Verticillium Stripe on Canola: Survey and Cultivar Screening

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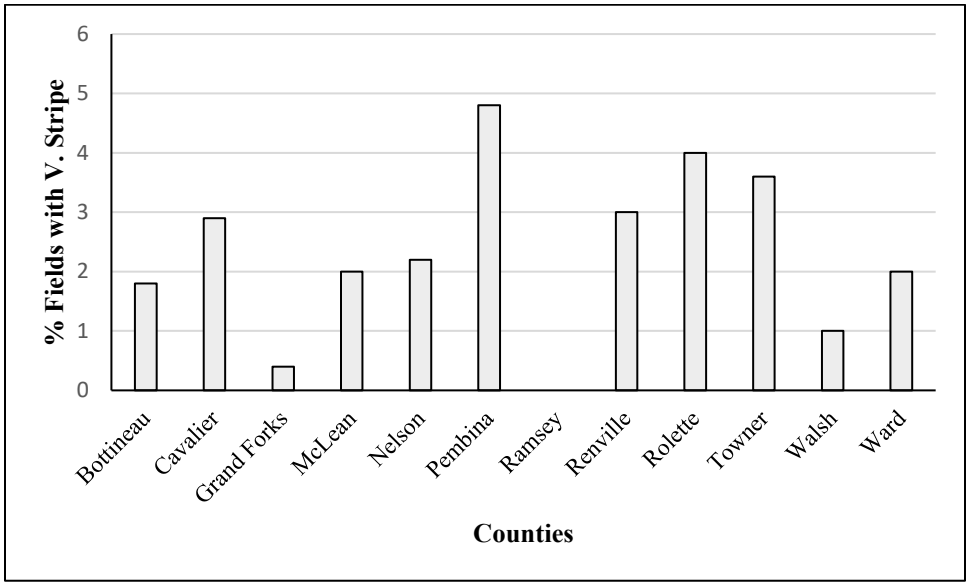
This Verticillium stripe survey was conducted in major canola-growing counties of North Dakota to determine the prevalence of the disease-causing pathogen *Verticillium longisporum*. The survey was done by inspecting canola stubbles for disease infections with Verticillium stripe. A minimum of four to five fields were scouted in each county. Thirty fields were scouted in Cavalier County, the central canola-growing county in North Dakota. The survey was done after swathing or harvest in the fall. The survey group walked in a "W" pattern, stopping at five spots and uprooting twenty stem stubbles from the ground at every spot. Each sampling point was separated by 100 meters or 328 feet. The roots of one hundred stems were evaluated for the presence of Verticillium stripe in the surveyed field. The stubbles with likely infection of Verticillium were collected, bagged, and labeled with the field location. All the symptomatic stems with roots were evaluated for incidence (% infected stems) by cross-section clipping of canola stems just half an inch below ground level in the Langdon REC laboratory.

Figure 1: Percent incidence of Verticillium stripe from canola growing counties in North Dakota, 2023.



Results: The survey was done from fields of major canola-growing counties in North Dakota indicated there was a presence of the disease Verticillium stripe in eleven out of twelve counties (Figure 1). The county-wide incidence data suggest the disease was found in low amounts (five percent and below).

Cultivar Screening to Manage Verticillium Stripe

Canola cultivars/varieties: Eleven commercial canola cultivars with unknown resistance to Verticillium stripe were planted to monitor the level of resistance against the pathogen *Verticillium longisporum* in the research ground (Table 1). The trial was planted in the first week of June in a randomized complete block design (RCBD) with four replications. The amount of Verticillium stripe infection obtained in the research plots was from natural soil borne inoculum.

Table 1: Commonly cultivated canola cultivars/varieties in North Dakota.

Cultivar	Description
CP9978TF	Croplan Genetics
CP7130LL	Croplan Genetics
CP7144LL	Croplan Genetics
InVigor LR344PC	BASF
InVigor L340PC	BASF
InVigor L255PC	BASF
InVigor L345PC	BASF
InVigor L343PC	BASF
InVigor L233P	BASF
CP9221TF	Croplan Genetics
CP7250LL	Croplan Genetics

Percent incidence and severity of Verticillium stripe was evaluated on September 9, 2023 by cross-section clipping of canola stems a half inch below ground level. Percent incidence was determined by the percent of infected stems and percent severity was determined by the percent of the pith infected in each stem.

Data analysis: Statistical analysis was done using Agrobase Generation II software. Fisher's least significant difference (LSD) was used to compare means at p ($\alpha = 0.05$).

Figure 1: Mean Verticillium stripe incidence and severity percentages were recorded on various commercial cultivars of canola tested in 2023.

	Verticillium Stripe	
NAME	Incidence %	Severity %
CP9978TF	36	6
CP7130LL	39	8
CP7144LL	25	8
INVIGORLR344PC	45	12
INVIGORL340PC	34	12
INVIGORL255PC	28	6
INVIGORL345PC	54	9
INVIGORL343PC	29	8
INVIGORL233P	40	10
CP9221TF	21	8
CP7250LL	36	12
Mean	**35**	**9**
CV%	**38**	**57**
LSD	**NS**	**NS**
P-Value (0.1)	**NS**	**NS**

Results: None of the cultivars showed resistance to Verticillium stripe and were statistically non-significant from each other with a mean incidence of 35% and a mean severity of 9% (Table 1).