Plant Disease Survey in Libya

II. Physiologic Races of *Puccinia graminis* var. *tritici*

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ABSTRACT

Samples of rusted wheat and barley plants were collected during three successive years, from the western region of Libya. Stem rust races identified were; in 1971: race 14 (28.5%), 17 (21.4%), 19 (28.5%), 21 (7%), and 39 (14.6%); in 1972: race 14 (54.5%), 17(9.1%), 19(9.1%), 24(18.2%) and 39(9.1%); and in 1973: race 14(61.9%), 17(4.8%), 19(4.8%), 24(14.2%), 39(4.8%) and 53(9.5%).

INTRODUCTION

Breeding for rust resistance in wheat, and barley has been carried out for many years in most parts of the world and some success has been achieved. In Libya, the wheat and barley breeding programs are still new and rely primarily on introductions from which selections were obtained.

To carry on a wheat or barley breeding program for rust resistance, it is first needed to know the existing physiologic races of the rusts and test the introduced or newly bred lines of wheat or barley under greenhouse and field conditions with all or the prevailing races either singly or in mixture.

Therefore, races of the stem rust fungus (*Puccinia graminis* var. *tritici* Erikss. & Henn.) were identified; being one of the important rusts that attack both wheat and barley. Results of this study for 1971 were published (4).

MATERIALS AND METHODS

Samples of rusted wheat and barley plants were collected during three successive seasons (1971, 72 and 73), stored in the refrigerator till temperature in the greenhouse was favourable for rust identification and were identified for each year the following autumn. Procedures for planting and inoculation of the differential hosts, then notes recording, were the same as those described by Stakman *et al.* in 1962 (7).

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RESULTS AND DISCUSSION

Physiologic races were identified according to Stakman *et al.* (7) and data were summerized in Table 1. Many of these races were already identified in the Mediterranean region (1,2,3,5,6,8).

From the data presented, it is noted that race 14 constitute, during the three seasons, the highest percentage among these races followed by race 19 in 1971 and race 24 in 1972 and 1973. However, races 14, 17, 19 and 24 are similar on all stem rust differentials except on two differential hosts (Marquis and Kota) and possibly can be considered one group of races.

Prevalence of these races in the three successive seasons cannot be compared because of the dissimilarity of the surveyed localities in the three years. In 1971, it was confined to the coastal area from Zawia west to Gorabolly east; in 1972 it was extended west to Sebrata, east to Khoms and south to Tarhona and in 1973 it was extended more to the east to Kararim east to Mesrata and more to the south in the hilly regions of Khoms governorate south and east to Tarhona. However, almost the same races, with few exceptions, were identified during the three successive years.

Rust survey has to be continued and extended over wider areas especially in the eastern parts of the country and these races have to be used in the wheat and barley breeding programs for testing new lines and introduced cultivars for their resistance under greenhouse and field conditions.

Table 1 Percentage of physiologic races of *Puccinia graminis* var. *tritici* identified in Western Libya in 1971, 72 and 73.

Physiologic race.	Year		
	1971	1972	1973
14	28.5%	54.5%	61.9%
17	21.4	9.1	4.8
19	28.5	9.1	4.8
21	7.0	—	—
24	—	18.2	14.2
39	14.6	9.1	4.8
53	—	—	9.5

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