Supplementary Table 1. Parameters of quadratic functions\* (relative yield = *bx2 + ax + c*) for each curve in replacement series between maize and *Amaranthus retroflexus* presented in Figure 4.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Model | Experiment | Relative yield component | *b2* | s.e.m. | *a* | s.e.m. | *c* | s.e.m. | r2 |
| Inflection point | 1 | *Maize* | -0.061 | 0.02 | 0.60 | 0.15 | -0.53 | 0.19 | 0.86 |
|  |  | *A. hybridus* | 0.054 | 0.02 | -0.57 | 0.10 | 1.51 | 0.13 | 0.93 |
|  |  | RYT | -0.007 | 0.03 | 0.03 | 0.18 | 0.98 | 0.24 | 0.01 |
|  | 2 | *Maize* | -0.069 | 0.05 | 0.67 | 0.31 | -0.62 | 0.40 | 0.62 |
|  |  | *A. hybridus* | 0.041 | 0.05 | -0.51 | 0.30 | 1.52 | 0.40 | 0.64 |
|  |  | RYT | -0.028 | 0.07 | 0.16 | 0.41 | 0.91 | 0.54 | 0.02 |
| Maximum biomass | 1 | *Maize* | -0.40 | 0.13 | 2.70 | 0.77 | -2.40 | 1.01 | 0.53 |
|  |  | *A. hybridus* | 0.10 | 0.01 | -0.85 | 0.07 | 1.72 | 0.09 | 0.97 |
|  |  | RYT | -0.30 | 0.13 | 1.85 | 0.78 | -0.68 | 1.02 | 0.32 |
|  | 2 | *Maize* | -0.11 | 0.03 | 0.94 | 0.17 | -0.82 | 0.22 | 0.86 |
|  |  | *A. hybridus* | 0.10 | 0.02 | -0.80 | 0.14 | 1.62 | 0.18 | 0.87 |
|  |  | RYT | -0.02 | 0.04 | 0.14 | 0.21 | 0.80 | 0.28 | 0.09 |
| N uptake | 1 | *Maize* | -0.78 | 0.02 | 0.72 | 0.15 | -0.66 | 0.19 | 0.88 |
|  |  | *A. hybridus* | 0.008 | 0.02 | -0.29 | 0.15 | 1.30 | 0.19 | 0.87 |
|  |  | RYT | -0.07 | 0.03 | 0.42 | 0.19 | 0.63 | 0.25 | 0.29 |
|  | 2 | *Maize* | -0.01 | 0.02 | 0.34 | 0.15 | -0.34 | 0.20 | 0.87 |
|  |  | *A. hybridus* | -0.15 | 0.10 | 0.57 | 0.59 | 0.69 | 0.78 | 0.44 |
|  |  | RYT | -0.16 | 0.10 | 0.90 | 0.59 | 0.35 | 0.77 | 0.19 |
|  |  |  |  |  |  |  |  |  |  |

\* Regression analyses were done with R. Different models were tested, and quadratic functions were chosen for being he most parsimonious based on AIC and r2.

Supplementary Table 2. Parameters of quadratic functions\* (relative yield = *bx2 + ax + c*) for each curve in replacement series between maize and *Setaria faberi* presented in Figure 5.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Model | Experiment | Relative yield component | *b* | s.e.m. | *a* | s.e.m. | *c* | s.e.m. | r2 |
| Inflection point | 1 | *Maize* | -0.09 | 0.02 | 0.76 | 0.12 | -0.62 | 0.16 | 0.89 |
|  |  | *A. hybridus* | 0.05 | 0.01 | -0.53 | 0.08 | 1.44 | 0.10 | 0.95 |
|  |  | RYT | -0.04 | 0.02 | 0.23 | 0.13 | 0.82 | 0.17 | 0.25 |
|  | 2 | *Maize* | -0.09 | 0.03 | 0.76 | 0.19 | -0.56 | 0.25 | 0.62 |
|  |  | *A. hybridus* | 0.07 | 0.02 | -0.65 | 0.11 | 1.58 | 0.14 | 0.64 |
|  |  | RYT | -0.02 | 0.03 | 0.11 | 0.21 | 1.02 | 0.28 | 0.02 |
| Maximum biomass | 1 | *Maize* | -0.12 | 0.03 | 0.95 | 0.19 | -0.82 | 0.26 | 0.83 |
|  |  | *A. hybridus* | 0.08 | 0.01 | -0.70 | 0.08 | 1.59 | 0.10 | 0.96 |
|  |  | RYT | -0.04 | 0.04 | 0.25 | 0.24 | 0.77 | 0.31 | 0.09 |
|  | 2 | *Maize* | -0.10 | 0.07 | 0.82 | 0.43 | -0.59 | 0.56 | 0.41 |
|  |  | *A. hybridus* | 0.09 | 0.02 | -0.75 | 0.10 | 1.60 | 0.13 | 0.93 |
|  |  | RYT | -0.02 | 0.06 | 0.07 | 0.37 | 1.00 | 0.52 | 0.01 |
| N uptake | 1 | *Maize* | -0.10 | 0.04 | 0.80 | 0.24 | -0.62 | 0.32 | 0.69 |
|  |  | *A. hybridus* | 0.003 | 0.05 | -0.30 | 0.30 | 1.38 | 0.39 | 0.66 |
|  |  | RYT | -0.10 | 0.09 | 0.50 | 0.69 | 0.76 | 0.67 | 0.12 |
|  | 2 | *Maize* | 0.003 | 0.02 | 0.23 | 0.11 | -0.23 | 0.14 | 0.87 |
|  |  | *A. hybridus* | 0.01 | 0.05 | -0.30 | 0.28 | 1.28 | 0.37 | 0.44 |
|  |  | RYT | 0.01 | 0.06 | -0.07 | 0.37 | 1.04 | 0.48 | 0.19 |
|  |  |  |  |  |  |  |  |  |  |

\* Regression analyses were done with R. Different models were tested, and quadratic functions were chosen for being he most parsimonious based on AIC and r2.