# NPK FERTILIZATION INFLUENCES SEVERITY OF FUSARIUM WILT OF COTTON Linda J. Smith John Lehane Linda Scheikowski Deedi (Queensland Primary Industries and Fisheries) Brisbane, Australia

# Justification and Objective

Fertilizer recommendations are developed to optimize nutrient uptake and provide the crop with adequate nutrients for normal growth and yield. Once critical levels of nutrients are met, no response to yield is expected from further nutrient application, but there may be other benefits. In some instances, nutrient applications higher than those needed for optimal growth may result in improved disease resistance. The aim of this study is to examine the influence of nitrogen (N), phosphorus (P) and potassium (K) fertilization on severity of vascular wilt of cotton.

### **Methods**

Glasshouse trials were conducted to determine the influence of NPK fertilization on severity of Fusarium wilt of cotton. Field trials were conducted to investigate the effect of various rates of NPK fertilization on plant establishment, yield, disease severity and nutrient uptake.

## **Results**

Glasshouse trials

Application of N above 40 kg/ha significantly reduced disease severity.

### Field trial

#### Nutrient levels pre-plant and uptake

Availability of N, P and K of field soil exceeded the critical values required for adequate plant growth. There was plant uptake of both N and K following fertilizer application, however P fertilization did not increase P uptake.

## Nutrient effects on plant establishment

Application of N at 150 kg/ha significantly increased plant establishment of both varieties. K at 100 kg/ha significantly increased plant establishment of Sicala 45 BRF.

# Nutrient effects on yield

N significantly increased yield of both varieties, K significantly increased yield of Sicala 60 BRF only.

### Nutrient effects on disease severity

There was an interactive effect between N and K on disease severity. For Sicala 45 BRF, when K was applied without N, significantly more plants had less disease than for plants not fertilized at all. Sicala 60 BRF the opposite occurred; significantly more plants had less disease when both N and K were applied.