resemble the mother plant, the conclusion is drawn that the seed was formed apomictically. On the other hand, when they are aberrant—that is, deviate from the typical plant—and exhibit striking variations among themselves and from the mother plant, it is safe to say that the seed was produced sexually. Microscopic studies of the number and nature of the chromosomes have verified the conclusion that lack of variability is associated with apomictic seed formation and that variability is associated with sexual seed formation.

Akerberg examined 703 plants of Kentucky bluegrass grown at the Plant Breeding Institution at Weibullsholm. These had been obtained either by isolation, free-flowering, or cross-pollinating of strains which were considered to be apomictic. Of these 703 plants only 9.2 percent were aberrants. In other words, 90.8 percent of the plants had come from seed which was produced apomictically.

Akerberg then studied Kentucky bluegrass elsewhere in Sweden and also in Norway and Germany. In these studies he considered the plants resulting from the seed of a single panicle as families. He grew 44 such families. Among the 185 plants examined belonging to these 44 families only 5.9 percent were aberrants and these were limited to seven of the families. Therefore, in nature he found 94.1 percent of the seed he examined was produced apomictically. These figures indicate that apomictic seed formation is common in other strains as well as in those cultivated at Weibullsholm.

CHLOROPICRIN MAY CONTROL SOME PLANT DISEASES

Treatment with chloropicrin is known to aid in the control of weeds by killing a large proportion of the weed seed in soil. This aspect of the problem has been discussed in TURF CULTURE for January, 1939. F. L. Howard and F. L. Stark, of the Rhode Island Experiment Station, writing in Seed World also call attention to this weed killing property of tear gas and point out that the susceptibility of weed seed to treatment varies, some being more susceptible than others.

They also give data showing that many soil diseases may be controlled and plants consequently make a better growth and yield larger crops after the soil has been treated with chloropicrin. Treatments were made in the field at rates of 201, 217 and 369 pounds to the acre and the material put into crowbar holes made 15 inches apart. Onions yielded 43 percent more in treated than in un-

treated soil, egg plants 206 percent more and millet 46 percent more. Other crops also yielded much better after the soil was treated.

The same men with J. B. Smith published in Phytopathology the results of a study on the use of chloropicrin for the control of nematodes in tomato greenhouses. They found that chloropicrin and carbon disulfide injected into the soil gave results that compared favorably with those secured by steam sterilization. Dosages of chloropicrin which delayed initial nematode infection until an extensive root system had developed were sufficient to give normal yields.

P. A. Young, of Texas, writing in Phytopathology, reported that chloropicrin injected into sandy soil at rates of 250 to 450 pounds to the acre usually controlled all or most of the Fusarium wilt troubles with tomatoes, and the root nematode of watermelons, besides killing weed seeds such as those of Johnson grass, crabgrass and pigweed.

A Russian investigator, Mr. Schepetilnikova, found that flax sick soils treated in the laboratory with chloropicrin and tested periodically showed no *Fusarium* or *Asterocystis* spores. The beneficial effect extended into the following year.

THE LEAF CUTTING ANT

While there have been no reports of the leaf cutting ant damaging turf, E. V. Walter, L. A. Seaton and A. Mathewson in the United States Department of Agriculture, Circular 494, state that few plants are immune to attack. Reports have been received of damage to cereal and forage crops in Texas by the species, *Atta texana*. It is not impossible, therefore, that this ant may attack turf.

The ant cuts green vegetation, carries it into its nest and on this decaying vegetation grows a crop of a special fungus on which it feeds. The ants are good gardeners and carefully keep down all fungi not wanted. The ants in a nest range in size from the queens through fighters to the smallest workers. The latter are the gardeners. Larger workers gather pieces of leaves and once they start on a particular tree or crop they seldom let up until all the foliage is stripped.

The best control so far worked out is with carbon disulfide. Under Texas conditions the authors advise that this be injected into the nests between late February and early April as during this time the queens are likely to be in the center of the nest. Later they leave the nest and establish homes of their own, increasing the centers of infection.