2,4-D EFFECTS ON 3 WHEAT SELECTIONS OF DIFFERENT GENETIC HEIGHT LEVELS

B. R. Gregg and R. E. Allan

The value of 2,4-dichlorophenoxyacetic acid (2,4-D) as a selective spray is due to the ability of various plants to resist its toxicity, while others do not. 2,4-D is widely used to control broadleaved weedy plants in wheat fields, since wheat (T. aestivum L.) at certain stages is relatively resistant to 2,4-D. However, 2,4-D apparently will injure wheat under certain conditions. Reported effects of 2,4-D on yields of winter wheat are conspicuous for their lack of uniformity.

The susceptibility of wheat to injury from 2,4-D is affected by its stage of growth. Wheat appears to be most sensitive to 2,4-D during 2 stages of growth: (a) during the seedling stage when the plant is from ½ inch to 5 inches tall and has from 2 to 5 leaves; and (b) from the early boot stage until heading occurs. The first susceptible stage appears to be associated with the rapid development of the plants at the time of tiller primordia and floret initiation, while the second period is during the time when the florets are developing rapidly.

Different formulations of 2,4-D vary in selectivity, volatility, and total activity, and result in variable effects on wheat. Rates of application also have a marked effect on injury to wheat. Varietal differences also cause varying responses to 2,4-D. Environmental factors also influence the effects of 2,4-D on wheat, as does the retention of 2,4-D by the plant.

Gaines is a new and high-yielding variety of soft white winter wheat adapted to the Pacific Northwest. It is considered a Semidwarf in plant height, as its height is intermediate between that of standard varieties and the short-strawed Norin 10 selections. There have been reports that Gaines is more sensitive to 2,4-D than are other varieties. However, Gaines was not hyper-sensitive to 2,4-D when treated at the 4-tiller stage. It was not injured when sprayed.