

Accessory Publication: Full datasets for Tables 1 and 3

Table 1. Effect of K chloride or sulfate on barley grain yields and percentage leaf area diseased (%LAD) by powdery mildew, spot-type net blotch and rust when 4 amounts of K as each K source were applied in 2002–2003

Fungicide sprays were either applied to control leaf diseases or not applied to allow natural development of the diseases. The 2 sources of K had no significant effect on grain yields and %LAD when fungicide sprays were applied so mean data are listed for the 2 sources. When no fungicide sprays were applied, then for both spot-type net blotch and rust, grain yields and disease were not significantly affected by the source of K so mean data for the 2 sources are listed. However, for powdery mildew, when no fungicide was applied, grain yields and disease were significantly different for the 2 sources so data are shown for each K source

Site	Year	Fungicide ^A	K Source	Grain yield (t/ha)				LAD (%)			
				K ₀	K ₁₀	K ₂₀	K ₄₀	K ₀	K ₁₀	K ₂₀	K ₄₀
<i>Powdery mildew</i>											
1	2002	+	Mean1 ^B	1.08	1.30	1.37	1.40	6.1	5.1	6.2	5.1
		– ^C	Chloride	0.68	0.90	1.03	0.99	26.9	19.3	14.5	10.6
		–	Sulfate	0.68	0.84	0.93	0.98	27.4	25.7	17.9	15.1

2	2002	+	Mean1	2.45	2.72	2.80	2.97	0.0	0.0	0.0	1.4
		–	Chloride	2.26	2.63	2.77	2.83	37.7	21.9	14.1	11.5
		–	Sulfate	2.27	2.58	2.72	2.81	36.6	26.9	18.3	13.6
3	2003	+	Mean1	2.44	2.74	3.07	3.15	8.3	8.4	5.6	8.3
		–	Chloride	1.45	1.79	1.92	2.02	31.9	19.4	14.8	12.1
		–	Sulfate	1.46	1.63	1.78	1.93	32.0	23.7	18.6	13.7
4	2003	+	Mean1	3.71	4.02	4.15	4.12	3.8	3.5	3.1	3.4
		–	Chloride	3.03	3.22	3.41	3.68	34.4	20.2	14.8	12.8
		–	Sulfate	3.11	3.05	3.40	3.53	34.7	25.2	18.0	14.0
5	2003	+	Mean1	2.47	2.76	2.88	2.97	4.4	4.7	4.5	4.1
		–	Chloride	1.74	2.27	2.42	2.52	22.3	11.8	8.2	6.3
		–	Sulfate	1.71	2.08	2.34	2.54	22.2	15.9	10.4	7.7
6	2003	+	Mean1	1.74	2.22	2.26	2.36	4.8	3.7	4.5	3.7
		–	Chloride	1.08	1.68	1.75	1.75	16.8	10.7	8.9	8.0
		–	Sulfate	1.00	1.64	1.80	1.72	16.6	14.2	12.0	9.8
7	2003	+	Mean1	1.85	2.12	2.41	2.57	3.4	3.7	3.5	3.1

		–	Chloride	1.26	1.46	1.74	1.75	17.5	11.7	8.5	6.0
		–	Sulfate	1.27	1.30	1.33	1.45	17.8	15.3	11.4	9.3
<i>Spot- type net blotch</i>											
8	2002	+	Mean1	2.48	2.76	2.86	2.98	6.8	5.0	7.2	3.3
		–	Mean2 ^D	2.18	2.63	2.77	2.83	34.3	23.1	15.0	19.8
9	2002	+	Mean1	1.73	2.37	2.55	2.67	3.8	4.5	5.1	3.3
		–	Mean2	1.40	1.74	2.01	2.10	45.7	27.6	16.6	10.6
10	2002	+	Mean1	1.70	2.22	2.29	2.38	4.4	4.7	4.4	4.1
		–	Mean2	1.08	1.69	1.79	1.85	23.2	15.9	7.2	6.3
11	2002	+	Mean1	1.97	2.45	2.57	2.68	5.0	4.7	5.6	3.6
		–	Mean2	1.55	2.02	2.19	2.26	34.4	24.2	16.7	11.5
<i>Rust</i>											
12	2002	+	Mean1	0.91	1.33	1.52	1.64	25.7	25.2	25.0	25.8
		–	Mean2 ^C	0.68	0.98	1.13	1.24	48.7	48.1	50.1	52.6
13	2002	+	Mean1	2.38	2.78	3.00	3.20	45.0	44.0	40.0	42.0
		–	Mean2	2.19	2.42	2.74	2.80	68.7	67.1	63.1	65.6

14	2002	+	Mean1	0.73	1.23	1.42	1.42	4.0	4.5	3.6	4.6
	2002	–	Mean2	0.47	0.89	1.12	1.15	18.2	19.5	19.5	19.4

^AControl of powdery mildew, spot-type net blotch and rust with (+) fungicide sprays or no fungicide sprays were applied (-) to allow natural development of diseases.

^BWhen fungicide was applied grain yields and %LAD was not significantly affected by source of K so mean data (Mean1) for the 2 sources are listed.

^CWhen no fungicide was applied, only for powdery mildew were grain yields and %LAD significantly different so data for each source are listed.

^DFor spot-type net blotch and rust grain yields and %LAD were not significantly affected by the source of K so mean data (Mean2) are listed for the 2 sources.

Table 3. Values of coefficients of (i) the exponential equation fitted to data for the relationship between barley grain yields and the amount of K applied and (ii) the rectangular hyperbola and percentage leaf areas diseased (%LAD)

The K was applied as either the chloride or sulfate source. Fungicide spays were either applied to control leaf diseases or no fungicide spray was applied to allow the natural development of disease. Also listed is the amount of K fertiliser required to produce 90% maximum grain yield ($K_{0.9GY}$), the ratio of the amount of K fertiliser required to produce 90% of the maximum grain yield in the absence and presence of disease ($K_{-F/+F}$), the ratio of the

amount of K as the sulfate compared to the KCl ($K_{\text{Sul/Chl}}$), the amount of K, as each source, required to reduce the %LAD to 14% (K_{14}), and the ratio of the amount of K as the sulfate compared to the KCl required to produce a %LAD of 14% (K_{Ratio})

Site	Fungicide ^A	K source	Coefficients for grain yield						Coefficients for %LAD				
			<i>a</i>	<i>b</i>	<i>c</i>	K _{0.9GY} ^B	K _{-F/+F} ^C	K _{Sul//Chl} ^D	A	B	D	K ₁₄ ^E	K _{Ratio} ^F
<i>Powdery mildew</i>													
1	+	Mean1 ^G	1.4	0.32	0.12	7.0	1.0		— ^H	—	—		
	—	Chloride	1.01	0.33	0.13	9.1	1.3	1.0	0.96	25.93	0.04	22.5	
	—	Sulfate	1.01	0.34	0.07	18.3	2.6	2.0	5.03	22.54	0.03	45.9	2.0
2	+	Mean1	3	0.55	0.07	9.2	1.0		—	—	—		
	—	Chloride	2.86	0.6	0.08	10.0	1.1	1.0	3.91	33.87	0.1	23.6	
	—	Sulfate	2.91	0.66	0.05	18.0	2.0	1.8	-1.72	38.58	0.04	36.1	1.5

3	+	Mean1	3.24	0.81	0.06	15.0	1.0		—	—	—		
	—	Chloride	2.06	0.61	0.07	16.4	1.1	1.0	7.2	24.72	0.11	24	
	—	Sulfate	2.1	0.64	0.03	34.0	2.3	2.1	3.12	28.95	0.04	41.5	1.7
4	+	Mean1	4.19	1.13	0.07	14.0	1.0		—	—	—		
	—	Chloride	3.71	1.02	0.06	16.8	1.2	1	7.04	27.37	0.12	26.6	
	—	Sulfate	3.68	0.99	0.04	23.0	1.6	1.4	2.4	32.38	0.05	35.8	1.4
5	+	Mean1	2.89	1.09	0.08	17.1	1.0		—	—	—		
	—	Chloride	2.66	0.92	0.07	17.2	1	1	2.76	19.57	0.12	6.2	
	—	Sulfate	2.65	0.92	0.05	25.6	1.5	1.5	-1.27	23.64	0.04	13.7	2.2
6	+	Mean1	2.46	0.73	0.05	13.8	1.0		—	—	—		
	—	Chloride	1.81	0.73	0.07	21.3	1.5	1.0	6.34	10.48	0.14	2.6	

7	–	Sulfate	1.85	0.78	0.04	38.3	2.8	1.8	1.49	15.12	0.02	10.4	4.0
	+	Mean1	2.67	0.83	0.05	21.1	1.0		–	–	–		
	–	Chloride	1.88	0.63	0.06	21.8	1.0	1.0	0.79	16.78	0.06	4.8	
15	–	Sulfate	1.91	0.67	0.03	40.0	1.9	1.8	-1.3	19.28	0.02	12.1	2.5
	+	Mean1	3.57	1	0.05	20.6	1.0		–	–	–		
	–	Chloride	2.87	1.04	0.06	21.0	1.0	1.0	9.64	20.05	0.16	22.5	
16	–	Sulfate	2.87	1.06	0.03	37.5	1.8	1.8	8.61	21.43	0.07	43.1	1.9
	+	Mean1	2.58	0.76	0.06	18.3	1.0		–	–	–		
	–	Chloride	1.74	0.38	0.04	21.1	1.2	1.0	8.9	25.03	0.12	31.9	
17	–	Sulfate	1.75	0.38	0.02	35.6	1.9	1.7	7.58	26.67	0.07	46.4	1.5
	+	Mean1	3.08	0.89	0.05	22.3	1.0		–	–	–		

–	Chloride	2.3	0.71	0.05	20.7	0.9	1.0	10	22.03	0.19	20.9	
–	Sulfate	2.3	0.72	0.03	36.0	1.6	1.7	7.04	25.11	0.06	45	2.2

Spot- type net blotch

8	+	Mean1	3.1	0.63	0.04	16.6	1.0	–	–	–		
	–	Mean2 ^I	2.86	0.56	0.03	23.1	1.4	-1.16	35.61	0.05	27	
9	+	Mean1	2.68	0.95	0.1	13.0	1.0	–	–	–		
	–	Mean2	2.16	0.78	0.07	18.6	1.4	-3.6	49.41	0.07	27.8	
10	+	Mean1	2.46	0.76	0.07	16.6	1.0	–	–	–		
	–	Mean2	1.87	0.82	0.1	14.8	0.9	-2.52	26.81	0.06	10.6	
11	+	Mean1	2.72	0.75	0.07	13.8	1.0	–	–	–		
	–	Mean2	2.32	0.78	0.07	17.1	1.2	0.25	34.23	0.05	28.1	

Rust

12	+	Mean1	1.67	0.76	0.08	18.5	1.0	—	—	—
	—	Mean2 ¹	1.27	0.6	0.07	21.6	1.2	—	—	—
13	+	Mean1	3.29	0.92	0.06	17.8	1.0	—	—	—
	—	Mean2	2.92	1.07	0.05	24.0	1.3	—	—	—
14	+	Mean1	1.45	0.72	0.13	12.5	1.0	—	—	—
	—	Mean2	1.19	0.74	0.1	18.8	1.5	—	—	—

^ALeaf diseases either controlled using fungicide sprays (+) or no fungicide was sprayed to allow the natural development of leaf diseases (-).

^BAmount of K required to produce 90% of the maximum grain yield.

^CAmount of K required to produce 90% of the maximum yield when no fungicide sprays were applied divided by the amount of K required to produce 90% of the maximum yield when fungicide sprays were applied to control leaf diseases.

^DAmount of K required to produce 90% of the maximum grain yield for K_2SO_4 divided by amount of K required to produce 90% of the maximum grain yield for KCl.

^EAmount of K required to reduce the %LAD to 14%.

^FAmount of K required to reduce the %LAD to 14% for K_2SO_4 divided by amount of K required to reduce the %LAD to 14% yield for KCl.

^GGrain yields were not significantly affected by the source of K when fungicide sprays were used to control leaf diseases so mean data (Mean1) are listed for the 2 sources of K.

^HDash (—); no relationship was determined.

^IFor spot-type net blotch grain yields were not significantly affected by the K source when no fungicide spray was applied to allow natural development of the disease so mean data (Mean2) are listed for the 2 sources of K.