



NEW WEAPON AGAINST **WILD OATS**¹

By E. A. Helgeson² and John G. Green³

The dormancy of the seeds of wild oats has been a challenging hindrance to effective control of this annual weed. The natural dormancy in storage appears to be three to four months for primary seed and somewhat longer for secondary seed, though some have attributed periods of up to 18 years for seed contained in soil. Dormancy affects the control of the weed in that seeds may germinate for several years following an initial infestation of cultivated soil.

Some attempts to disturb the dormancy of wild oats seed have met with success. Brief flaming of the caryopsis or puncturing the fruit coat with a needle enhanced the germination of the seeds. However, no method having potential field application has been developed.

Chemical control possesses the greatest potential for field control, but no chemical tested thus far has proved markedly effective in breaking the dormancy of the seeds. However, promising results have been obtained through laboratory testing

of a recently introduced plant growth regulator, gibberellic acid.

Gibberellic acid, a hormonal substance produced by a fungus, stimulated the growth of a wide variety of plants when it was applied in spray or paste form. Initial trials indicate that the compound also stimulated the growth of wild oat seedlings; consequently, exploratory work was conducted upon dormant seed.

The seeds, 100 to a trial, were placed between number two filter papers in 5½ inch petri dishes. The contents of each petri dish germinator were set wet with 9 milliliters of gibberellic acid solution or with distilled water. The germinators were placed in a darkened, constant-temperature room for varying periods of time.

An initial trial was conducted using dormant primary seed from hand harvested material grown during the 1956 season. The following results were obtained in a 5-day incubation period:

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²Botanist.

³Research Assistant.

Treatment	Percent germination
Control-distilled water	63.0
50 ppm gibberellic acid in water	63.1
50 ppm gibberellic acid in water with Dupont "spreader-sticker"	81.2

The results of this initial testing were tempered by evidence that the primary seeds were losing their dormancy rapidly, yet further exploration seemed warranted.

Consequently, tests were performed on secondary seed from the same stock which had been separated by hand from the primary seed. Readings obtained from this trial follow:

Treatment	Percent germination	
	5 days	10 days
Control-distilled water	12.4	12.4
50 ppm gibberellic acid in water	74.5	85.9

A repeat trial utilizing two samples of seed rather than taking two read-

ings of the same sample yielded the following results:

	Percent germination	
	7 days	10 days
Control-distilled water	7.8	6.9
50 ppm gibberellic acid in water	71.0	88.0

The tentative conclusion which may be drawn from these trials is that gibberellic acid appears to show promise in breaking the dormancy of wild oat seeds. However, further testing must be conducted with the compound, since many questions remain unanswered.

If gibberellic acid merits field application, it may become an effective aid in the control of wild oats. Perhaps the seed may be stimulated to germinate in the fall or early spring when control by cultivation would be effective. Another prospect may lie in control with a selective herbicide in nonsensitive crops in one year. Currently, further research is underway to determine the exact role of gibberellic acid in the field of weed control.

