Plant Disease Survey in Libya

I. Diseases of Wheat and Barley

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ABSTRACT

During the last three growing seasons (1970/71, 71/72, 72/73), a survey of wheat and barley diseases was carried out in the western part of Libya. Diseases observed were the stem rust, leaf rust of wheat, leaf rust of barley, bunt, loose smut, covered smut of barley, flag smut of wheat, powdery mildew, and some barley leaf spots. These diseases occur in different degrees of severity according to the crop, the cultivar and the prevailing environmental conditions. The flag smut of wheat and some of the barley leaf spots were observed for the first time in Libya and this is the first record of these diseases.

INTRODUCTION

With the expansion of crop production in Libya and the increase in introduction of stocks for planting whether seed or other plant parts, it is badly needed to survey plant diseases already existing in the country. This is very important especially with the enforcement of the new plant quarantine act. The last attempt to survey plant diseases in Libya was that presented to the FAO second session of the Near East Plant Protection Commission in which casual pathogens were listed and the localities together with the hosts were mentioned (2).

A plant disease survey was carried out during the three successive growing seasons, 1970/71, 71/72, 72/73, in the region from Kararim (Mesrata Governorate) east to Sebrata west to the mounty region south to Tarhona (Khoms Governorate) south. This covered four Governorates, Tripoli, Zawia, Khoms and Mesrata. All wheat and barley fields were examined during the month of May for diseases occurring in these fields. This includes identification of these diseases, their prevalence and severity on the different cultivars of the two crops.

RESULTS AND DISCUSSION

Diseases observed on the two crops are listed below together with their casual pathogens and prevalence.

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1. Stem Rust of Wheat and Barley (*Puccinia graminis* var. *tritici* Erikss. & Henn.).

Severe infections were observed on susceptible bread and durum wheats and barley cultivars. Pustules were of the moderate susceptible and susceptible types (6). Appearance of this rust in the three growing seasons varied due to the differences in the prevailing environmental conditions (3,4). The prevalence of this rust depends also on the amount of rain and its distribution during the period after its appearance. Also this rust was more prevalent and severe in the irrigated fields compared with those rain-fed only, especially when rain was scarce in the latest period of the growing season. This rust is not as important on barley as it is on wheat because of the early maturity of barley. Samples of this rust were collected and races were identified in the greenhouses.

2. The Leaf Rust of Wheat (*Puccinia recondita* Rob. Ex Desm.)

This rust was more severe and prevalent than the previous rust and constitute a serious problem on wheat. It appears at a wider range of environmental conditions though it is limited by the higher temperature in late June (3,4), the period in which the normally sown wheat would be harvested.

3. The Stripe Rust of Wheat and Barley (*Puccinia striiformis* West.)

This disease was observed rarely on both wheat and barley and till now does not constitute a serious problem. It is known to be restricted by high temperatures (3,4). Infection types in most cases were of the resistant and moderate resistant types and prevalence did not exceed 10% (1).

4. Leaf Rust of Barley (*Puccinia hordei* Otth.).

The disease is severe on many of the cultivated barley cultivars in all parts of the region. It has been observed over a wide range of temperature which may be similar to that of the leaf rust of wheat.

5. The Wheat Bunt or Stinking Smut (*Tilletia caries* (D.C.) Tul., *T. foetida* (Wallr.) Liro).

This disease was not observed in the Tripoli region in the three successive years of the survey but samples were brought from the Green Hills (Gabal El Akhdar) in 1973, where it was previously found (2).

6. Covered Smut of Barley (*Ustilage hordei* (Pers.) Lagerh.).

A very important disease on barley. It is wide spread throughout the country and causes great reduction in yield and must be considered in seed certification.

7. Loose Smut of Wheat and Barley (*Ustilage nuda* (Jens.) Rostr.).

The disease was observed throughout the region especially on barley but to a lesser extent than the covered smut of barley. It is estimated to be about 5% of the total number of plants.

8. Flag Smut of Wheat (*Urocystis tritici* Koern.) (U. agropyri (Preuss.) Schröt).

This disease was first observed in this country in May 1973 in Qasabat (Khoms Governorate) south to Tripoli. Another sample was brought from Zorda, Marg (Gabal

El Akhdar Governorate) and was then found in the University Farm in Tripoli. This means that the disease is widespread though occurring in very low percentage and must be taken in consideration in selection of new wheat cultivars.

9. Powdery Mildew of Barley and Wheat (*Erysiphe graminis* D.C.).

A very important disease on barley in Libya. It is very severe and destructive on most of the cultivated barleys especially in the irrigated parts of the country. It rarely occurs on wheat and sometimes can be observed in the greenhouses. Barley cultivars react differently to this disease and amount of infection depends on the prevailing environmental conditions (5).

10. Leaf Spots of Barley

Several leaf spots occur on barley in Libya. They occur in different degrees of severity. The following leaf spots were observed:

a. The spot blotch (*Helminthosporium sativum* Pam., King & Bakke)
b. The net blotch (*Helminthosporium teres Sacc.*)
c. The barley scald (*Rhyncosporium secalis* (Oud.) J. J. Davis)
d. The Septoria leaf spot (*Septoria passerini* Sacc.)

The spot blotch and the net blotch were not mentioned in the list of plant diseases in Libya (2).

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