

Abstract.

The importance of studying the cytogenetic effect of the various insecticides and fungicides which are being used to protect crops against insect pests and diseases appears not to have been sufficiently recognised by cytogeneticists and plant breeders. Though the best insecticides and fungicides are those which kill the plant parasites without affecting the plant organism some of them have been found to affect the host plant in various ways and degrees. Thus for example ethyl mercuric chloride which is the active substance of the fungicide "Granosan" induces atypical growth, abnormal mitosis and polyploidy. Almost similar effects have been seen in the case of Hexachlorocyclohexane (666) which has of late found widespread use as an insecticide. Hexachlorane stimulates the germination of certain *cruciferae* initially, but the growth of such treated seedlings become strikingly suppressed later on.

Cytological studies of the roots of a number of plants treated with insecticides containing hexachlorocyclohexane have revealed that the agents cause disturbances in the mitotic processes by acting upon the cytoplasm and interfering with the cytoplasmic processes involved in the formation of achromatic bodies. The continuance of such disturbances leads to the production of tetraploid, octoploid, and even cells of much higher degree of polyploidy. Certain changes in the nuclear elements have also been induced by the active agents. The changes resemble those induced by colchicine, acenaphthene and other polyploidizing agents. Two features however are worth noticing; one is that the tissue is affected only if the particles are in contact with it unlike in the case of acenaphthene; the other is that meiotic processes are practically unaffected.

Insecticides and fungicides which induce disturbances of the sorts mentioned above, "when applied, may increase the hereditary changes in the cultivated "pure lines" leading thus to more rapid degeneration of the highly bred uniform varieties. This means that when one applies such insecticides or fungicides one should more frequently change the seeds of the varieties which he propagates, by using a fresh non-degenerated stock."

(Cytogenetic changes and atypical growth induced by Hexachlorocyclohexane $C_6H_6Cl_6$) by Dontcho Kostoff; *Current Science*, 17: 294-5).



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