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5. EFFECT OF PLANT DENSITY ON BORON TOXICITY IN BARLEY
 - 87SG7/4864 EX

AIM: To examine the effect of seeding density on the degree of boron toxicity in barley.

METHOD: Stirling barley was sown at 20, 50 or 80 kg/ha on a soil with naturally high levels of boron.

LOCATION: Salmon Gums Research Station adjacent to 87SG6.

SOIL: Kumarl - a yellow-brown calcareous earth with naturally high levels of boron.

RESULTS: Sown - June 3
 - Stirling barley at 20, 50 or 80 kg/ha
 - Superphosphate at 104 kg/ha

Harvested - November 12.

Table 11. Effect of seeding rate on dry weights of shoots at anthesis, and on grain yields of Stirling barley

Seeding rate	Shoot dry weights		Grain yields (t/ha)
	(t/ha)	(g/plant)	
20	3.02	12.6	2.20
50	3.48	7.5	2.37
80	3.77	4.3	2.62

Table 12. Ratings of leaf injury due to boron toxicity on the primary tillers of Stirling barley grown on a soil with naturally high levels of boron, and the concentrations of boron in the Youngest Emerged Blades

Stage	Seeding rate	Zadoks growth rate	YEB boron ($\mu\text{g/g}$)	Ratings of leaf injury on primary tiller			
				YEB	YEB + 1	YEB + 2	YEB + 3
T2	20	213/31	25	1	1	2	2
	50	28/31	30	2	2	2	2
	80	24/31	36	2	4	2	2
T3	20	61	240	5	6	6	5
	50	61	290	6	7	7	7
	80	61	300	7	8	7	7

T2 - August 19; stem elongation.

T3 - September 22; anthesis.

RESULTS: Results of analyses of plant tissues for concentrations of boron have yet to be completed. Preliminary results indicate:

1. Increasing the seeding rate of Stirling barley decreased tillering and dry weights of plants, but increased total dry matter production per hectare.
2. Although increasing plant density increased the concentration of boron in the YEB and the ratings of leaf injury, final grain yields per hectare increased.