Summary of results:

This project was needed to assess the N fertiliser requirements of cotton under new tillage systems currently being adopted, particularly since the structure of cracking clay soils is prone to degradation under intensive cultivation and traffic of continuous cropping. With little chance of extreme drying and cracking to restore soil structure, the trend towards continuous cropping may force soil management towards systems that allow maintenance and natural regeneration of soil structure. Such systems are likely to be based on permanent beds with minimum disturbance. Following is a summary of results; a detailed report is appended.

1. Overall, the best method of N application was in the hill before sowing. Anhydrous ammonia and urea gave similar performance. With cotton grown in rotation with wheat, there was less fertiliser N required, and the method and timing of application was less critical. For continuous cotton, more fertiliser was required and it was important to apply the fertiliser before sowing.

2. Soil and plant N tests were a good guide to N status.

3. Under continuous cotton, minimum tillage was superior to a system where the soil was completely disturbed. In fact in the last season, minimum tillage continuous cotton had equal yield to a fallow treatment.

4. We conclude that minimum tillage can be highly recommended for continuous cotton rotations. Issues such as pest, weed and disease carry-over need to be assessed for each situation.