

Table 1. Number and frequency (%) of the predominate virulence phenotypes of *Puccinia triticina* in the United States in 2020 identified by virulence to 20^a lines of Thatcher wheat with single genes for leaf rust resistance.

	Southeast		Ohio Valley		Texas-Oklahoma		Kansas-Nebraska		Minnesota-ND, SD		Washington		Total	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%
BBBQD B,10,39	0	0	0	0	25	54.3	0	0	0	0	0	0	25	9.6
LBDSD 1,17,B,10,14a,28	1	3.0	0	0	0	0	0	0	0	0	3	50.0	4	1.5
LCDJG 1,26,17,10,14a,28	0	0	0	0	0	0	0	0	0	0	1	16.7	1	0.4
LCDSG 1,26,17,B,10,14a,28	0	0	0	0	0	0	0	0	0	0	1	16.7	1	0.4
MBDSD 1,3,17,B,10,14a,39	0	0	0	0	1	2.2	2	9.5	8	5.7	0	0	11	4.2
MBTNB 1,3,3ka,11,17,30,B,14a	8	24.2	4	28.6	0	0	0	0	0	0	0	0	12	4.6
MCDSB 1,3,26,17,B,10,14a	2	6.1	0	0	0	0	0	0	0	0	0	0	2	0.8
MCSDS 1,3,26,17,B,10,14a,39	0	0	0	0	0	0	0	0	1	0.7	0	0	1	0.4
MCJSB 1,3,26,11,17,B,10,14a	1	3.0	0	0	0	0	0	0	0	0	0	0	1	0.4
MCTNB 1,3,26,3ka,11,17,30,B,14a	8	24.2	0	0	1	2.2	1	4.8	0	0	0	0	10	3.8
MLPSD 1,3,9,3ka,17,30,B,10,14a,39	0	0	0	0	1	2.2	0	0	0	0	0	0	1	0.4
MNPSD 1,3,9,24,3ka,17,30,B,10,14a,39	3	9.1	1	7.1	12	26.1	13	61.9	25	17.9	0	0	54	20.8
MPPSD 1,3,9,24,26,3ka,17,30,B,10,14a,39	0	0	1	7.1	3	6.5	3	14.3	12	8.6	0	0	19	7.3
MPTSD 1,3,9,24,26,3ka,11,17,30,B,10,14a,39	0	0	1	7.1	0	0	0	0	0	0	0	0	1	0.4
MSBJG 1,3,9,16,24,10,14a,28	0	0	0	0	0	0	0	0	1	0.7	0	0	1	0.4
TBBGS 1,2a,2c,3,10,21,28,39	0	0	0	0	2	4.3	0	0	59	42.1	0	0	61	23.5
TBBJS 1,2a,2c,3,10,14a,21,28,39	0	0	0	0	0	0	0	0	1	0.7	0	0	1	0.4
TBRKG 1,2a,2c,3,3ka,11,30,10,14a,18,28	0	0	0	0	1	2.2	0	0	4	2.9	0	0	5	1.9
TBTDB 1,2a,2c,3,3ka,11,17,30,14a	0	0	1	7.1	0	0	0	0	0	0	0	0	1	0.4
TBTNB 1,2a,2c,3,3ka,11,17,30,B,14a	3	9.1	3	21.4	0	0	0	0	0	0	0	0	6	2.3
TCBGS 1,2a,2c,3,26,10,21,28,39	0	0	0	0	0	0	0	0	2	1.4	0	0	2	0.8
TCGJG 1,2a,2c,3,26,11,10,14a,28	1	3.0	0	0	0	0	0	0	0	0	0	0	1	0.4
TCJTB 1,2a,2c,3,26,11,17,B,10,14a,18	2	6.1	0	0	0	0	0	0	0	0	0	0	2	0.8
TCSQB 1,2a,2c,3,26,3ka,11,17,B,10	1	3.0	0	0	0	0	0	0	0	0	0	0	1	0.4
TCTBB 1,2a,2c,3,26,3ka,11,17,30	0	0	0	0	0	0	0	0	0	0	1	16.7	1	0.4
TCTNB 1,2a,2c,3,26,3ka,11,17,30,B,14a	1	3.0	2	14.3	0	0	0	0	0	0	0	0	3	1.2
TCTQB 1,2a,2c,3,26,3ka,11,17,30,B,10	1	3.0	0	0	0	0	0	0	0	0	0	0	1	0.4
TDBGS 1,2a,2c,3,24,10,21,28,39	0	0	0	0	0	0	0	0	1	0.7	0	0	1	0.4
TFPSB 1,2a,2c,3,24,26,3ka,17,30,B,10,14a	0	0	1	7.1	0	0	0	0	0	0	0	0	1	0.4
TFTSB 1,2a,2c,3,24,26,3ka,11,17,30,B,10,14a	1	3.0	0	0	0	0	0	0	0	0	0	0	1	0.4
TGBGS 1,2a,2c,3,16,10,21,28,39	0	0	0	0	0	0	0	0	1	0.7	0	0	1	0.4
TNBGJ 1,2a,2c,3,9,24,10,28,39	0	0	0	0	0	0	0	0	5	3.6	0	0	5	1.9
TNBGS 1,2a,2c,3,9,24,10,21,28,39	0	0	0	0	0	0	0	0	7	5.0	0	0	7	2.7
TNBJJ 1,2a,2c,3,9,24,10,14a,28,39	0	0	0	0	0	0	0	0	5	3.6	0	0	5	1.9
TNBJS 1,2a,2c,3,9,24,10,14a,21,28,39	0	0	0	0	0	0	1	4.8	8	5.7	0	0	9	3.5
TPBGJ 1,2a,2c,3,9,24,26,10,28,39	0	0	0	0	0	0	1	4.8	0	0	0	0	1	0.4
Total # isolates	33		14		46		21		140		6		260	

Table 2. Number and frequency (%) of isolates of *Puccinia triticina* in the United States in 2020 virulent to 20^a lines of wheat with single resistance genes for leaf rust resistance.

Gene	<u>Southeast</u>		<u>Ohio Valley</u>		<u>Texas-Oklahoma</u>		<u>Kansas-Nebraska</u>		<u>Minnesota-ND, SD</u>		<u>Washington</u>		<u>Total</u>	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Lr1	33	100	14	100.0	21	45.7	21	100.0	140	100.0	6	100.0	235	90.4
Lr2a	10	30.0	7	50.0	3	6.5	2	9.5	93	66.4	1	16.7	116	44.6
Lr2c	10	30.3	7	50.0	3	6.5	2	9.5	93	66.4	1	16.7	116	44.6
Lr3	32	97.0	14	100.0	21	45.7	21	100.0	140	100.0	1	16.7	229	88.1
Lr9	3	9.1	3	21.4	16	34.8	18	85.7	63	45.0	0	0.0	103	39.6
Lr16	0	0	0	0.0	0	0.0	0.0	0.0	2	1.4	0	0.0	2	0.8
Lr24	4	12.1	4	28.6	15	32.6	18	85.7	64	45.7	0	0.0	105	40.4
Lr26	18	54.5	5	35.7	4	8.7	5	23.8	15	10.7	3	50.0	50	19.2
Lr3ka	26	78.8	14	100.0	18	39.1	17	81.0	41	29.3	1	16.7	117	45.0
Lr11	27	81.8	11	78.6	2	4.3	1	4.8	4	2.9	1	16.7	47	18.1
Lr17	32	97.0	14	100.0	18	39.1	19	90.5	46	32.9	6	100.0	135	51.9
Lr30	25	75.8	14	100.0	18	39.1	17	81.0	41	29.3	1	16.7	116	44.6
LrB	32	97.0	13	92.9	43	93.5	19	90.5	46	32.9	4	66.7	157	60.4
Lr10	13	39.4	4	28.6	45	97.8	20	95.2	140	100.0	5	83.3	227	87.3
Lr14a	31	93.9	14	100.0	19	41.3	20	95.2	65	46.4	5	83.3	154	59.2
Lr18	2	6.1	0	0.0	1	2.2	0	0.0	4	2.9	0	0.0	7	2.7
Lr21	0	0.0	0	0.0	2	4.3	1	4.8	79	56.4	0	0.0	82	31.5
Lr28	2	6.1	0	0.0	3	6.5	2	9.5	94	67.1	5	83.3	106	40.8
Lr39	3	9.1	3	21.4	44	95.7	20	95.2	135	96.4	0	0.0	205	78.8
Lr42	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0