

# Report Summary

## Assessment of HibrixBB Organic Liquid Fertiliser for the production of maize cv. Hycorn 675IT, Bowen, Queensland, 2010

*Chris Monsour – Peracto North Qld*

### SUMMARY

In Bowen, Queensland, in 2010, HibrixBB was compared with a standard mineral fertiliser program for the production of maize cv. Hycorn 675IT on an alluvial sandy loam soil irrigated via sub-surface drip tape.

The standard fertiliser treatment consisted of CK88 at 667 kg/ha applied as a base fertiliser pre-plant followed by two fertigations via trickle tape of urea at 40 kg/ha at the 5 to 6 leaf stage (22 days after sowing (DAS)) and just prior to tassel initiation (56DAS). The total amount of nutrient applied was 178 kg/ha nitrogen, 20 kg/ha phosphorous and 73 kg/ha of potassium.

The Hybrix treatment consisted of a single application at 2.5 L/ha at sowing. HybrixBB was applied using a backpack sprayer fitted with a hand-held boom and Spraying Systems AIXR11002 flat fan nozzles in a water volume of 500 L/ha. Dual Gold at 1.5 L/ha was applied as a pre-emergent herbicide to both treatments immediately after sowing.

At commercial harvest, cobs from 20 randomly selected plants per plot were harvested, weighed and the length, girth at the cob base and length of tip not filled with kernels was measured. The grain was removed from each cob and weighed. A subsample of 100 grains was selected from the grain from each cob and weighed to determine mean grain size per cob.

HibrixBB at 2.5 L/ha applied at sowing in conjunction with the use of a pre-emergent herbicide produced a commercially acceptable maize crop. Cobs from the standard fertiliser treatment were 11.2% heavier than those from the HibrixBB at 2.5 L/ha. There was no significant difference in the length of cobs or girth at the base of the cob, but cobs from the standard fertiliser treatment had significantly better tip fill compared with HibrixBB at 2.5 L/ha.

The mean total weight of grain per cob from the standard fertiliser treatment was 6.4% higher than for HibrixBB, but the mean weight per grain for HibrixBB was 6.1% higher than for the standard fertiliser treatment.

Application of HibrixBB at 2.5 L/ha at sowing was safe to maize cv. Hycorn 675IT.

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## INTRODUCTION

### Aims

- To compare HibrixBB with a conventional mineral fertiliser program for maize production in north Queensland.
- To determine the crop safety of HibrixBB to maize.

## MATERIALS AND METHODS

### *Treatment list*

No.	Product and rate
1	Standard fertiliser practice (CK88 @ 667 kg/ha + 2 x Urea @ 40 kg/ha = 168 N:20 P:73 K) Dual Gold pre-emergent herbicide at 1.5 L/ha immediately after sowing
2	HibrixBB at 2.5 L/ha Dual Gold pre-emergent herbicide at 1.5 L/ha immediately after sowing

### *Site details*

Location	Peracto North Queensland Research Station 14 Kelsey Road, Bowen, Queensland, Australia
GPS co-ordinates	20°00' 30.12" S 148°11'48.20" E
Crop	Maize
Variety	Hycorn 675IT
Trial design	Randomised complete block
Replications	3
Plot size	2 rows x 20 metres
Plant spacing	20 centimetres
Row spacing	0.75 metres
Plant density	66,667 plants/ha
Planting date	27/05/10
Irrigation type	Sub-surface drip tape

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## Chronology of events

Date	Days after sowing (DAS)	Crop stage	Event
11/05/10	-16	Pre-plant	Ground prepared and drip tape laid Chemical fertiliser applied to T1 (standard practice plots)
27/05/10	0	Sowing	Maize seed sown Dual Gold applied to T1 and T2 HibrixBB applied to T2 post-sowing
18/06/10	22	5 to 6 leaf stage	Urea @ 40 kg/ha applied to T1
22/07/10	56	Tassel initiation	Urea @ 40 kg/ha applied to T1
16/09/10	112	Mature cobs	Yield assessment

## Assessments

1. Harvest assessment			
Date	16/09/10		
Days after sowing	112DAS		
Sample size and method	Twenty cobs from each plot were randomly sampled, weighed and the length, girth at the cob base and length of tip not filled with kernels was measured. The grain was removed from the cob and weighed. A subsample of 100 grains was selected and weighed to determine mean grain size.		
Statistical analysis	Student's t-test (two sample assuming unequal variances) conducted on raw data. See Appendix iii.		
2. Crop safety assessments			
Dates	10/06/10	08/07/10	22/07/10
Days after sowing	14DAS	42DAS	56DAS
Sample size and method	Maize plants were inspected for any symptoms of crop phytotoxicity.		

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## RESULTS AND DISCUSSION

**Table 1.** Yield data for cobs harvested from the HibrixBB treatment compared with the standard fertiliser treatment, 16/09/10 (112DAS)

No.	Treatment	Mean cob weight (g)	Mean cob length (cm)	Mean girth at base (cm)	Mean tip not filled (cm)
1	Standard fertiliser	244.2 a	19.6	14.4	3.0 a
2	HibrixBB at 2.5 L/ha	217.4 b	20.0	14.1	5.0 b
<b>P-value</b>		0.0001	0.1599	0.0659	0.0001

Means within columns followed by the same letter are not significantly different at the 5% level according to least significant difference (LSD) test.

DAA: Days after sowing

**Table 2.** Grain yield data for the HibrixBB treatment compared with the standard fertiliser treatment, 16/09/10 (112DAS)

No.	Treatment	Mean weight of total grain per cob (g)	Mean weight of 100 grains (g)
1	Standard fertiliser	199.0 a	29.3 b
2	HibrixBB at 2.5 L/ha	187.0 b	31.1 a
<b>P-value</b>		0.0206	0.0001

Means within columns followed by the same letter are not significantly different at the 5% level according to least significant difference (LSD) test.

DAA: Days after sowing

Cobs from the standard fertiliser treatment were significantly heavier (11.2%) than those from the HibrixBB at 2.5 L/ha (Table 2). There was no significant difference in the length of cobs or girth at the base of the cob, but cobs from the standard fertiliser treatment had significantly better tip fill compared with HibrixBB at 2.5 L/ha.

The mean total weight of grain per cob from the standard fertiliser treatment was significantly higher (6.4%) than for HibrixBB (Table 3), but the mean weight per grain for HibrixBB was significantly higher (6.1%) than for the standard fertiliser treatment.

## Crop Safety

There was no symptoms of phytotoxicity to maize cv. Hycorn 675IT following a single application of HibrixBB at 2.5 L/ha at sowing or application of Hibrix BB at up to 3.5 L/ha prior to sowing followed by two applications of HibrixBB at 0.5 L/ha prior to tasselling.

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**Figure 1.** Relative size and quality of cobs harvested from Treatment 1 at the top through to Treatment 6 at the bottom, 16/09/10 (112DAS)

## CONCLUSIONS

- HibrixBB at 2.5 L/ha applied at sowing in conjunction with the use of a pre-emergent herbicide produced a commercially acceptable maize crop. The mean cob weight and grain yield per cob was less than that produced by the standard mineral fertiliser, but the mean weight per grain was greater for HibrixBB compared with the standard mineral fertiliser.
- Application of HibrixBB at 2.5 L/ha at sowing was safe to maize cv. Hycorn 675IT.