

DISEASES OF ALFALFA AND OTHER FORAGE LEGUMES IN SASKATCHEWAN IN 1968 AND 1969¹

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Introduction

Approximately 1,642,000 acres of alfalfa are grown in Saskatchewan (1). Of this, some 677,000 acres are devoted to alfalfa and alfalfa-grass hay production, 960,000 acres to pasture, and about 5,000 acres to alfalfa seed production. Most of this acreage is located in the north-eastern part of the cultivated area of the province.

Materials and methods

The survey was devoted primarily to leaf and stem diseases of alfalfa. However, an attempt was also made to assess the occurrence of other diseases of alfalfa, sweet clover and red clover. The surveys were conducted in mid-June and mid-August in 1968 and in mid- to late-August in 1969. Representative fields in the north eastern crop district (Fig. 1) were scored for the percentage of plants affected and disease severity. Rating was done subjectively on a scale of 1-10 where 1 represents a trace of the disease and 10 a severe outbreak.

Results

Leaf and stem diseases of alfalfa

In 1968 (Table 1) the most obvious disease was black stem, caused by *Phoma*

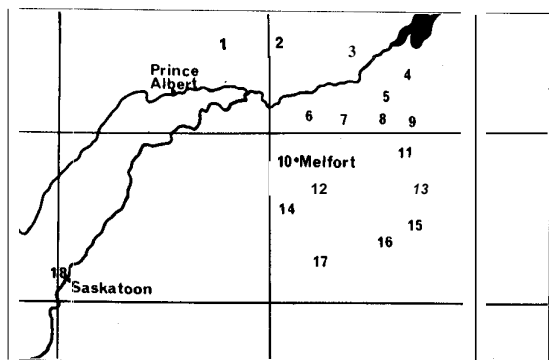


Figure 1. Locations of fields surveyed in alfalfa disease survey in 1968 and 1969.

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medicaginis Malbr. & Roum. It was found in all fields with most fields showing slight to moderate infection on about 50% of the plants. Stem blackening was the most noticeable symptom of the disease but leaf spotting was abundant also. Common leaf spot, caused by *Pseudopeziza trifolii* f. sp. *medicaginis-sativae* Schmiedeknecht, was found in most fields but only in slight amounts. Yellow leaf blotch, caused by *Leptotrochila medicaginis* (Fckl.) Schuepp, was noted only occasionally and did not seem to be of any importance.

In 1969 (Table 2) the picture was quite different. Black stem was rarely found in more than slight amounts and the incidence of leaf spotting was higher than that of stem blackening. Yellow leaf blotch was very common and appeared to be causing serious defoliation at some locations. Common leaf spot again appeared innocuous with the possible exception of a large acreage at location 12 and a breeder seed plot of variety Grimm at Saskatoon.

Table 1. Alfalfa disease survey 1968

Location No.	Black Stem		Common Leaf Spot	
	% Plants affected	Disease rating ²	% Plants affected	Disease rating ²
1	75	4	25	1
2	50	2	25	4
	25	7		
3	25	2	25	2
	25	5		
4	50	5	15	2
6	75	4	5	2
7	5	1	0	
8	75	2	5	2
8	100	2	25	2
9	50	4	25	2
10	75	5	25	1
10	50	2	25	2
	25	7		
12	100	2	25	5
14	75	4	25	2
18	75	3	25	1

* Where 0 = no disease and 10 = severe disease.

Table 2. Alfalfa disease survey 1969

Location No.	Black Stem		Yellow Leaf Blotch		Common Leaf Spot	
	% Plants affected	Disease rating	% Plants affected	Disease rating	% Plants affected	Disease rating
5	5	1	75	4	0	
9	50	1	75	4	25	1
10	50	1	50	4	0	
			25	7		
10	25	1	100	4	0	
	75	5				
10	75	4	75	7	5	1
10	25	1	25	1	0	
11	5	1	0		0	
12	50	1	15	2	50	2
					25	4
13	50	1	75	3	0	
			15	7		
14	50	1	75	2	50	2
	5	5	25	5	5	5
15	5	1	5	1	0	
16	25	1	50	2	0	
17	25	1	50	2	50	1
18	75	2	5	2	75	2

The difference between the two years probably reflects the different climatic conditions (Table 3). The summer of 1968 was unusually cool and wet, while in 1969 many fields of alfalfa showed signs of stress due to lack of moisture.

Other diseases

Bacterial wilt, caused by Corynebacterium

Table 3. Mean temperature and total rainfall recorded at Melfort, April-September 1968 and 1969

Month	Temperature (°F)		Rainfall (inches)	
	1968	1969	1968	1969
April	38	40	0.42	0.24
May	49	49	1.26	0.57
June	58	54	1.18	0.68
July	60	62	2.85	3.05
August	56	64	3.34	1.23
September	53	53	1.49	1.70

insidiosum (McCull.) Jensen, seems well controlled by the use of resistant varieties and was rarely seen. In 1968 a few infected plants in an old stand of Grimm alfalfa were noted at location 8. Also in 1968 crown bud rot, caused by a combination of Rhizoctonia solani Kuhn, Fusarium roseum Lk., and Phoma medicaginis, was recorded in fields of alfalfa under irrigation in south-western Saskatchewan.

Other forage legumes

In both 1968 and 1969 the sweet clover fields surveyed seemed relatively disease-free. Gray stem canker, caused by Ascochyta caulicola Laub., was commonly found but usually in slight amounts.

The most obvious disease of red clover in 1969 was powdery mildew, caused by Erysiphe polygoni DC ex Merat. Most plants were moderately infected, some severely. In both 1968 and 1969 small amounts of northern anthracnose, caused by Kabatiella caulivora (Kirchn.) Karak., and black stem were recorded on red clover.

Literature cited

- Goplen, B.P. 1969. Legume breeding. In K.F. Nielsen [ed.] Canadian Forage Symposium. Western Co-op Fertilizers Limited, Calgary, Alberta.