Trial 27

Fertiliser strategies for Mallee soils.

Marcus Brown, Technical Officer.
VIDA, Mallee Research Station, Walpeup.

Summary: BCDS was used as one of the heavier (soil) sites to evaluate fertiliser strategies developed for sandy soils over the previous two seasons. In 1996 triticale yields at Birchip increased progressively as P application increased from 0-20 kg/ha. Yield increases were also associated with applying N and Zn fertilisers although these were not as consistent as those for P fertilisers.

Aims:

Mallee soils, particularly sandy soils are recognised as being low in fertility, which in turn limits production and quality. In recognition of this the National LandCare Program and state Agriculture and Food Initiative provided funding for research to,

a) Identify which nutrients were limiting.

b) Determine appropriate rates of fertiliser to apply, specifically phosphate.

c) Measure the production potential of a range of crops which may be appropriate for (sandy) Mallee soils and investigate any specific nutrient requirements.

Soil Analysis:

The soil at the BCDS site contained high amounts of available sulphur and nitrogen (148kg/ha) whilst phosphorus and organic carbon were low. The pH (in water) was 6.91 and electrical conductivity satisfactory. The high level of available soil nitrogen caused some concern that a true response, if any at all would be detected to applied nitrogen.

Crop establishment:

The trial was sown on the 22/5/96, using an 8 hoe cone seeder. Sulphur, copper and manganese were applied at sowing to ensure deficiencies did not limit response to applied P, N and Zn. (A true response in crop growth to the rate of nutrient applied can not be measured if another nutrient is limiting production). Approximately eight weeks after sowing, dry matter cuts were taken and analysed. Plant numbers were around the optimum for the recommended plants per metre square, and the dry matter cuts showed no trend in response to the fertilisers applied.

The anthesis (flowering) sampling occurred on the 16/10/96. At this stage the plant numbers per metre had declined (since the emergence sampling) and were below the optimum population, although the majority of plants had tillered well compared to the normal characteristics of triticale. Again the dry matter weights had no clear relation to fertiliser application.

Results:

Harvest Yield t/ha - Tahara Triticale

		P rate			
N rate	Z rate	0	10	15	20
0	0	2.9	3.5	3.7	3.8
0	2.5		3.2	3.5	4.0
10	0		3.4	3.5	3.9
10	2.5		3.4	3.6	3.7
20	0		3.5	3.8	3.9
20	2.5		3.7	3.8	4.0

Interpretation:

Grain yield increased by approximately 1.0t/ha as fertiliser increased from nil to the higher rates. The greatest response was to 20kg/ha of applied P. Nitrogen application increased grain yield although this was not consistent across all treatments. The effect of N application on grain quality is not known at this stage. Zinc tended to be beneficial when high rates of other fertilisers were applied.