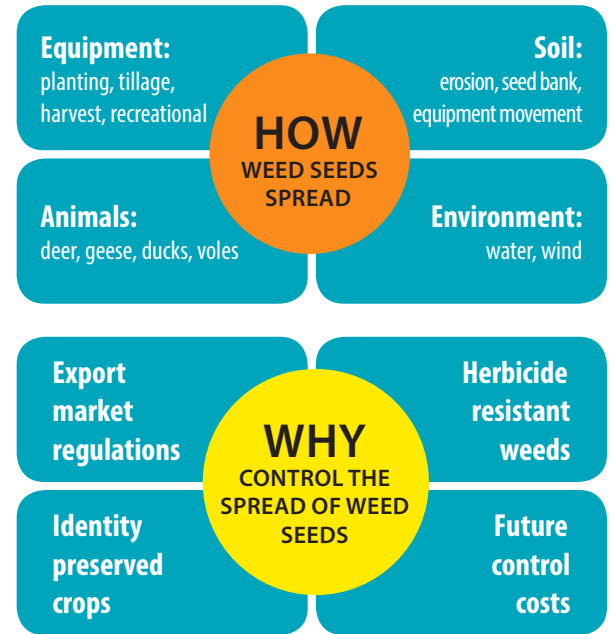


WEED SEED MANAGEMENT AT CROP HARVEST

Weed seed in harvested crops can negatively impact a farm's potential profits. Sometimes the impact can be immediate like crop yield reduction, the rejection of a grain load due to export market regulations; and at other times, it can set the stage for future problems like herbicide resistance and increased control costs.

Although weed seed can spread in ways that can't be controlled (animals, wind), there are management strategies that can prevent seeds from further spreading farm to farm (cleaning equipment, hand weeding before harvest, reducing erosion).

The timing of weed seed control is also important; **weed seed management at crop harvest is critical** because at harvest, weeds that have survived other control attempts during the growing season and produced viable seed (also called weed escapes) can be spread from farm to farm if equipment is not properly and thoroughly cleaned. Many species have the potential to be troublesome but waterhemp has proven to be exceptionally challenging in recent years.



Watch our video!

How to Clean a Combine to Limit the Spread of Weed Seeds

<https://youtu.be/nDMq1UanSkE>



WEED SEED PRODUCTION & RETENTION IN SOYBEAN

TABLE 1

		Seed Production per plant		Seed Retention % at harvest	
		2013	2014	2013	2014
Palmer amaranth	Arkansas	50,022 \pm 8,209	33,195 \pm 5,775	99.98 \pm 0.00	99.85 \pm 0.05
	Illinois	26,038 \pm 3,753	-	99.95 \pm 0.03	-
	Nebraska	36,978 \pm 5,399	58,004 \pm 9,434	98.89 \pm 0.23	99.93 \pm 0.02
	Missouri	13,384 \pm 27,363	60,221 \pm 21,991	99.98 \pm 0.00	99.67 \pm 0.20
	Tennessee	22,833 \pm 4,914	-	99.96 \pm 0.01	-
Waterhemp	Illinois	25,649 \pm 5,800	11,833 \pm 2,277	99.98 \pm 0.01	94.98 \pm 0.94
	Nebraska	60,228 \pm 8,348	82,811 \pm 15,051	99.99 \pm 0.00	99.63 \pm 0.10
	Missouri	19,727 \pm 2,493	23,787 \pm 4,200	100.00 \pm 0.00	99.84 \pm 0.04
	Wisconsin	17,459 \pm 2,625	38,221 \pm 7,956	99.96 \pm 0.00	98.80 \pm 0.30

Adapted from: Schwartz, L., Norsworthy, J., Young, B., Bradley, K., Kruger, G., Davis, V., Steckel, L., Walsh, M. (2016). Tall Waterhemp (*Amaranthus tuberculatus*) and Palmer amaranth (*Amaranthus palmeri*) Seed Production and Retention at Soybean Maturity. Weed Technology, 30(1), 284-290. doi:10.1614/WT-D-15-00130.1

TABLE 2

	Total Seed Captured per plant	% Seed Shattered before crop harvest	% Seed Shattered during harvest delay	% Retained on plant after simulated harvest
Redroot pigweed	149,427 \pm 27,267	7.2 \pm 1.1	7.7 \pm 0.9	85.1 \pm 17.5
Common ragweed	2,204 \pm 382	7.2 \pm 1.2	14.1 \pm 2.4	78.7 \pm 15.3
Common lambsquarters	62,091 \pm 11,332	4.3 \pm 0.7	40.6 \pm 8.1	55.2 \pm 12.0
Common cocklebur	1,325 \pm 155	14.4 \pm 3.5	48.2 \pm 8.2	38.9 \pm 5.5
Giant foxtail	26,334 \pm 2,124	26.3 \pm 3.6	24.0 \pm 2.8	49.8 \pm 5.2
Large crabgrass	84,721 \pm 11,637	46.3 \pm 6.9	13.7 \pm 1.9	40.0 \pm 7.7

Adapted from: Haring S. (2017) Harvest Weed Seed Control: An Integrated Weed Management Strategy for Organic and Conventional Production System. M.S. Thesis, Blacksburg, VA: Virginia Tech. 64 p

BURIED WEED SEED LONGEVITY AND NUMBER OF SEEDS PRODUCED

TABLE 3

	Years of Seed Burial when exhumed											
	0	1	2	3	4	5	6	7	8	9	12	17
	% germination											
Barnyardgrass	17	4	4	19	16	35	20	8	3	8	3	1
Common cocklebur	10	60	36	16	16	4	3	0	18	20	0	0
Common lambsquarters	28	53	43	40	40	17	48	36	21	37	42	28
Pennsylvania smartweed	11	3	1	1	1	30	0	0	0	1	0	7
Redroot pigweed	66	73	27	5	8	1	3	3	0	2	7	0
Waterhemp	40	38	10	7	12	10	14	3	2	7	6	3
Velvetleaf	15	32	23	43	17	40	70	5	24	41	25	25
Canada thistle	60	47	39	44	40	35	31	29	28	34	14	9
Curly dock	76	83	73	88	88	89	87	87	91	86	83	77
Dandelion	2	3	6	3	1	5	1	0	0	1	0	0

Adapted from:
Burnside, O., Wilson, R., Weisberg, S., & Hubbard, K. (1996). Seed Longevity of 41 Weed Species Buried 17 Years in Eastern and Western Nebraska. *Weed Science*, 44(1), 74-86. doi:10.1017/S0043174500093589
Zimdahl, R. (2018). *Fundamentals of Weed Science*. 5th ed. Academic Press, Cambridge, MA

