Agronomic Uses for Plant Growth-Regulators

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The discovery that certain of the plant growth-regulating substances or inhibitors can be used for herbicidal purposes has been followed by very rapid adoption of the best known of these compounds, 2,4-dichlorophenoxyacetic acid, for the control of broad-leaved weeds in lawns and for certain troublesome problems of weed eradication, usually not on land currently being cropped. Direct agricultural uses so far tested, proved, and adopted have been limited to a few crops in a few areas. It cannot be said that the practices followed by the ordinary farmer have been modified in any way by the availability of such materials. This is probably only because there has not as yet been time adequately to consider, investigate, and subject to test the many fascinating possibilities that confront us.

The properties of these growth-regulators are so radically different from those of the contact herbicides which have hitherto been employed in weed eradication that a new approach to the problem of weeds on the farm is now available. Moreover, the growth-regulators can do many things which the older contact herbicides cannot accomplish. Furthermore, it would be quite shortsighted to view the potentialities of this group of compounds as limited to weed control. On the contrary, it is clear that we have in them the means of regulating, or controlling within certain limitations, the growth of plants in a way that goes far beyond anything that has been accomplished with animals or microorganisms. In the past our efforts at controlling vegetation and improving crops have largely been by the use of genetic tools. Progress has been remarkable, but is slow, and dependent upon recombination of the characteristics inherent in available germ plasm. This limitation is partly removed by the plant growth-regulators. Although they cannot effect basic changes in plant characteristics, they can accomplish changes in growth rate, growth habit, or maturity date and perhaps also changes in composition, any of which, under certain circumstances, may be of great agronomic value.

WEED CONTROL

Inasmuch as up to the present investigators have been preoccupied with the development of 2,4-dichlorophenoxyacetic acid for herbicidal

1An address presented at the general session of the Society in Cincinnati, Ohio, November 19, 1947.
2Camp Detrick, Frederick, Md.