NOTES

SODIUM FLUORIDE AS AN HERBICIDE

In 1925, a tobacco patch was dusted with sodium flusilicate to test the insecticidal properties of fluorides. The tobacco suffered no foliage injury, but smartweed growing around the borders was observed to be badly injured. This selective action of sodium silico-fluoride for smartweed was striking. Since then other weeds have been found susceptible to fluoride injury, particularly annuals.

In the summer of 1940, sodium fluoride was given a trial for the control of crabgrass in lawns. A 2% solution killed the weed or injured it severely. Crabgrass was found to be difficult to wet. Water literally rolled off the plants as off a duck's back. A 1% solution of soap decreased the surface tension of the liquid and resulted in the wetting of the crabgrass. The combination of 2% sodium fluoride and 1% soap powder gave good control of crabgrass without causing permanent injury to bluegrass. Some browning of the bluegrass occurred, but growth was resumed with the first good rains. The control obtained with 2% sodium fluoride was as good as with "Sinox", which is highly recommended for crabgrass. The fluoride, moreover, is much cheaper, more convenient to handle, and easy to apply.

In California, wild mustard and wild radish are two serious annual weeds. Results of trials of sodium fluoride suggest that it may offer promise as an herbicide against these plants. Other weeds doubtless would be highly susceptible to control by sodium fluoride. Only extensive trials in various parts of the United States will establish the possible usefulness of sodium fluoride for weed-killing purposes.

Perennials do not seem to be easily injured by sodium fluoride. Quick-growing, succulent annuals with thin cuticle are most susceptible. There appears to be wide variation in the effects of this chemical on different plants. Some plants, notably oxalis, sheep sorrel, persimmon, scrub pine, colias, smartweed, and crabgrass, are easily injured. Others, such as red cedar, hickory, Russian olive, and holly, can withstand a saturated solution of 4% sodium fluoride with little or no injury.

A large number of factors are involved in the cause of injury. There appears to be no correlation as to calcium content. The stage of growth or succulence seem to be important. Early in the season, when the foliage was tender, black gum was injured by a 1-4,000 solution on June 18, whereas on July 26, a 1-500 solution produced little or no injury. It appears that with the progress of the season, the cuticle becomes thickened, especially in dry weather. For best results, the sodium fluoride should be used early in the season, while the plants are tender and the cuticle is thin and permeable.—S. Marcovitch, Tennessee Agr. Exp. Station, Knoxville, Tenn.