FLOWER FORMATION IN THE PINEAPPLE PLANT AS CONTROLLED BY 2,4-D AND NAPHTHALENEACETIC ACID

THE flower-inducing power of appropriate growth-regulating substances in the pineapple plant may be ranked among the most spectacular effects of plant hormones. The treatments as given here in Puerto Rico resulted in flower formation with a precision and uniformity of response (Fig. 1) comparable to

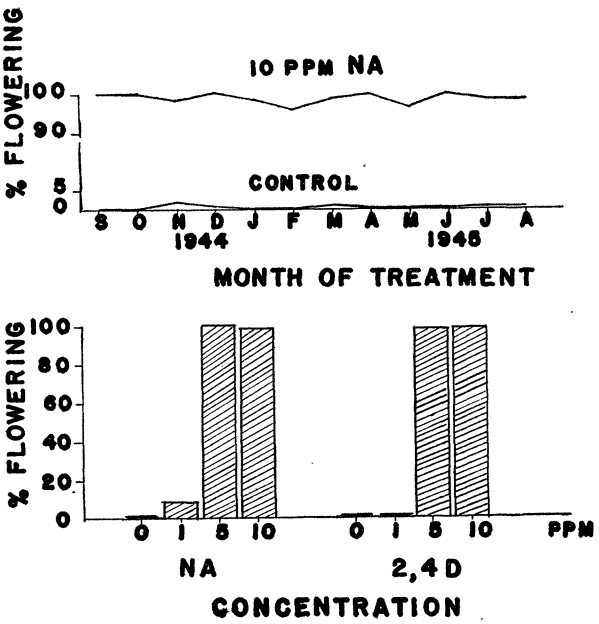

FIG. 1. (upper). Flower induction in pineapple plants throughout the year by a single treatment with naphthaleneacetic acid (NA; 10 ppm, 50 cc per plant). Fig. 2. (lower). Flower induction as a function of the concentration of NA and 2,4-D, applied by a single treatment in July, 1945, when the plants were 22 months old. Flowers were visible 6 to 8 weeks after treatment. The plants, of the Cabezona variety, were 16 months old in January, 1945. Each valve represents observations on from 40 to 50 plants.

that of the classical avena test for auxins. Flowers, which later produced perfect fruits,[1] were induced in plants which were not due to flower for another year or more. These results were somewhat surprising, since it had been shown previously in Hawaii[2] with the Cayenne variety and in Florida[3] with the Abachi variety, that naphthaleneacetic acid will induce flowering from 6 weeks[3] to 4 months[2] ahead of the natural flowering time. In addition it was shown that the plants in Florida did not respond during the summer. The investigations reported here, however, show that with the Cabezona variety growing in the dry Lajas Valley of Puerto Rico, growth-regulating substances will cause flower formation throughout the year (Fig. 1).

Although the main experiments were performed with naphthaleneacetic acid (NA), 2,4-dichlorophenoxyacetic acid (2,4-D) was also tested throughout the year. The results show that both substances are equally effective for the flower induction in pineapples. A concentration of 5 parts per million (50 cc per plant, applied in the center, equivalent to 0.25 mg per plant) is sufficient to cause a 100 per cent. response (Fig. 2).

The following conclusions may be drawn from these observations.[4]

(1) One ounce of either NA or 2,4-D is a sufficient amount for inducing flowering in 113,000 plants, which is equivalent to a pineapple plantation of 11 acres.

(2) One dollar's worth of chemical (2,4-D, at the current price of $7.50 per kg) will treat over one-half million of plants (536,000), the equivalent of 53 acres of pineapples.

It is also of interest to note that the same 2,4-D which is now being widely applied as a selective herbicide, is an equally effective flower-inducing agent for the pineapple when used in 100 times lower concentrations.

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SCIENTIFIC APPARATUS AND LABORATORY METHODS

A NEW ABSORBABLE MATERIAL FOR USE IN NEUROLOGICAL AND GENERAL SURGERY

THERE have been reports in the recent literature on the properties and uses of readily absorbable materials in surgical procedures.[1, 2, 3] The substances described are human fibrin foam and oxidized cotton. Particular emphasis has been laid on the value of such agents in brain surgery, especially in the control

[1] The size of the fruit depends on the size of the plant; no effect of hormone treatment on the flavor of the fruit could be detected; J. van Overbeek *et al.*, Ann. Rept. Inst. Trop. Agric. Puerto Rico, 1944–45, in press. Here also the advantages of the "hormone method" over the "carbide method" have been pointed out.

[2] H. E. Clark and K. R. Kerns, SCIENCE, 95: 536–537, 1942.

[3] W. C. Cooper, *Proc. Am. Soc. Hort. Sci.*, 41: 93–98, 1942.

[4] A more detailed report will be published elsewhere.

[5] The author is indebted to Mr. Guillermo Dávila Olivo and Mrs. Elba Santiago de Váquez for their assistance, and also to Dr. A. Ortiz Romeu, who generously made available part of his plantation for experimental purposes.

[1] F. D. Ingraham, O. T. Bailey and F. E. Nulsen, *Jour. Neurosurg.*, 1: 171, 1944.

[2] V. K. Frantz, *Ann. Surg.*, 118: 116, 1943.

[3] T. J. Putnam, *Ann. Surg.*, 118: 127, 1943.