Table 1: Reservation prices determined by the Brazee and Mendelsohn method as well as the American put option of various lengths

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | P(t)= | $169.19 | Std. Dev.= | $65.73 | C= $240/A |  |  |
|  | r= | 0.04 | LEV2= | $2000/A |  |  |  |
|  | Stand Volume | LEV1 under | B & M | American Put 55-year | | American Put Rolling 10-year | American Put Rolling 20-year |
| Age t | Q(t)\* | Certainty | Reserv. Price | Option value | Reserv. Price | Reserv. Price | Reserv. Price |
| Years | BF/acre | $/acre | $/MBF | $/MBF | $/MBF | $/MBF | $/MBF |
| 15 | 5236.11 | 1343.81 | 704.36 | 61.62 | 1153.45 | 379.29 | 604.41 |
| 20 | 12644.78 | 1619.94 | 391.26 | 61.55 | 576.32 | 292.98 | 386.89 |
| 25 | 21461.16 | 1831.53 | 301.07 | 61.29 | 408.05 | 263.02 | 317.76 |
| 30 | 30536.15 | 1918.48 | 266.17 | 60.78 | 335.66 | 248.85 | 286.63 |
| 31 | 32323.45 | 1921.35 | 261.88 | 60.64 | 326.09 | 246.91 | 282.46 |
| 32 | 34093.94 | 1919.89 | 258.14 | 60.48 | 317.57 | 245.17 | 278.75 |
| 33 | 35845.37 | 1914.36 | 254.85 | 60.32 | 309.93 | 243.61 | 275.41 |
| 34 | 37575.88 | 1905.03 | 251.95 | 60.13 | 303.04 | 242.19 | 272.41 |
| 35 | 39283.95 | 1892.19 | 249.37 | 59.94 | 296.81 | 240.91 | 269.70 |
| 40 | 47453.24 | 1784.74 | 239.89 | 59.86 | 274.69 | 235.97 | 259.34 |
| 45 | 54964.59 | 1627.79 | 233.93 | 59.37 | 259.53 | 232.67 | 252.48 |
| 50 | 61821.10 | 1446.21 | 229.76 | 58.01 | 247.67 | 230.33 | 247.67 |
| 55 | 68062.51 | 1257.56 | 226.30 | 55.35 | 237.21 | 228.62 | 237.21 |
| 60 | 73742.41 | 1073.28 | 221.88 | 51.26 | 227.33 | 227.33 | 227.33 |
| 65 | 78917.15 | 900.25 | 210.54 | 42.36 | 214.09 | 214.09 | 214.09 |
| 70 | 83640.72 | 742.15 | 169.19 | 0.00 | 169.19 | 169.19 | 169.19 |

\*Q(t) =exp(12.09-52.9/t) from Brazee and Mendelsohn (1988)

Table 2: Average land expectation value and rotation age based on rolling puts of different lengths

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Method | LEV1 | | Rotation age | |
|  | Average | Standard deviation | Average | Standard deviation |
|  |  |  |  |  |
| B&M | 2882.60 | 364.98 | 35.45 | 7.20 |
|  |  |  |  |  |
| 10-year rolling put | 2771.68 | 311.09 | 29.86 | 7.54 |
| 13-year rolling put | 2859.39 | 345.80 | 33.54 | 8.30 |
| 15-year rolling put | 2872.06 | 392.63 | 35.69 | 8.72 |
| 17-year rolling put | 2863.54 | 441.94 | 37.61 | 9.03 |
| 19-year rolling put | 2841.18 | 486.53 | 39.27 | 9.25 |
| 20-year rolling put | 2827.57 | 306.58 | 40.09 | 9.29 |
| 21-year rolling put | 2816.90 | 521.96 | 40.71 | 9.34 |
| 23-year rolling put | 2780.64 | 553.73 | 42.07 | 9.38 |
| 25-year rolling put | 2756.60 | 572.66 | 42.98 | 9.30 |
| 40-year rolling put | 2638.99 | 603.53 | 46.05 | 8.32 |
| 55-year put | 2632.72 | 600.34 | 46.15 | 8.28 |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Table 3. Partial coverage ratios at various ages of three rolling put options

|  |  |  |  |
| --- | --- | --- | --- |
| stand age | 10-year rolling put | 15-year rolling put | 20-year rolling put |
| 15 | 0.2566 | 0.3651 | 0.4697 |
| 20 | 0.3651 | 0.4697 | 0.5673 |
| 25 | 0.4697 | 0.5673 | 0.6572 |
| 30 | 0.5673 | 0.6572 | 0.7391 |
| 35 | 0.6572 | 0.7391 | 0.8137 |
| 40 | 0.7391 | 0.8137 | 0.8817 |
| 45 | 0.8137 | 0.8817 | 0.9435 |
| 50 | 0.8817 | 0.9435 | 1.0000 |
| 55 | 0.9435 | 1.0000 | 1.0000 |
| 60 | 1.0000 | 1.0000 | 1.0000 |
| 65 | 1.0000 | 1.0000 | 1.0000 |
| 70 | 1.0000 | 1.0000 | 1.0000 |

Table 4. Stand harvest age for the 15-year rolling put

|  |  |  |
| --- | --- | --- |
| Stand Harvest Age | Frequency | |
|  |  |  |
| 20 | 349 | 0.70% |
| 25 | 4653 | 9.31% |
| 30 | 10483 | 20.97% |
| 35 | 11833 | 23.67% |
| 40 | 9830 | 19.66% |
| 45 | 6218 | 12.44% |
| 50 | 3446 | 6.89% |
| 55 | 1755 | 3.51% |
| 60 | 875 | 1.75% |
| 65 | 391 | 0.78% |
| 70 | 167 | 0.33% |