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227
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PERFORMANCE OF ALFALFA VARIETIES IN THE WICHITA VALLEY

L. E. Brooks, Superintendent
Substation No. 16, Iowa Park, Texas

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SUMMARY

All varieties of alfalfa grown in this test at Iowa Park in 1957-58 were susceptible to cotton root rot, Phymatotrichum omnivorum. This disease is the leading obstacle to successful production of alfalfa in the Wichita Irrigated Valley.

Buffalo, Du Puits and Williamsburg were the lowest in mortality and highest in yield of forage at the time harvesting was discontinued because of a reduction in stands.

Introduction

Alfalfa is adapted to the climate and to many of the soil types of the Wichita Valley of Texas. The most serious problem in its production is a disease, Phymatotrichum omnivorum, which is commonly called cotton root rot.

In the early days of Substation No. 16 at Iowa Park, an extensive search was made in an effort to find a variety or strain of alfalfa that had resistance to the cotton root-rot fungus. Seed were collected from many sources and tested for root-rot resistance under natural and artificial methods of disease inoculation. Strains showing the slightest indication of resistance or superiority in the inoculation studies were evaluated further in replicated production tests. None of the varieties or strains tested were more tolerant of the root-rot organism than the major local variety, Oklahoma Common.

As new strains were developed, variety tests have been conducted to evaluate them under local conditions in comparison with known varieties. The availability of several new varieties prompted the planting of this test.

Procedure and Results

The alfalfa variety test was planted on Yohola loamy very fine sand following a crop of sweet corn. The varieties were established in single-row plots, 30 feet long, with rows 36 inches apart. Planting date was December 2, 1957. This was late for alfalfa and growth was limited during the winter. All varieties, however, withstood the winter temperatures and came through with good stands the following spring. The plots were cultivated and hoed for weed control and irrigated as needed.

Mortality from root rot was occurring in all varieties by August 4, 1958, the date of the second harvest. By September, stand losses were so severe that further harvesting was abandoned. On September 23, stand reductions were measured in linear feet per row. These data are summarized in Table 1 with final comparisons shown as a percentage loss.

Table 1. Stand losses in alfalfa varieties caused by cotton root rot, Iowa Park, 1958

Variety	Stand loss in feet per row ^{1/}				Percent stand loss
	Rep. 1	Rep. 2	Rep. 3	Average	
Buffalo	15.0	17.0	16.0	16.0	53.3
Du Puits	20.0	12.0	19.0	17.0	56.7
Williamsburg	24.0	11.0	17.0	17.3	57.8
Lahontan	27.0	18.0	16.0	20.3	67.8
African	18.0	23.0	20.0	20.3	67.8
Ranger	26.0	19.0	17.0	20.7	68.9
Common	29.5	22.0	14.0	21.8	72.7
Indian	29.0	19.0	19.0	22.3	74.4
Caliverde	28.0	28.0	19.0	25.0	83.3
L.S.D. .05				N.S.	N.S.

^{1/} Row length 30 feet.

Table 2. Forage yields and stand loss of alfalfa varieties, Iowa Park, 1958

Variety	Forage, pounds per acre ^{1/}			% root rot loss 9/23
	6/14	8/4	Total	
Buffalo	1925	1172	3097	53.3
Du Puits	1925	1188	3113	56.7
Williamsburg	1716	1298	3014	57.8
Lahontan	1336	820	2156	67.8
African	1650	968	2618	67.8
Ranger	1441	979	2420	68.9
Common	1337	1089	2426	72.7
Indian	1584	759	2343	74.4
Caliverde	1584	957	2541	83.3
L.S.D. .05			N.S.	N.S.

^{1/} Stands so depleted that no further harvests were made.

While forage yields recorded in Table 2 do not represent a normal annual yield of alfalfa for this location, they do show the comparative performance of varieties included in this test. The root-rot loss data were included for convenience in showing that, in most cases, varieties with more vigor, as indicated by higher yields, showed less root-rot mortality.

