Growth Injury from Pesticides

W. D. Holley

Carnation growth distortions have been described and illustrated in previous CFGA bulletins (189, 223). Growths often appear to be, and sometimes have been, injured by weed killers (Bull. 223). During the past two years, our attention has been called to a number of cases involving injury similar to that pictured here. In some cases injury was concentrated near pad ends of greenhouses; in others the symptoms were most prominent in the centers of benches. Sometimes there were only a few growths affected; in other greenhouses the damage approached 5% or more of the growths in a given stage of development.

The injury is hormonal in nature, known to be caused by overdoses of organophosphates or Morocide. Moreover, other chemicals may possibly interact in the metabolism within the plant to cause these aberrations.

Among the common abnormalities in growth are the cracks across internodes, shown clearly in two of the three pictures. twisting, bending, and strap-like overgrowths on internodes are also common. A time period of two or more months seems to transpire between the time young growths are injured and the symptoms appear on maturing stems. Symptoms have been observed most frequently in August and September, indicating injury from late May to July (corresponding with our worst thrips invasion). The shoot stage probably most susceptible to injury is in the later stages of flower development, when the top four or five internodes are just beginning to elongate rapidly.

The most frequent cause of injury in the past two years has been traced to applications of cygon (dimethoate) in the irrigation water. While this is

Figure 1.

Figure 2.

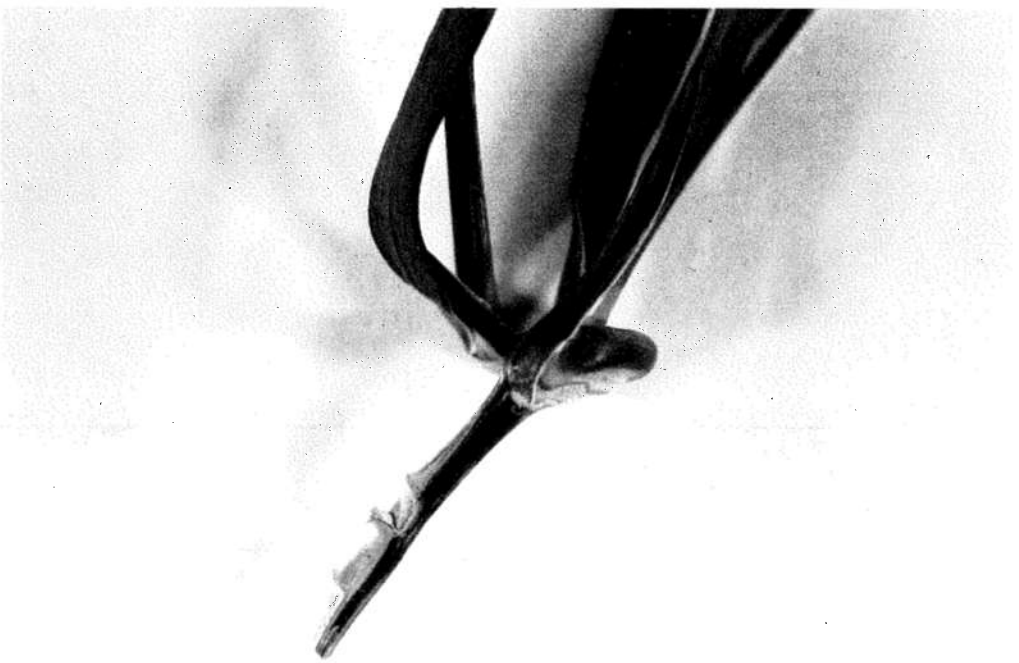

Figure 3.

accepted practice in the insect control program, growth injury is likely to occur if cygon solution is applied to wilted plants. Apparently, plants under water stress ingest an overdose of the chemical. For this reason, cygon should be applied to plants in moist soils or the day following a normal irrigation.

The pesticide chemicals we are using today are potent; we cannot be complacent with them. More and more of them are systemic; that is, they are absorbed into the plant's system either through the leaves or the roots. Once in the conductive system of the plant, they can interact with naturally produced growth chemicals to upset the plant's growth pattern.

We overtreat with chemicals by applying them at too strong a concentration, or we may overspray with the correct concentration. These observations indicate that we can also apply too much of a systemic chemical when we apply it to plants that are under water stress.

Correction

Your editor goofed in using the word "Pixie" to refer to miniature carnations in Bulletin 278. I have been informed that this term was first used by the Denver Wholesale Florists Company and is being registered as a trademark by DWF. Sorry, I thought the term was in common usage.

Your Editor,

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