

1. Auxin relations

The auxin relations for a number of dwarf mutants are being studied in terms of auxin production, inactivation of auxin, response of decapitated coleoptiles to added IAA, and the response of coleoptiles to the switching of normal and mutant coleoptile tips. An allele to dwarf-1, obtained from Dr. Anerson at CIT, has been studied in some detail (Robert Harris, Ph. D. thesis, 1953). The amount of diffusible auxin obtained from 5 day old dwarf coleoptile tips was consistently .4 that of normal tips. This is confirmation of Van Overbeek's original work on the auxin content of dwarf-1 coleoptiles. In addition, ether extraction techniques gave an auxin ratio of .5, mutants to normals. Time experiments with diffusion methods suggested that the lower auxin value in dwarfs is due to a lower rate of production of auxin. Inactivation studies showed that auxin differences were not due to differences in rates of inactivation. Both diffusates and ether extractions were tested for inactivators. Surprisingly enough, inactivation by dwarf coleoptiles was not more but less than that found for normal coleoptiles. Normal coleoptile tips on decapitated dwarf coleoptiles did not result in elongation of the dwarf coleoptiles.

One dwarf mutant (4963, CIT) gave no curvature (i.e. less than 5°) from diffusion studies using 10 and 15 coleoptile tips per block. Normal controls gave 23° curvature using 10 tips per block. Practically no elongation occurs in the mesocotyl (first internode) of this mutant; the final length of the dwarf coleoptiles is 1/2 that of normals.