

Supplement 1: Korres N.E. et al. Seedbank persistence of *Amaranthus palmeri* (Palmer amaranth) and *Amaranthus tuberculatus* (tall waterhemp) across diverse geographical regions in the United States

Table S1. *Amaranthus palmeri* seedbank dynamics during 2014-2016 for two burial depths treatments (0 and 15 cm) and seven experimental sites with diverse climates and soil conditions.

Species	Year	Burial depth (cm)	Site	Initial # seeds	Intact seeds	Damaged seeds*	Viable seeds	NViable seeds
<i>Amaranthus palmeri</i>	2014	0	Arkansas	100	58.1	41.9	15.8	42.1
			Illinois		48.6	50.4	8.1	40.5
			Indiana		59.8	40.2	34.1	25.7
			Mississippi		67.1	32.9	39.3	27.8
			Missouri		60.8	39.1	7.2	53.6
			Tennessee		59.4	40.5	16.4	43.0
			Wisconsin		70.2	29.8	14.6	55.6
		15	Arkansas	100	75.9	24.1	25.5	50.4
			Illinois		64.4	35.6	20.7	43.6
			Indiana		71.5	28.5	29.7	41.8
			Mississippi		97.0	3.0	66.2	30.8
			Missouri		62.1	37.8	14.7	47.4
			Tennessee		74.6	25.4	13.8	60.8
			Wisconsin		79.5	20.5	18.7	60.8
	2015	0	Arkansas	100	44.4	55.6	4.5	39.9
			Illinois		42.3	57.7	3.5	38.8
			Indiana		66.1	33.9	21.3	44.8
			Mississippi		56.4	43.6	12.0	44.2
			Missouri		31.1	68.9	2.3	28.7
			Tennessee		57.8	42.2	4.8	53.0
			Wisconsin		63.2	36.8	2.5	60.6
		15	Arkansas	100	45.5	54.4	6.1	39.4
			Illinois		44.5	55.5	11.7	32.8
			Indiana		78.8	21.2	12.6	66.2
			Mississippi		69.9	30.1	39.0	30.9
			Missouri		62.4	37.5	6.3	56.2
			Tennessee		57.1	42.9	1.5	55.5
			Wisconsin		77.8	22.2	2.7	75.1
2016	0	Arkansas	100	14.3	85.7	1.5	12.7	
		Illinois		14.7	85.3	0.9	13.8	
		Indiana		47.0	53.0	13.4	33.6	

			Mississippi		27.9	72.1	8.8	19.1	
			Missouri		20.3	79.7	1.9	18.3	
			Tennessee		35.1	64.9	5.3	29.8	
			Wisconsin		55.7	44.3	4.6	51.2	
		15		100	Arkansas	25.6	74.4	5.2	20.3
					Illinois	33.8	66.2	5.5	28.3
					Indiana	65.7	34.2	5.9	59.8
					Mississippi	55.1	44.9	18.2	36.9
					Missouri	50.8	49.1	1.6	49.2
					Tennessee	29.2	70.8	3.8	25.4
					Wisconsin	74.7	25.3	9.1	65.6

Data included in the table above are the mean of three replications per site for each burial depth and location of seed origin.

*Damaged seeds contained broken, shrunk, or malformed seeds (Figure 3) and those lost due to deterioration and futile germination and were impossible to measure but they were estimated. NViab=non-viable.

Supplement 2: Korres N.E. et al. Seedbank persistence of *Amaranthus palmeri* (Palmer amaranth) and *Amaranthus tuberculatus* (tall waterhemp) across diverse geographical regions in the United States

Table S2. *Amaranthus tuberculatus* seedbank dynamics during 2014-2016 for two burial depths treatments (0 and 15 cm) and seven experimental sites with diverse climates and soil conditions.

Species	Year	Burial depth (cm)	Site	Initial # seeds	Intact seeds	Damaged seeds*	Viable seeds	NViable seeds
<i>Amaranthus tuberculatus</i>	2014	0	Arkansas	100	67.5	32.5	14.4	53.1
			Illinois		48.2	51.8	5.3	42.8
			Indiana		66.2	33.8	41.3	24.9
			Mississippi		89.2	10.7	39.8	49.4
			Missouri		58	42.0	6.7	51.3
			Tennessee		54.9	45.1	3.2	51.7
			Wisconsin		71.6	28.4	17.4	54.2
		15	Arkansas	100	86.3	13.7	30.3	55.9
			Illinois		70.3	29.7	12.2	58.1
			Indiana		71.5	28.5	21.9	49.6
			Mississippi		90.4	9.6	37.2	53.2
			Missouri		81.8	18.2	16.3	65.5
			Tennessee		67.6	32.4	2.8	64.8
			Wisconsin		89.3	10.7	46.1	43.2
	2015	0	Arkansas	100	41.2	58.8	1.0	40.2
			Illinois		26.9	73.1	2.0	24.9
			Indiana		52.0	48.0	24.1	27.9
			Mississippi		60.2	39.8	4.2	56.0
			Missouri		22.0	78.0	0.9	21.1
			Tennessee		36.9	63.1	3.4	33.5
			Wisconsin		62.3	37.7	17.3	44.9
		15	Arkansas	100	74.2	25.8	5.2	69.0
			Illinois		63.4	33.6	16.8	49.6
			Indiana		72.0	28.0	26.4	45.6
			Mississippi		66.3	33.7	4.9	61.3
			Missouri		70.3	29.6	1.6	68.7
			Tennessee		59.5	40.5	2.9	56.6
			Wisconsin		76.9	23.1	30.9	46.0
2016	0	Arkansas	100	20.5	79.5	1.5	19.0	
		Illinois		11.2	88.8	0	11.2	
		Indiana		38.0	62.0	18.9	19.1	

			Mississippi		30.3	69.7	2.2	28.1
			Missouri		26.1	73.9	0.6	25.5
			Tennessee		35.0	65.0	2.7	32.3
			Wisconsin		61.1	38.9	10.1	51.0
		15	Arkansas	100	35.8	64.2	2.6	33.1
			Illinois		49.3	50.7	2.7	46.6
			Indiana		62.5	37.5	12.8	49.6
			Mississippi		58.9	41.1	5.4	53.5
			Missouri		54.2	45.8	0.4	53.8
			Tennessee		23.4	76.6	1.6	21.8
			Wisconsin		76.6	23.4	14.2	62.3

Data included in the table above are the mean of three replications per site for each burial depth and location of seed origin.

*Damaged seeds contained broken, shrunk, or malformed seeds (Figure 3) and those lost due to deterioration and futile germination and were impossible to measure but they were estimated. NViab=non-viable.