Strawberry cultivar reaction to pallidosis disease'

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Leaf-grafting to the UC10 clone of *Fragaria* virginiana (Duchesne) has shown that many of the Canadian produced cultivars grown in Eastern Canada are infected with pallidosis. A field plot test of fruit characteristics and yield of pallidosis free and pallidosis infected Redcoats and Midways indicated the value in replacing infected stock currently propagated for certification by local nurseries with pallidosis free stock.

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Le greffage sur feuille pratique sur le clône UC10 de *Fragaria virginiana* (Duchesne) a permis de demontrer que beaucoup des cultivars canadiens cultives dans l'est du Canada sont atteints de pallidose. Un essai en parcelle portant sur les caracteristiques des fruits et le rendement de fraisiers Redcoat et Midway infectes et non infectes a montre l'avantage de remplacer les stocks actuellement multiplies en vue de la certification par les pepinieres locales par des stocks exempts de pallidose.

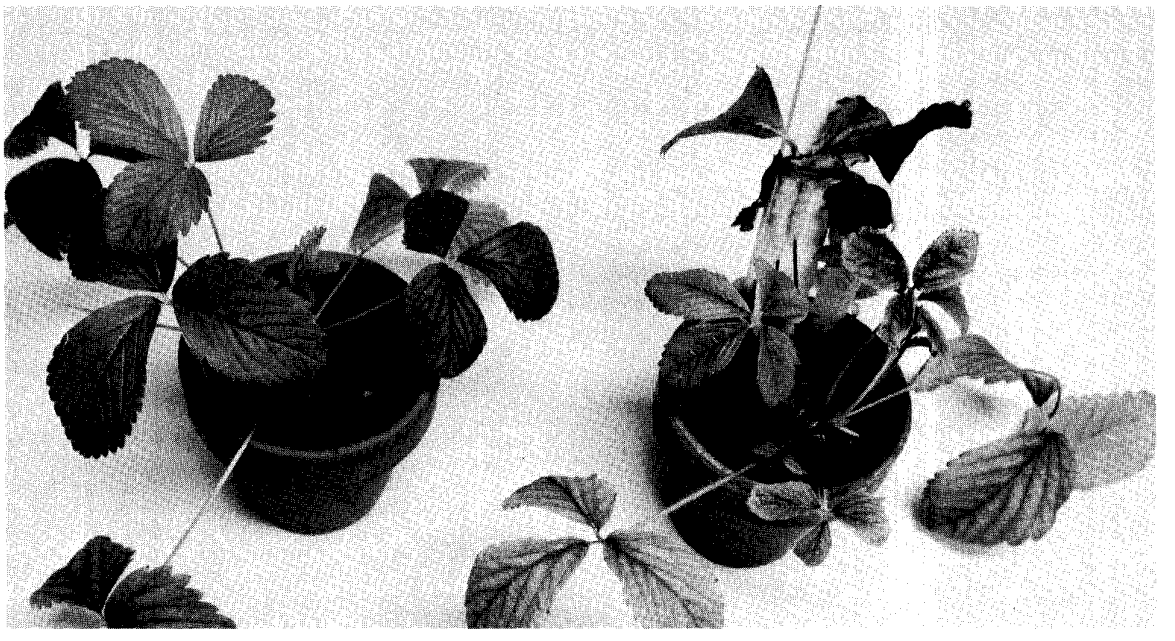

Figure 1. Healthy (left) and pallidosis infected (right) UC10 clone of *Fragaria* virginiana

Introduction

Pallidosis, a disease, widespread in strawberries in the U.S.A. but not present in the United Kingdom was first described by Frazier and Stubbs (3) in 1969. Frazier (2) also identified the leafhopper *Coelidia olitoria* (Say) as a possible vector. Mullin et al. (5) suggest the disease could reduce vigor and intensify symptoms of other diseases, and, may thus cause significant yield reductions.

Symptoms of pallidosis are not apparent in the cultivars currently recommended for planting in Eastern Canada but are expressed clearly (Fig. 1) following grafting of a leaf from an infected cultivar to the University of California Clone 10 of *Fragaria virginiana.* Symptoms in *UC*10 which appear about 4 weeks after grafting consist of pallidness and cupping of young leaves which are reduced in size and vigor. During chronic stages, mature leaves are cupped or rounded outwards, mottled interveinally and prematurely colored. Pallidosis can be readily eliminated from strawberries by propagating from meristems (6).

Leaf-graft indexing to UC10 at Kentville verified the presence of pallidosis in the principal Eastern Canadian cultivars

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Cavalier, Redcoat, Veestar and Vibrant and in the U.S. cultivar Midway. New cultivars such as Micmac and Bounty from the Kentville breeding program remain pallidosis free when protected in the Station screenhouse. However, plant sampling in 1978 from a 5 year old commercial field of Micmac and a 4 year old field of Bounty indicated 25 per cent of the Micmac and 9 percent of the Bounty pallidosis infected. It also suggested the presence of a vector in the region. The effect of the disease on fruit characteristics and yield has not been reported for cultivars developed in Canada. Meristem propagated pallidosis free clones of many cultivars including some Canadian are available from the U. S. Dept. of Agriculture, Beltsville, Maryland. This paper reports the performance of pallidosis infected and pallidosis free Redcoat, the most important Canadian cultivar in Eastern Canada, and Midway, a U. S. cultivar occasionally grown in Eastern Canada.

Materials and methods

Pallidosis-free clones of Redcoat and Midway were obtained from Beltsville in 1978 and propagated in the Kentville insect proof screenhouse. In May 1979, pallidosis infected Redcoat and Midway plants were field planted in a randomized block design with 4 replicates. This planting stock had been propagated from clones indexed to the East Malling clone of *Fragaria vesca* and the virus diseases Latent C and mottle normally identified by this indicator were not present. Ten mother plants and their runner plants in 6 m plots formed 30 cm wide plant rows. Five sample plants from each pallidosis free plot and 2 from each pallidosis-infected plot were dug in November 1979, and indexed to the UC10 clone.

Table 1. Yield and fruit size from pallidosis infected and non-infected strawberry cultivars.

	Total yield kg/ha	Marketable yield kg/ha	Av. fruit size (g)
Redcoat-pallidosis free	25925a*	23494a	11.9a
Redcoat-pallidosis infected	23602a	21226ab	11.7a
Midway-pallidosis free	19659a	17608bc	11.0ab
Midway-pallidosis infected	19768a	18364c	10.4b

*Values in the same column followed by the same letter are not significantly different at the 5% level according to the DMR test.

Results and discussion

Assuming there was no additional infection from the time of mulch removal in late April 1980 until fruiting in early July the presence of pallidosis had no significant effect on total yield, marketable yield or fruit size (Table 1). Careful visual observation of fruit failed to detect any change in fruit form or color.

The indexing to UC10 of sample plants taken from the randomized plots exposed to vectors for a complete growing season indicated the following: pallidosis free Midway 0 infection, pallidosis free Redcoat 5% infection, pallidosis infected Midway and Redcoat 100% infection.

A sampling of commercial fields in 1978 indicated the rate of pallidosis spread in Nova Scotia was not rapid since the mother plants in 4 year old Bounty and 5 year old Micmac fruiting fields also had two years exposure in the commercial nursery prior to their purchase for commercial planting. This is in contrast to Arkansas where a high percentage infection occurs within one year **(4).**

Latent C and mottle virus are the principal strawberry virus diseases in Nova Scotia (1) and although Frazier (3) reports the additive effect of mottle or vein banding as less severe than crinkle or mild yellow edge freedom from pallidosis is important for Eastern Canada's strawberry industry.

The identification of pallidosis in Canadian cultivars emphasizes the problems involved in labelling a strawberry clone virus free. The data from this test supports our decision to replace the present pallidosis infected stock currently propagated by Nova Scotia nurseries with pallidosis free stock.

Literature cited

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