Table 4. Survival, sprouts per cutting planted, ground line diameter (GLD), diameter at breast height, and total height (THT) by clone, location, and year with the CW cropping system at each study site in the Lower Mississippi Alluvial Valley.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SREC | | | | | | | | | | | | | | | | |
| Year | Age | ST-66 | | | | | S7C20 | | | | | MIXED | | | | |
| Survival | Avg. # Sprouts | GLD  (cm) | DBH  (cm) | THT | Survival | Avg. # Sprouts | GLD  (cm) | DBH  (cm) | THT  (cm) | Survival | Avg. # Sprouts | GLD  (cm) | DBH  (cm) | THT  (cm) |
| 2009 | 1 | 73% | 1.4 | 1.2 | --- | 95 | 90% | 1.5 | 1.4 | --- | 95 | 84% | 1.5 | 1.4 | --- | 101 |
| 2010 | 2 | 79% | 1.2 | 4.0 | 2.0 | 344 | 81% | 1.3 | 4.0 | 1.9 | 335 | 86% | 1.3 | 4.2 | 2.0 | 337 |
| 2011 | 3 | 78% | 1.1 | 5.6 | 3.0 | 432 | 81% | 1.1 | 5.3 | 3.0 | 432 | 86% | 1.1 | 5.6 | 3.2 | 432 |
| 2012 | 4 | 78% | 1.0 | 6.4 | 3.6 | 520 | 80% | 1.0 | 6.5 | 3.7 | 525 | 86% | 1.0 | 6.5 | 3.8 | 521 |
| PTBES | | | | | | | | | | | | | | | | |
| Year | Age | ST-66 | | | | | S7C20 | | | | | MIXED | | | | |
| Survival | Avg. # Sprouts | GLD  (cm) | DBH  (cm) | THT  (cm) | Survival | Avg. # Sprouts | GLD  (cm) | DBH  (cm) | THT  (cm) | Survival | Avg. # Sprouts | GLD  (cm) | DBH  (cm) | THT  (cm) |
| 2009 | 1 | 87% | 1.2 | 1.3 | --- | 92 | 89% | 1.3 | 1.3 | --- | 88 | 84% | 1.3 | 1.4 | --- | 95 |
| 2010 | 2 | 68% | 1.1 | 2.4 | 0.4 | 151 | 67% | 1.2 | 2.4 | 0.5 | 141 | 67% | 1.2 | 2.5 | 0.4 | 148 |
| 2011 | 3 | 63% | 1.1 | 3.8 | 1.0 | 202 | 64% | 1.1 | 4.0 | 1.2 | 212 | 64% | 1.2 | 3.9 | 0.9 | 196 |
| 2012 | 4 | 63% | 1.1 | 5.1 | 1.9 | 312 | 63% | 1.1 | 5.8 | 2.4 | 327 | 64% | 1.3 | 5.1 | 1.9 | 297 |
| SF | | | | | | | | | | | | | | | | |
| Year | Age | ST-66 | | | | | S7C20 | | | | | MIXED | | | | |
| Survival | Avg. # Sprouts | GLD  (cm) | DBH  (cm) | THT  (cm) | Survival | Avg. # Sprouts | GLD  (cm) | DBH  (cm) | THT  (cm) | Survival | Avg. # Sprouts | GLD  (cm) | DBH  (cm) | THT  (cm) |
| 2009 | 1 | 79% | 1.3 | 0.7 | --- | 73 | 74% | 1.4 | 0.7 | --- | 68 | 75% | 1.3 | 0.9 | --- | 84 |
| 2010 | 2 | 36% | 1.2 | 1.4 | 0.4 | 133 | 36% | 1.3 | 1.7 | 0.5 | 151 | 40% | 1.2 | 1.5 | 0.5 | 143 |
| 2011 | 3 | 28% | 1.1 | 2.7 | 1.3 | 212 | 31% | 1.0 | 3.1 | 1.3 | 236 | 31% | 1.0 | 3.2 | 1.3 | 249 |
| 2012 | 4 | 28% | 1.1 | 4.1 | 1.9 | 368 | 31% | 0.6 | 2.5 | 1.4 | 227 | 31% | 1.0 | 4.5 | 2.6 | 450 |

Table 5. Percent biomass components for cottonwood trees in the middle of their fourth growing season at three study sites in the Lower Mississippi Alluvial Valley.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Study Site |  | Percent Green Aboveground Components | | | Percent OD Aboveground Woody Biomass | |
| Clone | Bole | Branches | Leaves | Bole | Branches |
| SREC | S7C20 | 51% | 27% | 22% | 68% | 32% |
| ST66 | 54% | 26% | 20% | 71% | 29% |
| Mixed | 52% | 27% | 21% | 70% | 30% |
| Avg for SREC |  | 52% | 27% | 21% | 70% | 30% |
|  |  |  |  |  |  |  |
| PTBES | S7C20 | 37% | 33% | 31% | 57% | 43% |
| ST66 | 39% | 32% | 29% | 60% | 40% |
| Mixed | 37% | 30% | 33% | 59% | 41% |
| Avg for PTBES |  | 38% | 32% | 31% | 58% | 42% |
|  |  |  |  |  |  |  |
| SF | S7C20 | 48% | 23% | 29% | 70% | 30% |
| ST66 | 48% | 21% | 31% | 73% | 27% |
| Mixed | 51% | 21% | 28% | 73% | 27% |
| Avg. for SF |  | 49% | 22% | 29% | 72% | 28% |

Table 6. Average and maximum oven dry aboveground biomass for four-year old cottonwoods grown in the CW treatment at each study site in the Lower Mississippi Alluvial Valley, reported in short tons/acre and kg/ha.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Study Site | Mean (tons/acre) | | | Maximum (tons/acre) | | |
| ST-66 | S7C20 | Mixed | ST-66 | S7C20 | Mixed |
| SREC | 4.7 | 5.0 | 5.9 | 9.8 | 9.1 | 9.3 |
| PTBES | 1.2 | 1.9 | 1.3 | 3.8 | 5.1 | 4.5 |
| SF | 0.9 | 1.2 | 1.4 | 2.5 | 3.1 | 4.0 |
|  | | | | | | |
| Study Site | Mean (kg/ha) | | | Maximum (kg/ha) | | |
| ST-66 | S7C20 | Mixed | ST-66 | S7C20 | Mixed |
| SREC | 10,471 | 11,285 | 13,255 | 22,085 | 20,347 | 20,828 |
| PTBES | 2,603 | 4,247 | 2,937 | 8,444 | 11,352 | 10,135 |
| SF | 2,001 | 2,659 | 3,047 | 5,268 | 6,895 | 8,963 |

Table 7. Average annual oven dry aboveground biomass switchgrass grown in the CW treatment at each study site in the Lower Mississippi Alluvial Valley for years 2 through 4.

|  |  |  |  |
| --- | --- | --- | --- |
| Calendar Year | OD kg/ha | | |
| SREC | PTBES | SF |
| 2010 | N/A | 4,335 | 3,221 |
| 2011 | N/A | 14,168 | 6,960 |
| 2012 | N/A | 8,391 | 13,388 |

Table 8. Average annual oven dry (OD) biomass crop production (kg/ha) at each of the three study sites in the Lower Mississippi Alluvial Valley. Years 2009, 2011, and 2012 are soybean, year 2010 is grain sorghum.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Calendar year | Study Site | OD kg/ha | | |
| Total | Grain | Residue |
| 2009  (soybeans) | SREC | 1,805 | 605 | 1,200 |
| PTBES | 3,769 | 2,045 | 1,725 |
| SF | 3,222 | 161 | 3,061 |
| 2010  (grain sorghum) | SREC | 14,771 | 3,631 | 11,139 |
| PTBES | 9,696 | 871 | 8,824 |
| SF | 15,677 | 273 | 15,404 |
| 2011  (soybeans) | SREC | 4,360 | 1,713 | 2,647 |
| PTBES | 3,616 | 1,803 | 1,814 |
| SF | 1,684 | 336 | 1,348 |
| 2012  (soybeans) | SREC | 3,421 | 1,113 | 2,308 |
| PTBES | 4,432 | 1,861 | 2,571 |
| SF | 6,097 | 2,273 | 3,824 |

Table 9. Cumulative cottonwood, switchgrass, and grain seed and residue biomass production (oven dry kg/ha) at three study sites in the Lower Mississippi Alluvial Valley over the 2009-2012 growing seasons. Switchgrass average production is for three years (2010-2012).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Study site | Cottonwood (average of all varieties) | Switchgrass | Control | | |
| Total | Grain seed | Residue |
| Total | SREC | 11,670 | --- | 24,356 | 7,062 | 17,294 |
| PTBES | 3,262 | 26,894 | 21,513 | 6,579 | 14,934 |
| SF | 2,569 | 23,569 | 26,679 | 3,042 | 23,636 |
|  |  |  |  |  |  |  |
| Average | SREC | 2,918 | --- | 6,089 | 1,765 | 4,323 |
| PTBES | 816 | 8,965 | 5,378 | 1,645 | 3,733 |
| SF | 642 | 7,856 | 6,670 | 761 | 5,909 |