

Day Degree accumulation to the 7th Nov 07.

District	Season 07/08	Season 06/07	Season 05/06	Cold Days	Hot Days
Emerald (from 15 th Sept 07)	680	635	695	3	12
Theodore (from 25 th Sept 07)	563	501	572	2	12

Cotton Australia

Tyson Hosie from Cotton Australia will be in CQ 19th -23rd November. If you would like assistance with BMP give Tyson a call on 0427 707 868.

Disease Survey results

Last week I accompanied Dr. Stephen Allen and Greg McNamara from CSD on the annual early season disease survey. Some seedling diseases caused by *Rhizoctonia* and *Pythium* were noted but most had grown away from it during those hot days last week. Crops following legumes are more prone to seedling diseases and this was obvious in cotton following mung beans.

Several of the crops inspected had been planted into sorghum stubble and some displayed symptoms of 'allelopathy' including poor root development and slowed growth. Allelopathy results from the release of toxic substances from freshly decomposing plant residues. (There is an internet reference to the use of fresh sorghum residues soaked in water to produce a 'home made herbicide' for weed control.) Not all crops are potentially allelopathic but problems with sorghum and medics have been observed in cotton previously.

Slow or uneven plant development in one of the fields surveyed appeared to be the result of placement of fertiliser under the plant line.

Water Logging

With recent storms following irrigations, water logging has been an issue for some crops. Because clay soils drain slowly, many cotton crops are subjected to some degree of water logging. This problem is accentuated by rainfall after irrigation, cloudy conditions, and inadequate land preparation. Water logging may reduce crop yield by up to 1 bale/ha with yields affected before symptoms are noticed. Symptoms of waterlogged cotton include a general yellowing of the crop and stunted growth.

The major and immediate effect of waterlogging is blocking transfer of oxygen between the roots and the soil atmosphere. Plant roots may become so oxygen deficient that they cannot respire. As a

consequence, root growth and absorption of nutrients is decreased leading to less overall plant growth.

Waterlogging also tends to increase sodium uptake by cotton - this is being researched this summer. As the roots of some crops (eg maize) have their roots exposed to low levels of oxygen in the soil, as occurs with waterlogging, an enzyme that helps to exclude sodium from the plants is disabled, hence sodium can move into the root more freely. This may then affect the uptake of other nutrients and the growth of the plant.

In addition to the physiological impacts of waterlogging on the crop, there are also significant impacts on nutrient availability and uptake. The availability of Nitrogen (N), Iron (Fe) and Zinc (Zn) (reduced) and Manganese (Mn) (increased) are directly affected by the decline in soil oxygen, and uptake of N, K and Fe by the roots is also impaired.

Nitrogen

Denitrification of soil mineral nitrogen, may result in less N being available to crop even after water logging has ceased. Yield reduction from waterlogging may be severe but applying foliar fertilizer or water run N (about 8 kg N/ha before each of the first three irrigations) can help recover yield loss by encouraging further growth. Foliar N is more effective in increasing the yields of waterlogged cotton when applied one day before irrigation under hot, sunny conditions. Application to a field that is waterlogged will not necessarily alleviate existing damage. Plant tissue testing may be used as a guide to indicate susceptibility to waterlogging and response to foliar N.

Potassium

Waterlogging is possibly involved in premature senescence of cotton. Under waterlogged conditions, uptake of K by the cotton crop may be reduced, predisposing the crop to the premature senescence syndrome.

Iron

The young leaves of iron deficient plants become yellow between the veins (chlorosis). The veins usually remain green, unless the deficiency is severe. The whole leaf may eventually turn white. Although the plant may contain high concentrations of iron, most of it is unavailable for chlorophyll production and the leaves lose their green colour. Foliar application of 200 g Fe/ha with a ferrous sulphate may return foliage to its normal colour within 2-3 days.

(for more info refer to *NutriPak & WaterPak*. Thanks to Ian Rochester, Michael Bange and Steve Milroy for their assistance with this article.)