

# **Pivot Prescription Farming**

## **Strategies for winter crops - 1997 - Victoria**

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Phosphorus, nitrogen, sulphur and trace elements particularly zinc and copper, have been identified by researchers over many years to be the main nutrients required for high yielding cereal, grain legume and oilseed crops in Victoria.

### **1. PHOSPHORUS**

Winter crops require a ready supply of phosphorus particularly during the early stages of crop growth to produce vigorous root development. Crops then are able to cope better with adverse seasonal conditions - including wet starts and dry finishes. The importance of phosphorus cannot be underestimated.

The strategy for grain growers should be flexible enough to change the phosphorus application rates from paddock to paddock according to soil status (determined by a soil test), crop type, target yield and rotation practices.

#### ***Main messages on phosphorus:***

1. Use adequate phosphorus at sowing to ensure crop yields will not be limited in above average years.
2. Treat each paddock individually according to its own needs and history.
3. Each paddock should be soil tested every 3-4 years to monitor fertility change and fertility programs.

### **2. NITROGEN**

A nitrogen strategy is required for cereal and canola crops but is not essential for sowing grain legume crops. The high yielding, low protein wheat crops produced in the Wimmera in 1996 indicated below optimum soil nitrogen fertility. Protein targets for cereal crops need to be considered in formulating nitrogen fertiliser strategies.

**Soil testing:** In 1997 grain growers should commence planning their crop nitrogen strategy with 0-60 cm deep soil nitrogen tests to determine the amount of available soil nitrogen in the profile prior to sowing. A more balanced recommendation will follow if the deep soil nitrogen test is linked to a 0-10cm soil fertility test

**Nitrogen monitoring:** Growers should also monitor their crops during the growing season by using sap-nitrate testing and NIR analysis. Additional nitrogen can be top dressed if seasonal conditions indicate higher yields can be achieved.

#### ***Main messages on nitrogen:***

1. Balance nitrogen with total crop nutrition
2. Use deep soil nitrogen testing to establish nitrogen status in the soil profile
3. Don't underestimate the nitrogen required to achieve yield and protein targets.
4. Monitor the nitrogen requirements during crop growth
5. Nitrogen application has an excellent economic pay back in most years
6. Rates of N placed with the seed above 20kgN/ha (canola) or 25kgN/ha (cereals) may cause seedling damage and reduce crop emergence.

### **3. SULPHUR**

Sulphur is the third most important nutrient behind P and N for crop growth. Canola and grain legumes have a higher requirement for sulphur than cereals. Deficiencies of sulphur could be occurring where high analysis (low sulphur) fertiliser are regularly used.

### **4. ZINC**

Zinc is a trace element essential for crop growth and seed set.

**Zinc deficiency:** Most alkaline soils of the Wimmera and Mallee are naturally deficient in zinc. It is essential that adequate levels of this zinc maintained by regular application (every 3-4 years) in the rotation.

**Zinc program:** If the zinc history has been poor, zinc should be applied in the fertiliser, the cost will be \$7-\$8/ha for the recommended rate of 2.5kg/ha. If required, a foliar spray of "Zincsol" will cost around \$2.50/ha.

## **6. Overall Summary:**

- a) During 1997 make the most of the technology and services available.
- b) Soil testing prior to sowing
- c) Monitoring your crops with sap nitrate testing, NIR analysis, plant tissue and grain tissue testing during the season will enable you to make informed decisions and to capitalise on the opportunities presented.