Effect of 2,4-D on the Yield and Height of Federation Wheat

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WHEN 2,4-D was first introduced to the American grain farmer in 1944, it was acclaimed by commercial companies as the answer to weed problems. During the short time it has been used as an herbicide it has proved to be effective in controlling many annual and a few perennial, broad-leaved weeds.

Numerous reports have been released showing the effect of 2,4-D on weeds, but very little information is available concerning its effect on small grain plants. As shown by Mitchell and Brown (3), if 2,4-D is applied to a succulent plant, such as tomato or bean, curvature of the stem or leaf may result. This would indicate one side of the leaf or stem is growing and elongating faster than the other.

Rasmussen (5) agrees with Mitchell and Brown (2) that the sugar content of susceptible plants increases rapidly following application of 2,4-D. Sugar later tends to decrease to the original level or lower. Rasmussen further states that the increase in sugar is more than offset by a rapid decrease of carbohydrate reserves. VanOverbeek (6) states that the application of 2,4-D to a plant may cause an exaggerated energy release that could affect the behavior of a plant or even stop its growth.

Some workers have recently observed that small grains are adversely affected by application of 2,4-D, but the extent of this damage has not been determined in most cases. It was found by Mitchell and Marth (4) that Kentucky bluegrass, redtop, and creeping red fescue are sensitive to 2,4-D in amounts equivalent to 3/4 pound of parent acid per acre.

A recent experiment by Klingman (1) shows a definite effect on spring wheat when 2,4-D is applied. Applications were made on three dates, and in all cases the plots receiving no treatment gave highest yields. Plant height was not affected materially.

In view of results obtained to date concerning reaction of 2,4-D on plants, there is definite need for more information as to the effect of this chemical on small grains. If wheat plants are injured by 2,4-D,