

BioStart N and Digester Maize Grain Trial

Increased maize grain yield by 22%

Manawatu, 2013 - 2014



This 2014 trial was conducted on a maize grain crop at Noaro Farms, Opiki, Manawatu in peat country on a 27 ha block. The trial showed that the combination of BioStart N and Digester increased maize grain yield by 22% versus the control in very dry conditions, and increased gross margin by \$610/ha for an investment of \$163/ha.*

Application

- The block was divided into four trial blocks; Control (13 ha); Digester only (5 ha); BioStart N only (5 ha); and BioStart N & Digester (5 ha). Pioneer cultivar 37Y12 was sown 26th October, 2013 at 100,000 seeds/ha in wet conditions.
- BioStart products were applied in July 2013 after the previous season's maize crop was harvested: Digester, a decomposer activator, at 4 L/ha and BioStart N, nitrogen-fixing bacteria, at 200mL/ha.
- Fertiliser (12-10-10): All blocks received 250kg/ha at sowing with a side dressing of 300kg/ha Urea in November 2013.
- Growing conditions: The dry summer period between December 2013 and March 2014 put the plants under climatic stress and this would have reduced the final yield for the crop.

Results

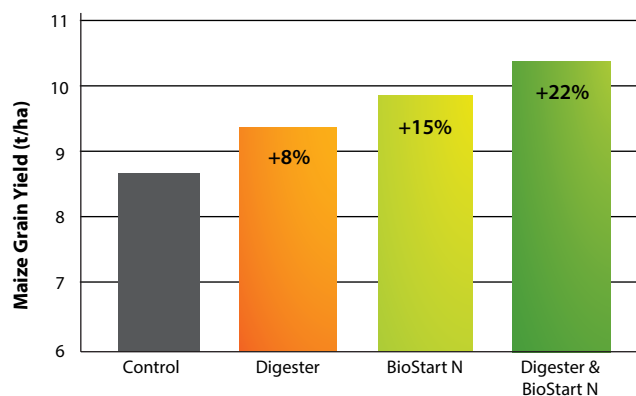
Increased Maize Grain Yield

All of the BioStart treatments increased yield, however, the combination of BioStart N and Digester was the most effective and increased yield by 22% (2 T/ha), compared to the control block.

| Treatment | Grain Yield (T/ha) | Difference (T/ha) | Relative |
|-----------------------|--------------------|-------------------|----------|
| Control | 8.7 | | 100% |
| Digester | 9.4 | 0.7 | 108% |
| BioStart N | 10.0 | 1.3 | 115% |
| Digester + BioStart N | 10.6 | 1.9 | 122% |

Note: Yield results were provided by the farmer. All moisture levels were 22% or lower at harvest.

Maize Grain Yield (t/ha) July 2014
BioStart N & Digester Manawatu Trial



Financial Returns

Based on BioStart's RRP as at June 2019: BioStart N and Digester treatment increased financial returns by \$610/ha for an investment of \$163/ha.

| | Control | Digester | BioStart N | BioStart N & Digester |
|-----------------------|---------|----------|------------|-----------------------|
| Yield (t/ha) | 8.7 | 9.4 | 10 | 10.6 |
| Gross margin (\$/ha) | \$3,481 | \$3,775 | \$3,996 | \$4,255 |
| Increase/ha | | \$294 | \$515 | \$773 |
| Product Cost | | \$75 | \$88 | \$163 |
| Gross margin increase | | \$219 | \$427 | \$610 |

"This was a challenging block as it was planted reasonably early in wet conditions and was affected by bird damage, followed by a very dry summer. This led to a low yield compared to the rest of the property. Using BioStart Digester and BioStart N lifted my yield in difficult conditions. I am very happy with the result and returns."

-Adrian Noaro, Noaro Farms

*Note: All prices exclude GST. Gross return is based on a \$400/T contract maize price. Product costs are based on BioStart's RRP as at June 2015 for BioStart N 500mL Concentrate at 200mL/ha and Digester 20L at 4L/ha. Gross margin excludes application costs and fertiliser costs. All other costs are assumed the same.

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Increased plant fresh weight, height and stem diameter

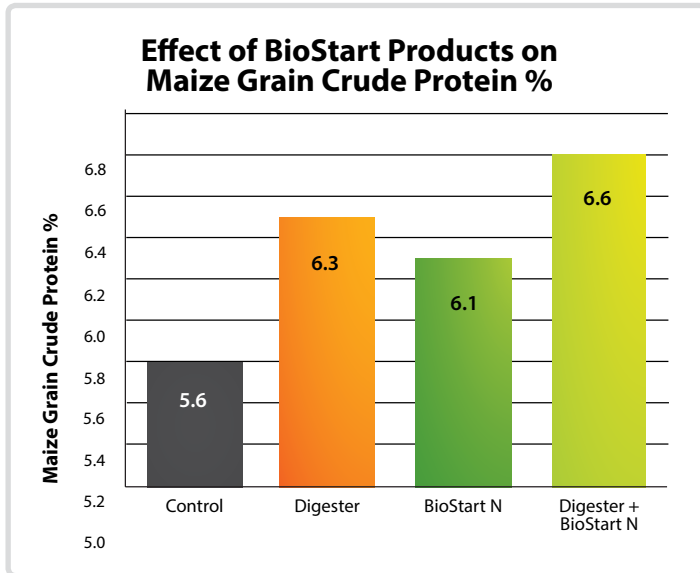
Analysis of 10 individual plants collected from each of the four treatment areas showed that the three BioStart treatments increased plant fresh weight, plant height and stem thickness when compared to the control plants.



Matt Cheer, BioStart Territory Manager Manawatu/Wairarapa, at the trial site prior to harvest

Increased grain mineral levels

Kernel mineral analysis shows Digester and BioStart N treatment produced kernels with better N availability and more minerals in the grain resulting in a higher nutritive value for livestock.



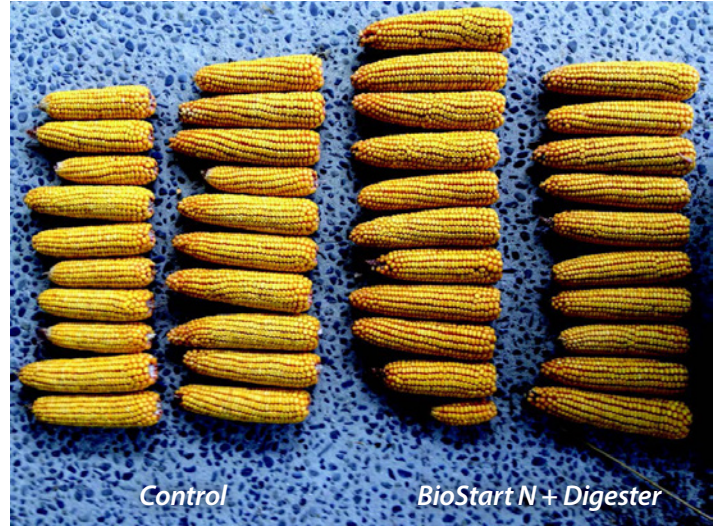
Increased kernel crude protein reflects better N availability.

Directions for use for maize grain crops

After harvest: Co-apply BioStart N Concentrate at 200mL/ha and Digester at 4L/ha on to crop trash through standard spray equipment and lightly incorporate, BioStart N contains living microbes and should be applied directly onto the soil in the late afternoon. Refer to the BioStart N label for further application instructions.

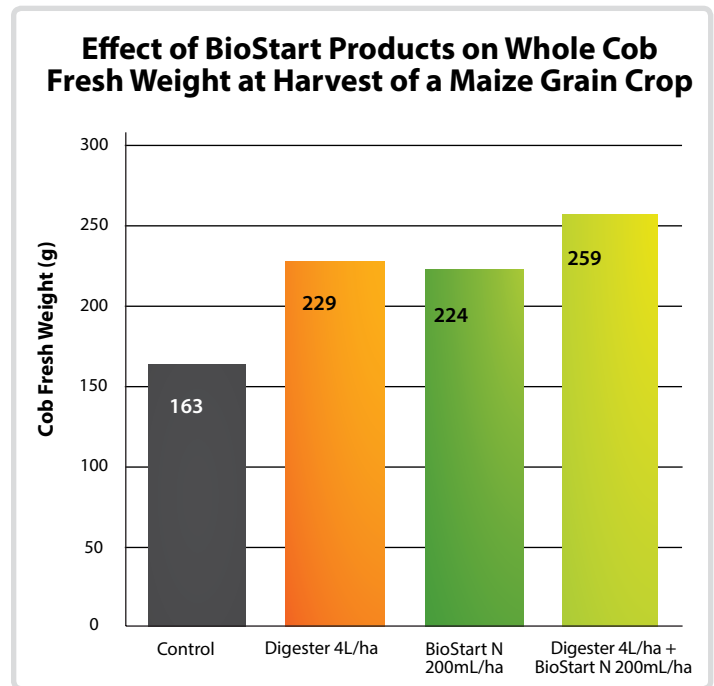
Increased cob kernels/length

The increase in grain yield for the three BioStart treatments was reflected most significantly in the increase in the number of kernels/cob length when compared to the control plants. The overall cob fresh weight also increased when compared to the control plants.



Increased cob fresh weight

The overall cob fresh weight also increased when compared to the control plants.



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