

Table S4 Tetraploid ‘Miracle Wheat’ used for allelism test and the corresponding F₁ phenotype.

| Cross | | | Resulted Progeny | plant number | spikes per plant | branched spikes |
|----------|---|----------|------------------|--------------|------------------|--------------------|
| Tri 3261 | * | Tri 9652 | plant 1 | XIX-2012-1 | 3 | 1 |
| Tri 3261 | * | Tri 9652 | plant 2 | XIX-2012-2 | 3 | no branched spikes |
| Tri 3261 | * | Tri 9652 | plant 3 | XIX-2012-3 | 2 | 2 |
| Tri 3261 | * | Tri 9652 | plant 4 | XIX-2012-4 | 4 | 3 |
| Tri 3261 | * | Tri 9652 | plant 5 | XIX-2012-5 | 2 | 2 |
| Tri 3261 | * | Tri 9652 | plant 6 | XIX-2012-6 | 2 | 2 |
| Tri 3261 | * | Tri 9652 | plant 7 | XIX-2012-7 | 4 | 4 |
| Tri 3261 | * | Tri 9652 | plant 8 | XIX-2012-8 | 3 | 3 |
| Tri 3261 | * | Tri 9652 | plant 9 | XIX-2012-9 | 3 | 3 |
| Tri 3261 | * | Tri 9652 | plant 10 | XIX-2012-10 | 3 | 3 |
| Tri 9652 | * | Tri 3261 | plant 1 | XIX-2012-11 | 4 | 4 |
| Tri 9652 | * | Tri 3261 | plant 2 | XIX-2012-12 | 2 | 2 |
| Tri 9652 | * | Tri 3261 | plant 3 | XIX-2012-13 | 3 | 3 |
| Tri 9652 | * | Tri 3261 | plant 4 | XIX-2012-14 | 3 | 2 |
| Tri 9652 | * | Tri 3261 | plant 5 | XIX-2012-15 | 3 | 3 |
| Tri 9652 | * | Tri 3261 | plant 6 | XIX-2012-16 | 3 | 3 |
| Tri 9652 | * | Tri 3261 | plant 7 | XIX-2012-17 | 4 | 4 |
| Tri 9652 | * | Tri 3261 | plant 8 | XIX-2012-18 | 2 | 2 |
| Tri 9652 | * | Tri 5283 | plant 1 | XIX-2012-22 | 2 | 2 |
| Tri 9652 | * | Tri 5283 | plant 2 | XIX-2012-23 | 2 | 2 |
| Tri 9652 | * | Tri 5283 | plant 3 | XIX-2012-24 | 3 | 3 |
| Tri 9652 | * | Tri 5283 | plant 4 | XIX-2012-25 | 4 | 3 |
| Tri 9652 | * | Tri 5283 | plant 5 | XIX-2012-26 | 4 | 4 |
| Tri 9652 | * | Tri 5283 | plant 6 | XIX-2012-27 | 3 | 3 |
| Tri 9652 | * | Tri 5283 | plant 7 | XIX-2012-28 | 3 | 3 |
| Tri 9652 | * | Tri 5283 | plant 8 | XIX-2012-29 | 3 | 3 |
| Tri 9652 | * | Tri 5283 | plant 2 | XIX-2012-31 | 3 | 2 |
| Tri 9652 | * | Tri 5283 | plant 3 | XIX-2012-32 | 3 | 3 |
| Tri 9652 | * | Tri 5283 | plant 4 | XIX-2012-33 | 3 | 3 |
| Tri 3261 | * | Tri 5283 | plant 1 | XIX-2012-34 | 3 | 3 |
| Tri 3261 | * | Tri 5283 | plant 2 | XIX-2012-35 | 3 | 3 |
| Tri 3261 | * | Tri 5283 | plant 3 | XIX-2012-36 | 5 | 5 |
| Tri 3261 | * | Tri 5283 | plant 4 | XIX-2012-37 | 3 | 3 |
| Tri 3261 | * | Tri 5283 | plant 5 | XIX-2012-38 | 3 | 3 |
| Tri 984 | * | Tri 5283 | plant 1 | XIX-2012-39 | 4 | 3 |