

2021 Burdekin Spring Sesame Nitrogen Trial

Trial Overview

New varieties of non-shattering sesame have been identified as having potential within a sugarcane fallow for both soil conditioning and providing an alternative source of income over the summer fallow period.

With the introduction of the Queensland Government nutrition guidelines for cropping in the Great Barrier Reef Catchment, there is need to identify appropriate Nitrogen (N) application rates that will provide optimal crop outcomes, whilst ensuring environmental stewardship. This trial will compare the response of Black Sesame to three rates of N.

Trial location/Paddock history

The trial is located in the Burdekin locality of Clare. The site is furrow irrigated and currently in a period of extended fallow. Prior to trial establishment, the site had been sown to Mungbeans that were taken to grain. Soil analysis of the site identified an existing 38kgN/ha.

Trial design & methodology

Aim

To determine the N response of Black Sesame specific to the furrow irrigated farming system(s) of Burdekin region. Determination of crop N treatment effect to be assessed at 6 and 16 weeks after sowing (WAS). Measurements include plant height, stem girth and number of branches (Babajide & Oyeleke, 2014). Additionally, measurement of tonnes of dry biomass per hectare (t/ha) at 16 WAS and yield, at harvest, will be taken.

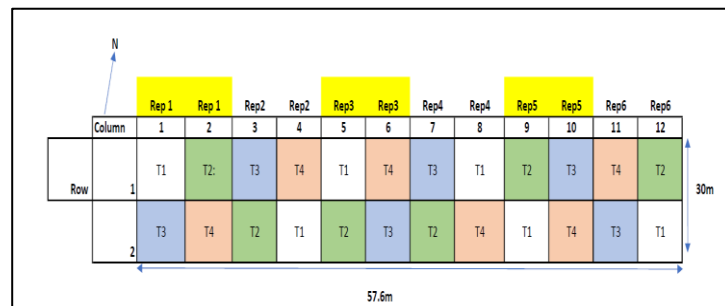


Figure 1. 2021 CRCNA Burdekin Spring Black Sesame nitrogen (N) trial design.

Treatments

Three rates of N applied- 50kgN/ha, 75kgN/ha & 100kgN/ha, to be compared with a control of 0kgN/ha.

The trial is a Latin square design, replicated 6 times to allow for robust statistical analysis of trial outcomes (Figure 1.). Treatments are 15 metres (m) long by 3 beds wide at 1.6m spacing. Each bed contains 2 rows at 40cm spacing.

Planting

N treatments were applied on the 17/08/2021 and the site was sown on the 18/08/2021 at 400,000 seeds per ha (seeds/ha) using a Jang Planter configuration at 2cm depth. The crop was sown into existing soil moisture supplied via irrigation applied on the 28/07/2021. Post sowing irrigation was applied on the 19/08/2021 to assist germination.

At this stage of the trial, there is no significant N application rate effect upon the crop factors being measured.

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Establishment

Emergence commenced 5 days post sowing with staggered emergence observed across the site. This was considered to be due to variation in sowing depth. Initial monitoring planned for 6 WAS was postponed until 8 WAS to allow for even establishment. Successive monitoring identified successful establishment.

Outcomes to date

8 WAS monitoring results identified no significant treatment effect ($P < 0.05$) upon plant height, stem girth or number of branches. Averaged results identified that the 50kgN/ha treatment recorded a slightly greater average plant height (Figure 2.).

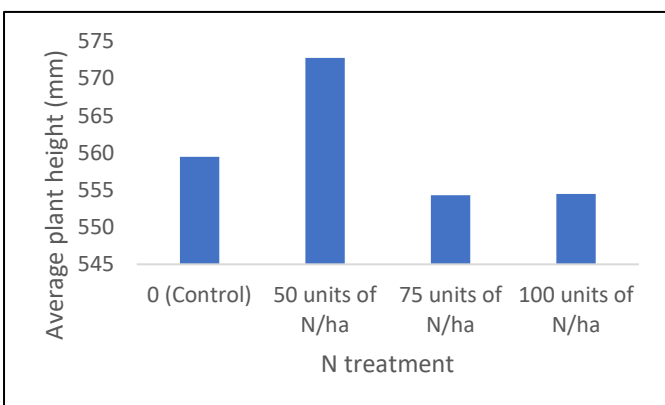


Figure 2. 2021 CRCNA Burdekin Spring Black Sesame nitrogen (N) trial. Average stem height by nitrogen (N) treatment.

The 75kgN/ha recorded a slightly greater stem girth average (Figure 3) and the 50kgN/ha treatment recorded an average number of branch count minimally greater than the other treatments (Figure 4).

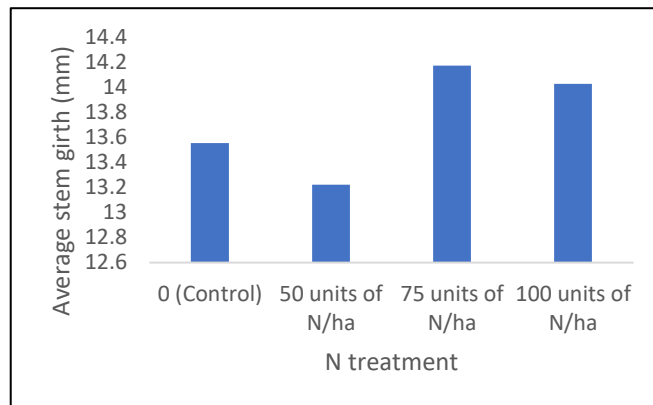


Figure 3. 2021 CRCNA Burdekin Spring Black Sesame nitrogen (N) trial. Average stem girth by nitrogen (N) treatment.

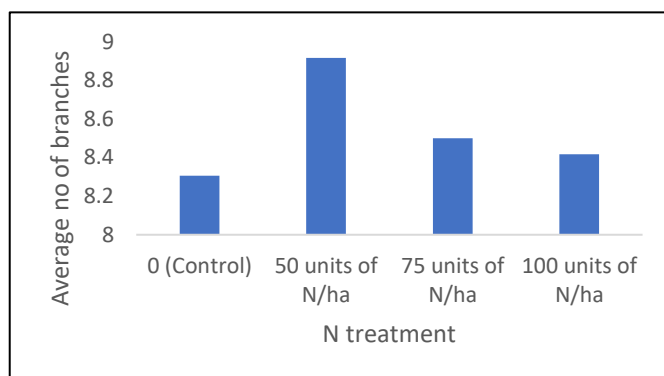


Figure 4. 2021 CRCNA Burdekin Spring Black Sesame nitrogen (N) trial. Averaged number of branches by nitrogen (N) treatment.

Conclusion

At 8 WAS, limited difference was observed between treatments. The 50kgN/ha treatment recorded slightly greater stem height and branch number. Future monitoring events will provide greater insight into N treatment effect.

Reference

Babajide, P.A. and Oyeleke, O.R. (2014). Evaluation of sesame (*Sesamum indicum*) for optimum nitrogen requirement under usual farmers practice of basal organic manuring in the savanna ecoregion of Nigeria. *Journal of Natural Sciences Research*, 4, 14, 122-132.