

Maize Grain

Benefit Sheet Biostart N and Digester



Biostart N is a biological fertilizer that naturally increases soil nitrogen levels.

How it works:

Biostart N contains the naturally occurring nitrogen fixing bacteria, *Azotobacter chroococcum*, which converts nitrogen from the air into plant-available nitrogen in the soil. When **Biostart N** is applied, the *A. chroococcum* becomes part of the soil and creates an association with the plant roots, providing the plant with a long-term, steady supply of nitrogen throughout the growing season in response to the plant's needs. This reduces the amount of traditional nitrogen fertilizer required.

Digester contains fermentation extracts from beneficial soil bacteria that stimulates decomposition microbes to speed up the breakdown of organic matter such as maize stubble. The sugars released by decomposition fungi breaking down stubble feed the nitrogen fixing bacteria such as *A. chroococcum*.

Trial Description

The trials were located in Te Puke, Bay of Plenty and on peat country in Opiki, Manawatu. In each trial 4 L/ha Digester and 100mL/ha of Biostart N was applied in July on to crop trash after the previous crop had been harvested. Following application the crop trash was lightly incorporated into the soil. The yield of the following maize grain crops, planted in October, was monitored at harvest.

Results

Increased Yield

BioStart N and Digester increased maize grain yield in the following by 22% (2 T/ha), compared to the control block in the Manawatu trial and 19% in the Bay of Plenty trial. Cobs were longer and plant fresh weight, plant height and stem thickness was greater.

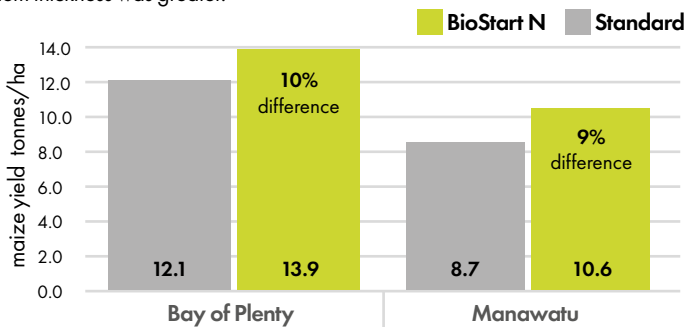


Figure 1. Increase in maize grain yield with BioStart N - Bay of Plenty and Manawatu



Increased Leaf Nutrients

Leaf and grain mineral analysis results on the Bay of Plenty trial showed that Digester and BioStart N treatments increased the levels of anionic macro elements N, P and S and other minerals (Table 1).

Increase in Grain Crude Protein

In the Bay of Plenty trial, crude protein was increased from 5.1% in the control to 8.4% in the Digester and BioStart N treated area (Table 1), an increase of 65%, and a 17% increase from 5.6% to 6.6% in the Manawatu trial.

Treatment	Leaf Mineral Test			Grain Test	
	Nitrogen	Phosphorus	Sulphur	CP	Ash
Standard	2.30%	0.19%	0.16%	5.1	1.2
BioStart N + Digester	2.70%	0.23%	0.19%	8.4	1.5
Change	17%	21%	19%	65%	25%

Table 1. Leaf nutrient analysis (50% silk) & grain nutrient analysis at harvest Bay of Plenty Trial.

Reduced Nitrogen Fertiliser Use

In the Bay of Plenty trial a December leaf nitrogen test showed that a side dressing of 300 kg/ha of urea fertiliser was not needed in the BioStart N and Digester treated areas. Thereby increasing profitability and reducing nitrogen budget for the crop.

"This was a challenging block as it was planted reasonably early in wet condition 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



Conclusion

Maize grain crops had significant increases in yield, protein and nutrient levels and a reduced requirement for urea after the application of Biostart N and Digester after harvest in the prior season.