

Pathogenicity of *Ditylenchus dipsaci* to Sainfoin (*Onobrychis viciaefolia* Scop)¹

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Sainfoin has been suggested as a possible forage substitute for alfalfa under controlled irrigation (1).

metal containers of Provo sand at 15, 20, 25, and 30 C. Plant galling and mortality were rated after 14 and 28 days.

TABLE I. Effect of temperature on the susceptibility of Eski sainfoin and Ranger alfalfa to *Ditylenchus dipsaci*^a.

Temperature (C)	Time after inoculation (days)	Eski		Ranger	
		Galled plants (%)	Mortality ^b (%)	Galled plants (%)	Mortality ^b (%)
15	14	16	0	66	0
	28	76	7	92	25
20	14	47	8	100	6
	28	80	8	85	23
25	14	58	1	97	9
	28	60	3	81	12
30	14	72	6	100	9
	28	40	7	64	11

^a25 nematodes per seed.

^bInoculated less control.

Since sainfoin may be introduced into areas infested with the alfalfa stem nematode, we initiated a study to determine if *Ditylenchus dipsaci* (Kühn) Filipjev is pathogenic to sainfoin, and what effect temperature has on nematode pathogenicity and reproduction.

Germinating seeds of sainfoin (*Onobrychis viciaefolia* Scop. 'Eski' and 'Vica') and alfalfa (*Medicago sativa* L. 'Ranger'), used as a comparison, were inoculated with 25 *D. dipsaci* per seed. Seedlings, 100 of each cultivar, were grown in 320 × 215 × 100 mm metal containers of Provo sand in a growth chamber at 25 C, and the percentages of susceptible plants were determined after 14 days. Ranger was the most galled. There were 91, 43, and 43% galled 'Ranger,' 'Eski,' and 'Vica' plants, respectively.

To compare the effect of temperature on pathogenicity and reproduction of *D. dipsaci* on Eski sainfoin and Ranger alfalfa, germinating seeds were inoculated with 25 *D. dipsaci* per seed. Seedlings, 100 of each cultivar, were grown in 320 × 215 × 100 mm

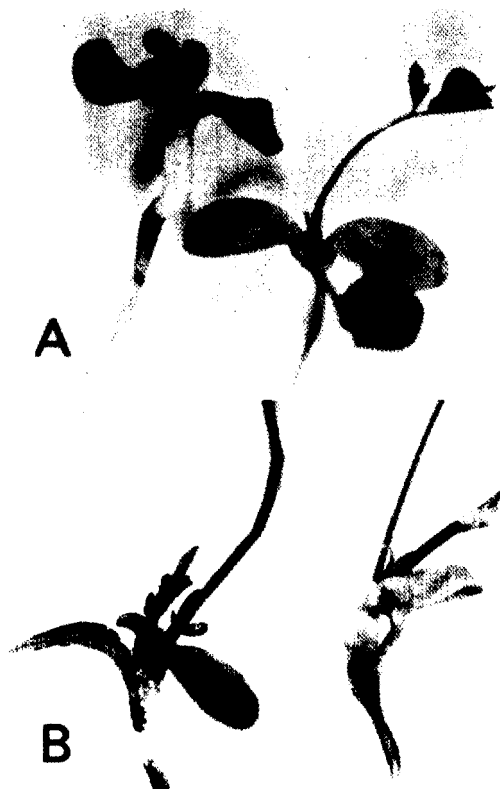


FIG. 1. Galling and distortion of Eski sainfoin (left) and Ranger alfalfa (right) seedlings after 28 days: A) 15 C; B) 20 C. (Note necrotic areas on hypocotyl at 20 C.)

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Ranger alfalfa showed more galling than Eski sainfoin at all temperatures (Table 1).

Both sainfoin and alfalfa partially outgrew the galling and distorted appearance after 28 days at 30 C. This is not uncommon in the field where stunting, distortion, and galling may precede what appears to be normal plant growth as the stems mature. There was, however, an increase in the percent of galled and distorted Eski seedlings at 15 and 20 C, and Ranger at 15 C, after 28 days; seedling size and disease symptoms were similar to those at 25 and 30 C after 14 days (Fig. 1).

D. dipsaci reproduced on galled sainfoin seedlings as readily as on a susceptible alfalfa seedling; maximum reproduction occurred at 20 C (Table 2).

TABLE 2. Reproduction of *Ditylenchus dipsaci* on galled Eski sainfoin and Ranger alfalfa^a.

Temperature (C)	Nematodes per plant	
	Eski ^b	Ranger ^b
15	35	62
20	171	196
25	126	135
30	16	4
L.S.D., $P = 0.05$		
	38	38

^a25 nematodes per plant.

^b28 days after inoculation.

LITERATURE CITED

I. CARLETON, A. E., C. S. COOPER, C. W. ROATH, and J. L. KROLL. 1968. Evaluation of sainfoin for irrigated hay in Montana. Sainfoin Symposium: Montana State University. Bozeman, Montana. pp. 44-48.