

### BT resistance monitoring 2007/08

Early season results from resistance monitoring of samples collected on the Darling Downs are shown below. The % *Helicoverpa armigera* values do not include hosts that are known to be dominated by this species (i.e. maize & sorghum). The levels of egg parasitism are averages & values in brackets indicate range.

number of eggs	88
% hatch	71
% parasitised	27 (0-84)
% <i>H. armigera</i>	50

In all sampled regions the total survival of larvae tested (i.e., the total number of survivors divided by the total number of individuals tested) is not greater than 2% (the baseline), and is not higher than the total survival detected in previous years. These early results do not indicate any major changes from previous seasons in survival rates to discriminating doses of Cry1Ac or Cry2Ab.

Thanks to Matt Holding & Murray Boshammer and the team from Total Ag Services for egg collections. For the full resistance report by Sharon Downes, please contact Kate Charleston.

### Evaluating In Crop Nutrient Status

Both petiole and leaf tissue tests can be used to evaluate crop nutrient status. Petioles are ideal for monitoring nitrate-N and potassium concentrations until mid-flowering. Beyond flowering, leaf tests are a better method of monitoring crop nutrition.

Leaf samples can be used to monitor all nutrients including micronutrients. In fact micronutrients are most accurately assessed with leaf blade samples. Sampling twice (at flowering and boll opening) produces the most useful information although leaves can be sampled at any time. Leaf tissue tests can identify nutrient imbalances, deficiencies and toxicities more precisely than soil testing and assist in optimising fertiliser programs.

### Leaf Analysis Interpretation

The table in the next column is from NutriLOGIC and outlines ideal, high and low leaf tissue levels of each major nutrient at two stages during the season. The concentrations of most nutrients change as the crop matures. For example, leaf N and K decline while leaf S, Ca and Mg increase with time.

Any action taken based on leaf test results is really dependent on the nutrient in question, how limiting it may be and the stage of crop development.

	Days after sowing	Ideal	High	Low
<b>Macronutrients (%)</b>				
N	70	4.49	4.99	3.99
	120	4.01	4.51	3.51
P	70	0.34	0.39	0.29
	120	0.31	0.36	0.26
K	70	1.66	1.69	1.64
	120	1.35	1.37	1.32
S	70	0.88	0.91	0.85
	120	1.10	1.113	1.07
Ca	70	3.16	3.08	3.24
	120	3.70	3.78	3.78
Mg	70	0.7	0.71	0.68
	120	0.81	0.82	0.79
<b>Micronutrients (ppm or mg/kg)</b>				
Na	70	<1050	1900	
	120	<1200	2100	
Cu	70	7.39	8.39	6.39
	120	6.43	7.43	5.43
Zn	70	28	34	22
	120	23.3	29.3	17.3
Fe	70	225	305	145
	120	155	235	75
Mn	70	104	134	74
	120	111	141	81
B	70	69	89	49
	120	88	108	68

Late season options for alleviating any deficiencies are limited, particularly for macronutrients. After cut out, crops should be able to fill bolls with the nutrients already taken up. Applying more nutrients may encourage vegetative growth rather than enhance yield. Late season micronutrient deficiencies could be alleviated through foliar applications.

An understanding of nutrient demands, the pattern of nutrient accumulation and the partitioning of these nutrients within cotton bolls could assist with making in crop nutrient management decisions.

Thanks to Julie O'Halloran, Regional Cotton Extension Officer, NSW DPI and the Cotton CRC for collating this information with input from Dr Ian Rochester, CSIRO and the Cotton CRC.

The 2007/08 Cotton Pest Management Guide has been mailed out. Please contact Kate if you have not received yours.