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THE EFFECTS OF RATES OF PHOSPHORUS AND NITROGEN ON THE COPPER AND ZINC STATUS OF WHEAT PLANTS AND GRAIN PRODUCTION

87E30/2247 EX

Aim: To examine the possibility of rates of nitrogen and phosphorus inducing copper and zinc deficiency in wheat.

Location: Esperance Downs Research Station (Forestry Block)
New land

Soil: Sand/gravel

Sown: May 28, 1987

Harvested: December 17, 1987

Basals: Aroona wheat 47 kg/ha
S 15 kg/ha, K 50 kg/ha
Mo 80 g/ha
Zn 700 g/ha

Table 85. Grain yields (kg/ha)

T.E. TRS	Phosphorus (kg/ha)				
	0	5	10	20	40
Nil Cu N 50	0	707	939	864	769
Nil Cu N 100	0	639	755	857	673
1.5 Cu N 50	0	639	1,109	1,605	2,143
1.5 Cu N 100	0	701	1,231	1,898	2,483

NB: 1.5 Cu = 6.0 kg Cu SO₄.5 H₂O/ha
N treatments topdressed 2/7/87

Table 86. Plant weights (g/plant) 6/8/87 (Z17.5)

T.E. TRS	Phosphorus (kg/ha)				
	0	5	10	20	40
Nil Cu N 50	0.08	0.54	0.72	0.87	1.00
Nil Cu N 100	0.09	0.77	0.77	1.05	0.85
1.5 Cu N 50	0.10	0.61	0.88	1.07	0.90
1.5 Cu N 100	0.10	0.90	0.86	0.91	0.98

NB: 1.5 Cu = 6.0 kg Cu SO₄.5 H₂O/ha

Table 87. Dry matter production (kg/ha) 6/8/87 (Z17.5)

T.E. TRS	Phosphorus (kg/ha)				
	0	5	10	20	40
Nil Cu N 50	87	582	778	931	1,077
Nil Cu N 100	96	830	832	1,124	913
1.5 Cu N 50	108	652	946	1,147	968
1.5 Cu N 100	104	967	948	979	1,048

N treatments topdressed 2/7/87

Table 88. Plant weights (g/plant) 19/8/87 (Z31)

T.E. TRS	Phosphorus (kg/ha)				
	0	5	10	20	40
Nil Cu N 50	0.13	0.81	1.23	1.08	1.48
Nil Cu N 100	0.13	0.95	1.24	1.77	1.87
1.5 Cu N 50	0.12	0.72	1.31	1.71	1.75
1.5 Cu N 100	0.12	1.10	1.42	1.94	2.11

Table 89. Dry matter production (kg/ha) 19/8/87 (Z31)

T.E. TRS	Phosphorus (kg/ha)				
	0	5	10	20	40
Nil Cu N 50	142	873	1,316	1,161	1,586
Nil Cu N 100	140	1,020	1,328	1,900	1,949
1.5 Cu N 50	132	774	1,407	1,832	1,878
1.5 Cu N 100	129	1,277	1,528	2,079	2,262

N treatments topdressed 2/7/87

Table 90. Plant weights (g/plant) 3/9/87 (Z48)

T.E. TRS	Phosphorus (kg/ha)				
	0	5	10	20	40
Nil Cu N 50	0.21	1.18	2.13	2.23	2.90
Nil Cu N 100	0.17	1.49	2.42	2.67	3.49
1.5 Cu N 50	0.24	1.24	2.04	2.16	2.99
1.5 Cu N 100	0.24	2.09	2.36	3.02	3.38

Table 91. Dry matter production (kg/ha) 3/9/87 (Z48)

T.E. TRS	Phosphorus (kg/ha)				
	0	5	10	20	40
Nil Cu N 50	224	1,271	2,288	2,400	3,114
Nil Cu N 100	182	1,604	2,606	2,867	3,750
1.5 Cu N 50	258	1,335	2,192	2,326	3,213
1.5 Cu N 100	256	2,247	2,530	3,247	3,629

N treatments topdressed 2/7/87

Table 92. Plant weights (g/plant) 16/9/87 (Z63)

T.E. TRS	Phosphorus (kg/ha)				
	0	5	10	20	40
Nil Cu N 50	0.27	1.75	2.80	2.94	3.81
Nil Cu N 100	0.20	2.03	2.97	3.81	4.55
1.5 Cu N 50	0.30	2.16	3.08	3.88	5.17
1.5 Cu N 100	0.30	2.27	3.39	4.58	6.09

Table 93. Dry matter production (kg/ha) 16/9/87 (Z63)

T.E. TRS	Phosphorus (kg/ha)				
	0	5	10	20	40
Nil Cu N 50	286	1,880	2,899	3,164	4,088
Nil Cu N 100	219	2,180	3,293	4,090	4,886
1.5 Cu N 50	317	2,319	3,307	4,170	5,559
1.5 Cu N 100	318	2,444	3,643	4,918	6,543

NB: 1.5 Cu = 6.0 kg Cu SO₄.5 H₂O/ha
N treatments topdressed 2/7/87

Data from sampling time 1 (Z14.5) on 16/7/87 has not been presented.

Chemical analyses not available.