**Annex**

Annex 1. Trimmed branch wood aliquot dry biomass, volume and density and their respective basal diameter for *Acacia seyal*

|  |  |  |  |
| --- | --- | --- | --- |
| dry wood (g) | DBHB | volume(cm3) | mean wood density(kg/m3) |
| 200 | 20 | 500 | 0.40 |
| 300 | 38 | 600 | 0.50 |
| 300 | 32 | 500 | 0.60 |
| 250 | 27 | 400 | 0.63 |
| 201 | 33 | 800 | 0.25 |
| 210 | 30 | 400 | 0.53 |
| 200 | 22 | 700 | 0.29 |
| 111 | 10 | 300 | 0.37 |
| 300 | 45 | 600 | 0.50 |
| 134 | 13 | 500 | 0.27 |
| 134 | 12 | 300 | 0.45 |
| 400 | 51 | 700 | 0.57 |

Annex 2. Untrimmed bioass for large branch and trunk

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| DBHb | Btrimmed dry(g) |   | n | untrimmed |
| 45.00 | 241 | 649.4605 | 9 | 5845.1445 |
| 32.00 | 221 | 472.875 | 10 | 4728.75 |
| 32.00 | 97 | 472.875 | 9 | 4255.875 |
| 27.00 | 132 | 404.9575 | 8 | 3239.66 |
| 33.00 | 147 | 486.4585 | 6 | 2918.751 |
| 55.00 | 233 | 785.2955 | 5 | 3926.4775 |
| 47.00 | 211 | 676.6275 | 8 | 5413.02 |
| 10.00 | 91 | 174.038 | 7 | 1218.266 |
| 66.00 | 279 | 934.714 | 5 | 4673.57 |
| 23.00 | 161 | 350.6235 | 4 | 1402.494 |
| 11.00 | 62 | 187.6215 | 8 | 1500.972 |
| 51.00 | 179 | 730.9615 | 6 | 4385.769 |
| 44.00 | 223 | 635.877 | 6 | 3815.262 |
| 36.00 | 107 | 527.209 | 5 | 2636.045 |
| 10.00 | 47 | 174.038 | 4 | 696.152 |
| 7.00 | 68 | 133.2875 | 3 | 399.8625 |
| 34.00 | 165 | 500.042 | 6 | 3000.252 |
| 23 | 126 | 350.6235 | 5 | 1753.1175 |

Annex 3. Trimmed branch Density in g/cm3 and whole tree volume in cm3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | *Acacia seyal* | *Acacia polycantha* | *Acacia ethicia* | *Acacia toritolis* |
| Tree No | Volume |  Density | Volume |  Density | Volume |  Density | Volume |  Density |
| 1 | 52019.2 | 0.4 | 90319.0 | 0.37 | 70319.0 | 0.50 | 86319.0 | 0.30 |
| 2 | 110344.6 | 0.5 | 122358.3 | 0.50 | 102358.3 | 0.44 | 118358.3 | 0.12 |
| 3 | 89249.4 | 0.6 | 252019.2 | 0.40 | 152019.2 | 0.58 | 248019.2 | 0.39 |
| 4 | 177890 | 0.63 | 110344.6 | 0.40 | 90344.6 | 0.40 | 106344.6 | 0.58 |
| 5 | 119234 | 0.25 | 189249.4 | 0.40 | 169249.4 | 0.60 | 185249.4 | 0.36 |
| 6 | 124678 | 0.53 | 277890.0 | 0.35 | 257890.0 | 0.18 | 173890.0 | 0.50 |
| 7 | 97543 | 0.29 | 279234.0 | 0.32 | 259234.0 | 0.33 | 275234.0 | 0.40 |
| 8 | 89567 | 0.37 | 224678.0 | 0.30 | 204678.0 | 0.25 | 220678.0 | 0.18 |
| 9 | 112345 | 0.5 | 269543.0 | 0.42 | 189543.0 | 0.33 | 265543.0 | 0.30 |
| 10 | 123455 | 0.27 | 189567.0 | 0.33 | 169567.0 | 0.29 | 123567.0 | 0.55 |
| 11 | 123453 | 0.45 | 212345.0 | 0.45 | 192345.0 | 0.40 | 208345.0 | 0.50 |
| 12 | 98765 | 0.57 | 223455.0 | 0.35 | 103455.0 | 0.35 | 219455.0 | 0.25 |
| 13 |   |   | 223453.0 | 0.33 |   |   |   |   |
| 14 |   |   | 298765.0 | 0.20 |   |   |   |   |
| 15 |   |   | 199800.0 | 0.24 |   |   |   |   |
| 16 |   |   | 194567.0 | 0.34 |   |   |   |   |
| 17 |   |   | 255678.0 | 0.29 |   |   |   |   |
| 18 |   |   | 225678.0 | 0.43 |   |   |   |   |

Annex4. Predicted biomass for the untrimmed small branches of *Acacia seyal*, using simple linear regression model-1 equation. Bdry untrimmed branch= y=54.355 + 5.6913(DBHb)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| DBHb | Trimmed biomass | Biomass untrimmed small branches | N | Total biomass Untrimmed small branches |
| 43 | 317 | 299.081 | 5 | 1495.40 |
| 31 | 205 | 230.785 | 6 | 1384.71 |
| 49 | 381 | 333.229 | 5 | 1666.14 |
| 14 | 144 | 134.033 | 4 | 536.13 |
| 34 | 197 | 247.859 | 6 | 1487.16 |
| 15 | 148 | 139.725 | 5 | 698.62 |
| 45 | 302 | 310.464 | 8 | 2483.71 |
| 13 | 145 | 128.342 | 7 | 898.39 |
| 27 | 239 | 208.02 | 5 | 1040.10 |
| 18 | 161 | 156.798 | 4 | 627.19 |
| 34 | 240 | 247.859 | 6 | 1487.16 |
| 31 | 188 | 230.785 | 6 | 1384.71 |

*N=number of branch, DBHb= dimeter breast height for untrimmed branch*

Annex5. Predicted biomass for the untrimmed small branches of *Acacia polycantha*, using simple linear regression model-1 equation. Bdry untrimmed branch= Y=39.553+3.6976(DBH)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| DBHb | Btrimmed dry(g) | untrimmed small branches | n | Total untrimmed SB |
| 45 | 241 | 205.945 | 9 | 1853.505 |
| 32 | 221 | 157.8762 | 10 | 1578.762 |
| 12 | 97 | 83.9242 | 9 | 755.3178 |
| 27 | 132 | 139.3882 | 8 | 1115.106 |
| 29 | 147 | 146.7834 | 6 | 880.7004 |
| 55 | 233 | 242.921 | 5 | 1214.605 |
| 47 | 211 | 213.3402 | 8 | 1706.722 |
| 10 | 91 | 76.529 | 7 | 535.703 |
| 66 | 279 | 283.5946 | 5 | 1417.973 |
| 31 | 161 | 154.1786 | 4 | 616.7144 |
| 8 | 62 | 69.1338 | 8 | 553.0704 |
| 37 | 179 | 176.3642 | 6 | 1058.185 |
| 51 | 223 | 228.1306 | 6 | 1368.784 |
| 36 | 107 | 172.6666 | 5 | 863.333 |
| 7 | 47 | 65.4362 | 4 | 261.7448 |
| 10 | 68 | 76.529 | 3 | 229.587 |
| 34 | 165 | 165.2714 | 6 | 991.6284 |
| 25 | 126 | 131.993 | 5 | 659.965 |

Annex 6. Predicted biomass for the untrimmed small branches of *Acacia* Ethibica, using simple linear regression model-1 equation. Bdry untrimmed branch= 74.384+5.5975(DBHb)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| DBHb | trimmed  |   | n | untrimmed |
| 12.00 | 317 | 316.276 | 5 | 1581.38 |
| 34.00 | 205 | 199.632 | 6 | 1197.792 |
| 7.00 | 381 | 342.786 | 5 | 1713.93 |
| 44.00 | 144 | 146.612 | 4 | 586.448 |
| 34.00 | 197 | 199.632 | 6 | 1197.792 |
| 43.00 | 148 | 151.914 | 5 | 759.57 |
| 10.00 | 302 | 326.88 | 8 | 2615.04 |
| 42.00 | 145 | 157.216 | 7 | 1100.512 |
| 21.00 | 239 | 268.558 | 5 | 1342.79 |
| 43.00 | 161 | 151.914 | 4 | 607.656 |
| 22.00 | 240 | 263.256 | 6 | 1579.536 |
| 38.00 | 188 | 178.424 | 6 | 1070.544 |

Annex 7. Predicted biomass for the untrimmed small branches of *Acacia* toritolis , using simple linear regression model-1 equation. Bdry untrimmed branch= 23.97+7.4463(DBHb)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| DBHb | trimmed  | untrimmed small branches | n | untrimmed |
| 15 | 137 | 135.6645 | 4 | 542.658 |
| 12 | 140 | 113.3256 | 5 | 566.628 |
| 37 | 306 | 299.4831 | 6 | 1796.899 |
| 47 | 380 | 373.9461 | 7 | 2617.623 |
| 25 | 227 | 210.1275 | 8 | 1681.02 |
| 47 | 408 | 373.9461 | 5 | 1869.731 |
| 39 | 298 | 314.3757 | 9 | 2829.381 |
| 10 | 105 | 98.433 | 4 | 393.732 |
| 34 | 218 | 277.1442 | 3 | 831.4326 |
| 39 | 331 | 314.3757 | 3 | 943.1271 |
| 40 | 315 | 321.822 | 5 | 1609.11 |
| 21 | 148 | 180.3423 | 7 | 1262.396 |