THE EFFECT OF LOW CONCENTRATIONS OF
PLANT GROWTH REGULATORS
ON ALFALFA

Attempts to increase the yield of a given crop by the application of plant growth regulators have met with outstanding success where weeds were killed and the crop was allowed to thrive without competition. Actual increases in yield of a crop where weeds were not eliminated by the application of stimulative dosages are more difficult to demonstrate. Taylor\(^2\) showed that corn was stimulated by applying 2,4-D to the soil while Murneck and co-workers\(^3\) found higher yield and increased chlorophyll content in snap beans. Since Griffith and co-workers\(^4\) have shown the ratio of chlorophyll to carotene to be quite constant in some plants, attempts were made to increase both the carotene content and the total yield of alfalfa by the application of several plant growth regulators.

A field of alfalfa located in the Imperial Valley was selected for the first experiments. On January 13, 1948, replicated plots of vigorously growing plants 6–8 inches in height were sprayed with emulsions of the following plant growth regulators at the rate of 1.0 ml/sq. ft.: 0.06% 2,4-D (butyl ester), 0.01% 0-chlorophenoxyacetic acid, 0.01% p-chlorophenoxyacetic acid, 0.01% 2,3,5 triiodobenzoic acid, and 0.5% isopropylphenyl carbamate. No observation of the plants was possible at 24–48 hours to determine the amount of curling of the tips, but after 13 days, random stems were picked from each plot, were composited, and after blanching and drying, were analyzed for carotene. The results showed that 2,4-D and 2,3,5 triiodobenzoic acid reduced the carotene 6 and 10% respectively. The other compounds had no effect. After 24 days of further growth the plants were harvested. No significant changes in carotene content, green color, or yield were observed.

In a second similar trial near Riverside, Calif., 0.01% 2,4-D (butyl ester), 0.01% 2,4,5 trichlorophenoxyacetic acid (butyl ester), 0.015% p-chlorophenoxyacetic acid, 0.015% 2,3,5 triiodobenzoic acid, and 0.20% isopropylphenyl carbamate were applied as indicated previously. The applications were made on April 23, 1948, and the plants were harvested after 14 days since the growth was very rapid at this time of year. T-T caused more reduction in yield than he before, probably because of the higher temperature and length. No significant effect was observed in carotene content, total yield, or per cent dry weight of the remaining treatments.

Since other workers have shown that the growth of plants is possible with compounds as those tested, perhaps the lack of more positive results was caused by improper dosage. Alfalfa may be a plant in which the difference between stimulative and inhibiting dosage is small. If this is the case, the determination of this level would have to be found by a large number of trials.—C. R. THOMPSON, Regional Research Laboratory, Albany 6, Calif.

MODERATE AND COMPLETE SCARIFICATION
OF KUDZU AND PERENNIAL LESPEDEZA SEED

The degree of scarification of kudzu and bicolor lespedeza seed has been improving stands on Soil Conservation Service nurseries in Southeastern United States.

Seed are considered to be moderately about 50% swell in water during 24 hours completely scarified when practically all swell in the same time.

Completely scarified seed have behavior in field seedings without irrigation. Excellent stands have been secured when moisture conditions were good after the seeding date. If a drought prevents their emergence and establishment, no reserve seed were left for later germination when better moisture conditions might occur.

A second crop from the plots used in the first was harvested and tested for possible later effects, but no differences in carotene or total yield were observed.

In a third trial near Riverside, Calif., as was the case in the first trial. The sprays were used at a spraying procedure, the following concentrations of the following plant growth regulators in emulsions were applied: 0.005% 2, 4,5-T (butyl ester), 0.02% 2,4-D (butyl ester), 0.1% isopropylphenyl carbamate, and 0.40% carbamatic acid. The applications were made July 1, 1948, and the plots were harvested after 14 days since the growth was very rapid at this time of year. T-T caused more reduction in yield than he before, probably because of the higher temperature and length. No significant effect was observed in carotene content, total yield, or per cent dry weight of the remaining treatments.