Table 1. Number and frequency (%) of the predominant virulence phenotypes of *Puccinia triticina* in the United States in 2024 identified by virulence to 20[a] lines of Thatcher wheat with single genes for leaf rust resistance.

Race	Virulence combination	Southeast		Ohio Valley		TX-OK		KS-NE-MO		MN-ND		Total	
	(ineffective Lr genes)	#	%	#	%	#	%	#	%	#	%	#	%
MBDSD	1,3,17,B,10,14a,39	2	2	0	0	3	5.8	0	0	1	1.1	6	2
MBJSD	1,3,11,17,B,10,14a,39	0	0	0	0	2	3.8	0	0	2	2.2	4	1.4
MBTNB	1,3,3ka,11,17,30,B,14a	13	12.9	2	6.3	0	0	0	0	0	0	15	5.1
MBTSB	1,3,3ka,11,17,30,B,10,14a	3	3	0	0	0	0	0	0	0	0	3	1
MCTNB	1,3,26,3ka,11,17,30,B,14a	23	22.8	4	12.5	0	0	1	5.3	4	4.4	32	10.8
MCTSB	1,3,26,3ka,11,17,30,B,10,14a	1	1	0	0	0	0	0	0	0	0	1	0.3
MFPSB	1,3,24,26,3ka,17,30,B,10,14a	0	0	0	0	0	0	0	0	1	1.1	1	0.3
MGPSB	1,3,16,3ka,17,30,B,10,14a	0	0	0	0	0	0	0	0	9	9.9	9	3.1
MKJSB	1,3,16,24,26,11,17,B,10,14a	0	0	0	0	0	0	0	0	2	2.2	2	0.7
MKPSB	1,3,16,24,26,3ka,17,30,B,10,14a	0	0	0	0	0	0	0	0	2	2.2	2	0.7
MMDSD	1,3,9,26,17,B,10,14a,39	1	1	0	0	0	0	0	0	0	0	1	0.3
MNDSD	1,3,9,24,17,B,10,14a,39	0	0	0	0	0	0	2	10.5	0	0	2	0.7
MNPJD	1,3,9,24,3ka,17,30,10,14a,39	0	0	0	0	0	0	1	5.3	0	0	1	0.3
MNPSD	1,3,9,24,3ka,17,30,B,10,14a,39	6	5.9	1	3.1	6	11.5	1	5.3	4	4.4	18	6.1
MNTSD	1,3,9,24,3ka,11,17,30,B,10,14a,39	0	0	0	0	8	15.4	0	0	0	0	8	2.7
MPDSD	1,3,9,24,26,17,B,10,14a,39	0	0	0	0	1	1.9	0	0	0	0	1	0.3
MPJSD	1,3,9,24,26,11,17,B,10,14a,39	0	0	0	0	9	17.3	2	10.5	4	4.4	15	5.1
MPPSD	1,3,9,24,26,3ka,17,30,B,10,14a,39	0	0	2	6.3	15	28.8	4	21.1	14	15.4	35	11.9
MPTSD	1,3,9,24,26,3ka,11,17,30,B,10,14a,39	4	4	0	0	1	1.9	2	10.5	2	2.2	9	3.1
TBRDG	1,2a,2c,3,3ka,11,30,14a,28	4	4	5	15.6	0	0	2	10.5	3	3.3	14	4.7
TBRNG	1,2a,2c,3,3ka,11,30,B,14a,28	1	1	0	0	0	0	0	0	0	0	1	0.3
TBTNB	1,2a,2c,3,3ka,11,17,30,B,14a	18	17.8	4	12.5	0	0	1	5.3	0	0	23	7.8
TBTSB	1,2a,2c,3,3ka,11,17,30,B,10,14a	0	0	1	3.1	0	0	0	0	1	1.1	2	0.7

Race	Virulence combination	Southeast		Ohio Valley		TX-OK		KS-NE-MO		MN-ND		Total	
TCGKG	1,2a,2c,3,26,11,10,14a,18,28	2	2	0	0	0	0	0	0	0	0	2	0.7
TCJSB	1,2a,2c,3,26,11,17,B,10,14a	1	1	0	0	0	0	0	0	0	0	1	0.3
TCRDG	1,2a,2c,3,26,3ka,11,30,14a,28	2	2	0	0	3	5.8	0	0	0	0	5	1.7
TCRKG	1,2a,2c,3,26,3ka,11,30,10,14a,18,28	1	1	0	0	0	0	0	0	0	0	1	0.3
TCTBD	1,2a,2c,3,26,3ka,11,17,30,39	0	0	0	0	0	0	2	10.5	0	0	2	0.7
TCTNB	1,2a,2c,3,26,3ka,11,17,30,B,14a	7	6.9	4	12.5	0	0	0	0	10	11	21	7.1
TCTSB	1,2a,2c,3,26,3ka,11,17,30,B,10,14a	4	4	4	12.5	0	0	0	0	2	2.2	10	3.4
TCTSL	1,2a,2c,3,26,3ka,11,17,30,B,10,14a,21	1	1	0	0	0	0	0	0	0	0	1	0.3
TFTDB	1,2a,2c,3,24,26,3ka,11,17,30,14a	0	0	3	9.4	0	0	0	0	0	0	3	1
TFTSB	1,2a,2c,3,24,26,3ka,11,17,30,B,10,14a	0	0	2	6.3	0	0	0	0	2	2.2	4	1.4
TGTSB	1,2a,2c,3,16,3ka,11,17,30,B,10,14a	0	0	0	0	1	1.9	0	0	4	4.4	5	1.7
THTSB	1,2a,2c,3,16,26,3ka,11,17,30,B,10,14a	1	1	0	0	0	0	0	0	8	8.8	9	3.1
THTSL	1,2a,2c,3,16,26,3ka,11,17,30,B,10,14a,21	3	3	0	0	0	0	0	0	0	0	3	1
TNBJJ	1,2a,2c,3,9,24,10,14a,28,39	2	2	0	0	0	0	0	0	0	0	2	0.7
TNBJS	1,2a,2c,3,9,24,10,14a,21,28,39	1	1	0	0	3	5.8	1	5.3	16	17.6	21	7.1
Total number of isolates		101		32		52		19		91		295	

[a] Thatcher lines with genes Lr1, Lr2a, Lr2c, Lr3, Lr9, Lr16, Lr24, Lr26, Lr3ka, Lr11, Lr17, Lr30, LrB, Lr10, Lr14a, Lr18, Lr21, Lr28, Lr39 and Lr42.

Table 2. Number and frequency (%) of isolates of *Puccinia triticina* in the United States in 2024 virulent to 20 lines of wheat with single resistance genes for leaf rust resistance.

	Southeast		Ohio Valley		TX-OK		KS-NE-MO		MN-ND		Total	
Gene	#	%	#	%	#	%	#	%	#	%	#	%
Lr1	101	100	32	100	52	100	19	100	91	100	295	100
Lr2a	48	47.5	23	71.9	7	13.5	6	31.6	46	50.5	130	44.1
Lr2c	48	47.5	23	71.9	7	13.5	6	31.6	46	50.5	130	44.1
Lr3	101	100	32	100	52	100	19	100	91	100	295	100
Lr9	14	13.9	3	9.4	43	82.7	13	68.4	40	44	113	38.3
Lr16	4	4	0	0	1	1.9	0	0	25	27.5	30	10.2
Lr24	13	12.9	8	25	43	82.7	13	68.4	47	51.6	124	42
Lr26	51	50.5	19	59.4	29	55.8	11	57.9	51	56	161	54.6
Lr3ka	92	91.1	32	100	34	65.4	14	73.7	66	72.5	238	80.7
Lr11	89	88.1	29	90.6	24	46.2	10	52.6	44	48.4	196	66.4
Lr17	88	87.1	27	84.4	46	88.5	16	84.2	72	79.1	249	84.4
Lr30	92	91.1	32	100	34	65.4	14	73.7	66	72.5	238	80.7
LrB	89	88.1	24	75	46	88.5	13	68.4	72	79.1	244	82.7
Lr10	33	32.7	10	31.3	49	94.2	13	68.4	74	81.3	179	60.7
Lr14a	101	100	32	100	52	100	17	89.5	91	100	293	99.3
Lr18	3	3	0	0	0	0	0	0	0	0	3	1
Lr21	5	5	0	0	3	5.8	1	5.3	16	17.6	25	8.5
Lr28	13	12.9	5	15.6	6	11.5	3	15.8	19	20.9	46	15.6
Lr39	16	15.8	3	9.4	48	92.3	15	78.9	43	47.3	125	42.4
Lr42	0	0	0	0	0	0	0	0	0	0	0	0
Total # isolates	101		32		52		19		91		295	