**Table S1. Populations of *Amaranthus tuberculatus*, including their pedigree and designation, used in this study.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Population Name** | **Source** | **Generation Number** | **Line Number** | **Designations in manuscript** |
| SIR a | Stanford, IL USA | 0 | NA | Sub-population derived from the original MCR; original field population; MHR *A. tuberculatus* population |
| SEN a | Herbiseed, Twyford, UK e | 0 | NA | VLCFA\* inhibiting herbicide-sensitive population; sensitive population; sensitive parent |
| DK1b | SIR × SIR | 1 c | NA | DK1-1, DK1-2, DK1-3, DK1-4 |
| DK2b | DK1× DK1 | 2 c | NA | DK2-1, DK2-2, DK2-3, DK2-4 |
| DK3b | DK2× DK2 | 3 c | NA | DK3-1, DK3-2, DK3-3, DK3-4 |
| DK3-1b | DK2-1× DK2-1 | 3 c | 1 | DK3-1 |
| DK3-2b | DK2-2× DK2-2 | 3 c | 2 | DK3-2; resistant *A. tuberculatus* parent; R×R parent; R parent |
| DK3-3b | DK2-3× DK2-3 | 3 c | 3 | DK3-3 |
| DK3-4b | DK2-4× DK2-4 | 3 c | 4 | DK3-4 |
| F1-♂ b | ♂DK3-2× ♀SEN | 1 d | NA | F1-♂; paternal F1 |
| F1-♀ b | ♂SEN × ♀DK3-2 | 1 d | NA | F1-♀; maternal F1 |
| F2-♂-1 b | F1-♂ × F1-♀ | 2 c | 1 | F2-♂; paternal F2 |
| F2-♂-2 b | F1-♂ × F1-♀ | 2 c | 2 | F2-♂; paternal F2 |
| F2-♀-1 b | F1-♀ × F1-♂ | 2 c | 1 | F2-♀; maternal F2 |
| F2-♀-2 b | F1-♀ × F1-♂ | 2 c | 2 | F2-♀; maternal F2 |

a Refers to seed collected from field populations of *A. tuberculatus.*

b  Refers to synthetic populations of *A. tuberculatus* created by the authors.

c  Population derived from full-sib mating of *A. tuberculatus*plants.

d  Population derived from a cross between two different *A. tuberculatus*populations.

e Information from Kaundun et al. (2017), doi:10.1371/journal.pone.0180095

\* VLCFA, very-long-chain fatty acid