

# IMPROVEMENT OF BREEDING AND SELECTION METHODS FOR RESISTANCE AGAINST FUSARIUM OXYSPORUM

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Breeding for *Fusarium* resistance at the Institute for Horticultural Plant Breeding, between 1975 and 1983, had to be carried out without adequate knowledge of host-parasite relationships. Screening of seedlings involved the removal of all plants with external or internal symptoms; clonal testing was based on determining the percentage symptomless plants. This procedure, though unsatisfactory from a scientific point of view, resulted nevertheless in a gradual increase of resistance over the generations and the release of breeding stock and demonstration cultivars to private breeders.

Since this introduction, the shortcomings of the screening procedure have become even more apparent. This has led to fundamental research, aimed at understanding the resistance mechanism.

In a cooperative project, the Phytopathological Laboratory "Willie Commelin Scholten", the Institute for Horticultural Plant Breeding and the Institute for Phytopathological Research in Wageningen study

- the histology of parasitism
- the biochemical reaction to infection
- the variation in the pathogen
- the genetics of resistance, including the possible components of partial resistance

On the basis of preliminary results of this research, screening methods are being adjusted. The possibility that there are two (or more) components of resistance — resistance against infection of the roots and resistance against fungal growth through the xylem vessels — is being investigated. Possible consequences for screening and for the choice of breeding partners are discussed.

**FORT COLLINS GREENHOUSE CLIMATOLOGICAL SUMMARY FOR FOUR WEEKS, BEGINNING NOVEMBER 1, 1987** (See Bulletin 426 for details.)

	Week beginning							
	Nov. 1		Nov. 8		Nov. 15		Nov. 22	
	Day	Night	Day	Night	Day	Night	Day	Night
Average outside temperature (°F)	55	44	50	41	36	26	37	30
Maximum outside temperature (°F)	65	56	60	55	62	40	51	52
Minimum outside temperature (°F)	42	33	34	25	18	13	22	13
Degree-days of heating	10	21	15	24	29	39	28	35
Accumulated total solar radiation (MJ/sq.m.)	60	9	64	1	59	0	53	1
Average relative humidity (%)	60	83	44	61	60	77	60	76
Maximum relative humidity (%)	98	100	79	92	100	92	98	100
Minimum relative humidity (%)	26	50	23	24	18	53	19	23
Average absolute vapor pressure (mb)	9	8	5	5	4	4	4	4
Average wind speed (mph)	2	1	2	2	2	1	2	1
Maximum wind speed (mph)	22	30	24	27	21	21	19	24
Average CO <sub>2</sub> concentration (Pascal)	35	0	37	0	40	0	39	0
Maximum CO <sub>2</sub> concentration (Pascal)	50	0	50	0	56	0	51	0
Accumulated gas consumption (cu.ft./sq.ft.)	23	60	20	66	42	99	43	108

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