Disease

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Cotton Bunchy Top (CBT)

CBT is a viral disease that is relatively new to Australian cotton, being first observed in 1998/99 season. The disease is spread by cotton aphid (*Aphis gossypii*). While cotton can compensate for a proportion of plants being infected, if the proportion of CBT infected plants is too high (>15-20% plants infested), there can be serious yield implications.

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What do CBT affected plants look like?

Leaves usually have pale green angular patterns around the margins and darker green centres. The leaves also have a leathery texture.

After the plant is infected, subsequent growth is characterised by small leaves, short internodes and small bolls. This is usually limited to growth that occurred after the plant was infected; growth before infection usually appears normal.

When plants are affected at a very early stage (e.g. as seedlings) the growth of the whole plant is affected and the crop takes on a compact, stunted, 'climbing ivy' appearance.

Roots appear hairy and dark brown in comparison to the light yellow-brown colour of healthy roots and form small knots on the secondary root branches.

Symptoms are difficult to distinguish in perennial volunteer cotton & late crops (post cut out) where there has been insufficient new growth to show symptoms

There is a 3-5 week delay from infection to obvious symptoms.

Circular patches of infected plants may arise around plants that were affected by CBT and survived from the previous season. These infected ratoon plants often harbour aphids which can then move to adjacent plants, spreading the disease.

Small leaves, bolls and short internodes are a distinctive symptom of CBT

Pale green angular patterns around the margins are a distinctive symptom of CBT

Management considerations

1: Avoid the problem - Elimination of hosts, particularly over winter, is the most effective means of minimising the risk of CBT. Break the green bridge and step 2 will not be required.

- CBT can only survive in living plants. If there is a break in the presence of host between cotton seasons, this will reduce the risk of CBT surviving on-farm through winter. Cotton volunteers, regrowth and ratoons are an important host of CBT. Good crop destruction and control of ratoons and volunteers is critical for controlling CBT. This also removes an important over winter host for cotton aphid. Growers should also control volunteer cotton plants on their farms, especially near sheds, head ditches, water ways, riparian areas and roads.
- Good on-farm management of broad leaf weeds is important as they can also host aphids and some may be hosts for CBT.
- Controlling volunteers or ratoons may force winged aphids to move to nearby cotton crops and spread CBT. To reduce this risk control volunteers/ ratoons before cotton emerges.

Life Cycle

DISEASE

- Disease symptoms usually develop about 21-40 days after the CBT-infective aphids have fed & transferred the virus.
- The CBT virus must multiply within an infected plant to a sufficient level before the aphids are able to acquire & spread further. Aphids feeding on the plant in this lag period, will not acquire the disease, & if they move to adjacent plants will not spread it.
- After this lag period aphids moving to adjacent plants will spread the disease

VECTOR

- Aphids can acquire CBT with only 5 minutes feeding on an infected leaf. After about one hour they can then transfer CBT to other cotton plants during subsequent feedings.

HOST

- CBT can only survive in living plants
- Known CBT hosts are cotton (volunteers & ratoons) and Marshmallow weed. There may be other hosts.
- Volunteer & ratoon cotton also host aphids over winter.

2: Manage the risk – Aphid control should not be the primary means of preventing infection

- Don't over-react to aphids. Excessive use of aphicides will select resistance and restrict control options.
- Sample young cotton regularly for aphids and assess aphid spread within the field (while they are wingless spread will be slow, faster once winged forms present).
- If aphid populations are unhealthy (many beneficials present, high mortality and little spread) then keep monitoring, if healthy then consider control with a selective option so that beneficials can provide ongoing mortality.
- If a high influx of aphids is experienced consider controlling them quickly with a selective option to reduce the risk of CBT infection.
- Maintain the beneficial complex to help control aphids.

Cotton aphid can spread CBT from infected cotton ratoons or volunteers to your crop

The "GREEN BRIDGE" of cotton volunteers and ratoons in grain crops can host CBT through winter

BREAK THE GREEN BRIDGE!

To reduce your risk of CBT next year, don't give the virus & it's vector a home for the winter.
Plan for good crop destruction to reduce ratoons.
Control all ratoons & volunteers & other hosts.

Cotton Catchment Communities CRC