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COMPETITION, SURVIVAL, AND SOME PHYSIOLOGICAL STUDIES
ON SOME RACES OF PUCCINIA GRAMINIS VAR. TRITICI

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BY



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I N T R O D U C T I O N

The population of the united Arab Republic increased in the last few years due to the rise high standard of living in the country. Production of wheat, the main food crop, is limited owing to the restricted area cultivated in the U.A.R. Though the high-dam will increase the cultivated area, yet this increase will not correspond to the increase of the population in the country. Consequently, large amounts of wheat are imported from foreign countries to meet such shortage.

Several methods have been tried in an attempt to increase wheat production including, breeding, pest control, agricultural methods and increase in cultivated area.

Wheat is liable to rust attack which causes serious losses to this crop.

Breeding programmes initiated under the conditions of the U.A.R. necessitated rust inoculum every year to induce artificial epiphytotics in an attempt to select resistant cultivars. Rust inoculum has to be stored from one season to another and then races must be mixed before artificial inoculation to test new lines of wheat.

Studies conducted here are designed to determine the effect of storing rust urediospores at different temperatures and to study the survival of races in mixtures. Besides, survival of rust urediospores on dry foliage of wheat was investigated. Furthermore, several wheat cultivars were tested under greenhouse and field conditions to select cultivars that might be used as sources of resistance and to study the relation between seedling and adult plant reactions.

History of the races used in this investigation

For this investigation, six races were chosen some of those races were selected because of their extensive spread, great virulence or economic importance. Other races were chosen because of their behaviour on the differential cultivars(Table 1, Fig. 1).

Race 11 was isolated for the first time in U.A.R. in 1951 and again in 1959, 1963 and 1965. This rust race was not prevalent up to 1965, but in 1966, 1967 and 1968 it predominated suddenly accounting alone to more than 50 % of the total isolates.

Races 14 and 19 which were of special importance in U.A.R. up to 1965 but are now of minor importance. Race 17 was predominant from 1949 to 1959. In 1960 it occupied the third position, predominated in 1961 and occupied the third position in 1962. In 1963 and 1965 it was the top race, but now it is of secondary importance after race 11.

Race 53 was isolated for the first time in U.A.R. during 1950, then was isolated in 1953 but disappeared from that time till 1965.

Race 117 was isolated only in 1963 constituting 1.44% of the total isolates.

Table (1): Relative prevalence of physiological races of *E. uredinis* isolated in U.A.R. (1949 - 1968).

Relative rank, and percentage of uredial isolates												
Race year	Race year											
	11	14	17	19	53	117	1959	10.4	11	14	17	19
1949	0	11.85	47.85	12.23	0	0	1959	10.4	2.30	60.40	15.30	0
50	0	2.94	43.58	19.40	1.17	0	60	0	63.85	7.23	6.63	0
50	0	0	70.60	17.60	0	0	61	0	16.16	29.55	21.66	0
52	0	0	72.72	0	0	0	62	0	31.90	29.75	21.86	0
53	0	6.82	68.20	6.82	5.82	0	63	2.26	10.91	35.80	13.37	0
54	0	24.00	24.00	20.00	0	0	64	0	33.29	28.46	17.44	0
55	0	0.82	79.50	13.93	0	0	65	3.06	21.40	34.93	14.41	0.44
56	0	0	87.72	10.53	0	0	66	67.40	8.69	8.70	0	0
57	0.23	0.23	84.63	8.49	0	0	67	50.62	22.74	10.33	5.16	0
58	0	0	0	0	0	0	68	45.74	5.65	25.27	7.45	0

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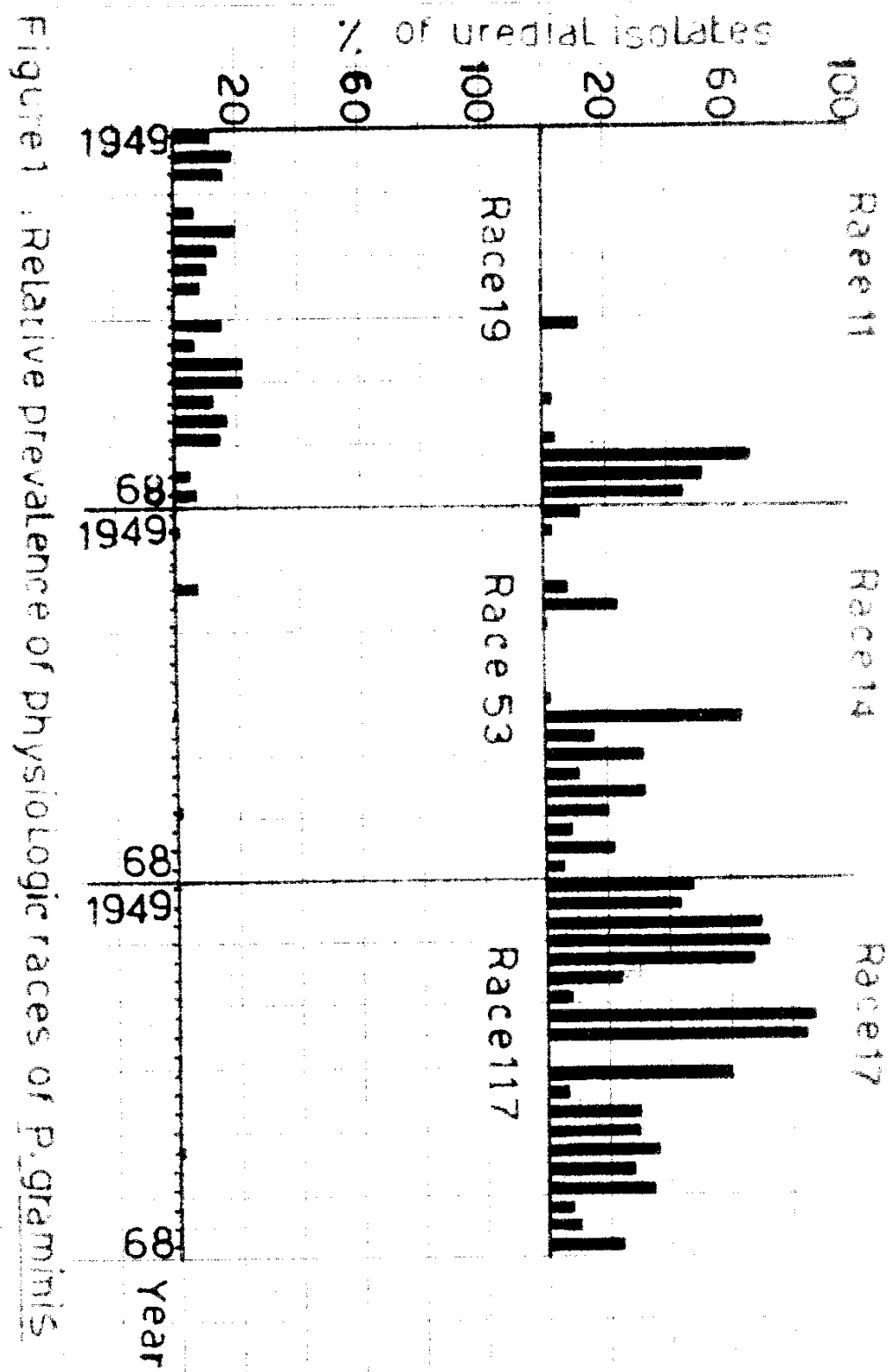


Figure 1 : Relative prevalence of physiologic races of *P. graminis*
in U.A.R. 1949-1968.