

# Cotton Aphid Web Tool

[www.cottassist.cottoncrc.org.au](http://www.cottassist.cottoncrc.org.au)

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## Will your Aphid infestation affect final yield?

Manual calculations of yield loss from pest infestations are complicated and time consuming. The CottASSIST Aphid Yield Loss Estimator allows the user to enter current Aphid samples to estimate a rate of pest increase and the potential effect on yield. This allows crop managers to 'look ahead' to decide on control options or if natural enemy populations are providing sufficient control.



Aphids can quickly build up large populations and stunt the growth of cotton. They are also a vector for the Cotton Bunchy Top Disease.

Cotton aphids are a regular pest of cotton. Cotton aphids (*Aphis gossypii*) have the potential to affect cotton productivity in three ways;

1. by feeding on phloem sap, thereby competing with the plant for the sugars produced by photosynthesis
2. by spreading the disease 'Cotton Bunchy Top' (CBT) which can significantly reduce cotton yield and
3. by secreting sticky honeydew onto open bolls – contaminating the lint resulting in downgrading.

The Aphid Yield Loss Estimator is designed to help deal with point (1) – the direct effect of aphid feeding on yield. By entering scores of aphid abundance you can obtain an estimate of the likely effect on yield. On-going entry of new counts enables this estimate to be adjusted, allowing for faster or slower development of populations.

## Sampling Aphids

Cotton Aphids are challenging to sample, as they are patchy in distribution, small and too numerous to count quickly. A simple scoring system has been developed which involves scoring the density of aphids on the underside of main-stem leaves on the 3rd or 4th node below the terminal. A complete description of this scoring system can be found in the latest Cotton Pest Management Guide.

## How the Web Tool Works

The Aphid Yield Loss Estimator takes the aphid scores and calculates the sample aphid score (SAS) which basically allows for the time between the current and previous scores. The SAS is calculated as:

$$\text{SAS} = (\text{Previous score} \times \text{days since last score}) + ((\text{current score} - \text{previous score}) \times \text{days since last score} / 2)$$

The SAS is then accumulated across sample dates to give a 'cumulative seasonal aphid score' (CSAS) which is used in the formula to estimate yield loss.

This formula predicts yield loss using the CSAS (see above), the time remaining in the season from when the aphids were first found (TREM) and the cotton growing period for a particular region (season length, SL). For any given CSAS a longer TREM will result in a higher yield loss.





**Getting Started**

To start entering aphid scores, firstly register with CottASSIST (registration is free) and set up the farms and crops you wish to monitor.

The results page will show the data and charts for yield loss, CSAS and AAS. The yield loss and CSAS charts have a horizontal green line on them which indicates the nominal threshold of 4% yield loss which justifies an aphid spray.

For further information about the Aphid Yield Loss Estimator go to <http://www.cottassist.cottoncrc.org.au/Aphids/About.aspx>

**Other Web Tools**

Other CottASSIST tools are available that can help with various management decisions using the latest cotton research.

For example, the Mite Yield Loss Estimator can help with mite control decisions (similar to the Aphid tool), and the Crop Development Tool can be used to track cotton growth.

CottASSIST is available to use on all internet browsers and hence a range of mobile devices, particularly tablets (iPad, Android).

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Sample Date	AAS	CSAS	Treat	Sprayed	Yield Loss
9/01/2011	3.900	8.750	88	No	1.04 %
15/01/2011	5.000	34.250	88	No	10.23 %
2/02/2011	4.300	117.950	88	No	37.25 %
9/02/2011	2.200	140.700	88	No	43.76 %
1/03/2011	4.200	204.700	88	No	60.16 %

Example Screen Shot of the CottASSIST Aphid Yield Loss Estimator

