

Yellow Disease or Blight of Asters

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LAST fall, Mr. Wm. Hunt, florist at the Ontario Agricultural College, asked me to look into what appeared to be a disease of asters that seemed to be fairly prevalent last season in many districts. After examining a number of plants at the college, I found that the trouble is the same as was described in Bulletin 79 of the Hatch Experiment Station. Prof. R. E. Smith of that station investigated this disease very carefully seven years ago and gave it the name of the Yellow Disease or Blight of Asters.

SYMPTOMS

The symptoms are so conspicuous that anyone can easily identify affected asters. The diseased plants are characterized by the leaves and upper parts of the stem being of a sickly greenish yellow color. When the flowers appear they too take this greenish yellow color instead of being the normal white, red or blue, and so on. Moreover, each flower assumes more of a globular shape than is the case with healthy flowers. This is caused chiefly by the outer or ray florets curving in towards the centre instead of expanding somewhat horizontally. If the disc or central florets are examined it will be seen that they are more cylindrical and elongated than is the case in healthy flowers, and the stigma and style of the pistil protrude about twice as far as they should in normal plants. The leaves in addition to being sickly and yellowish, are usually narrow and small, thus giving many of the affected plants a spindly appearance. Sometimes one or more branches will show very little or almost no sign of the disease, while all the other parts are affected. Very badly diseased plants become dwarfed and though many flowers may appear they look like clusters of very narrow greenish-yellow leaflets rather than true flowers.

CAUSE NOT KNOWN

Professor Smith has given much study to the cause of the disease and has not found any organism present in any part, so that it is in no way associated with root aphid, white grubs, fungi or bacteria. Hence the true cause is still a mystery. Practically all that has been discovered along this line is that the plant for some reason is unable to assimilate to the proper extent the food that it manufactures in its own green parts. Hence we have an excess of starch and of certain acids and of tannin present; failure to use these, of course, means semi-starvation.

It is supposed by some that one flower will contract the trouble from another, or that it will be worse if plants are placed in the same bed year after year, or grown from seed from infected beds. Professor Smith's experiments tend to show that the disease is not contagious, and that it is not spread by seed or by soil. He finds

moreover that it cannot be due to lack of certain substances in the soil because it is about equally prevalent on different kinds of soil, such as sand, sandy loam, clay loam, and heavy clay. No variety seems to be exempt, though some years, as for example last year at Guelph, white asters are worse attacked than others. This does not seem to hold in every case. It has been found that the plants are not so likely to be attacked if they are grown on the raised benches of greenhouses or on raised boxes outside. The cause of this

is not known. From the fact that some seasons the disease is much worse than others, it is believed that weather conditions must have a great deal to do with its severity.

PREVENTIVE MEASURE

Though this disease, according to Professor Smith, is not to any extent prevented by selecting new soil, yet there are certain other diseases that attack asters and as rot aphid are often severe, it is wise to endeavor if possible to have fresh soil, or soil that has been sterilized, in the hotbeds where the plants are started, and also to place the permanent beds in fresh soil.

Make a Fern Bed

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A GROUP of fine ferns makes a most magnificent display and should be found in every flower garden where a suitable place can be found for them. Select a place in the shade of trees or buildings. Make the conditions as near as possible like those under which the fern lives and thrives in its native haunts. The best ferns are not found in dense shade where the tree tops form a complete canopy impenetrable to the rays of the sun, nor in the open where they may be exposed to the full blaze of the noon-day heat. The ideal place for ferns is where the tree tops are sufficiently thick to merely break the direct rays of the sun during the greater part of the day. Where the shelter of trees cannot be obtained, an east or northwest exposure may be used. But in these locations they should be protected by a fence or some other arrangement, from the biting north and east winds.

The underground conditions should be studied the same as those overhead with a view to imitating the native haunts of the fern as much as possible. Our Canadian woods are rich in ferns, and here is the ideal place to study their requirements. The best are usually found in a heavy leaf mould and wood-dirt.

Go to your native woods for your ferns. In this Canada of ours there is no need to buy from abroad ferns for the garden. There is hardly a county in this province of Ontario, and certainly not a province in this Dominion, in the woods of which ferns do not grow in plenty, which for beauty of form and foliage, and ease of culture, cannot be surpassed by those of any other country in the world.

In transplanting ferns they should be lifted while the ground is wet, either early in the spring before the ground has dried out, or immediately after a rain. Take several pieces of burlap, one for each fern, and large enough to cover the roots and tie at the top to prevent the earth falling away. Select the fern most pleasing to your fancy and, after cutting the

top off, if it has grown to any size, lift it very carefully with a spade, leaving as much of the soil as possible around the roots. Wrap immediately in the burlap to keep earth and roots intact, and plant in the fern bed as soon as possible, after removing the burlap. Give a thorough watering and put on a two-inch mulch of pine needles, moss, sawdust or anything that will prevent the rapid evaporation of the moisture.

Early in the spring is the best time for removing ferns, although it may be done any time during the summer, but much more care is required in order to be successful. Where the moving is done in the summer and the fern has made some considerable growth, the leaves and young shoots should be cut back two or three days in advance of the removal, in order that the plant may regain in some measure its physical equilibrium before the shock incident to its removal and the mutilation of its roots is imposed upon it.

To prepare a bed for ferns the space should be dug out to a depth of twelve to fifteen inches and filled in with a compost, made as follows: Two parts leaf-mould, two parts meadow soil, or well rotted sod, one part well rotted cow manure, and one part sand. Add one pint of charcoal to each bushel of the mixture as near as can be estimated. There is very little danger of adding too much. Where the bed is made some little time in advance of the planting, one pound of wood ashes may be added to each bushel of the mixture.

After the plants are well started and in active growth, they may be given liquid food in considerable quantities—pulverized cow or sheep manure one ounce to two gallons; or potash one ounce to five gallons of water.

Planting varieties not adapted to soil and climatic conditions is one of the worst errors in fruit growing.—Col. G. B. Brackett, United States Pomologist, before the American Pomological Society at St. Catharines last September.