Mackay Irrigation Project

CANEGROWERS MACKAY

FACTSHEET 6

PRACTICAL OBSERVATIONS ON CROP RE-ESTABLISHMENT

Under normal conditions the crop will take 21 days to initiate root activity after cut (reduced as temperature increases). Ratoons when cut initiate new growth from the buds underground. A hormone suppresses germination of the buds until the meristem is cut. Buds germinate when soil and temperature conditions are favourable.

KEY MESSAGE:

Early crop establishment and CWU requires irrigation to be triggered as soon after harvest as possible.

The crop shown was harvested on the 15th August, 2023. There was no significant rainfall and no irrigations to re-activate root growth even though there is enough water in the profile (50% of RAW). There is a period of 50 days when the graph is flat, hence no CWU or root activity.

The water balance is at -45mm from full field capacity. As we have seen from previous fact sheets, root re-establishment is initiated from the top down. If an irrigation event had been initiated as soon after harvest as possible, this ratoon crop would have re-initiated root growth and started extracting water within 15-21 days after the irrigation event. In most cases our season length is limited to 12 months. In this case we already lost approximately 9% of the yield potential.

The 15-21 days that it takes for the crop to start using water is not set in stone. In the example, there was still 30mm of RAW available. In this case all the crop needed to start using water was an irrigation event to trigger CWU. CWU is triggered from the top down.

If the crop was stressed for an extended period before and after harvest it would take much longer for the roots to be re-established and extract water.

This fact sheet will be better understood if read in conjunction with Factsheets 2 & 3.

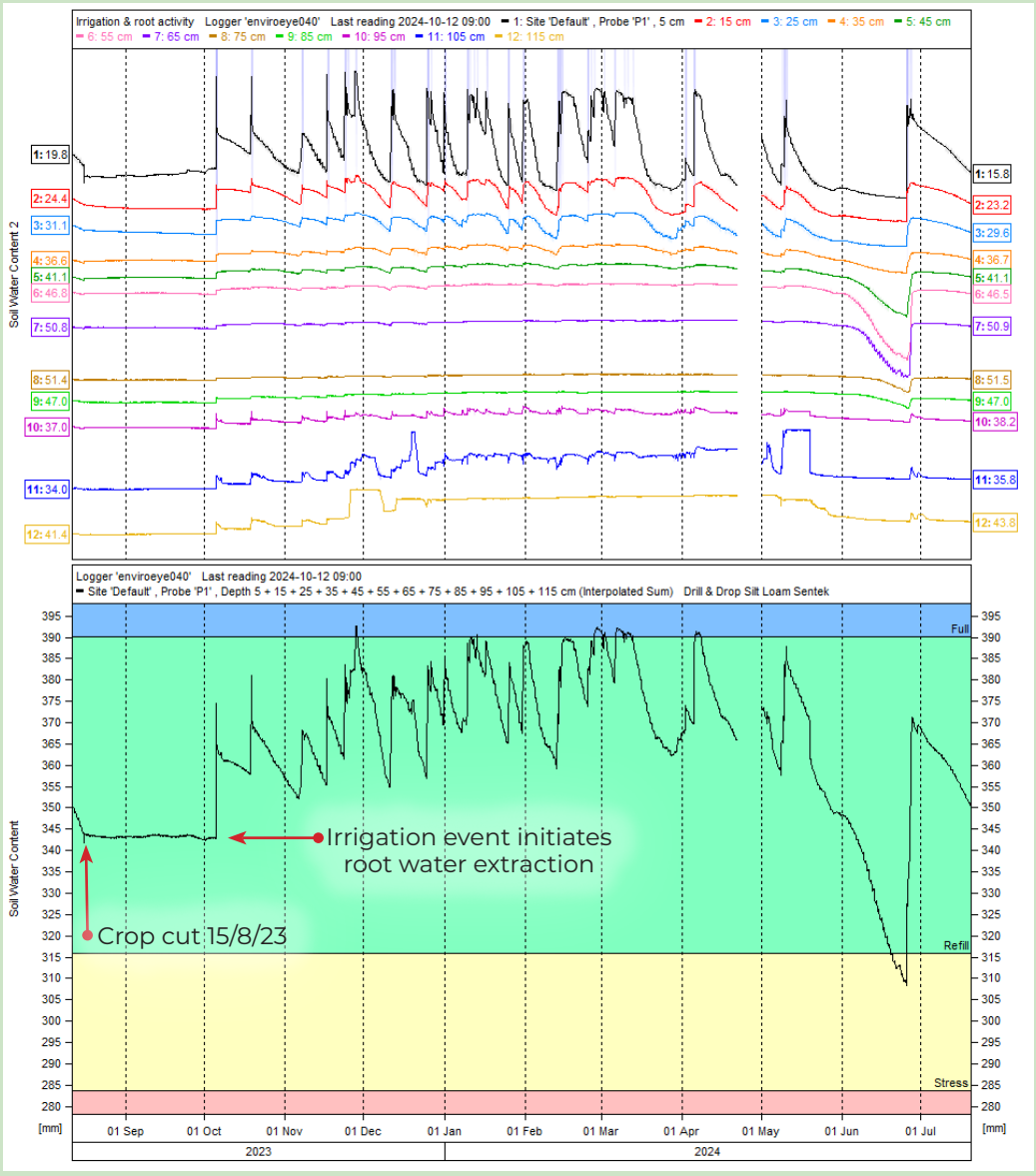

FIGURE 1

This project is a part of the Mackay Whitsunday Water Quality Program, funded by the partnership between the Australian Government's Reef Trust and the Great Barrier Reef Foundation.

Australian Government | REEF TRUST | Great Barrier Reef Foundation

KEY MESSAGE:

After harvest crop water use and root activity are triggered from the top down. The longer this takes the longer it takes for the ratoon to re-establish itself.

The crop above has lost an estimated total of 24t/ha. 12t/ha because crop re-establishment took too long and 12t/ha because CWU after the refill point is only 50% of the potential CWU. The CWU below refill point is soil dependent and also soil compaction dependent. The range can vary from 10-60% of potential CWU as observed from soil moisture probe data. There was nothing that could have been done when continuous rain events maintained the water balance at field capacity, nor can these losses be easily determined, however Factsheet 4 has some good information on the slowdown in growth rates from overwatering. Earlier crop establishment would have allowed the crop to withstand the wet conditions better.

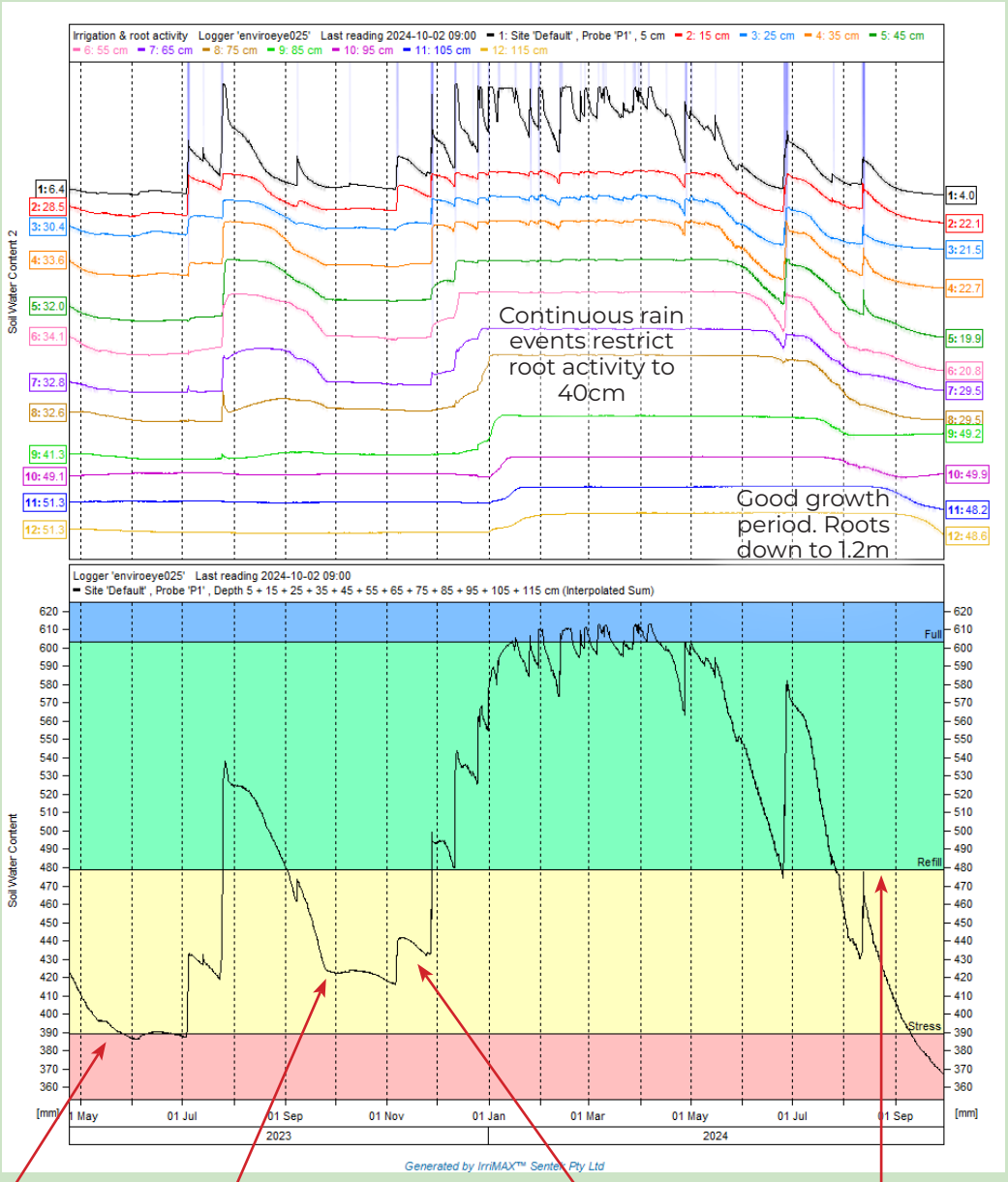

FIGURE 2

Previous crop lost 16t/ha No CWU for 60 days

Cut on 26/9/23.

Root water extraction starts on 10/11/23 lost 44 days. Lost 12 t/ha

CWU 50% after refill point. Lost 90 days (12t/ha)

Continuous gains for environment and productivity by improving irrigation strategies and water management

A win-win scenario created by applying the right amount of water at the right time