

RECOMMENDATIONS

Chloranil has been used by cabbage growers at Hastings to control downy mildew in cabbage plant beds since 1943. Nabam has been used since 1947, mostly to control the disease on heading cabbage.

Plant Beds and Seeded Fields.—Forty-eight or 50 percent chloranil (4 lbs. - 100 gals. water) and 5 percent chloranil dust are recommended for control of downy mildew in plant beds. If chloranil cannot be applied at the rates recommended, spray the plants with nabam (2 qts. - 1 lb. $ZnSO_4$ - 100 gals. water) or zineb ($1\frac{1}{2}$ lbs. - 100 gals. water), as there is less danger of injuring small plants by overtreatment with these fungicides than with chloranil. Nabam has been used at double strength in plant beds without injury (see Table 5).

Begin treating the plants with a fungicide a week to 10 days after the seed is planted or before then if the disease is present. Continue the treatment three times each week with a one- to two-day interval between applications, except when nocturnal temperatures drop to 40° F. or lower or heavy rains interrupt the schedule. Use 80 to 150 gallons of the spray or 15 to 35 pounds of the dust per acre at each application, depending upon size of the plants. Quantities used successfully in narrow plant beds are listed in Table 4. Treat plant beds until all usable plants are drawn. Where the crop is started from seed sown in the field, continue treating until the plants are thinned to a stand.

Sprayer and auxiliary tanks should be calibrated and the correct amount of fungicide and water used to make the required quantity and strength of spray recommended. Young cabbage plants less than 8 inches in height may be injured or killed if treated with chloranil spray which is stronger than recommended and if the amounts of chloranil spray or dust used on small plants at each application exceed those listed in Table 4. Plants less than 4 inches in height are more susceptible to injury from overtreatment with chloranil than larger ones. The stem of a severely-damaged seedling appears water-soaked at first and later turns white; the seedling falls over and dies as if affected with damping-off. Overtreatment with chloranil also causes malformation of the plant; the petioles may be elongated, the midribs enlarged and the blades undersize and rolled slightly upward and inward. Leaves of affected plants often are shaped like rabbit ears. A chloranil-injured, malformed plant will re-