Determining the nitrogen requirement of crops: 2 oilseed rape

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Oilseed rape has a high N requirement, particularly on low fertility soils, and has the ability to respond to topdressed N up to the commencement of stem elongation. In this paper we report on the use of petiole sap nitrate testing to monitor oilseed rape N status during rosette and early stem elongation.

Methods

Five intensive N rate x time of application experimental sites were used in 1987 (2 sites) and 1988 (3 sites). These sites were located in the Wimmera and North Central regions of Victoria. At each site petiole sap nitrate levels in selected treatments were monitored between 2nd leaf and early flowering growth stages. The procedure used to determine petiole sap nitrate levels is described in Paper 136, Proc. 5th Agronomy Conference.

Results and discussion

As with other crops tested, petiole sap nitrate levels remained relatively stable up until the period of maximum growth, ie; "running-up" and then declined rapidly. The rate of decline was greatest in N deficient crops. The potential responsiveness of crops to N topdressing at the commencement of running up is reflected by the sap nitrate levels (Table 1). The lower the petiole nitrate level, the greater the response.

Table 1. Relationship between Sap Nitrate and Yield Response

Sap Nitrate at Running up (mg kg^{-1})	Yield Response kg grain / 10 kg N
250	140
3200	38

The combined data from both years showed a strong correlation (R^2=0.85) between seed yield and sap nitrate at "running up".

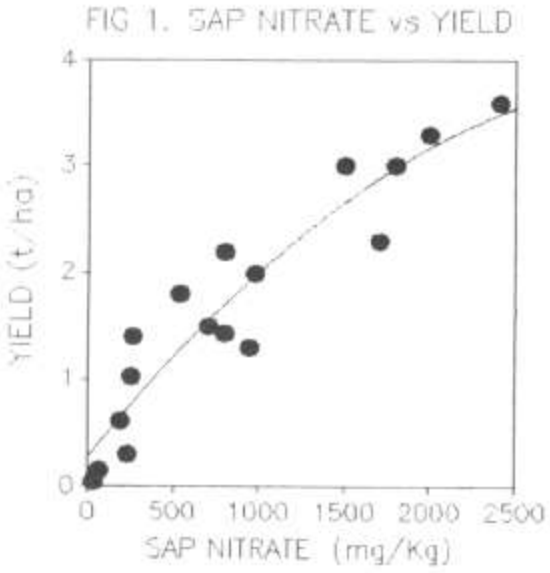

Figure 1 - Sap nitrate levels above 3500 mg kg-^{1} at any stage before "running up" indicate adequate N status. Because of the high N requirement of oilseed rape we would recommend that depending on expected soil fertility, growers incorporate 50 to 100 kg N/ha before sowing, then monitor the petiole nitrate levels during the rosette stage and topdress with N if sap nitrate levels fall below