

TWINN CROP TRIAL



Sugarcane: Nakambala Estate, Zambia 2010-2011

INTRODUCTION

An on-farm field trial was conducted by agronomists from Nakambala Estate, Illovo Sugar Ltd. The trial consisted of the standard fertiliser program compared to four combinations of reduced nitrogen fertiliser applications plus a single application of TwinN. The trial treatments were replicated under centre pivot. This commercial trial followed earlier strong results of TwinN on Nakambala Estate in trials on three different soil types.

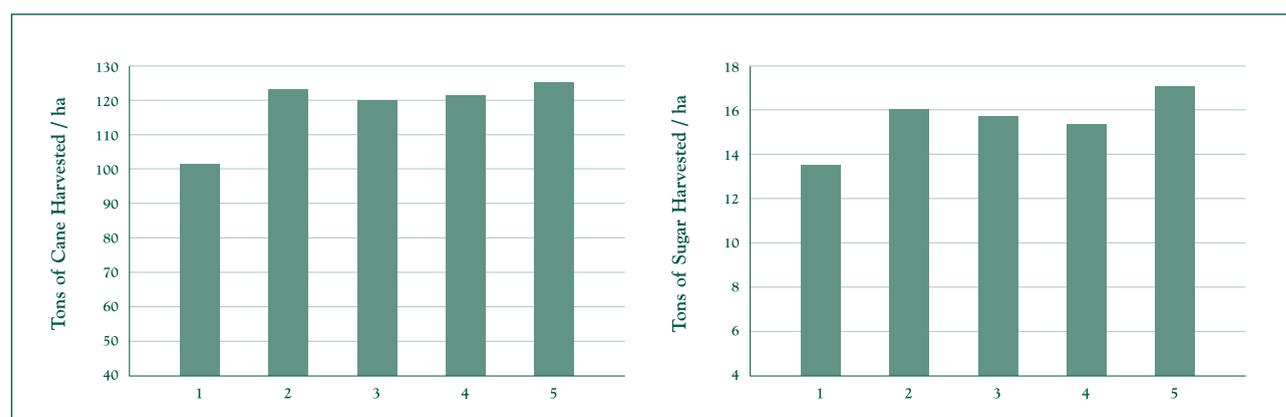
KEY RESULTS

- ♦ A single application of TwinN plus 100% N (standard application rate of 160 kgN/ha) yielded 24% higher Tons Cane Harvested (TCH) and 26% higher Tons Sugar Harvested (TSH) than the standard 100% N without TwinN.
- ♦ A single application of TwinN combined with either 50, 65, or 85% N gave between 14 and 19% higher TSH than the standard 100% N.

RESULTS

| Treatment | Pol% | TCH (T/ha) | % increase over T1 | TSH (T/ha) | % increase over T1 |
|------------------------|-------|------------|--------------------|------------|--------------------|
| 1. 100% N (160 kgN/ha) | 13.34 | 101.4 a | 0.0 | 13.47 | 0.0 |
| 2. 50% N + TwinN | 13.03 | 123.05 b | 21.4 | 16.04 | 19.1 |
| 3. 65% N + TwinN | 13.13 | 119.85 b | 18.2 | 15.72 | 16.7 |
| 4. 85% N + TwinN | 12.72 | 121.05 b | 19.4 | 15.4 | 14.3 |
| 5. 100% N + TwinN | 13.58 | 125.55 b | 23.8 | 16.99 | 26.1 |

For TCH, values with the same letter (a or b) beside them are not statistically different. No significant differences occurred between treatments for Pol%, Brix%, Fibre% or other quality parameters.



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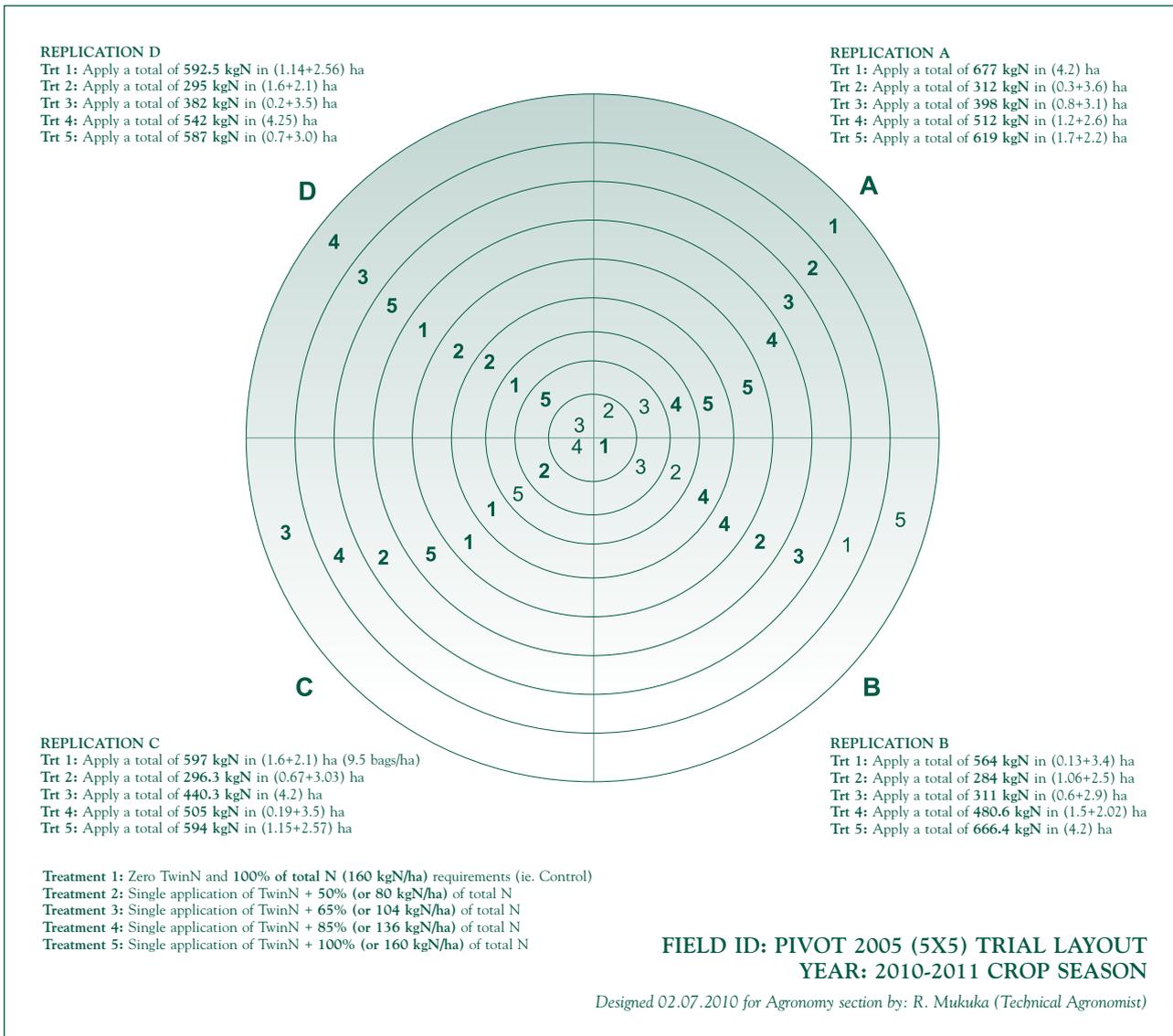


Figure 2: Effects of single TwinN application on sugarcane yield at various rates of N fertiliser

TwinN was applied by knapsack sprayer to moist soil to simulate centre pivot application to 15 cm high ratoon cane.

RECOMMENDATIONS

1. Apply a single application of TwinN to cane at 15-50 cm high (after harvest, wait until active growth has started then apply TwinN).
2. The application procedure must deliver the microbes into moist soil in the root zone. Use these procedures. Either:
 - (a) Apply TwinN via centre pivot in sufficient water to take the microbes into the root zone. Ensure an even coverage across the field; OR
 - (b) Apply TwinN via drip irrigation; OR
 - (c) Irrigate the field thoroughly and apply TwinN by boomspray (or backpack) onto moist soil. Use a coarse nozzle to direct the microbe solution into the root zone. If applying to

plant cane then band the TwinN application onto plant bases; OR

(d) Use a cutting disc and liquid inject system to deliver TwinN into the soil root zone. The cutting disk must cut deep enough to deliver the TwinN solution into moist soil in the root zone.

Don't apply TwinN in the same water mix as other agrochemicals or fertilisers.

3. Nitrogen fertiliser reductions:

(a) Apply 65% of standard N plus TwinN if N fertiliser prices are high and sugar prices are low; OR

(b) Apply N at a higher rate up to 100% if sugar prices are high and the grower wants to maximise yields. MAB recommends some reduction in N fertiliser because of the benefits to soil health.

NOTE: TwinN has been able to enable reductions down to a 50% reduction in trials and on-farm use. However, larger reductions in N produce yield decreases and this means that a 50% reduction may be too close to the point where TwinN cannot compensate for the large N reduction. Therefore MAB recommends that a 65% rate of N fertiliser, plus TwinN, is used to provide a safety margin.

(c) Use the standard at-plant N application rate and make reductions to later N applications to give a total reduction down to 65% minimum. Do not reduce N fertiliser by more than 60 Units N.

4. Keep applications of P, K and other nutrients at standard rates.

Mapleton Agri Biotec thanks the agronomists from Nakambala Estate, Illovo Sugar Ltd, for providing the results of this trial.

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