

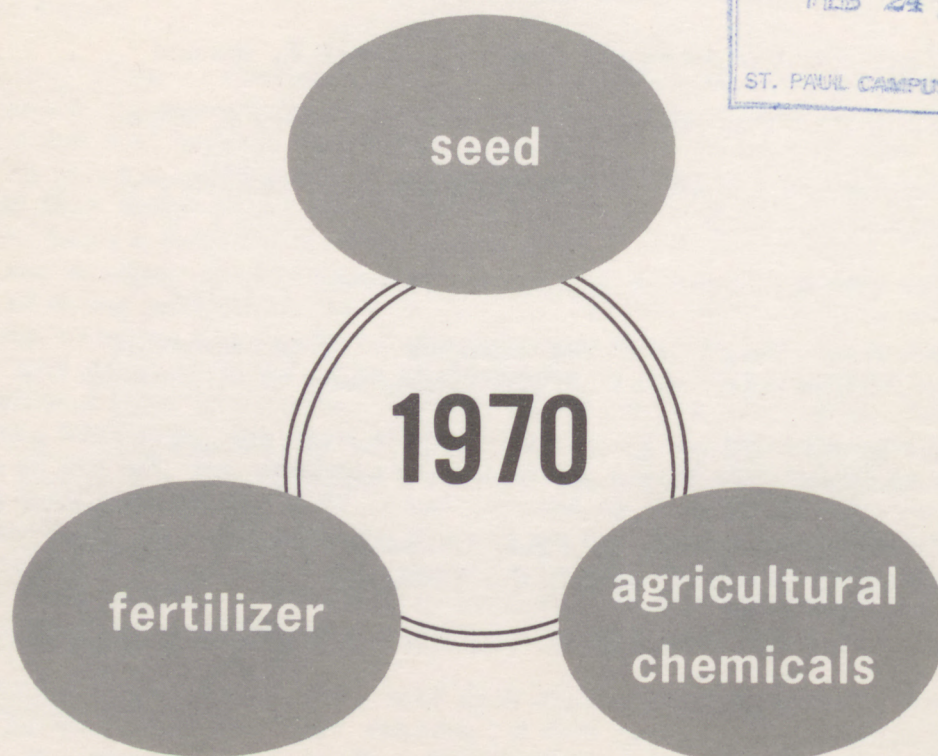
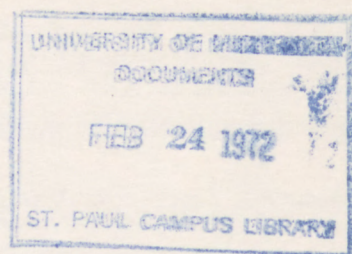
NA 2000  
SR-12

SPECIAL REPORT 12

3

**MINNESOTA**

# Retail Dealers Conference



conducted by

Minnesota Extension Specialists

in

Soils, Agronomy, Plant Pathology,

and Entomology

**AGRICULTURAL EXTENSION SERVICE, UNIVERSITY of MINNESOTA**

2

1

## TABLE OF CONTENTS

|  | <u>Page</u> |
|--|-------------|
| Crop Diseases and Problems in Minnesota in 1969 -- Herbert G. Johnson and Howard L. Bissonette . . . . .                               | 1           |
| Herbicides -- Gerald R. Miller . . . . .   | 6           |
| Corn and Soybean Weed Control Demonstration Results -- Gerald R. Miller and Oliver E. Strand . . . . .                                 | 15          |
| Herbicide Performance on Corn and Soybeans -- Gerald R. Miller . . . . .   | 24          |
| Broad-leaved Weed Control in Small Grain -- Oliver E. Strand . . . . .   | 27          |
| Field Crop Variety Recommendations for 1970 -- Harley J. Otto . . . . .  | 29          |
| Legislative Changes and Proposals Affecting the Seed Industry -- Harley J. Otto . . . . .  | 33          |
| Insecticide News Items in 1969 -- Phillip K. Harein. . . . .   | 34          |
| Policy Statement Regarding Use of Insecticides -- Department of Entomology, Fisheries, and Wildlife, University of Minnesota . . . . . | 37          |
| Insect Problems in 1969-70 -- L. K. Cutkomp, A. G. Peterson, Phillip K. Harein, Hart Graeber, Robert Flaskerd . . . . .                | 38          |
| Insect Control Recommendations on Field Crops for 1970 -- Phillip K. Harein, David M. Noetzel, and L. K. Cutkomp . . . . .             | 48          |
| What's Killing Our Lakes? -- Lowell D. Hanson and William E. Fenster. . . . .  | 61          |

Mention of trade names in this publication does not imply endorsement nor does failure to mention a name imply criticism by the Minnesota Agricultural Extension Service.

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.

## CROP DISEASES AND PROBLEMS IN MINNESOTA IN 1969

Herbert G. Johnson and Howard L. Bissonnette,  
extension plant pathologists

### CORN DISEASES

The 1969 season produced few spectacular corn diseases. Most of the diseases that have been found in recent years were present, but relatively few cases of severe field losses were observed. The status of several diseases is described below.

Seedling Loss -- Ordinarily a 10-15 percent loss in stand, compared to seeds planted, is expected. These losses result from disease, insects, rodents, birds, mechanical injury, and other causes. For these reasons, it's common practice to plant a little extra seed to allow for losses. A few examples of excessive stand loss were observed. Cool weather during the early period of growth could have been a critical factor. Corn does not grow at temperatures below 50° F., and disease organisms gain an advantage during such periods. An inspection of dying seedlings showed that the below-crown internode (the portion of the stem between the seed and the enlarged base of the plant) was rotted off. Fungi do this damage quite often and insects, such as wireworms, can also cut off the below-crown internode. During early stages of growth, the young plant is obtaining food from the seed through the below-crown internode. When this structure is cut off, the seedling usually dies. Seed treatment is of little help since the fungicide on the seed is not located to protect structures that grow out, away from the seed. Prevention of such loss is best accomplished through disease resistance, vigorous seed, proper planting depth, good seedbed preparation, and good weather. Planting in cold soil or the occurrence of a drop in temperature after planting contributes to stand reduction.

Leaf Spot Diseases -- Five leaf spot diseases of corn were found in southern Minnesota during the 1969 season. A few reports of possible damage were received, but generally these diseases were too low in incidence or occurred too late to cause damage. A survey through south central and southwestern areas in mid-August found low to trace amounts of eye spot, northern leaf blight, rust, and an unidentified yellow speckling.

Yellow Leaf Blight -- This disease was found in southeastern Minnesota this year: the first definite report in the state. In the field inspected, it may have caused some yield loss because of reduction of effective leaf surface.

New information on the eye spot disease indicates that it is caused by a fungus (Kabatiella zeae). Spores of the fungus are produced on overwintering, infected corn leaves and on the surface of infected, green corn leaves. The spores are windborne. In other parts of the world, this fungus is most successful in causing leaf spot diseases during periods of frequent rains. This may help to explain the higher incidence in 1968 than 1969.

Observations indicate that early maturing hybrids as a group are generally more susceptible to the disease than late hybrids. There is some reason to be-

lieve that the disease becomes more severe as plants mature, since scattered green plants in maturing fields had less infection. In 1968, however, a rather heavy infection was found uniformly in a corn field about the middle of July and all plants were green at that time. The genetics of resistance and susceptibility is not well known at present, but there are some indications it might be rather complicated. The development of a large number of resistant hybrids would be the best solution to the problem, but it is impossible to predict the time such a program would take.

Fungicide application is a possibility for control, but any large scale use of chemicals in the near future is not anticipated. Fungicides could be very useful to help determine the extent of yield loss in infected plantings. In 1969 the rather low incidence of the disease would likely have shown little effect from fungicide application. Zineb fungicide is registered for use on corn with a tolerance of 7 parts per million and the limitation, "Do not feed forage to dairy animals or animals being finished for slaughter."

Stalk Rot and Lodging -- This disease is always present and was probably at near normal levels in 1969. About 10 percent loss is expected each year. The use of resistant hybrids and proper cultural practices are still the best recommendations for control.

#### ALFALFA

Stand losses in alfalfa have resulted from bacterial wilt, *Phytophthora* root rot, and crown rot. The extended dry period during the last half of the growing season apparently increased the losses from these diseases. The use of bacterial wilt resistant varieties and planting on fields with good internal or surface drainage will help reduce these losses. Fungus leaf spots were common in many fields and caused varying degrees of leaf loss. In some fields, the first and second cuttings were fairly good and then the plants in low areas stopped growing. Leaf spot diseases often became severe on these plants. Some of these situations were investigated and *Phytophthora* root rot was found to be the cause on plants in the low ground. This disease rots off the tap root at depths down to 12 inches. Early in the season when moisture was adequate, these damaged plants grew fairly well. The extended drought period the last part of the season prevented these plants from making normal growth. Leaf spot diseases often became severe because leaves were exposed to infection for a long period of time. Root rot was the critical problem.

#### SOYBEANS

Root rot was more severe than usual in 1969. The cool weather early in the season, combined with wet conditions in some locations, was apparently responsible for this situation. The root damage continued to affect the crop throughout the rest of the season, resulting in some stunted and barren plants.

#### CEREAL GRAINS

Seed Treatment -- Planting good quality disease-free seed in a well-prepared seedbed when the soil is warm and moist would eliminate the need for most seed treatment. However, these ideal conditions usually do not occur -- so seed treatment is needed to protect the seed from pathogenic organisms on the seed and in the soil.