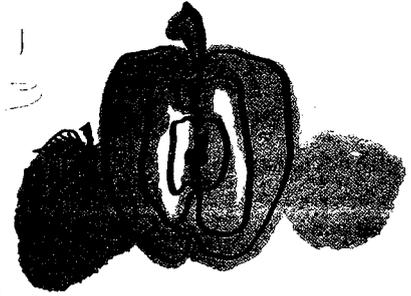


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AGRICULTURAL EXTENSION SERVICE UNIVERSITY OF MINNESOTA
FRUIT GROWERS' LETTER



By Leonard B. Hertz, Extension Horticulturist

May 1971

STRAWBERRY DISEASES AND THEIR CONTROL

To produce high yields of quality strawberries, a grower must understand the disease problems normally encountered in strawberry plantings. Most of these diseases can be controlled by fungicide sprays.

The most important disease of the fruit is a rot called gray mold or sometimes Botrytis. The infection may start where leaves or berries touch the ground or on injured areas of the blossoms and green fruit. The first symptoms appear on the fruit as light brown, rather soft spots. If moist conditions prevail, a gray powdery mass of spores appear over the surface of the fruit. If dry conditions prevail after infection, the berries may dry out and become tough. The gray mold fungus also attacks the flowers, resulting in a blossom blight. If cloudy, rainy weather persists during the bloom period, a great many blossoms can be infected and lost. Splashing rains and fruit pickers also spread the spores of this fungus, thus adding to the problem of producing quality fruit.

Foliar diseases, such as leaf spot and leaf scorch, often contribute to yield decline of established plantings. Cool, moist weather favors development of these diseases. Heavy spring applications of nitrogenous fertilizers may tend to increase the disease because of the production of succulent foliage. There is little spread of these diseases during the hot, dry summer months.

For control of fruit rot, fungicide applications should begin no later than full bloom and continue on a 7- to 10-day schedule until harvest. The last application is usually applied prior to the first picking; but if weather conditions are favorable for disease development an additional application into the harvest period may be desirable. It is important to apply the fungicide while the plants are in bloom. A pre-bloom spray may be desirable if moist conditions prevail.

Captan 50W is the recommended fungicide, at the rate of 6 pounds per acre of formulated product per application. Thiram (Thylate) is another fungicide which can be used at 4 to 5 pounds of product per acre, but cannot be used within 3 days of harvest.

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Current information available from University of Minnesota Extension: <http://www.extension.umn.edu>.

APPLE DISEASES AND THEIR CONTROL

The big advancement in the production of top quality apples came with the advent of organic pesticides in the late 1940's and early 1950's. At present, better growers can produce 85 to 90 percent or more of their harvest as "pack-out" fruit.

It is estimated by the USDA that 8 percent of the annual apple crop is lost to diseases. This means an annual loss to Minnesota growers of over \$200,000. Apple scab, fire blight, and cedar apple rust are the principle diseases of Minnesota apples.

Apple Scab

Apple scab is found in Minnesota wherever apples are grown. The scab fungus attacks the fruits, fruit stems, and leaves. On the fruit, small, circular, olive-colored areas develop, which in advanced stages are usually accompanied by a cracking of the fruit. Scab spots appear on the leaves as inconspicuous, olive-colored infection areas and serve as a potential source of inoculum for fruit infections.

Fungicide applications for control of scab are usually made on a set schedule of 7- to 10-day intervals. However, during wet periods this interval should be shortened, and conversely, during dry periods the interval should be increased.

Under most Minnesota conditions, dodine (Cyprex) at the rate of 3/4 pound per 100 gallons prior to petal fall is effective both as an eradicant and as a protectant. Captan, on the other hand, should be used at the rate of 2 pounds per 100 gallons and only as a protective fungicide.

Fire Blight

Fire blight is undoubtedly the most destructive apple disease in Minnesota. It is not only the annual loss of blossoms and fruit, but also the destruction of scaffold limbs and often entire trees, that makes it the most feared of all apple diseases.

Twig blight is the most common form of the disease in Minnesota. It starts with an infection of the young, succulent, growing tip of the terminal growth. After infection, the disease develops very rapidly; the leaves turn a light to dark brown and remain attached throughout the summer. The end of the terminal bends, resembling a shepherd's crook.

Fire blight, like most bacterial diseases, is difficult to control, but its destructiveness can be greatly reduced with orchard management, sanitation, resistant varieties and the use of Streptomycin sprays. For additional information, see Special Report 6, the "1971 Commercial Fruit Spray Guide."

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DISEASES OF APPLES AND PEARS IN THE MIDWEST

A copy of the recently revised publication, "Diseases of Apples and Pears in the Midwest," is enclosed. It is hoped that this publication will serve as a reference for identification, description, and control measures for diseases of Minnesota grown apples.

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CONTAINER DISPOSAL

In recent years, growers have become increasingly concerned about disposal of waste pesticides and their containers. Certainly, they understand the potential pollution hazards which exist if poor disposal practices are utilized.

Numerous disposal studies have shown that incineration (burning) is the most efficient procedure. However, these studies have also shown that the toxic, gaseous and non-combustible byproducts of incineration cannot be released into the atmosphere without having a potential pollution hazard. In addition, it is not just a simple matter of burying the containers or disposal in dumping sites, because of the potential hazard of air and water pollution.

Consequently, the fruit grower is presently faced with a very serious dilemma. Although he must spray to control injurious fruit pests, he is usually restricted from employing conventional disposal techniques. To quote an old expression, "He is caught between the devil and the deep blue sea." Attached is a copy of Agricultural Chemicals Fact Sheet No. 3, "Surplus Pesticide and Container Disposal."

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Issued in furtherance of cooperative extension work in agriculture and home economics, acts of May 8 and June 30, 1914, in cooperation with the U. S. Department of Agriculture. Roland H. Abraham, Director of Agricultural Extension Service, University of Minnesota, St. Paul, Minnesota 55101.

Trade names are sometimes used in this publication to clearly describe products. The use of a trade name does not imply endorsement by the Minnesota Agricultural Extension Service, nor does omission of other trade names imply nonapproval.

AGRICULTURAL CHEMICALS NO. 3

PHILLIP K. HAREIN and GERALD MILLER

Surplus pesticide and container disposal

Surplus pesticides

We are faced with the choice of pesticide storage or disposal when the use of certain pesticides is discontinued or when we have surplus pesticides at the end of a growing season. Storage presents problems, as discussed in our Agricultural Chemicals Fact Sheets No. 1, Fire Hazards of Stored Pesticides, and No. 4, Pesticide Storage and Formulation Shed. Disposal is also a problem because we currently do not have a satisfactory means for disposing of large quantities of pesticides in Minnesota.

High temperature incineration (1650° F.) appears to be the best potential disposal technique, but we do not have all the necessary information nor the necessary incinerators at this time. Using incinerators without adequate scrubbing to wash the contaminants from the exhaust would result just in another source of air pollution. Both the water and air effluents need to be monitored constantly to assure us that such as incinerator is performing properly. Many incinerators only will handle liquids. There also is doubt as to the proper disposal of the ash from pesticides following incineration.

Small quantities (no more than 1 gallon of liquid or 5 pounds of solid material) of surplus pesticides can be buried in properly supervised sanitary landfills approved by the Minnesota Pollution Control Agency. Contact this agency for information on current approved sanitary landfills when you have pesticides to dispose. Remember, these areas are not to be used for disposal of large quantities of pesticides. Large quantities, buried in one place, may complicate pollution problems and reduce the chance for breakdown by chemical degradation and microorganisms.

Minimize your pesticide disposal problems as follows:

1. Don't overstock. Obtain pesticides for the current season only.
2. Try to arrange the return of large containers of pesticides to your supplier in case the pesticides are not needed.
3. Use pesticides that will "breakdown" quickly.
4. Minimize purchases of pesticides that are likely to be restricted.
5. Mix only enough pesticide for your immediate needs. If you have some left over, try to use it elsewhere as instructed for Minnesota.

Pesticide containers

Combustible containers, as well as small (5 gallons or less) noncombustible containers, should be buried in a supervised sanitary landfill, as recommended above for pesticides.

Combustible containers should no longer be destroyed by burning in Minnesota. Such burning may contribute to air pollution.

Do not puncture aerosol or pressurized spray cans or bombs.

Empty pesticide containers should never be salvaged for reuse for any purpose. Such reuse is never worth the chance that trace amounts of pesticides remaining in the containers may be enough to harm people, pets, livestock, and wildlife.

To dispose of 15, 30, or 55-gallon metal containers, tighten all bungs and closures. Transport the container, or arrange for its transportation, to a pickup point previously designated by a professional drum reconditioner. The containers then will be reconditioned professionally.

The following reconditioning procedure is utilized by many professional drum reconditioners; it satisfactorily destroys any pesticide remaining in containers:

1. Heads are mechanically removed from tight-head drums.
2. Drums are upended and heated by direct flame in a special drum furnace to 1000° F. or more for about 10 minutes.
3. After cooling, drums are sandblasted or shotblasted to remove all traces of foreign matter, both inside and outside the drum.

A list of National Barrel and Drum Association members and of other drum reconditioners having suitable burning facilities is available from the National Agricultural Chemicals Association or the Minnesota Agricultural Chemicals Association. Formulators are urged to request their customers to follow recommended decontamination procedures.

In Summary:

1. BURY 1 GALLON OR 5 POUND QUANTITIES (OR LESS) OF PESTICIDES IN APPROVED AND SUPERVISED SANITARY LANDFILLS.
2. RETURN LARGER QUANTITIES OF PESTICIDES TO THE MANUFACTURER OR STORE IT PROPERLY UNTIL A DISPOSAL METHOD BECOMES AVAILABLE.
3. BURY SMALL AND DECOMPOSABLE CONTAINERS IN APPROVED AND SUPERVISED SANITARY LANDFILLS.
4. SEND EMPTY METAL PESTICIDE CONTAINERS OF 15-GALLON CAPACITY OR MORE BACK TO THE MANUFACTURER OR TO PROFESSIONAL DRUM RECONDITIONERS.
5. OBSERVE SPECIAL LABEL INSTRUCTIONS RELATING TO DISPOSAL.

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