

CROP: Canola

LOCATION: Alberta

NAMES AND AGENCIES:

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TITLE: THE OCCURRENCE OF CLUBROOT ON CANOLA IN ALBERTA IN 2012

ABSTRACT: A survey for the incidence and severity of clubroot in 390 commercial canola crops in 21 counties in southern and central Alberta revealed 64 new records of the disease. The severity of infection was low in most crops, although moderate to high levels of clubroot were observed in a quarter of the surveyed fields. Independent surveys by county personnel and testing of a galled root sample revealed an additional 169 new records, for a grand total of 233 clubroot-infested fields identified in 2012.

METHODS: A survey of commercial canola (*Brassica napus* L.) crops for the incidence and severity of clubroot, caused by the obligate parasite *Plasmodiophora brassicae* Woronin, was conducted in central and southern Alberta. A total of 390 crops were visited in 21 counties (Table 1), from late August to October 2012, with the crops usually visited after swathing. Most crops (373) were located on fields that had not been previously surveyed for clubroot, while the remainder (17) had been visited once or twice in earlier surveys and had been found to be negative for the disease. The roots of all plants within a 1 m² area at each of 10 locations along the arms of a 'W' sampling pattern were dug from the soil and examined for the presence of galls, which were taken as an indication of *P. brassicae* infection. The severity of root infection on each sampled plant was assessed on a scale of 0 to 3, adapted from Kuginuki et al. (1), where 0 = no galling, 1 = a few small galls, 2 = moderate galling and 3 = severe galling. The individual ratings were then used to calculate an index of disease (ID) for each field, according to the method of Horiuchi and Hori (2) as modified by Strelkov et al. (3). Visits to fields were coordinated with the agricultural fieldman in each municipality.

RESULTS AND COMMENTS: A total of 64 of the 390 canola crops surveyed were found to be clubroot-infested, all of which represented new records of the disease in the specific fields (Table 1). Of the 17 crops grown on fields that had previously been surveyed and found to be free of clubroot, six were found to be infested in 2012, suggesting continued dissemination of the disease. Symptoms of clubroot were identified in eight of 21 fields cropped to a resistant canola hybrid, and in 56 of 369 fields cropped to a susceptible hybrid or hybrid of unknown resistance. Clubroot severity was very low in the eight resistant crops found to be infected, with ID values ranging from 0.2 to 8.6%. In the susceptible canola crops or crops of unknown resistance, the average ID was below 10% in 40 fields, between 10 and 60% in 14 fields, and above 60% in two fields.

In addition to the 64 new cases of clubroot identified through this survey, another 168 new cases were identified in independent surveys by the counties of Lamont, Leduc, Parkland, Ponoka, Stettler, Strathcona, Westlock and Wetaskiwin. A galled root sample, collected from a volunteer canola plant growing in a field near Oyen, in Special Area 3, also tested positive for the presence of *P. brassicae* in conventional PCR (3) and quantitative PCR (4) assays, and therefore represented another record of clubroot. Thus, a grand total of 233 clubroot-infested fields were identified in the 2012 survey, including the first records of clubroot in Athabasca County, Beaver County, the County of Minburn, the County of Stettler, and Special Area 3. The results from 2012 bring the total number of confirmed infestations in Alberta to 1064 cases spread over 24 counties/municipalities and the City of Edmonton. While the outbreak remains centered in central Alberta, there appears to be continued dissemination of the disease,

with the first records of clubroot identified in a number counties northeast, east and southeast of Edmonton in 2012. Indeed, all counties between Edmonton and the Saskatchewan border now have at least one confirmed record of clubroot (Fig.1).

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Table 1. Distribution of clubroot-infested canola fields identified in Alberta in 2012

County	Number of fields surveyed	Number of new cases of clubroot-infested fields
Athabasca	18	7
Beaver	19	4
Camrose	25	11
Cypress	12	0
Flagstaff	26	7
Forty Mile	12	0
Lacombe	21	0
Lac Ste. Anne	12	3
Lamont	25	2 ^a
Lethbridge	12	0
Minburn	23	3
Newell	12	0
Ponoka	18	4 ^b
Red Deer	18	2
Stettler	24	0 ^c
Strathcona	30	15 ^d
Taber	12	0
Thorhild	21	0
Vermilion River	21	0
Warner	12	0
Wetaskiwin	17	6 ^e
TOTAL	390	64

^aAn additional clubroot-infested field was identified in a survey conducted by Lamont County, bringing the total new cases in that county to 3; ^bAn additional clubroot-infested field was identified in a survey conducted by Ponoka County, bringing the total new cases in that county to 5; ^c Three clubroot-infested fields were identified in a survey conducted by the County of Stettler, in the first records of the disease in

