

Table 131. HRS wheat and barley losses in North Dakota from various weeds in 1978 and 1979 based on individual weed competition data (from Dexter et al. 1981).

	HRS wheat					Barley				
	Weed Infestations					Weed Infestations				
	Weed Freq	Weed Density	Acres ^a	Yield Loss ^b	Grain Loss ^c	Weed Freq	Weed Density	Acres ^a	Yield Loss ^b	Grain Loss ^c
1978	%	pl/m ²	1000	%	1000 bu	%	pl/m ²	1000	%	1000 bu
Green foxtail	94	43.3	9,212	3.0	10,747	98	43.3	2,450	2.3	3,274
Yellow foxtail	17	18.5	1,666	1.5	913	2	18.0	50	1.1	182
Wild oat	67	9.5	6,566	8.0	15,072	63	11.3	1,575	7.1	4,177
Wild buckwheat	54	5.2	5,292	1.5	2,069	53	8.6	1,325	1.5	735
Wild mustard	12	2.8	1,176	2.0	1,606	13	3.2	325	1.7	269
Field bindweed	9	7.6	882	18.0	5,332	9	6.6	225	8.9	654
Canada thistle	11	3.5	1,078	17.0	7,196	15	4.6	375	15.0	3,342
Total				14.3	42,935				11.7	12,633
1979										
Green foxtail	95	74.6	9,405	5.0	13,018	99	93.5	1,717	4.7	3,895
Yellow foxtail	27	21.1	2,673	1.5	1,070	25	34.3	425	1.7	338
Wild oat	67	7.6	6,633	7.0	13,130	67	8.0	1,139	5.1	2,816
Wild buckwheat	66	4.2	6,534	1.0	1,735	86	5.0	1,462	0.8	542
Wild mustard	39	3.4	3,861	2.4	2,497	32	2.1	544	1.1	278
Field bindweed	19	5.0	1,881	9.0	4,893	10	2.8	170	3.8	309
Canada thistle	17	2.3	1,683	15.0	7,811	32	3.4	544	12.7	3,640
Total				17.0	44,154				15.1	11,818

^a Acres infested was obtained by multiplying weed frequency by crop acres which was 9.8 million (m) for HRS wheat and 2.5 m for barley in 1978 and 9.9 m for HRS wheat and 1.7 m for barley.

^b Percent yield loss caused by weed competition was based on weed density and competition data from the literature as follows: green and yellow foxtail (assumed similar), wild oat, wild mustard, and wild buckwheat (Nalewaja 1972), field bindweed (Gigax 1978), and Canada thistle (Hodgson 1968). Total % yield loss is based on all acres.

^c Grain loss based on average North Dakota production of 29.8 bu/A for HRS wheat and 46 bu/A for barley in 1978 and 26.3 bu/A for HRS wheat and 46 bu/A for barley in 1979. Losses from weed competition in barley were only available for wild oat where loss in barley was about 25% less than in HRS wheat for wild oat plants (Bell and Nalewaja 1968). The losses in barley from all weeds were assumed at 25% less than in HRS wheat.

Table 132. Crop losses in North Dakota from various weeds in summer 2000 based on individual weed competition data.

	HRS wheat, durum, and barley					Canola				
	Weed Infestations					Weed Infestations				
	Weed Freq	Weed Density	Acres ^a	Yield Loss ^b	Grain Loss ^c	Weed Freq	Weed Density	Acres ^a	Yield Loss ^b	Grain Loss ^c
	%	pl/m ²	1000	%	1000 bu	%	pl/m ²	1000	%	1000 lb
Green foxtail	57	31.5	6,327	2.5	4,551	11	28.5	138	-	-
Wild oat	54	12.0	5,994	10.0	20,852	53	11.9	663	9.6	83,952
Yellow foxtail	32	27.9	3,552	2.5	3,091	-	-	-	-	-
Wild buckwheat	38	11.3	4,218	4.0	5,870	5	5.4	63	-	-
Kochia	41	8.4	4,551	5.0	7,916	53	9.0	663	-	-
Canada thistle	32	8.2	3,552	27.0	35,502	42	8.9	525	14.1	97,713
Pigweed species	23	8.9	2,553	-	-	5	5.4	63	-	-
Field bindweed	12	9.3	1,332	25.0	12,327	-	-	-	-	-
Quackgrass	12	7.9	1,332	-	-	11	4.8	138	1.6	2,904
Common lambsquarters	11	5.0	1,221	-	-	16	4.3	200	-	-
Common ragweed	9	8.9	999	21.0	7,298	11	6.5	138	-	-
Russian thistle	9	6.6	999	-	-	-	-	-	-	-
Common milkweed	11	3.9	1,221	22.0	9,335	-	-	-	-	-
Perennial sowthistle	7	4.7	777	11.0	2,973	26	4.3	325	3.3	14,157
Sunflower	7	3.4	777	10.0	2,703	11	2.2	138	-	-
Wild mustard	6	6.2	666	5.0	1,158	37	6.8	463	16.0	97,680
Field pennycress	4	9.7	444	-	-	5	1.1	63	-	-
Barnyardgrass	5	3.6	555	-	-	5	4.3	63	-	-
Common cocklebur	4	4.1	444	12.0	1,854	5	1.1	63	-	-
Volunteer cereal	-	-	-	-	-	16	8.3	200	11.3	29,832
Flixweed/Tansy mustard	2	0.6	220	-	-	16	4.3	200	10.0	26,400
Total				28.1	115,430				21.4	352,638

^a Acres infested was obtained by multiplying weed frequency by crop acres which was 6.4 million for HRS wheat, 2.9 m for durum wheat, 1.8 m for barley, and 1.25 m for canola in 2000 (NDAS 2002).

^b Percent yield loss caused by weed competition was based on weed density and competition data from the literature: HRS wheat, durum wheat and barley: green and yellow foxtail (assumed similar), wild oat, wild mustard, and wild buckwheat (Nalewaja 1972), kochia (Dahl 1984), Canada thistle and perennial sowthistle (perennial sowthistle assumed 50% less than Canada thistle) (Donald 1990, Hodgson 1968), field bindweed (Gigax 1978), common milkweed (Yenish et al. 1997), and common sunflower, common ragweed, common cocklebur (assumed similar) (Gillespie 1982).

Canola: wild oat, Canada thistle, quackgrass, perennial sowthistle, and volunteer cereal (Canola Grower Manual). Total % yield loss is based on all acres.

^c Grain loss based on average North Dakota production of 36.5 bu/A for HRS wheat, 27 bu/A for durum wheat, 55 bu/A for barley, and 1,320 lbs/A for canola in 2000 (NDAS 2002). Losses from weed competition in barley were only available for wild oat where loss in barley was about 25% less than in HRS wheat for wild oat plants (Bell and Nalewaja 1968). The losses in barley from all weeds were assumed at 25% less than in HRS wheat.

Table 132 (continued).

	Soybean and dry bean					Sunflower				
	Weed Infestations					Weed Infestations				
	Weed Freq	Weed Density	Acres ^a	Yield Loss ^b	Grain Loss ^c	Weed Freq	Weed Density	Acres ^a	Yield Loss ^b	Grain Loss ^c
%	pl/m ²	1000	%	1000 bu	%	pl/m ²	1000	%	1000 lb	
Green foxtail	35	9.1	831	5	1,330	73	21.0	927	13	165,599
Wild oat	11	5.6	261	20	1,672	27	8.5	343	20	94,229
Yellow foxtail	27	10.8	641	6	1,231	32	20.5	406	13	72,591
Wild buckwheat	13	4.1	308	-	-	36	7.1	457	-	-
Kochia	25	7.0	594	-	-	43	5.1	546	22	165,075
Canada thistle	31	4.6	736	-	-	43	6.8	547	-	-
Pigweed species	16	6.2	380	40	4,864	35	5.8	445	-	-
Field bindweed	4	4.3	95	-	-	18	5.1	229	-	-
Quackgrass	10	5.4	238	0	0	12	9.7	152	-	-
Common lambsquarters	13	3.6	309	28	2,766	15	2.9	191	-	-
Common ragweed	17	3.0	404	26	3,359	25	8.0	318	-	-
Russian thistle	2	3.2	48	-	-	24	3.3	305	-	-
Common milkweed	8	3.4	190	-	-	3	3.0	38	-	-
Biennial wormwood	11	3.6	261	20	1,672	-	-	-	-	-
Sunflower	8	5.1	190	69	4,195	-	-	-	-	-
Wild mustard	9	3.0	214	30	2,052	14	5.8	178	13	31,759
Field pennycress	3	12.9	71	-	-	9	6.0	114	-	-
Flixweed/Tansy mustard	4	2.2	95	-	-	11	1.1	140	-	-
Canola	0.5	2.2	19	22	84	8	30.8	102	31	43,276
Common cocklebur	10	5.3	238	68	5,168	11	2.8	140	-	-
Volunteer cereal	14	6.6	333	22	2,341	16	10.9	203	25	69,799
Eastern black nightshade	9	5.7	214	14	958	16	6.3	203	-	-
Barnyardgrass	4	3.0	95	-	-	1	1.1	13	-	-
Common mallow	5	2.8	119	-	-	8	4.4	10	-	-
Total				41.7	31,692				36.8	642,328

^a Acres infested was obtained by multiplying weed frequency by crop acres which was 1.85 million for soybean, 0.525 m for dry beans, and 1.27 m for sunflower in 2000 (NDAS 2002).

^b Percent yield loss caused by weed competition was based on weed density and competition data from the literature: Soybean and dry beans (assume equal yield reduction even though dry beans are less competitive than soybean and would result in a greater % yield loss): green and yellow foxtail (assume similar), wild oat, volunteer cereal (assume similar), pigweed, common ragweed (assume similar), wild mustard, volunteer canola (assume similar), common cocklebur (Stoller et al. 1987), common lambsquarters (Crook and Renner 1990), biennial wormwood (Nelson 1992), sunflower (Auwater 1978), nightshade (Blackshaw 1991), quackgrass (Young et al. 1982).

Sunflower: green and yellow foxtail (assume similar), wild oat, volunteer cereals (assume similar), wild mustard, volunteer canola (assume similar), kochia (Blamey et al. 1997). Total % yield loss is based on all acres.

^c Grain loss based on average North Dakota production of 43 bu/A for soybean, 1,450 lbs/A for dry beans, and 1,374 lbs/A for sunflower in 2000 (NDAS 2002).

Common and Scientific Names of weeds which occurred in the 2000 survey.
Source: WSSA Composite Weeds List

<u>Common Name</u>	<u>Scientific Name</u>	<u>Common Name</u>	<u>Scientific Name</u>
Alfalfa	<i>Medicago sativa</i> L.	Milkweed, common	<i>Asclepias syriaca</i> L.
Barley, foxtail	<i>Hordeum jubatum</i> L.	Millet, wild-proso	<i>Panicum miliaceum</i> L.
Barnyardgrass	<i>Echinochloa crus-galli</i> (L.) Beauv	Mustard, tansy	<i>Descurainia pinnata</i>
Bindweed, field	<i>Convolvulus arvensis</i> L.	Mustard, wild	<i>Brassica kaber</i> (DC) LC Wheeler
Bindweed, hedge	<i>Calystegia sepium</i> L.	Nightshade, cutleaf	<i>Solanum triflorum</i> Nutt.
Brome, downy	<i>Bromus tectorum</i> L.	Nightshade, eastern black	<i>Solanum ptycanthum</i> Dun.
Brome, smooth	<i>Bromus inermis</i> Leyss.	Nightshade, hairy	<i>Solanum sarrachoides</i> Sendtner.
Buckwheat, wild	<i>Polygonum convolvulus</i> L.	Nutsedge, yellow	<i>Cyperus esculentus</i> L.
Buffalobur	<i>Solanum rostratum</i> Dun.	Oat, wild	<i>Avena fatua</i> L.
Canola	<i>Brassica napus</i> L.	Pennycress, field	<i>Thlaspi arvense</i> L.
Catchfly, nightflowering	<i>Silene noctiflora</i> L.	Pepperweed, greenflower	<i>Lepidium densiflorum</i> Schrad.
Cereal, volunteer		Pigweed, species	
Barley	<i>Hordeum vulgare</i> L.	Amaranth, powell	<i>Amaranthus blitoides</i> S. Wats.
Durum wheat	<i>Triticum aestivum</i> Desf.	Pigweed, prostrate	<i>Amaranthus powellii</i> S. Wats.
Oat, tame	<i>Avena sativa</i> L.	Pigweed, redroot	<i>Amaranthus retroflexus</i> L.
HRS wheat	<i>Triticum aestivum</i> L.	Pigweed, tumble	<i>Amaranthus albus</i> L.
Chamomile, false	<i>Matricaria maritima</i> L.	Purslane, common	<i>Portulaca oleracea</i> L.
Chickweed, common	<i>Stellaria media</i> (L.) Cyrillo	Quackgrass	<i>Elytrigia repens</i> (L.) Neyski.
Cocklebur, common	<i>Xanthium pensylvanicum</i> Wallr.	Ragweed, common	<i>Ambrosia artemisiifolia</i> L.
Corn	<i>Zea mays</i> L.	Ragweed, giant	<i>Ambrosia trifida</i> L.
Dandelion	<i>Taraxacum officinale</i> Weber	Rose, prairie wild	<i>Rosa arkansana</i> Porter
Dock, curly	<i>Rumex crispus</i> L.	Safflower	<i>Carthamus tinctorius</i> L.
Dry bean	<i>Phaseolus vulgaris</i> L.	Sage, lanceleaf	<i>Salvia reflexa</i> Hornem.
Candelabra, fairy	<i>Androsace occidentalis</i> Pursh.	Sandbur, field	<i>Cenchrus incertus</i> M.A. Curtis.
Falseflax, smallseed	<i>Camelina microcarpa</i> Andr. DC.	Shepherd's-purse	<i>Capella bursa-pastoris</i> (L.) Medic.
Field pea	<i>Pisum sativum</i> L.	Smartweed, annual	
		Ladysthumb	<i>Polygonum persicaria</i> L.
		Smartweed, Pennsylvania	<i>Polygonum pensylvanicum</i> L.
Flax	<i>Linum usitatissimum</i> L.	Sowthistle, perennial	<i>Sonchus arvensis</i> L.
Flixweed	<i>Descurainia sophia</i> (L.) Webb.	Soybean	<i>Glycine max</i> (L.) Merr.
Foxtail, giant	<i>Setaria faberi</i> Herrm.	Speedwell, purslane	<i>Veronica peregrina</i> L.
Foxtail, green	<i>Setaria viridis</i> (L.) Beauv.	Spurge, leafy	<i>Euphorbia esula</i> L.
Foxtail, yellow	<i>Setaria lutescens</i> (Weigel) Hubb.	Sunflower, common	<i>Helianthus annuus</i> L.
Horsetail	<i>Equisetum arvense</i> L.	Sweetclover species	
		Sweetclover, white	<i>Melilotus alba</i> Medicus
		Sweetclover, yellow	<i>Melilotus officinalis</i> (L.) Lam.
Horseweed	<i>Conyza canadensis</i> (L.) Cronq.	Thistle, Canada	<i>Cirsium arvense</i> (L.) Scop.
Knotweed, erect	<i>Polygonum erectum</i> L.	Thistle, Russian	<i>Salsola kali</i> L.
Kochia	<i>Kochia scoparia</i> (L.) Schrod.	Vetch, wild	<i>Vicia americana</i> Muhl.
Lambsquarters, common	<i>Chenopodium album</i> L.	Waterhemp, tall	<i>Amaranthus tuberculatus</i> (Moq.)
Lentil	<i>Lens culinaris</i> Medik.	Wheatgrass, western	<i>Agropyron smithii</i> Rydb.
Lettuce, prickly	<i>Lactuca serriola</i> L.	Whitlowwart species	
		Whitlowwart, white	<i>Draba mircantha</i> Nutt.
		Whitlowwart, yellow	<i>Draba nemorosa</i> L.
Mallow, common	<i>Malva neglecta</i> Wallr.	Witchgrass	<i>Panicum capillare</i> L.
Mallow, venice	<i>Hibicus trionum</i> L.	Woodsorrel, yellow	<i>Oxalis stricta</i> L.
Marshelder	<i>Iva xanthifolia</i> Nutt.	Wormwood, biennial	<i>Artemisia biennis</i> L.