

BACTERIAL WILT OF WALLFLOWERS IS CAUSED BY KNOWN AND NOVEL RACES OF *XANTHOMONAS CAMPESTRIS* PV. *CAMPESTRIS*

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Background

- Wallflowers are a widely-grown herbaceous biennial or perennial in the UK.
- Bacterial wilt or blight was first reported as caused by *Xanthomonas campestris* in 1970 (Griffin & Baker 1976)^(Pl. Path. 25: 108).
- The disease has caused significant losses for commercial growers in recent years, especially in perennial varieties.
- During 2010-13 isolates were obtained from symptomatic plants on a number of different nurseries and during testing of imported cutting material.
- Several papers have reported that *Xanthomonas campestris* strains from wallflowers are not pathogenic to *Brassica* spp. and may represent a distinct pathovar.



Symptoms and pathogenicity



Symptoms can be vague and variable: affected leaves often have one-sided chlorosis, or chlorotic tips, before becoming necrotic; infected plants may be stunted, readily shed their lower leaves and are short-lived.



Bacterial streaming from the veins at the cut edge of an infected leaf.

Pathogenicity of wallflower isolate 9218 on cabbage (Wirosa, left) and wallflower (Persian Carpet, right).

NCPPB 937 (type strain of pv. *incanae*) was non-pathogenic on wallflower and brassica differentials.

Race typing

- Isolates were inoculated into differentials as described by Jensen *et al.* (2010)^(Pl. Dis. 94: 298).
- Most (16) isolates gave reactions consistent with race 6, with one race 5, and one race 9.
- Six isolates gave a novel reaction pattern (designated race 12, see table).



Isolate 9622, race 6.

Isolate 9669, novel race 12.

Order as in table, plus wallflower Persian Carpet at the end.

Race*	Wir	Cob60	STT	Bo99...	FBLM2	Mir	SxD1
1	+	+	+	-	-	+	+
2	+	+	-	+	+	-	-
3	+	+	+	-	-	-	-
4	+	-	v	-	-	+	+
5	+	+	v	+	v	-	-
6	+	+	+	+	+	+	+
7	+	+	+	+	-	+	+
8	+	+	-	-	-	-	-
9	+	-	-	-	-	-	-
10	+	+	-	+	-	+	+
11	+	+	-	+	+	+	+
12 [†]	+	-	-	+	-	+	+

* Phytopath. 91: 492; Plant Path. 56: 805; J. Plant Path. 99: 403. † New.

Discussion

- Pathogenicity and race-typing clearly indicate that strains of *X. campestris* that cause vascular wilt/blight on *Erysimum* spp. are pathogenic on *Brassica* spp. and should be included in *X. c.* pv. *campestris*.
- Wallflower strains were often less aggressive on Wirosa than brassica strains. Wirosa may not be the best 'universal suscept'.
- Previous conclusions about lack of pathogenicity may be the result of using attenuated cultures/strains.



PLANT HEALTH SOLUTIONS



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