Table 1. Phenotypic resistance segregation observed in two pseudo-F2 and three backcross (BC) populations at lower mesotrione rate. Chi-square (X2) analysis for expected plant survival assuming control for mesotrione resistance by one major allele.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Run | Rate | Family | Plants treated | Survivors (observed) | Survival ratio | Survivors (expected) | Segregation ratio | *X*2 | *P* |
|  | g ai ha-1 |  |  |  |  |  |  |  |  |
| 1 | 26.25 | R | 10 | 10 | 1 |  |  |  |  |
|  |  | S | 8 | 6 | 0.75 |  |  |  |  |
|  |  | F1-8 | 13 | 13 | 1 |  |  |  |  |
|  |  | F1-9 | 9 | 9 | 1 |  |  |  |  |
|  |  | F1-13 | 8 | 8 | 1 |  |  |  |  |
|  |  | F2-9 | 75 | 65 | 0.87 | 70 | 1R:2F1:1S | 4.3 | 0.02 |
|  |  | F2-13 | 98 | 93 | 1 | 92 | 1R:2F1:1S | 6.5 | 0.00 |
|  |  | BC-8 | 93 | 93 | 1 | 81 | 1F1:1S | 12.7 | 0.00 |
|  |  | BC-9 | 94 | 94 | 1 | 82 | 1F1:1S | 13.9 | 0.00 |
|  |  | BC-13 | 60 | 57 | 0.95 | 53 | 1F1:1S | 2.4 | 0.07 |
| 2 | 26.25 | R | 16 | 16 | 1 |  |  |  |  |
|  |  | S | 14 | 14 | 1 |  |  |  |  |
|  |  | F1-8 | 24 | 24 | 1 |  |  |  |  |
|  |  | F1-9 | 14 | 14 | 1 |  |  |  |  |
|  |  | F1-13 | 24 | 24 | 1 |  |  |  |  |
|  |  | F2-9 |  |  |  |  | 1R:2F1:1S |  |  |
|  |  | F2-13 |  |  |  |  | 1R:2F1:1S |  |  |
|  |  | BC-8 |  |  |  |  | 1F1:1S |  |  |
|  |  | BC-9 |  |  |  |  | 1F1:1S |  |  |
|  |  | BC-13 |  |  |  |  | 1F1:1S |  |  |

Table 2. Phenotypic resistance segregation observed in two pseudo F2 and three backcross (BC) populations at labeled mesotrione rate. Chi-square (X2) analysis for expected plant survival assuming control for mesotrione resistance by one major allele.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Run | Rate | Family | Plants treated | Survivors (observed) | Survival ratio | Survivors (expected) | Segregation ratio | X2 | *P* |
|  | g ai ha-1 |  |  |  |  |  |  |  |  |
| 1 | 105 | R | 8 | 8 | 1 |  |  |  |  |
|  |  | S | 8 | 0 | 0 |  |  |  |  |
|  |  | F1-8 | 24 | 19 | 0.79 |  |  |  |  |
|  |  | F1-9 | 14 | 14 | 1 |  |  |  |  |
|  |  | F1-13 | 13 | 13 | 1 |  |  |  |  |
|  |  | F2-9 | 98 | 82 | 0.84 | 74 | 1R:2F1:1S | 3.48 | 0.04 |
|  |  | F2-13 | 98 | 86 | 0.88 | 74 | 1R:2F1:1S | 7.83 | 0.00 |
|  |  | BC-8 | 96 | 85 | 0.88 | 38 | 1F1:1S | 92.93 | <0.00 |
|  |  | BC-9 | 96 | 90 | 0.94 | 48 | 1F1:1S | 71.76 | <0.00 |
|  |  | BC-13 |  |  |  |  | 1F1:1S |  |  |
| 2 | 105 | R | 17 | 17 | 1 |  |  |  |  |
|  |  | S | 13 | 0 | 0 |  |  |  |  |
|  |  | F1-8 | 24 | 13 | 0.54 |  |  |  |  |
|  |  | F1-9 | 10 | 10 | 1 |  |  |  |  |
|  |  | F1-13 | 24 | 23 | 0.96 |  |  |  |  |
|  |  | F2-9 |  |  |  |  | 1R:2F1:1S |  |  |
|  |  | F2-13 |  |  |  |  | 1R:2F1:1S |  |  |
|  |  | BC-8 |  |  |  |  | 1F1:1S |  |  |
|  |  | BC-9 |  |  |  |  | 1F1:1S |  |  |
|  |  | BC-13 |  |  |  |  | 1F1:1S |  |  |

Table 3. Phenotypic resistance segregation observed in two pseudo F2 and three back-cross (BC) populations at higher mesotrione rate. Chi-square (X2) analysis for expected plant survival assuming control for mesotrione resistance by one major allele.

Table 3. Phenotypic resistance segregation observed in two pseudo F2 and three backcross (BC) populations at higher mesotrione rate. Chi-square (X2) analysis for expected plant survival assuming control for mesotrione resistance by one major allele.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Run | Rate | Family | Plants treated | Survivors (observed) | Survival ratio | Survivors (expected) | Segregation ratio | X2 | *P* |
|  | g ai ha-1 |  |  |  |  |  |  |  |  |
| 1 | 420 | R | 8 | 8 | 1 |  |  |  |  |
|  |  | S | 8 | 0 | 0 |  |  |  |  |
|  |  | F1-8 | 13 | 1 | 0.08 |  |  |  |  |
|  |  | F1-9 | 9 | 3 | 0.33 |  |  |  |  |
|  |  | F1-13 | 12 | 9 | 0.75 |  |  |  |  |
|  |  | F2-9 | 91 | 85 | 0.93 | 38 | 1R:2F1:1S | 97.7 | <0.00 |
|  |  | F2-13 | 96 | 56 | 0.58 | 60 | 1R:2F1:1S | 0.54 | 0.39 |
|  |  | BC-8 | 98 | 53 | 0.54 | 4 | 1F1:1S | 691.2 | <0.00 |
|  |  | BC-9 |  |  |  |  | 1F1:1S |  |  |
|  |  | BC-13 |  |  |  |  | 1F1:1S |  |  |
| 2 | 420 | R | 16 | 16 | 1 |  |  |  |  |
|  |  | S | 15 | 0 | 0 |  |  |  |  |
|  |  | F1-8 | 24 | 1 | 0.04 |  |  |  |  |
|  |  | F1-9 | 9 | 4 | 0.44 |  |  |  |  |
|  |  | F1-13 | 24 | 22 | 0.91 |  |  |  |  |
|  |  | F2-9 |  |  |  |  | 1R:2F1:1S |  |  |
|  |  | F2-13 |  |  |  |  | 1R:2F1:1S |  |  |
|  |  | BC-8 |  |  |  |  | 1F1:1S |  |  |
|  |  | BC-9 |  |  |  |  | 1F1:1S |  |  |
|  |  | BC-13 |  |  |  |  | 1F1:1S |  |  |