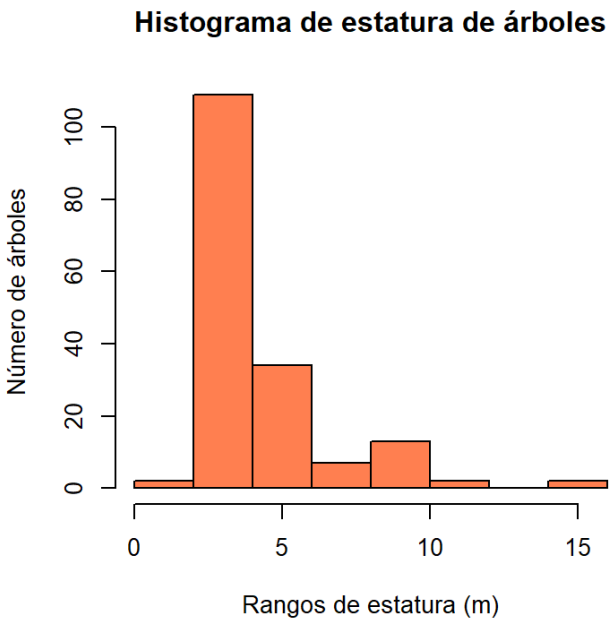


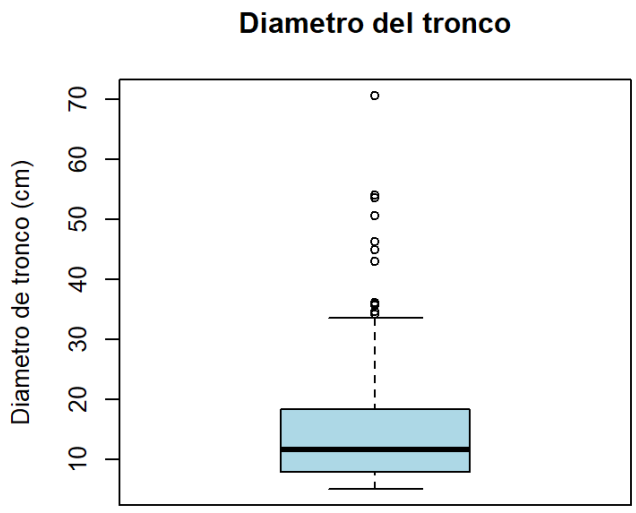


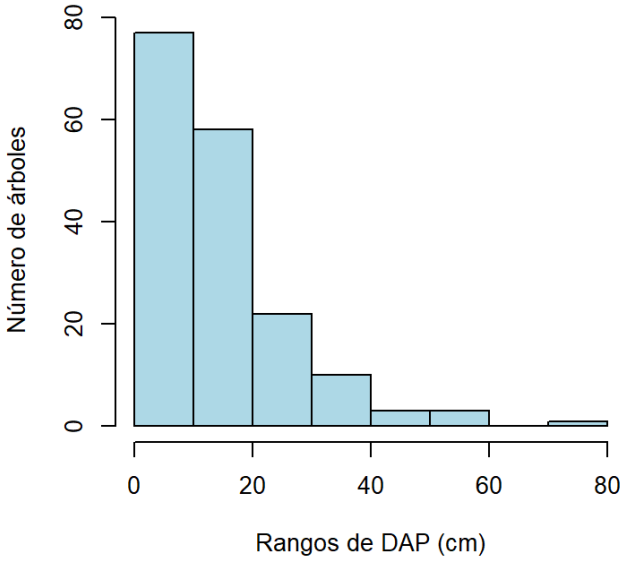
Acacia farnesiana

```
n = 174
```





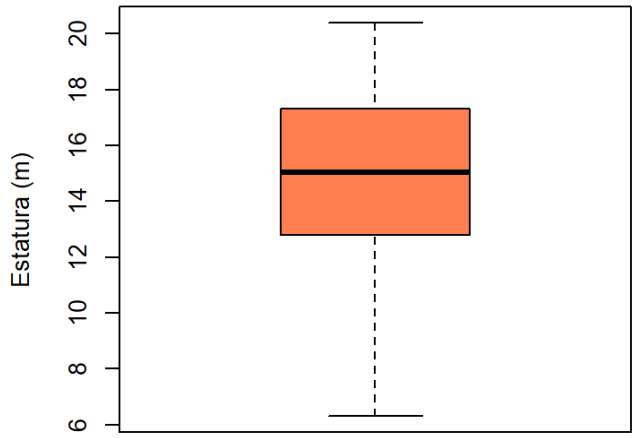




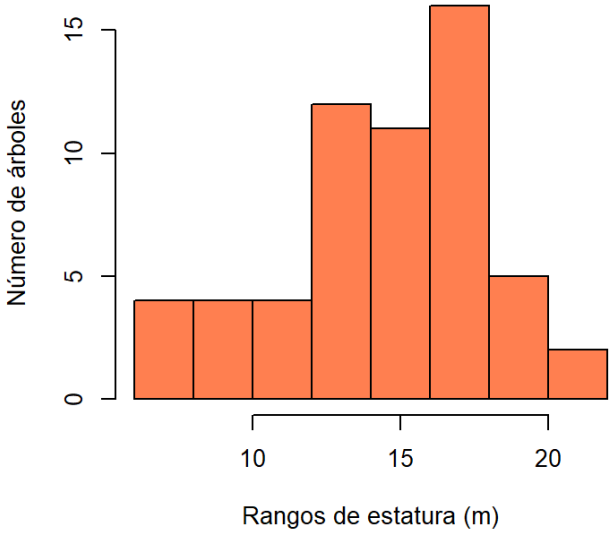
Eucalyptus camaldulensis

```
n = 58
```

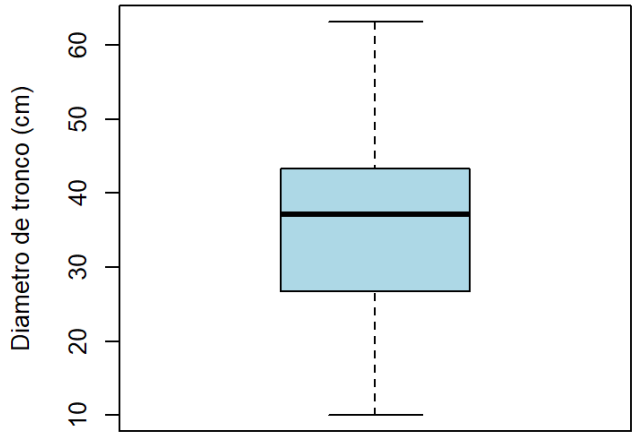
Estatura de árboles



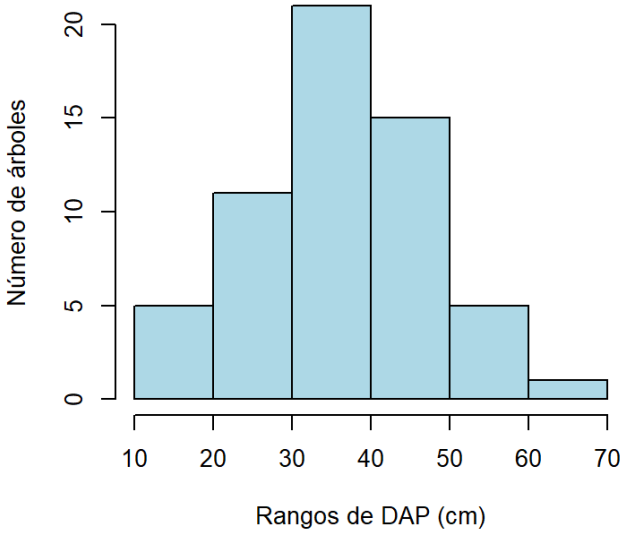
Histograma de estatura de árboles



Diametro del tronco

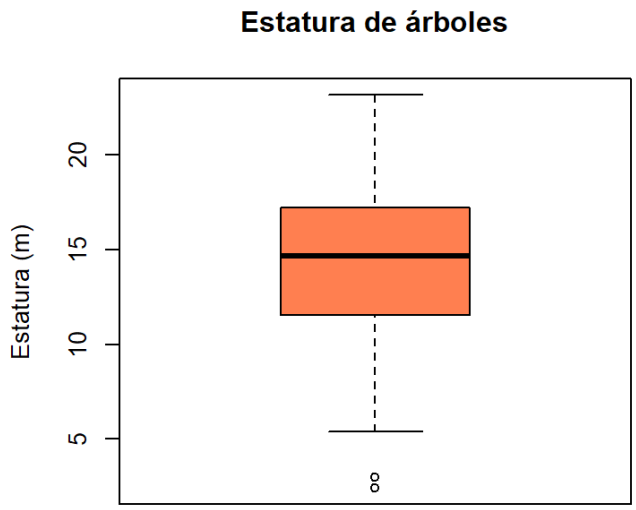


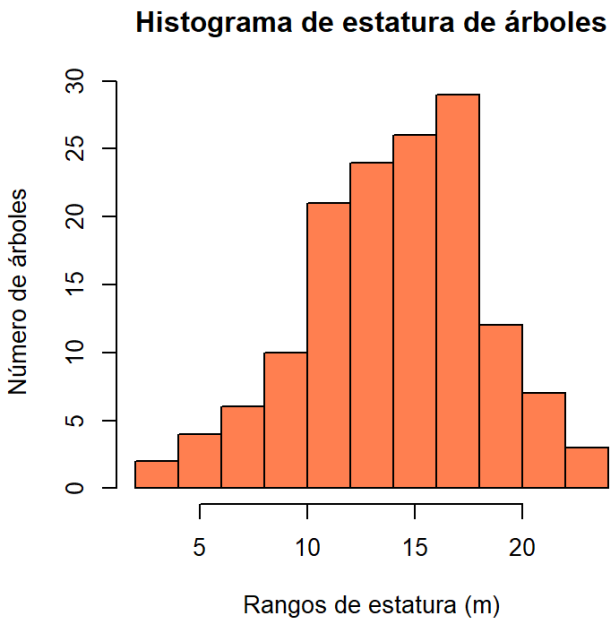
Histograma de DAP

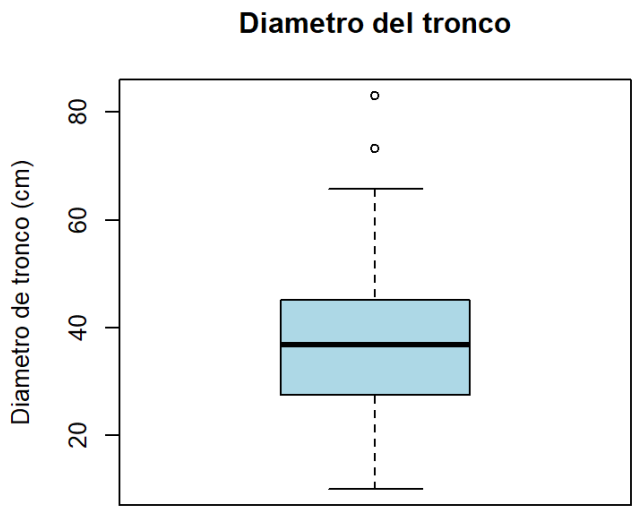


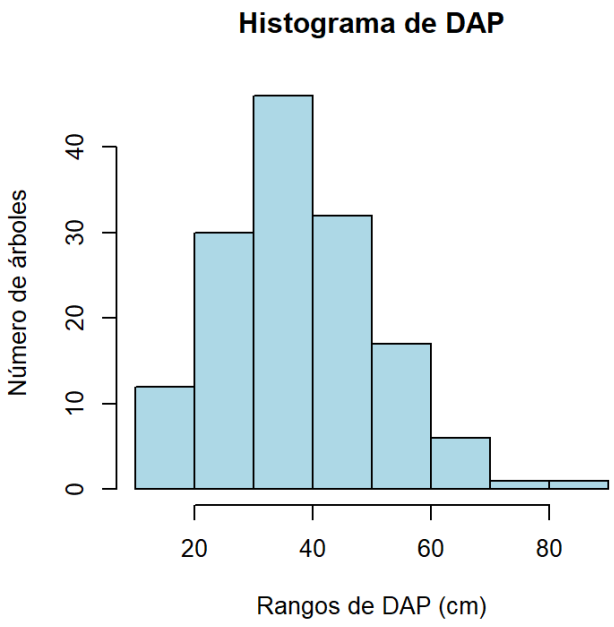
Casuarina equisetifolia

```
n = 145
```



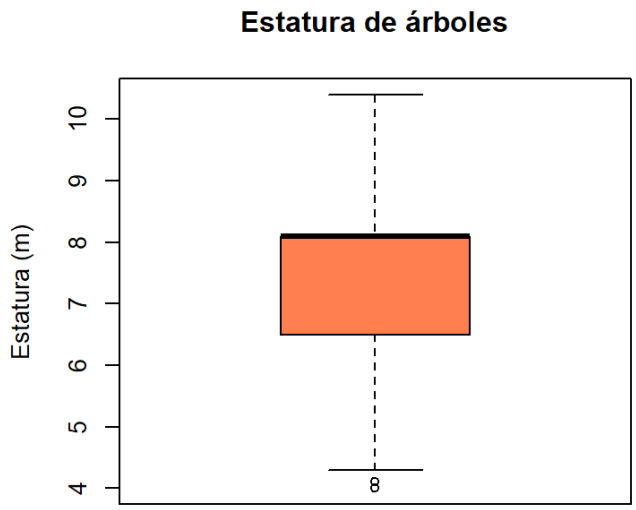


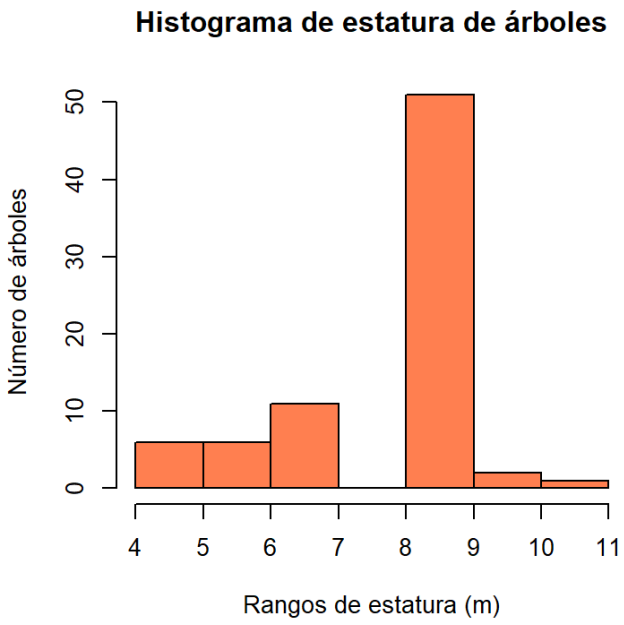


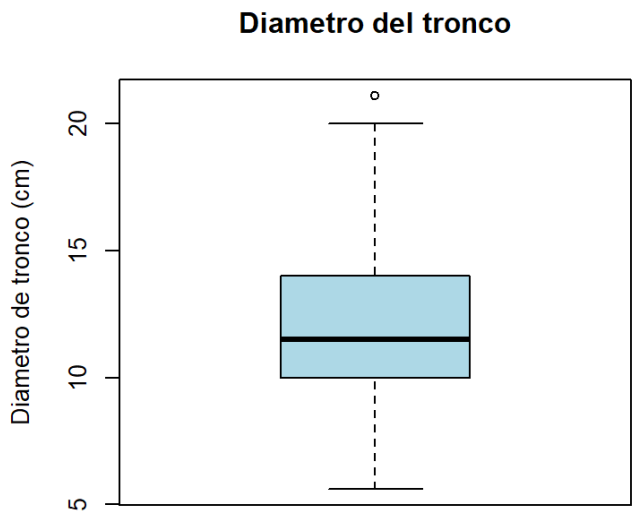


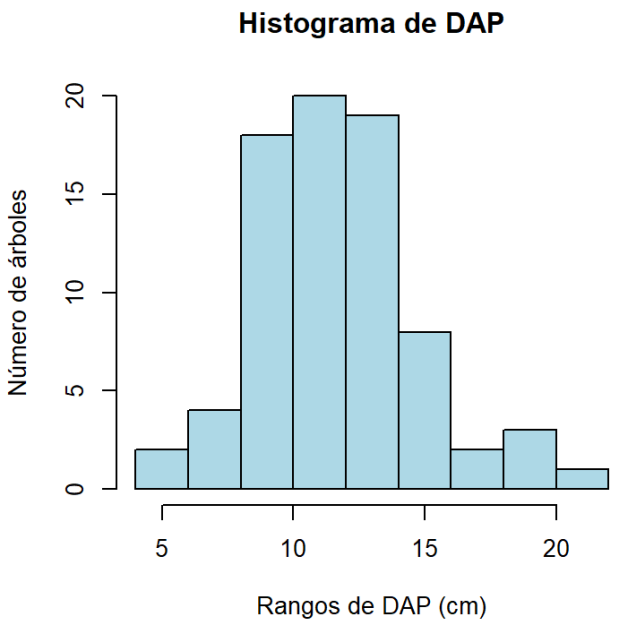
Cupressus sempervirens

```
n = 77
```



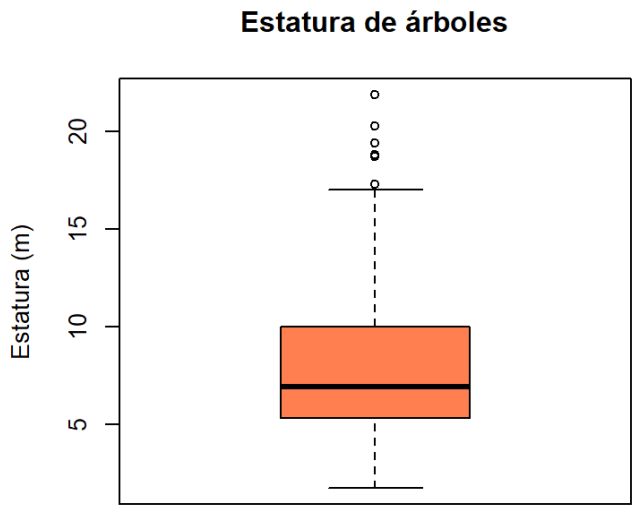


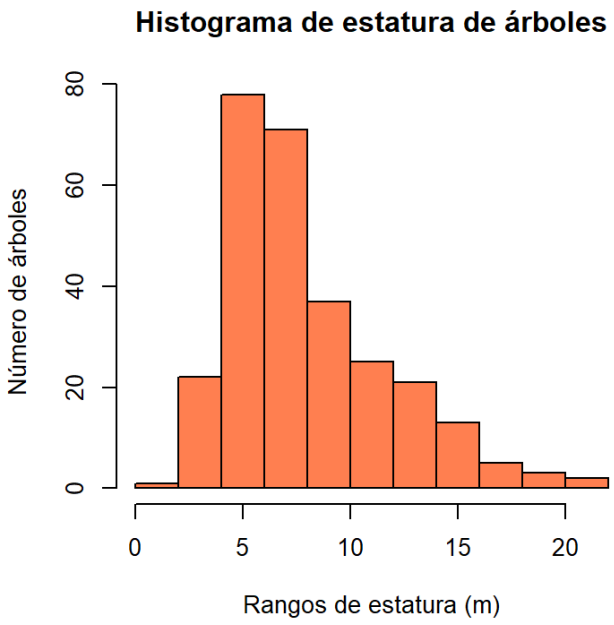


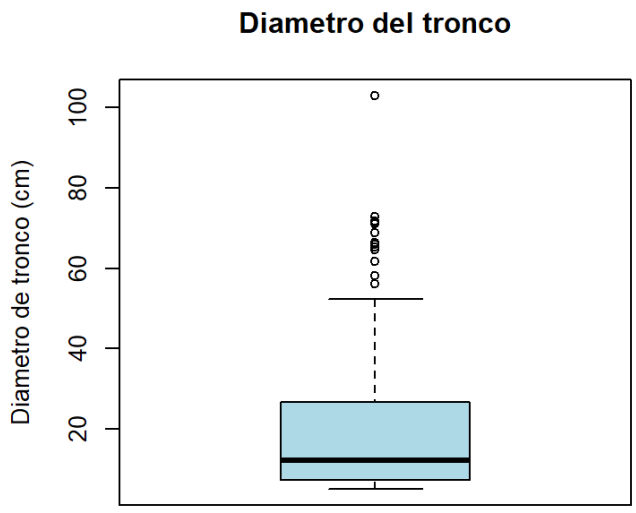


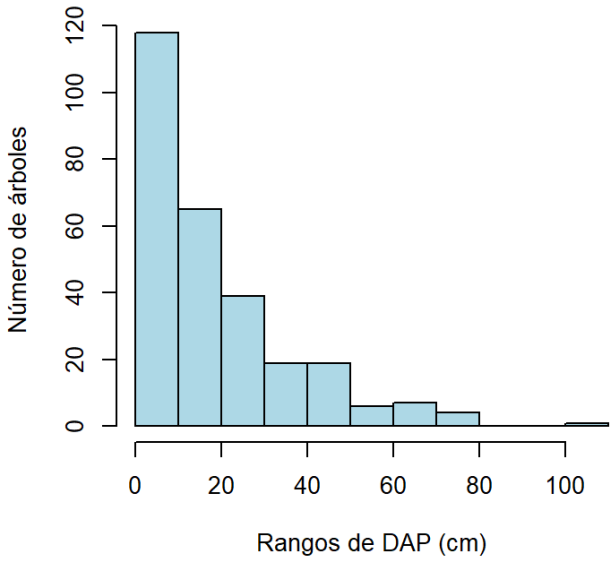
Fraxinus uhdei

```
n = 278
```





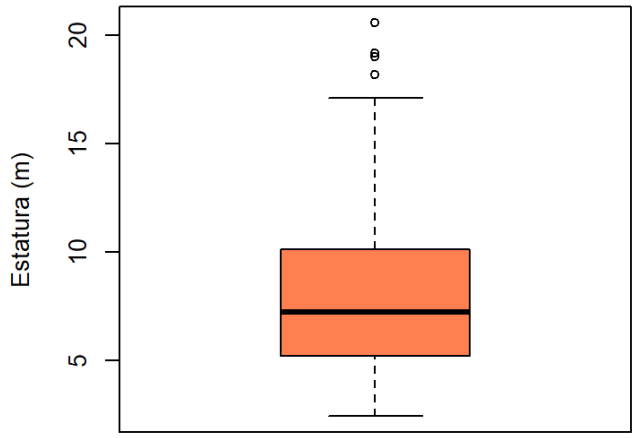




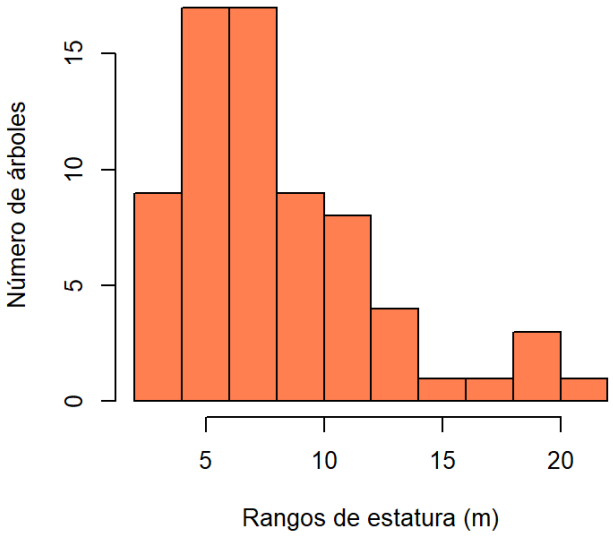
Jacaranda mimosifolia

```
n = 70
```

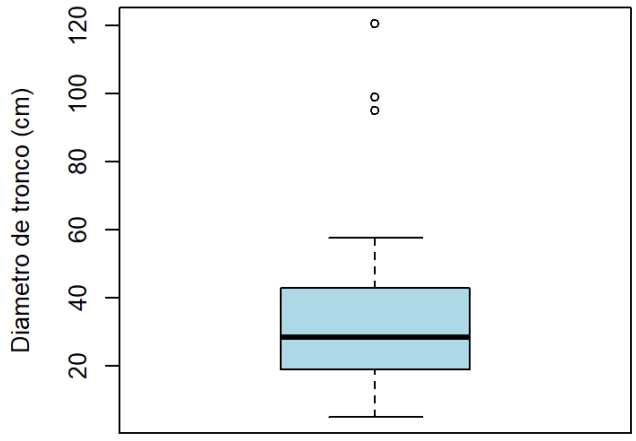
Estatura de árboles



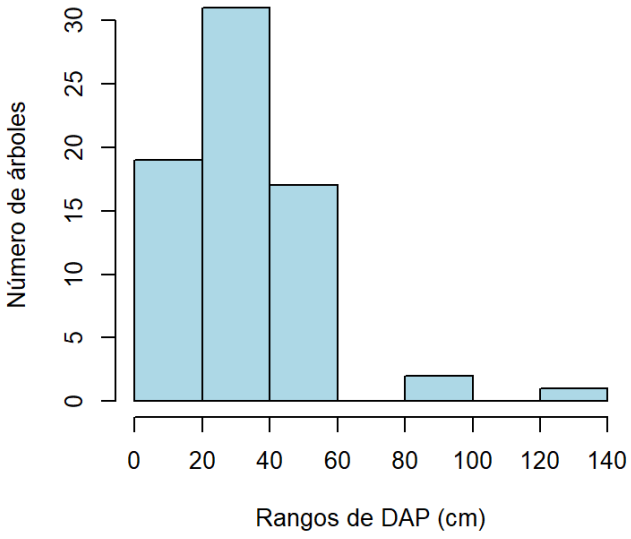
Histograma de estatura de árboles



Diametro del tronco



Histograma de DAP



Quercus resinosa

```
n = 530
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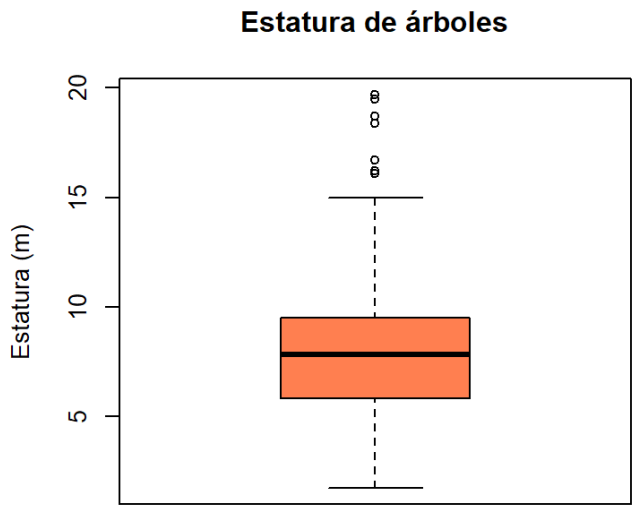
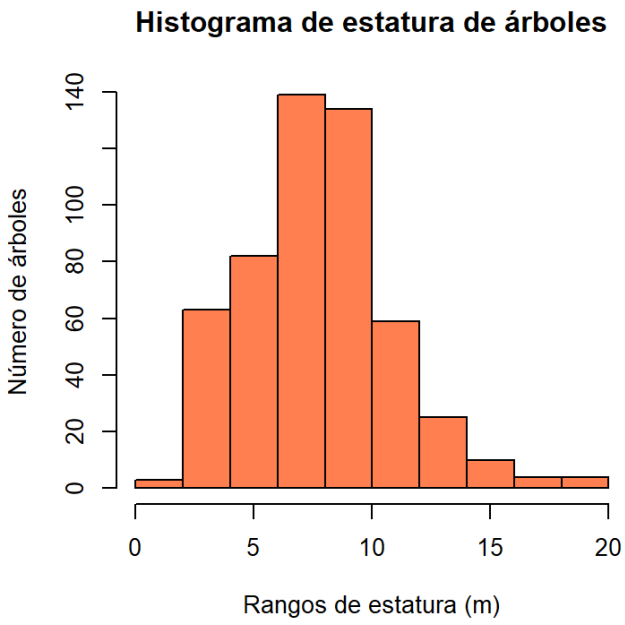
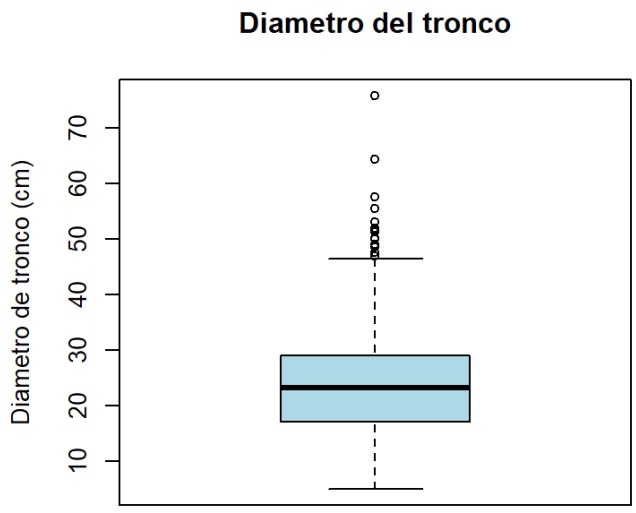
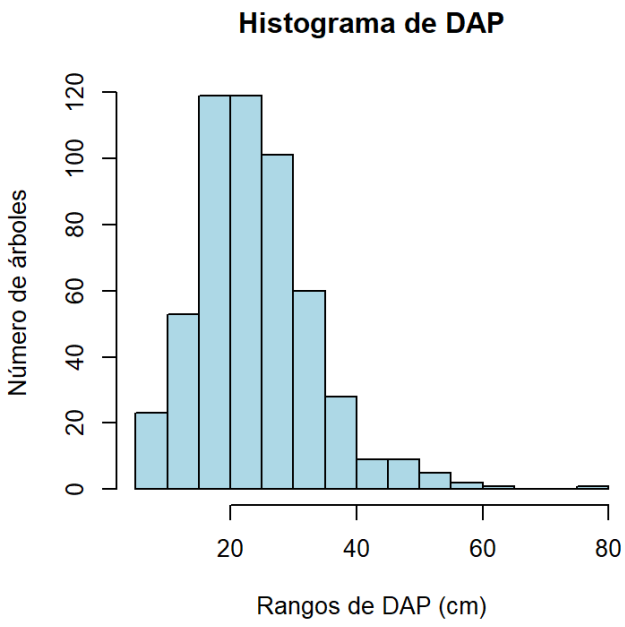


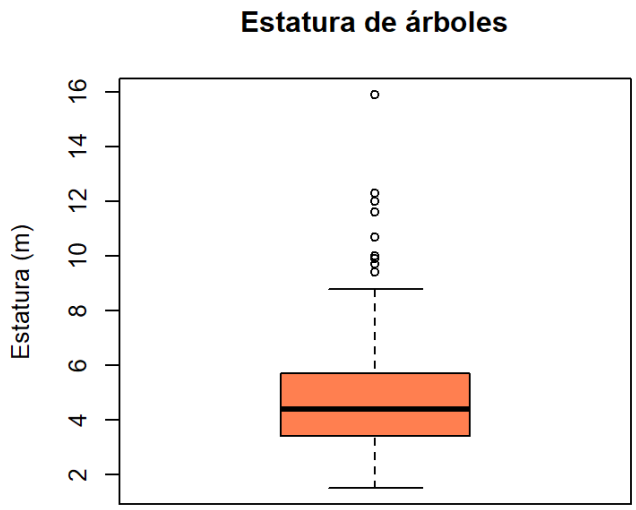


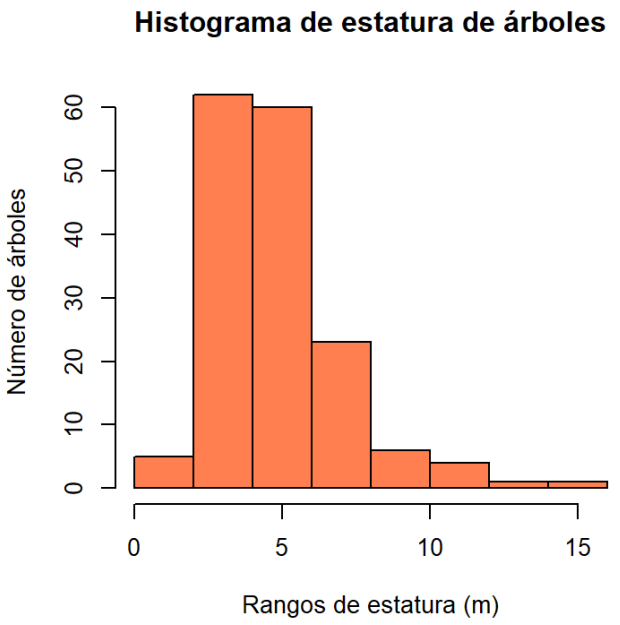


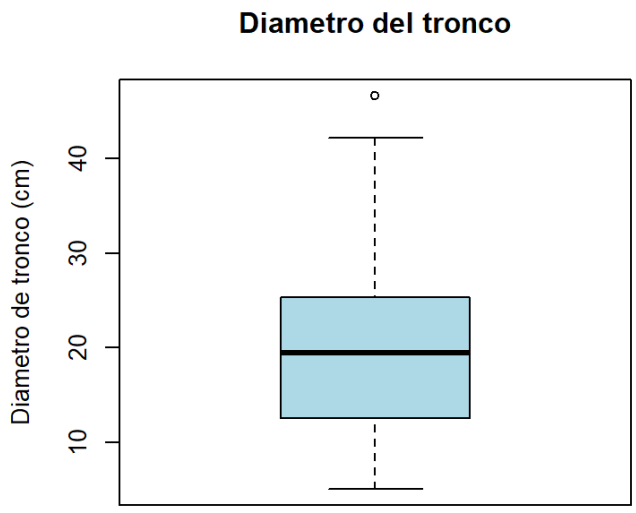


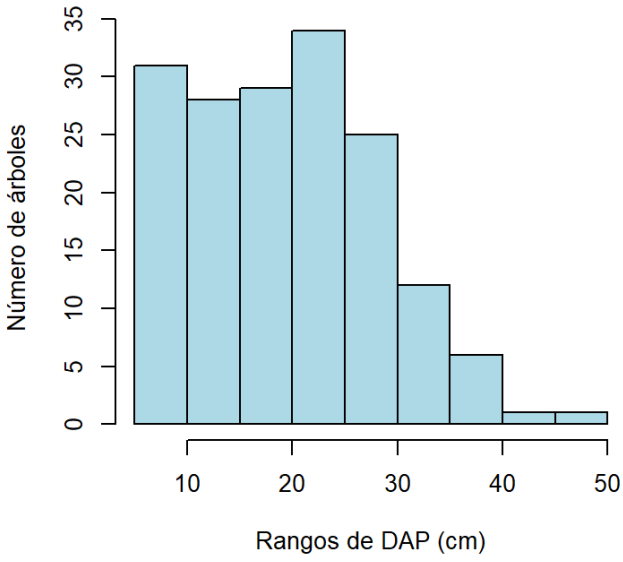
Acacia pennatula

```
n = 167
```









Lippia umbellata

```
n = 52
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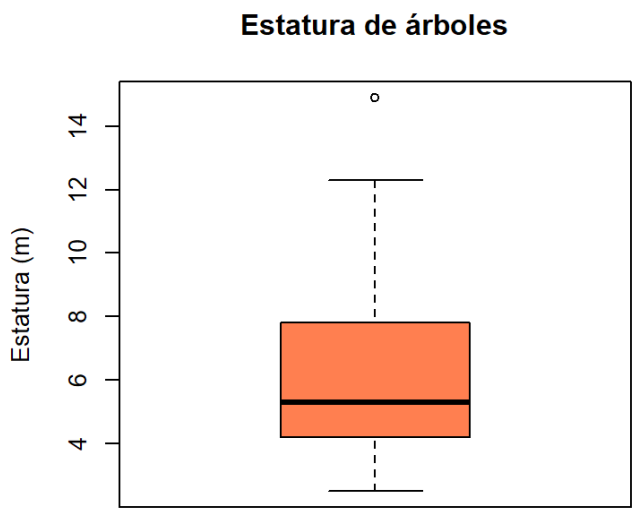

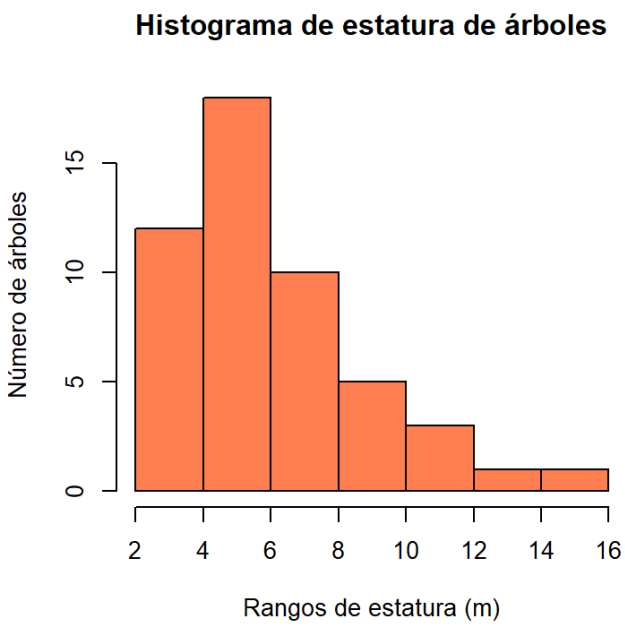

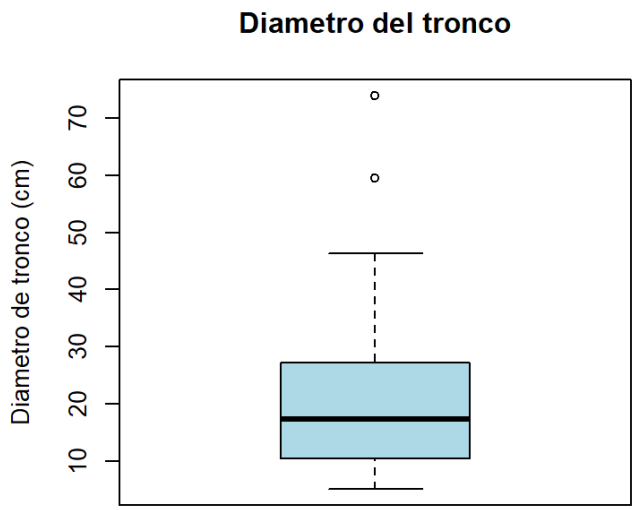

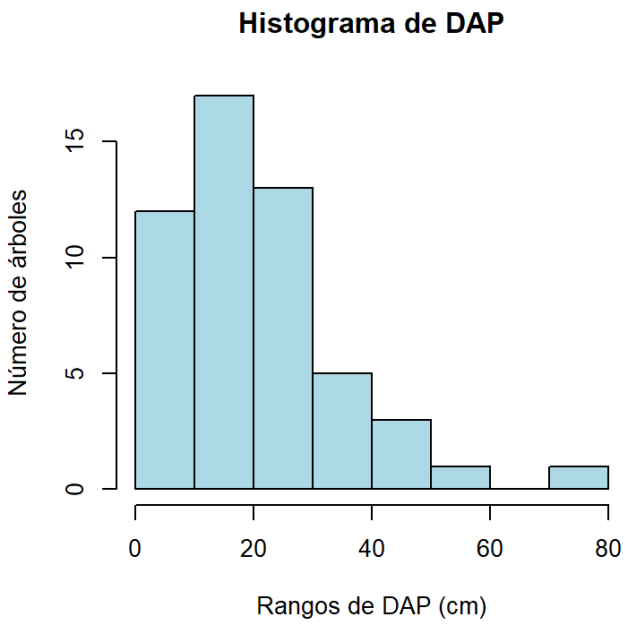

Eysenhardtia polystachya

```
n = 245
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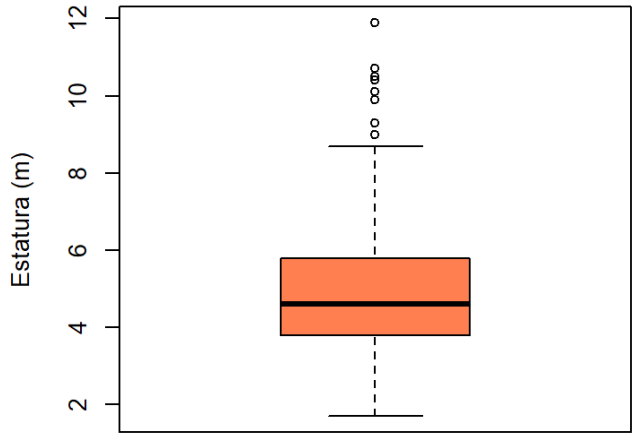
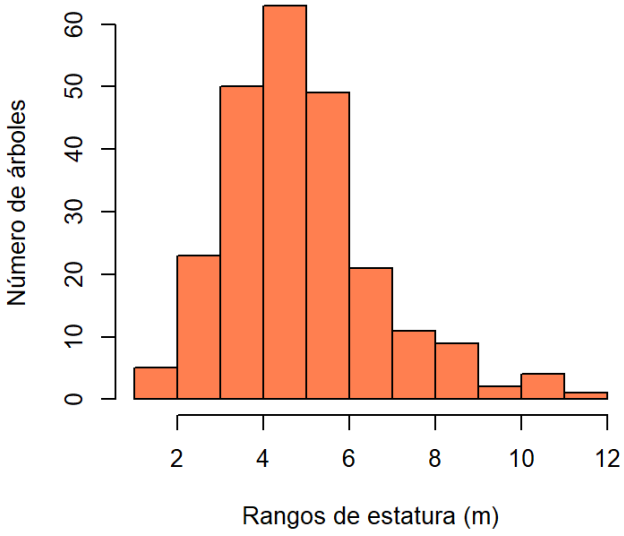
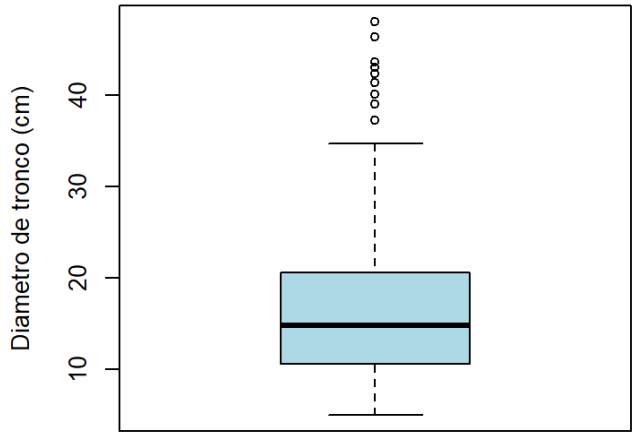
Estatura de árboles



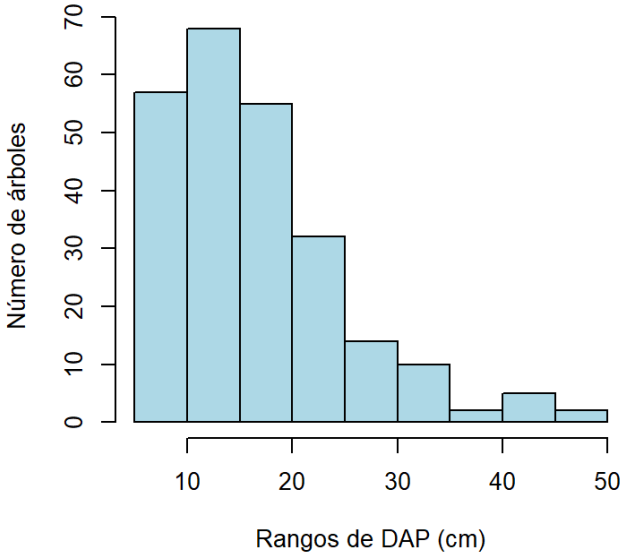
Histograma de estatura de árboles



Diametro del tronco



Histograma de DAP



Pinus devoniana

```
n = 63
```