



Irrigation Research &  
Extension Committee

# 2024 Demonstration Report

## Maize Layouts



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## Demonstration Summary

This demonstration was undertaken to examine if there is any efficiency in growing maize in flood irrigation without forming beds, in the Coleambally area. The aim was to determine whether growers can lower input costs while maintaining yields.

## Background & Aims

The demonstration will compare maize grown with and without bed forming to determine if there is any noticeable difference in yield. No difference in yield indicates that efficiencies can be gained in reducing labour, fuel and machinery costs.

Mitchell Wiseman chose to grow an area of maize that was flood irrigated using modified beds in border check layout. Bed forming requires large machinery, adding significant fuel, labour and machinery maintenance cost to growing maize. Corn growing on flat ground or without beds, results in the base of the plant being submerged during irrigation, however, maize can form brace roots which help anchor the plant and prevent plant lodging. These roots usually form from about fifth leaf stage (V5) onwards which means that the plant would be more prone to lodging prior to this secondary root growth.

## Demonstration Details

Location	Coleambally, NSW
Crop type	Maize
Irrigation system	Modified beds in border check

## Methodology

Maize was grown in two 2ha bays, irrigated by a modified beds in border check layout, with a furrow every 4m. Mitchell compared this with a 28ha control, which was grown in Mitchell's normal beds in border check layout. He also compared the demonstration to his other maize paddocks.

All bays were sown on 20 September 2023, with the same variety and had the same nutrition and irrigation applied. This was the first maize crop planted in this historic rice paddock. A uniform rate of 200kg/ha of Granulock Z and 200kg/ha of urea was incorporated in the soil before sowing. Another 200kg/ha of urea was incorporated after sowing, alongside 100kg Gran AM and 100kg of MOP. 100kg/ha of urea was also water run with an irrigation during the season. An average of 8ML/ha of water was used to irrigate the maize.

## Agronomic results

Mitchell measured yield from his header. There was no yield difference between the control and the hybrid irrigation layout, with the average yield being 15t/ha across the demonstration and the farm as a whole. This was an excellent result for Mitchell, as he wasn't expecting a yield increase, and was hoping there would be no yield decrease.

While on the header, Mitchell paid close attention to the instantaneous yield noticing that some areas of the demonstration were yielding 24t/ha despite the average being 15t/ha. The 24t/ha yield encourages Mitchell to keep striving for great yields in his maize crops by determining how he can improve the lower yielding areas to increase his paddock and farm average.

It should be noted that the yield of 15t/ha fits with the district average yield.

## Economic results

The key reason for this demonstration was to try to lower input costs without minimising yield, which was achieved. Mitchell saved two to three tractor passes with his hybrid layout. For Mitchell this meant a saving of 7L/ha of fuel. With fuel at around \$2/L, this saved Mitchell \$40/ha in fuel costs alone. Whilst it may not seem like a huge saving on his small demonstration block, Mitchell plants around 100ha of maize per season, so this is equivalent to a saving of \$400 per season in fuel. With fuel prices being inconsistent this could very well lead to a larger saving in future.

The other economical saving is time. Mitchell covers 5ha per hour. For the trial it saved him about 2 hours, however on a larger scale of 100ha, it would save Mitchell up to 60 hours of his time which he feels is a game changer. Currently, the average pay rate for a hired tractor driver is around \$30/hr, which will only increase in the future. Using this rate, this modified layout would save Mitchell \$1800 in labour costs per season, at a minimum.

## Key learnings & recommendations

Mitchell is happy with how the trial performed, however, he feels it is still too early to change all of his layouts to this hybrid beds in border check system. Mitchell aims to replicate the demonstration in the 2024/25 season on a larger scale (9.6ha). Due to a machinery change, he is planning to change the spacing between furrows from 4 meters to 3.6 meters. Mitchell has indicated he will also change the spacing between rows from 1m to 90cm, with the goal to move to 75cm spacing in future. Mitchell feels this will ensure better spacing between maize plants, to allow for optimum separation. The key takeaway from this demonstration is that it was successful in achieving the farmer's goal of minimising input costs without decreasing yield. But he feels it is still too early to tell, and aims to repeat the trial in future seasons to build confidence and learn more.

It will take more research and replications for growers to uptake this practice, however, the benefits of lower input costs, reducing time and tillage, and possibly better soil health, are all enticing reasons for farmers to be interested in this layout.

Mitchell and IREC hosted a Farm Walk on 14 February 2024 to showcase and discuss this demonstration with other growers in the area. Farmers were interested, however it is evident the trial needs to be replicated to increase grower confidence.

We recommend repeating this trial with aim of collecting more information including soil tests in order to determine the impact of reduced tillage on soil health in this layout.

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