

# Wild Oats Cost More to Keep Than to Control

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Probably the most important impact of a wild oats infestation in field crops is crop yield reduction. Yield is influenced by wild oats density, crop competitive ability, crop yield potential, and soil fertility.

Wild oats seeds in the harvested grain counts as "dockage" if they clean out, or may reduce the grain grade if they do not. In both cases wild oats in grain adds to storage and transportation costs. Further, wild oats in barley or oats intended for seed reduces their value because of the difficulty in separating these seeds. Wild oats also increases tillage costs by necessitating extra cultivation in an infested field.

Field experiments previously reported<sup>1</sup> involved various densities of wild oats in competition with wheat and flax in 1964 and 1965. The experiments involving wheat and flax were continued at the Fargo and Carrington experiment stations in 1966. In addition, similar experiments with barley were conducted in 1964-65 at both locations. Wild oats densities of 10, 40, 70, 100, 130, and 160 seedlings per square yard were counted at the 2- to 3-leaf stage. In a 1966 barley experiment, a wild oats density of 250 seedlings per square yard also was included. A recommended rate of nitrogen and phosphorus fertilizer was broadcast on half of the plots of each wild oats density in all experiments.

The per cent yield reduction caused by the various wild oats densities in each of the three

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<sup>1</sup>Bell, Allyn R. and John D. Nalewaja. 1966. *Wild Oats Cause Severe Crop Loss. N. Dak Farm Res. 24 (4) 26-29.*



Light infestation of wild oats in a field of wheat.

crops is illustrated in Figure 1. The yield of each crop at each wild oats density was averaged over all years and both locations, then the yield reductions were expressed as a per cent of the "weed free checks." Since these per cent yield losses are averages, one may actually obtain a higher or a lower per cent yield loss than indicated. In an area where comparatively low yields are common, the per cent yield loss will likely be higher, and conversely, an area known for relatively high yields might be slightly lower in per cent yield losses.

## Wild Oats Increases Loss

As might be expected, wild oats density greatly influenced the yield loss of a particular crop, but as seen in Figure 1 all crop yields were not reduced to the same extent. The per cent yield loss of barley was lowest at each wild oats density and, therefore, barley was considered the best competitor of the three crops. Flax yields were reduced the most and flax was considered the poorest competitor. Use of fertilizer on wild oats infested plots generally increased the per cent yield loss of flax and wheat when more than 10 to 20 to 70 to 100

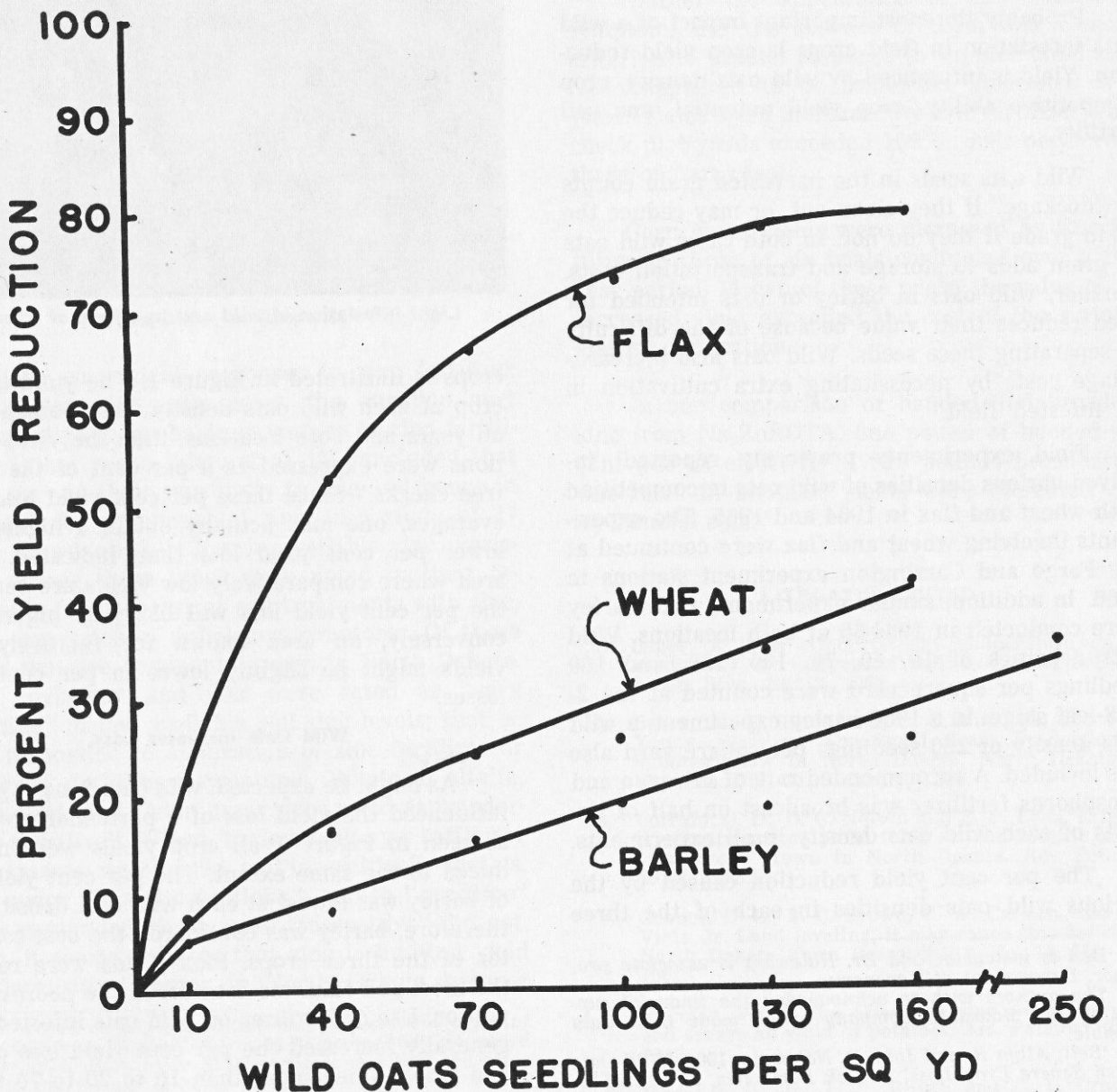
wild oats seedlings per square yard were present, respectively. The per cent yield loss caused by wild oats competition in barley generally was not increased with soil fertilization.

Since the fertilizer was broadcast, the nutrients were readily available to both wild oats and crop plants. Wild oats was a stronger competitor for nutrients than flax and wheat, but a weaker competitor than barley. Therefore, the broadcast fertilizer increased the competitive advantage of

wild oats against wheat and flax but not against barley.

The per cent yield reduction caused by a wild oats density in a crop may vary considerably according to the conditions at various locations during various years. However, based on the average per cent yield reductions illustrated in Figure 1 and statistics published by the North Dakota Crop and Livestock Reporting Service for average yield and market value, the average loss in dollars per

Figure 1. Per cent yield reductions caused by various wild oats densities in wheat, barley and flax crops.



acre caused by each of the wild oats densities in the crops appears in Table 1.

The loss in dollars per acre caused by a wild oats infestation was directly proportional to the market value of the crop and inversely proportional to the competitive ability of the crop; i.e., yields of the weakest crop competitor were reduced the most. The cost of the crop loss caused by 10 wild oats plants per square yard (counted at the seedling stage) in barley, wheat and flax was \$1.62, \$2.59 and \$5.79 per acre, respectively. In addition, 160 wild oats seedlings per square yard cost \$8.20, \$14.77, and \$21.43 per acre in barley, wheat and flax, respectively.

A wild oats density of 10 seedlings per square yard is a light infestation in barley or wheat and a moderate infestation in flax. An infestation of 160 wild oats plants per square yard is only about 17 plants per square foot and is an infestation commonly occurring in farm fields in North Dakota. When wild oats plants are easily visible in a wheat or barley field harvest, the seedling infestation probably is 17 plants per square foot or greater.

#### Only Part of Cost

Crop yield loss is only part of the cost of a wild oats infestation. One also should consider the cost of extra tillage during seedbed preparation. This practice adds expense besides depleting soil moisture and causing undesirable delays in seeding. Wild oats in a crop may mean the difference between selling a crop for seeding purposes or on the commercial market at regular market prices. A crop is more likely to lodge when infested with wild oats because wild oats has weak straw and often lodges against the crop plants. Wild oats which goes to seed and reinfests the soil perpetuates the species and the costs of future infestations. These costs are difficult to define with exact figures, but they suggest that the loss in dollars per

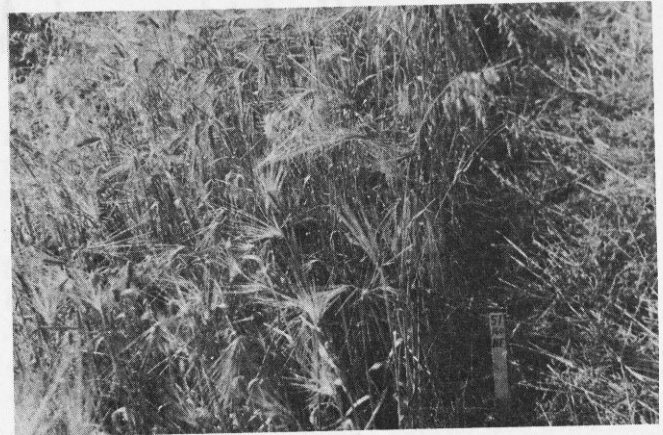
Table 1. Loss in dollars<sup>1/</sup> per acre caused by various wild oats densities in average<sup>2/</sup> yields of wheat, barley and flax.

Wild oats seedlings/yd <sup>2</sup>	Barley	Wheat	Flax
10	\$ 1.62	\$ 2.59	\$ 5.79
40	2.70	5.85	14.16
70	4.93	8.70	17.87
100	6.08	9.13	19.78
130	6.24	12.40	21.15
160	8.20	14.77	21.43
250 <sup>3/</sup>	11.31	—	—

<sup>1/</sup> Market value of wheat \$1.69/bu., barley \$1.01/bu., and flax seed \$2.85/bu. are 1966 average prices according to the North Dakota Crop and Livestock Reporting Service.

<sup>2/</sup> The North Dakota Crop and Livestock Reporting Service published average yields of 21.1 bu/A wheat, 31.9 bu/A barley and 9.5 bu/A flax for the 1961-1965 seasons.

<sup>3/</sup> One year's data only.



Moderate infestation of wild oats in a field of barley.

acre caused by wild oats should be somewhat higher than indicated in Table 1.

Wild oats can be controlled chemically in wheat and barley at a cost of \$3.50 and \$4.38 per acre, respectively, for the recommended rates of triallate (Far-go). The cost of chemical control in flax is \$5.35 per acre for the recommended rate of diallate (Avadex). Barban (Carbyne) at a rate of 4 to 6 ounces per acre may be used in all three crops at a cost of \$3.12 to \$4.70 per acre. According to the data in Table 1, chemical control of wild oats would be profitable if more than 10, 40 or 70 wild oats seedlings per square yard were present in fields of flax, wheat, or barley, respectively. One also should remember that these data are based on the cost of one year's crop loss. When the cost of future wild oats infestations is considered, chemical control of even smaller wild oats infestations would be economically feasible.



Heavy infestation of wild oats in a field of flax.