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Seed longevity of ten weed species six years after burial at two depths

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The longevity of weed seeds is a primary factor in determining potential weed population problems. The ability to anticipate successive weed generation effects enables the formulation of control strategies before populations reach yield impact level. A burial study plot was established in the last week of October of 1990 at four different dryland locations in Wyoming. Ten weed species were buried at two depths in replicates of four at each of the sites. Packets made from 100 micron mesh screen, containing 100 seeds of each species were buried at one- and six- inch depths in four- inch diameter holes, spaced twelve inches apart. Soil was firmly tamped after packet placement and a grass cover was allowed to develop over each study site. Seed packets were carefully removed from each of the four sites in October of 1991, 1992, 1994 and 1996. Holes were refilled and the packets were transported to the laboratory for comparison with stored samples using the tetrazolium chloride viability test.

Average seed viability declined over 2 and 4% between the first and second year of the study and 6 and 7% between the second and fourth years of the study at the one- and six- inch depths, respectively. Of the four monocot species tested only jointed goatgrass retained over one percent viability after six years. Cutleaf nightshade, field bindweed and spotted knapweed retained the highest viability of the weed species tested with viability remaining greater than 20%, 34% and 3%, respectively.

Table. Seed viability at two soil depths six years after burial at four locations in Wyoming, 1997.

Weed Species (Lab Viability) ^a	Location				Mean
	Cheyenne	Laramie	Sheridan	Torrington	
	% viable seed ^b				
	(1 inch depth)				
Field bindweed (85)	13	1	6	29	12
Cutleaf nightshade (55)	31	35	46	19	33
Spotted knapweed (64)	0	3	2	0	1
Jointed goatgrass (74)	0	1	0	0	0
Leafy spurge (44)	0	0	0	0	0
Canada thistle (0)	0	0	0	0	0
Wild oat (17)	0	0	0	0	0
Green foxtail (1)	0	0	0	0	0
Kochia (42)	0	0	0	0	0
Downy brome (8)	0	0	0	0	0
Mean (39)	4	4	5	5	5
	(6 inch depth)				
Field bindweed	73	46	25	78	56
Cutleaf nightshade	10	14	2	0	7
Spotted knapweed	6	10	2	2	5
Jointed goatgrass	0	1	3	2	5
Leafy spurge	15	0	10	1	7
Canada thistle	0	0	0	0	0
Wild oats	0	1	5	0	2
Green foxtail	0	0	0	0	0
Kochia	0	0	0	0	0
Downy brome	0	0	0	0	0
Mean	10	7	5	8	8

^a() = viability of seed stored in nylon packets in sealed glass jars at 70 – 75° F for six years in Weed Science Lab.

^bAll seed viability based on tetrazolium chloride test of 400 seeds.