

in control of cowpox. Very frequently it irritates and produces increased sensitivity of the teats and udder, resulting in the spread of the cowpox infection.

Various recognized quaternary ammonium preparations available today have proved to be most effective. The following preparations are included in this group: Pfanstiehl-20, Roccal, and Zephiran.

In addition to the establishment of maximum sanitation and disinfection to prevent spread of the disease, cowpox lesions must receive special attention. Application of medication which will stick to the area, prevent secondary bacterial invasion, counteract irritation and promote healing, becomes an essential part of the treatment. An ointment containing hexachlorophene is of value for this purpose. This ointment may be obtained from veterinarians.

The following regimen has proved effective in the treatment and prevention of cowpox:

1. Isolate and milk last all animals exhibiting symptoms and lesions of cowpox.

2. Thoroughly wash hands, milking machine inflations, udders and teats with a recognized quaternary ammonium preparation before milking infected animals.

3. Following milking, thoroughly dry teats and udder with clean, disposable towel for each animal.

4. Apply a medicated ointment to teats and udder to prevent secondary bacterial invaders and promote healing, giving special attention to areas exhibiting cowpox lesions.

Animals to be added to an established herd should be isolated for 2 to 3 weeks, and milked following completion of milking of the established herd. Veterinary inspection of isolated animals before admission to the herd will often save the dairyman many dollars in medication for cowpox. ■ ■ ■

The Battle Against

PLANT DISEASES

● by W. E. Brentzel

The most startling thing about plant diseases is that they cost so much. It is estimated that each year more than three billion dollars are lost from plant diseases. The tragic aspect of this is that much of it is waste. Losses that can not be avoided are regrettable but waste, due to the lack of using known methods of prevention and control, is simply waste. This kind of loss is not in accordance with the nature of man.

It is estimated there are more than 30,000 different economic plant diseases

in the United States. We are able to control, in some measure, about half of these.

In the battle against plant diseases, about a half billion pounds or more of fungicides are used annually, so there is nothing unusual about fighting diseases with fungicides. In many places, and in the culture of a wide variety of different kinds of crops, the use of fungicides has become a regular practice. Such use is anticipated as a part of the

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labor and expense required for the production of the crop.

Where fungicides are not, or can not be used in the fight against diseases, few other measures are left for the grower. He may be able to obtain varieties resistant to the disease, or he may quit trying to grow the crop, as many have done in the past. Cultural practices often play an important part in the control of diseases but are not in themselves sufficient.

As more food is required and farms become more numerous and closely spaced, the problem of disease control increases. What has happened in the past generation provides ample examples of this change. Not so many years ago flax was produced largely in Illinois, Wisconsin and Indiana. When the culture became rather intensive and the supply of new ground exhausted, flax wilt developed to such a degree as to make production unprofitable. At that time there were no resistant varieties and, of course, fungicides are not used for the wilt disease. Growers stopped growing flax in these states and the culture was taken up in the northwest **on new land which** had not, as yet, become infested with the wilt fungus.

A parallel example of crop changes, due to disease, is in the case of barley. Once malting barley was grown extensively in southern Minnesota, Wisconsin and Iowa. Again soil infestations made barley cultures unprofitable in these states and the growing of this crop was largely discontinued.

At present, barley is still a profitable crop to grow in North Dakota but diseases are beginning to be threatening.

Commercial potato growing began in North Dakota about 1925. At that time a few common diseases such as scab and scurf were known to occur but the region, for the most part, was practically free of potato diseases. With increased

acreages of the crop and the importation of seed stock from other regions, disease problems increased at a rapid rate. Now we have almost all of the known potato diseases in North Dakota.

In the eastern states, fruit and vegetable growers have experienced considerable difficulties from diseases. The growing of pears was largely discontinued because of the fireblight disease. Growers of green pod beans for canning purposes experienced considerable difficulty from diseases. It became necessary for them to import seed stock from other regions less affected by diseases.

The Experiment Station maintains a plant disease laboratory for diagnosing diseases reported in this region. Many samples of diseased plants are brought into the laboratory for a diagnosis. Many more are sent in by mail and growers often phone reports as to the disease problem affecting their crops. County Extension agents keep close watch and report the occurrence and development of disease problems. When time permits someone from the **laboratory goes out** into various parts of the state on survey and to confer with persons who have plant disease problems. Records are kept of the occurrence and the extent of damage. This information serves to keep the Experiment Station informed of disease problems and, especially, on the development of new diseases.

Following are some of the diseases diagnosed in 1957.

Aster yellows, with its related form, purple top of potatoes, appeared frequently in the 1957 plant disease survey listing. It not only appeared a number of times in flax, but also in asters, calendula, potatoes (purple top), onion, sugar beet, tomatoes and zinnias.

Fireblight was the most common disease diagnosed for apples. Five specimens, from widely scattered sections of the state, were listed. Bitter rot, scab,

cedar apple rust, silver leaf, and hail damage also were reported on apples.

Strawberries showed leaf spot, bud blight, crown rot and gray mold; raspberry diseases diagnosed included spur blight, cane blight, anthracnose, and winter and spider mite injury.

In summarizing the year's list of inquiries, almost all the common grain crops, orchard, windbreak, vegetable and flower garden plants commonly grown

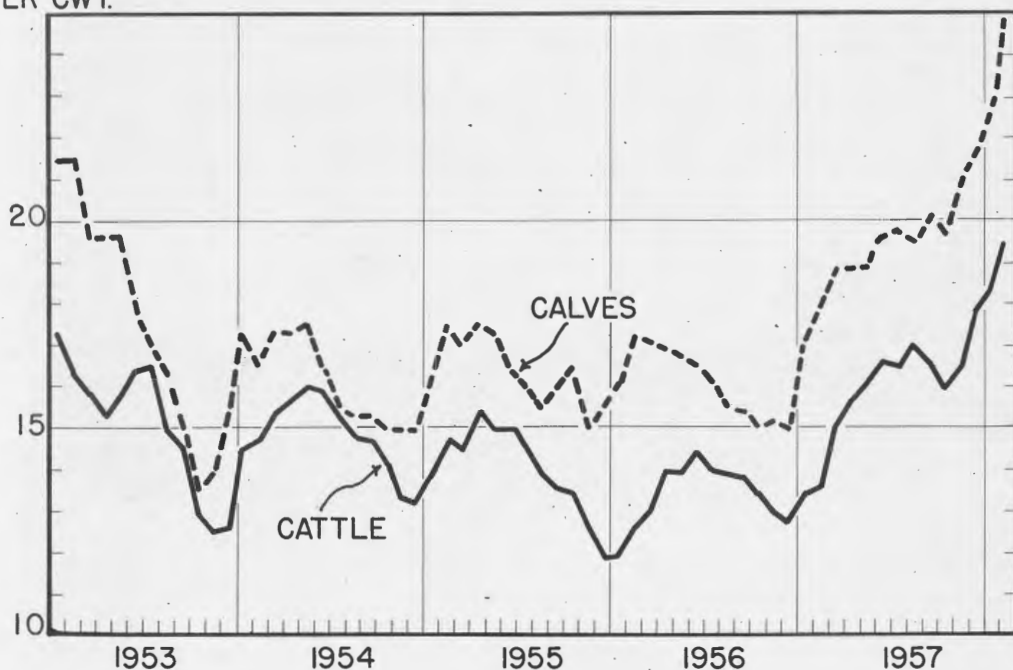
in the state were included, and the inquiries came from every section of the state. Three diseases new to this region were reported.

The survey not only gives individual help to the person submitting the specimen, but helps the pathologists and all residents of the state by indicating where the diseases are appearing. This is particularly important when the disease is new to the state or to the particular locality.



MARKET PRICE OF CATTLE AND CALVES

DOLLARS
PER CWT.



This information and Parity Table on back cover from U. S. Department of Agriculture, Agricultural Marketing Service. C. J. Heltemes and B. B. Barr, Agricultural Statisticians; and North Dakota Agricultural Experiment Station, Perry V. Hemphill, Associate Agricultural Economist.