

# Parcial 3

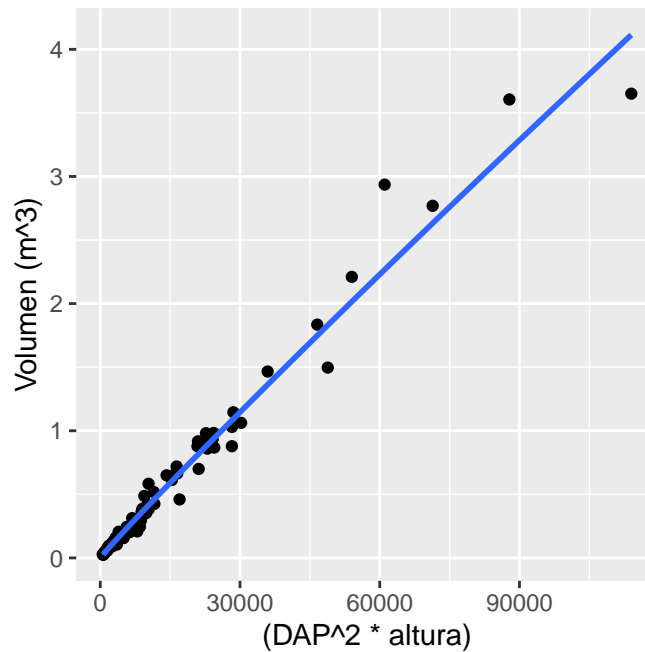
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## 1) Calculo del volumen usando la ecuación de Smalian

$$V_t = \left[ \sum_{i=1}^n (d_i^2 + d_{i+1}^2) * (L_{i+1} - L_i) \right] * \frac{\pi}{8}$$

## 2) Selección de muestras aleatorias para construcción de modelos

3) **Modelos de volumen.** El mejor modelo escogido es el 4, pues su *RSE* es el menor de todos lo modelos.  
los lineales no cumplen supuestos, mirar grafica de residuales para mirar tendencia log.



## 4) Calculo de biomasa

## 5) Modelos de biomasa aérea

se presentan los modelos

Table 1. Comparación de modelos

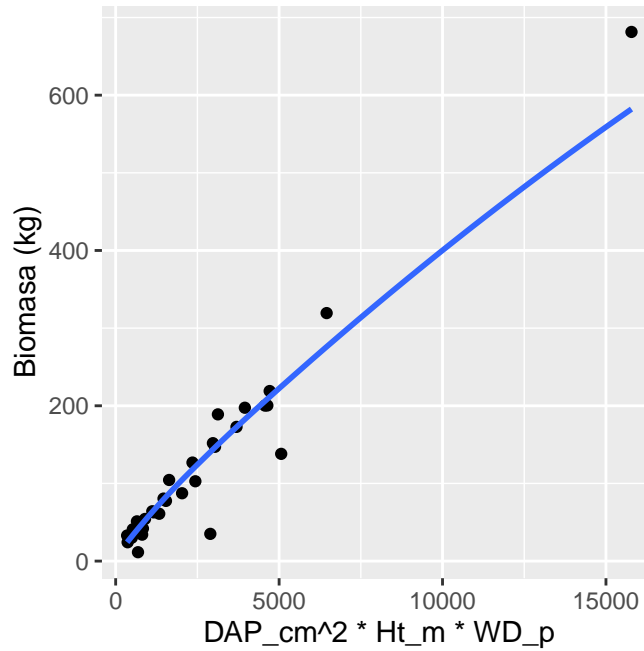
| Modelo   | Fc        | valor.p | Shapiro | R.squared | AIC       | RSE        |
|--|-----------|---------|---------|-----------|-----------|------------|
| $V = 7.61e-01 + (-1.30e-02 * D + (8.69e-04 * D^2) + (-1.09e-01 * H) + (4.19e-03 * H^2))$ | 395.9044  | ***     | 0.0000  | 0.9577    | -53.01262 | 0.1623729  |
| $V = 2.44e-02 + 3.72e-05 * (D^2 * H)$  | 2336.9484 | ***     | 0.0000  | 0.9697    | -84.11330 | 0.1345016  |
| $V = 6.40e-04 * D^6.15 * H^3.28$   | 2444.2628 | ***     | 0.8866  | 0.9855    | -74.91925 | 14.3482000 |
| $V = 5.88e-05 * (D^2 * H)^{2.61}$  | 4304.9706 | ***     | 0.3458  | 0.9833    | -66.51527 | 0.1320000  |

Table 2. Validación de modelos volumen

| Media3    | sd3     | Media4   | sd4      |
|-----------|---------|----------|----------|
| -1520.335 | 185.554 | -3.03686 | 14.20831 |

Table 3. Modelos de Biomasa

| Modelo                          | Fc       | valor.p | Shapiro | R.squared | AIC       | RSE      |
|---------------------------------|----------|---------|---------|-----------|-----------|----------|
| BA= -207.20+18.34*D+(-0.3342*H) | 39.6762  | ***     | 0.0201  | 0.7829    | 286.14189 | 67.20959 |
| BA= 3.75+0.025*(D^2*H)          | 308.0868 | ***     | 0.0032  | 0.9305    | 255.65875 | 37.18581 |
| BA= 0.12*D^15.31*H^0.62         | 55.6392  | ***     | 0.0073  | 0.8349    | 28.44571  | 52.93970 |
| BA= 0.16*D^11.33*H^0.93*WD^2.16 | 51.5368  | ***     | 0.0000  | 0.8513    | 29.23174  | 41.89810 |
| BA= 0.23*(D^2*WD)^3.23          | 161.7459 | ***     | 0.0000  | 0.8480    | 25.92556  | 40.08310 |
| BA= 0.10*(D^2*H)^2.32           | 111.2088 | ***     | 0.0000  | 0.7932    | 35.46763  | 42.46070 |
| BA= 0.18*(D^2*H*WD)^2.31        | 91.9029  | ***     | 0.0000  | 0.7998    | 31.26584  | 38.53990 |



```
#      Media_g      sd_e
# 1 -11.85311 26.66373
```

## 6) Estimación de volumen y biomasa en cinco localidades.

## 7) Comparación entre localidades

$$BA = b_0 + b_1 * D + b_2 * H \quad BA = b_0 + b_1(D^2 * H) \quad BA = b_0 * D^{b_1} * H^{b_2} \quad BA = b_0 * D^{b_1} * H^{b_2} * WD^{b_3} \quad BA = b_0 * (D^2 * WD)^{b_1}$$

$$BA = b_0 * (D^2 * H)^{b_1} \quad BA = b_0 * (D^2 * H * WD)^{b_1}$$

Table 4. Validación de modelo Biomasa

| Media_g   | sd_e     |
|-----------|----------|
| -11.85311 | 26.66373 |

Table 5. Volumen del inventario

| Media    | Desviacion |
|----------|------------|
| 77.58832 | 103.0507   |

Table 6. Contenido de Carbono del inventario

| media contenido de C | Sd contenido de C |
|----------------------|-------------------|
| 2.175178             | 2.451563          |

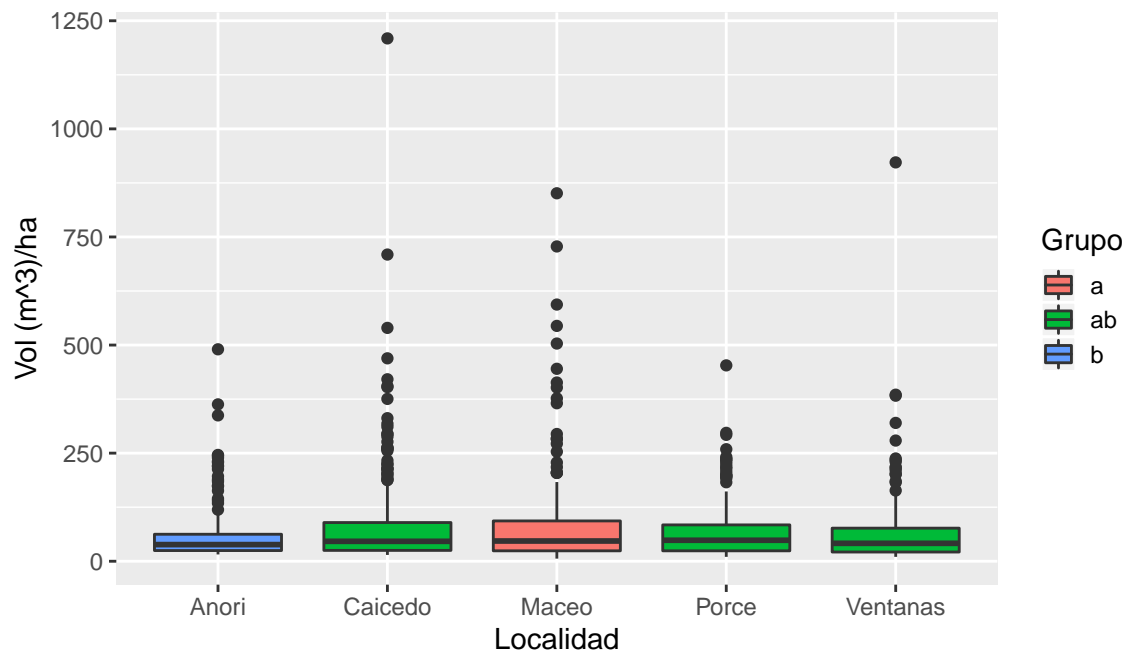


Fig. 1. Comparación de volumen por Localidad

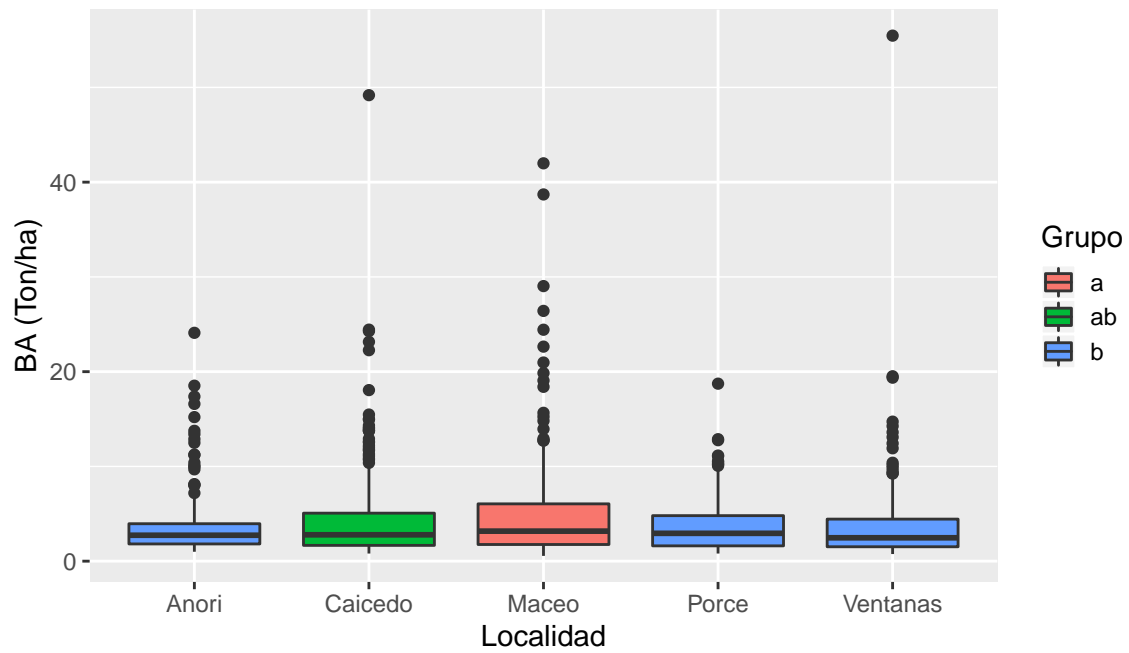


Fig. 2. Comparación de Biomasa por Localidad