Table 1. Number and frequency (%) of the predominant virulence phenotypes of *Puccinia triticina* in the United States in 2025 identified by virulence to 20[a] lines of Thatcher wheat with single genes for leaf rust resistance.

Race	Virulence combination	Southeast		NY		Ohio Valley		TX-OK		KS-NE		MN-ND-SD		CA		WA		**Total**	
	(ineffective Lr genes)	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
MBDSD	1,3,17,B,10,14a,39	0	0	0	0	0	0	8	9	4	9.8	3	4.8	0	0	0	0	15	5.7
MBDSG	1,3,17,B,10,14a,28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	40	2	0.8
MBDSN	1,3,17,B,10,14a,21,39	0	0	0	0	0	0	2	2.2	0	0	0	0	0	0	0	0	2	0.8
MBJSD	1,3,11,17,B,10,14a,39	0	0	0	0	0	0	1	1.1	0	0	1	1.6	0	0	0	0	2	0.8
MBTNB	1,3,3ka,11,17,30,B,14a	3	6.5	0	0	1	5.9	1	1.1	0	0	1	1.6	0	0	1	20	7	2.7
MCDSD	1,3,26,17,B,10,14a,39	0	0	0	0	0	0	0	0	2	4.9	1	1.6	0	0	0	0	3	1.1
MCTNB	1,3,26,3ka,11,17,30,B,14a	5	10.9	1	100	2	11.8	0	0	0	0	2	3.2	0	0	2	40	12	4.6
MDTSB	1,3,24,3ka,11,17,30,B,10,14a	0	0	0	0	0	0	0	0	0	0	1	1.6	0	0	0	0	1	0.4
MFTSB	1,3,24,26,3ka,11,17,30,B,10,14a	0	0	0	0	0	0	1	1.1	0	0	0	0	0	0	0	0	1	0.4
MGPSB	1,3,16,3ka,17,30,B,10,14a	0	0	0	0	0	0	2	2.2	0	0	0	0	0	0	0	0	2	0.8
MMDSD	1,3,9,26,17,B,10,14a,39	0	0	0	0	0	0	0	0	0	0	1	1.6	0	0	0	0	1	0.4
MNDSD	1,3,9,24,17,B,10,14a,39	0	0	0	0	0	0	0	0	2	4.9	1	1.6	0	0	0	0	3	1.1
MNJSD	1,3,9,24,11,17,B,10,14a,39	0	0	0	0	0	0	0	0	1	2.4	0	0	0	0	0	0	1	0.4
MNPSD	1,3,9,24,3ka,17,30,B,10,14a,39	0	0	0	0	0	0	8	9	10	24.4	4	6.5	0	0	0	0	22	8.4
MNTSD	1,3,9,24,3ka,11,17,30,B,10,14a,39	0	0	0	0	0	0	1	1.1	1	2.4	0	0	0	0	0	0	2	0.8
MPDSD	1,3,9,24,26,17,B,10,14a,39	0	0	0	0	0	0	1	1.1	0	0	0	0	0	0	0	0	1	0.4
MPDSN	1,3,9,24,26,17,B,10,14a,21,39	0	0	0	0	0	0	1	1.1	0	0	0	0	0	0	0	0	1	0.4
MPJSD	1,3,9,24,26,11,17,B,10,14a,39	0	0	0	0	0	0	28	31.5	3	7.3	4	6.5	0	0	0	0	35	13.4
MPPSD	1,3,9,24,26,3ka,17,30,B,10,14a,39	0	0	0	0	0	0	14	15.7	7	17.1	9	14.5	0	0	0	0	30	11.5
MPTSD	1,3,9,24,26,3ka,11,17,30,B,10,14a,39	0	0	0	0	0	0	7	7.9	3	7.3	1	1.6	0	0	0	0	11	4.2
MPTSF	1,3,9,24,26,3ka,11,17,30,B,10,14a,39,42	0	0	0	0	0	0	1	1.1	0	0	0	0	0	0	0	0	1	0.4
PBDGJ	1,2c,3,17,10,28,39	0	0	0	0	0	0	2	2.2	0	0	0	0	0	0	0	0	2	0.8
PBDQJ	1,2c,3,17,B,10,28,39	0	0	0	0	0	0	1	1.1	0	0	0	0	0	0	0	0	1	0.4
PCDGG	1,2c,3,26,17,10,28	0	0	0	0	0	0	0	0	0	0	0	0	1	100	0	0	1	0.4
TBRDG	1,2a,2c,3,3ka,11,30,14a,28	5	10.9	0	0	2	11.8	0	0	4	9.8	2	3.2	0	0	0	0	13	5
TBTNB	1,2a,2c,3,3ka,11,17,30,B,14a	16	34.8	0	0	4	23.5	0	0	0	0	0	0	0	0	0	0	20	7.6

TCBJQ	1,2a,2c,3,26,10,14a,21,28	0	0	0	0	0	0	0	0	0	0	5	8.1	0	0	0	0	5	1.9
TCJKB	1,2a,2c,3,26,11,17,10,14a,18	1	2.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.4
TCRDG	1,2a,2c,3,26,3ka,11,30,14a,28	2	4.3	0	0	1	5.9	0	0	1	2.4	1	1.6	0	0	0	0	5	1.9
TCRNJ	1,2a,2c,3,26,3ka,11,30,B,14a,28,39	0	0	0	0	0	0	1	1.1	0	0	0	0	0	0	0	0	1	0.4
TCTLB	1,2a,2c,3,26,3ka,11,17,30,B	1	2.2	0	0	0	0	0	0	1	2.4	0	0	0	0	0	0	2	0.8
TCTNB	1,2a,2c,3,26,3ka,11,17,30,B,14a	6	13	0	0	4	23.5	0	0	0	0	1	1.6	0	0	0	0	11	4.2
TCTSB	1,2a,2c,3,26,3ka,11,17,30,B,10,14a	1	2.2	0	0	1	5.9	0	0	0	0	0	0	0	0	0	0	2	0.8
TCTSL	1,2a,2c,3,26,3ka,11,17,30,B,10,14a,21	2	4.3	0	0	1	5.9	0	0	0	0	0	0	0	0	0	0	3	1.1
TDBJQ	1,2a,2c,3,24,10,14a,21,28	0	0	0	0	0	0	0	0	0	0	3	4.8	0	0	0	0	3	1.1
TFBJQ	1,2a,2c,3,24,26,10,14a,21,28	0	0	0	0	0	0	0	0	0	0	1	1.6	0	0	0	0	1	0.4
TFTSB	1,2a,2c,3,24,26,3ka,11,17,30,B,10,14a	1	2.2	0	0	0	0	3	3.4	2	4.9	0	0	0	0	0	0	6	2.3
TGTSB	1,2a,2c,3,16,3ka,11,17,30,B,10,14a	0	0	0	0	1	5.9	0	0	0	0	8	12.9	0	0	0	0	9	3.4
THBJQ	1,2a,2c,3,16,26,10,14a,21,28	0	0	0	0	0	0	0	0	0	0	1	1.6	0	0	0	0	1	0.4
THTSB	1,2a,2c,3,16,26,3ka,11,17,30,B,10,14a	1	2.2	0	0	0	0	1	1.1	0	0	2	3.2	0	0	0	0	4	1.5
TLBJS	1,2a,2c,3,9,10,14a,21,28,39	0	0	0	0	0	0	0	0	0	0	1	1.6	0	0	0	0	1	0.4
TNBJS	1,2a,2c,3,9,24,10,14a,21,28,39	1	2.2	0	0	0	0	4	4.5	0	0	8	12.9	0	0	0	0	13	5
TPBJS	1,2a,2c,3,9,24,26,10,14a,21,28,39	1	2.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.4
TPTSD	1,2a,2c,3,9,24,26,3ka,11,17,30,B,10,14a,39	0	0	0	0	0	0	1	1.1	0	0	0	0	0	0	0	0	1	0.4
Total number of isolates		46		1		17		89		41		62		1		5		262	

[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 2025 virulent to 20 lines of wheat with single resistance genes for leaf rust resistance.

	Southeast		NY		Ohio Valley		TX-OK		KS-NE		MN-ND-SD		CA		WA		**Total**	
Gene	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Lr1	46	100	1	100	17	100	89	100	41	100	62	100	1	100	5	100	262	100
Lr2a	38	82.6	0	0	14	82.4	10	11.2	8	19.5	33	53.2	0	0	0	0	103	39.3
Lr2c	38	82.6	0	0	14	82.4	13	14.6	8	19.5	33	53.2	1	100	0	0	107	40.8
Lr3	46	100	1	100	17	100	89	100	41	100	62	100	1	100	5	100	262	100
Lr9	2	4.3	0	0	0	0	66	74.2	27	65.9	29	46.8	0	0	0	0	124	47.3
Lr16	1	2.2	0	0	1	5.9	3	3.4	0	0	11	17.7	0	0	0	0	16	6.1
Lr24	3	6.5	0	0	0	0	70	78.7	29	70.7	32	51.6	0	0	0	0	134	51.1
Lr26	21	45.7	1	100	9	52.9	59	66.3	19	46.3	29	46.8	1	100	2	40	141	53.8
Lr3ka	43	93.5	1	100	17	100	41	46.1	29	70.7	32	51.6	0	0	3	60	166	63.4
Lr11	44	95.7	1	100	17	100	46	51.7	16	39	24	38.7	0	0	3	60	151	57.6
Lr17	37	80.4	1	100	14	82.4	84	94.4	36	87.8	40	64.5	1	100	5	100	218	83.2
Lr30	43	93.5	1	100	17	100	41	46.1	29	70.7	32	51.6	0	0	3	60	166	63.4
LrB	36	78.3	1	100	14	82.4	83	93.3	36	87.8	40	64.5	0	0	5	100	215	82.1
Lr10	8	17.4	0	0	3	17.6	87	97.8	35	85.4	55	88.7	1	100	2	40	191	72.9
Lr14a	45	97.8	1	100	17	100	86	96.6	40	97.6	62	100	0	0	5	100	256	97.7
Lr18	1	2.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.4
Lr21	4	8.7	0	0	1	5.9	7	7.9	0	0	19	30.6	0	0	0	0	31	11.8
Lr28	9	19.6	0	0	3	17.6	8	9	5	12.2	22	35.5	1	100	2	40	50	19.1
Lr39	2	4.3	0	0	0	0	81	91	33	80.5	34	54.8	0	0	0	0	150	57.3
Lr42	0	0	0	0	0	0	1	1.1	0	0	0	0	0	0	0	0	1	0.4
Total # isolates	46		1		17		89		41		62		1		5		262	