MITTEILUNGEN

Pathotype determination of potato wart from Prince Edward Island, Canada

An incidence of potato wart occurred in a 26-ha field of processing potatoes (cv. Russet Burbank) in Prince Edward Island (PEI) in the year 2000 (DE BOER, 2001). Potato wart is known to occur in the province of Newfoundland and Labrador but does not occur elsewhere in Canada (HAMPSON, 1993). The Centre of Expertise for Potato Diseases of the Canadian Food Inspection Agency requested assistance from the potato wart laboratory of the German Federal Biological Research Centre for Agriculture and Forestry in Kleinmachnow to determine the pathotype of the *Synchytrium endobioticum* strain that occurred in PEI.

Residue of wart tumors from infected tubers sent from PEI were removed, crushed and mixed with a high organic potting soil mix at a 1:5 ratio to produce a "wart compost". The wart compost was wetted with water 12 days prior to use and incubated at 16–17 EC. Wart inoculum was increased on cultivars Deodara[1] and Tomensa, which are susceptible to all pathotypes, by the SPIECKERMANN method as amended by POTOCEK et al. (1991). Fresh tumor inoculum was used to inoculate a series of differential cultivars (Table 1).

The bud end of tubers of the differential cultivars were removed as per STACHEWICZ (1996) and inoculated to determine pathotype by the Glynne-Lemmerzahl method (LANGERFELD et al., 1994). Inoculated tuber sections were incubated under optimal conditions (16–17 EC and 70–75 % R.H. in the dark) for wart development in environmental chambers. Varietal response was evaluated according to the scoring criteria of LANGERFELD and STACHEWICZ (1994).

A total of six trials were conducted in May/June and two during November, 2001. In each of the eight trials, 20–25 potato tuber bud ends were tested for each of the differential cultivars. Susceptibility and resistance reactions of the cultivars are shown in Tables 2 and 3. The cultivar response to the PEI wart strain was consistent with the German pathotype 6. Susceptibility of the cultivar Combi and resistance of Saphir differentiates pathotype 6 from pathotype 1 and 2 (Table 1). Newfoundland is known to harbor pathotypes 1, 2, 6 or 7, and 8 (HAMPSON et al., 1997). However, susceptiblity of North American potato cultivars to pathotype 6 is not known.

[1] We thank Dr. SCHÜLER of the Groß Lüsewitz gene bank of the Institute of Plant Genetics and Crop Plant Research for providing samples of varieties Saphir and Deodara, which are no longer authorised for farming.

Table 1. Differential potato cultivars used in Germany to identify pathotypes of *Synchytrium endobioticum* and their reaction to the pathogen

Differential cultivar	Potato wart pathotype			
	1	2	6	18
Tomensa	+[1]	+	+	+
Combi or Sorka	–	+	+	+
Saphir	–	+	–	–
Désirée	–	±	±	+
Sissi or Miriam	–	–	–	+
Karolin or Ulme	–	–	–	–

[1] + = susceptible reaction; – = resistant reaction; ± = slightly susceptible, free from attack under field conditions

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Table 2. Number or tubers of differential potato cultivars showing a susceptible and resistant reaction to inoculation with the PEI strain of *Synchytrium endobioticum* (Result of 6 test series with tubers of the 2000 harvest)

Cultivar	Number of bud ends total	Number of bud ends without infection or lost by rot	Number of bud ends ranking 1	2	3	4	5	Assessment of cultivar reaction
Deodara	80	26		31			23	susceptible
Tomensa[3]	40	25		5			10	susceptible
Combi	120	30		36	1	1	52	susceptible
Saphir	120	21	67	32				resistant (R1)
Désirée	120	50		66	4			resistant (R2)
Miriam[4]	100	29	20	49	2			resistant (R2)
Karolin[2]	80	17	63					resistant (R1)

Time of inoculation: 23. 04. to 16. 05. 2001; time of assessment: 22. 05. to 08. 06. 2001

Table 3. Number of tubers of selected differential potato cultivars showing a susceptible and resistant reaction to inoculation with the PEI strain of *Synchytrium endobioticum* (Result of test series with tubers of the 2001 harvest)

Cultivar	Number of bud ends total	Number of bud ends without infection or lost by rot	Number of bud ends ranking 1	2	3	4	5	Assessment of cultivar reaction
Erstling	50	3		14			33	susceptible
Sorka	50	4		14			32	susceptible
Saphir	50			50				resistant (R1)
Désirée	50			41	9			resistant (R2)

Time of inoculation: 15. and 17. 10. 2001; time of assessment: 12. 11. 2001