EFFECTIVENESS OF CONTACT SPRAYS IN THE
CONTROL OF ANNUAL WEEDS IN CEREAL CROPS

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Since the accidental discovery by the French vine grower L. Bonnet, the control of weeds by herbicides as a quick and labor-saving method has been widely resorted to. The pioneer researches of Korsmo (6) and Rebate (7) and various trials in Europe and America have brought sulfuric acid, sulfates of copper and iron, arsenic compounds, and other chemicals into prominence as efficient contact sprays. Besides large variations in the efficiency of the different sprays, their effectiveness depends largely on the meteorological conditions prevailing at the time of spraying. Thus, successful results are expected if spraying is carried out in fine weather with favorable temperature and humidity.

The experiments so far reported are of local interest since weather conditions vary widely from place to place, making it difficult to arrive at any definite conclusion. Moreover, little knowledge exists about the use of these herbicides in the tropics where weather conditions differ widely from those obtaining in the temperate regions. To elucidate relevant information pertaining to the problem of the physiology and control of weeds as it relates to the tropics, work has been in progress at the Institute of Agricultural Research at Benares, India, for some time past. In the present paper are described the results of experiments on the effectiveness of a few of the more important contact sprays in the control of annual weeds in a cereal crop. Besides the degree of control, the relation of the yield of the crop to the reduction in weed density, the degree of injury to the cereal crop, the time of spraying, the stage of growth of the weeds, and the souring effect on soil due to sulfuric acid spraying have been studied.

EXPERIMENTAL PROCEDURE

The effectiveness of three sprays, viz., sulfuric acid, copper sulfate, and ammonium thiocyanate, was tested. Three separate experiments on three adjacent fields with an uniform history of crop production and manuring were conducted for the three sprays in randomized blocks replicated four times, the size of the plats being 1/50 acre with borders 2 feet in width between them. Clean seeds of wheat (Pusa 4) were sown in the third week of October of 1936.

The spray solutions were applied at the rate of 100 gallons per acre by means of a Knapsack sprayer. One set of plats was sprayed when the weeds were in the young seedling stage, roughly when the fourth true leaf had developed. The wheat at this stage was nearly 6 to 8 inches in height, but no active tillering had proceeded. The second set of plats was sprayed nearly 2 weeks after the first spraying. On an average six leaves were observed on the weeds while tillers had formed in the wheat.

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2Director and Assistant respectively.
3Figures in parenthesis refer to "Literature Cited", p. 208.