Occurrence of downy mildew on spinach varieties in plantings where the disease developed at farms in the northeast, 2014 to winter/spring 2023

Number in row 5 refers to planting. R=resistant (no or much fewer symptoms than other varieties); H=highly (used when difference was observed). Last row has race when identified for pathogen in the planting or guess based on DM ocurrence on varieties present.

Multiple races have been found which explains variation in observed susceptibility of some varieties. Information on disease occurrence is from the grower.

			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57
Variety	**Race resistance**	**Partial resistance**	**2014**	**2015, 2016**	**spring 2016**	**spring 2016**	**spring 2016**	**fall 2016**	**fall 2016**	**fall 2016**	**fall 2016**	**fall 2016**	**fall 2016**	**winter 2017**	**winter 2017**	**spring 2017**	**spring 2017**	**spring 2017**	**spring 2017**	**spring 2017**	**fall 2017**	**fall 2017**	**spring 2018**	**spring 2018**	**spring 2018**	**spring 2018**	**spring 2018**	**spring 2018**	**spring 2018**	**spring 2018**	**spring 2018**	**spring 2018**	**fall 2018**	**fall 2018**	**winter 2018**	**fall 2019**	**fall 2019**	**fall 2019**	**winter 2020**	**fall 2020**	**fall 2020**	**fall 2020**	**fall 2020**	**fall 2020**	**fall 2020**	**fall 2020**	**fall 2020**	**winter 2021**	**winter 2021**	**winter 2021**	**spring 2021**	**spring 2021**	**fall 2021**	**fall 2021**	**fall 2021**	**fall 2022**	**fall 2022**	**fall 2022**	**winter 2023**
Acadia	1 - 13, 15, 16																		DM worse			DM								DM			DM	DM																							
Aztec																															R																											
Auroch	1-12, 14-16																																							DM			R					DM												
Avon	1, 2								DM						DM																																											
Bloomsdale	none																												DM																														
Butterflay	none										DM																																															
Caladonia	1 - 14															DM																																										
Carmel	1 – 11, 13, 15	12, 14	DM (think it was this variety)											HR																																			DM								
Corvair	1 – 11, 13, 15, 16							DM		DM	DM (1st)	DM	DM				DM			DM		DM				DM	DM		DM 1st			DM	DM	DM	DM	DM							DM			DM	has DM	DM								DM		DM
Emperor	1 - 10							DM						DM																																	DM											
Escalade	1 - 14, 16				DM (1st)	DM less								HR		DM			DM			DM			DM					DM																													
Flamingo	1 - 11	12, 13																																																								DM		R
Freja	1 – 11, 12, 13, 15																																				DM																							
Gazelle	1 - 13, 15							R		DM worse				DM worse							DM							DM		DM worse			DM												DM		DM												
Giant Winter	none													DM										DM																																			
Hammerhead	1-12, 14-16																																little																											
Kolibri	1 - 9, 12 - 15, 17	10 ,11																			R		DM								R									R					R		R			R				R					
Kookaburra	1 - 13, 15						DM																																						DM									DM					
Lakeside	1-11, 15-16, 19	12, 14																																																	DM								
Marabu	1-10, 15																																																		DM								
Mandolin	1 - 12, 14 - 16																																																									DM	
Pigeon	1 - 13, 15					worse								DM																																													
Red Kitten	1 - 13, 15							R			DM																	DM	DM	DM					DM													DM		DM											
Reflect	1 - 11									R				DM										DM																																				
Regiment	1-7, 11, 13, 15				DM									DM worse																														DM																
Renegade	1 - 7				DM						DM																																													R			
Seaside	1 - 12																																																										
Shelby	1 - 13, 15, 16																																																										
Sioux	1-15,17,19																																																			DM								
Space	1-3, 5, 6, 8, 11, 12, 14, 16							R						R	R			DM						DM		R				DM					R						DM		R						R						DM	DM	R		R
Spargo	1 - 4													DM																																													
SV 2157	1-13, 15, 16																																																								R		
SV 3580 VC	1 - 13					R								DM worse																	DM																												
Swan	1 – 11, 13													DM																																													
Tasman	1-12, 14-16																																		R																									
Toucan	1 - 13, 15, 16													DM																																													
Tundra	1-13, 15, 16																																																DM				DM						
Verdil	none										DM																											DM																			DM 1st			
Violin	1 – 12, 14													DM																																													
Whale	1-5, 7, 8, 9, 12, 13, 14	6, 10, 11												R																																													
Woodpecker	1 - 15									DM less																					R																												
Galaxy (processing)				DM																																																								
Plymouth (processing)	1 – 11, 13, 15, 16																																												DM severe															
966-07 (processing)	couldn't find on web																																												DM															
SV 1714 (processing)	1 - 13, 15																																												DM									DM					
Vancouver (processing)	1 - 3																																																					DM					
Race identified (in bold) or suspected based on varieties affected or not:					likely 17 or novel	**novel**	**14**	**12**		lkely mix or novel type	**12;** 14 too?	likely 12 or 14	**14**	likely 14		likely 15	likely 12 or 14	likely 13, 15, or novel type	**novel UA201720B type**	**12**	likely 14	likely 17 or novel	likely 16 or novel	**15**	likely 15 or novel	**novel UA201720B type**	likely 12 or 14	likely 14	likely 14	likely mix or novel	likely 14	likely 12 or 14	likely 14	**12**	**novel**	likely 12 or 14	likely 14	**novel**		**17 OR novel UA202 044A**	could be 13 or 15		**14**	**novel UA202 044A**	likely 14	likely 14; 12 too?	likely 14	likely 14	likely 14	likely 14 or 17	13? 12,14 PR	likely mix or novel	likely 14	likely 14	likely 15, 13, or novel type	likely 17, 18, or 19	maybe 12 or 14; and Renegade escaped	likely 13; could be 17 or higher

Table prepared by M. T. McGrath, Cornell University