ANNUAL SURVEY OF WHEAT GROWING AREAS OF MEXICO FOR DETERMINATION OF SEVERITY OF DAMAGE CAUSED BY DISEASES.

Area: Mexico City to Tehuacán, and Puebla to Atlixco.
Date of Inspection, March 20-22, 1945.
Inspectors: Guevara, Hadad, Borlaug .

GENERAL CHARACTERISTICS OF CEREAL PRODUCTION OF AREA.

In part of this area wheat and barley are grown as a "dry-land" crop, in the absence of irrigation while other areas (the larger acreage) is grown under conditions of irrigation. Plantings are made soon after the end of the rainy season . (probably December) and matures in April. Even the areas where irrigation is practiced the crops are grown with a minimum of water, presumably to minimize the losses c caused by rust. In many cases perhaps the droughts caused greater reduction in yields than would have been encountered from rust in the presence of sufficient water. In general stands are poor and even without losses from disease could not possibly yield more than to 15 bushels per acre.. In a few cases (probably 5%) of the fields good stands were present and in these cases judging from condition of most of these fields at time of inspection yields of 25 to 30 bushels per acre could be expected.

The thin stands can in part be attributed to low pates of seeding, which - are used in order to grow thin stands,"which are damaged less by rust", according to the natives. This appears to be a poor and uneconomical method of controlling rusts. Undoubtedly many of the poor stands can be attributed to seeding small grains in poorly prepared seed beds which results in poor emergence.

It appears to be necessary to determine what methods of seeding should be employed in order to obtain good stands which are capable of producing acceptable - yields. Experiments shall be conducted during the forth-coming year to determine the best time of planting, rate of seeding, and method of planting with the varieties of wheat now available. Special attention will be given to the interrelated factors of stand density, frequency of irrigation and damage caused by rust fungi, and from such tests it should be possible to select the proper balance between these factors which will result in higher yields.

The Wheat in the Tehuacán- Puebla Area is largely of the durum type although fields of bread wheats are also common. Many fields are mixtures of durums and bread wheats. Apparently although duram wheats are extensively grown in this area they are used for milling into flour for bread and not used exclusively for production of macaroni, spaghetti, noodles etc. as is the case with this type of wheat flour in the United States.

Disease Situation:

1.- Stem Rust:

At the time of inspection the majority of the wheat in this area was in in the flower to milk stage of development. Stem rust, caused by P. graminis - tritici, was present in all of the fields which were being grown under irrigation, but generally absent, or present only as "trace infections", in the non-irrigated fields. However, even in the fields which were grown under irrigation infection was not sufficiently severe to result in appreciable damage, this year, except in one or two fields.

2.- Stripe Rust.

Puccinia glumarum was present in most of the fields in this area at time of inspection, and in some fields infection appeared to be sufficiently severe to cause small losses. Apparently many of the durums possess resistance to P. glumarum, whereas all of the native bread wheats are susceptible.

3.- Leaf Rust

Caused by Puccinia triticina, was observed only once on this trip, and at least this year, appears to be of little importance in these areas.

4.- Loose Smut:

Loose smut, caused by Ustilago tritici, was generally present throughout the area. In many fields 12 to 15% of the heads were "smutted", while 23 and 25% of smut was observed in two fields near Atlixco. It appears that a seed lot purification program should be initiated as soon as possible. It is doubtful whether the hot water treatment can even be used successfully by the individual

farmers because of the uncertainties of this method of treatment unless it is closely supervised. There is definitely a need for a safer, more effective, and less unwieldy method of controlling loose smut of wheat and barley. It is of sufficient importance that we initate a program to endeavor to develop a satisfactory chemical treatment. We should begin to collect volitile chemicals for this purpose immediately.

Bunt.

The wheat was not sufficiently mature to obtain information on the incidence of bunt.

Barley Culture.

A considerable number of fields of barley were observed on this trip. Some of these fields were characterized by good stands, good height growth and capable of producing good yields. However heavy infections of both covered and loose smut were observed in virtually every field. One field was examined which hand approximately 60% of the heads smutted, about 30% being loose smut and the remainder covered smut.

There is a very urgent need to initiated a campaign against the barley smuts.