



Marsman Estate Plantation Incorporated
Research Development Center
Soil Fertility and Plant Nutrition Section
Marsman Compound, Sto. Tomas, Davao del Norte

APPROVAL SHEET

TERMINATION REPORT
BanEX. SFPN.SPT94.0318


TITLE:

Efficacy Evaluation of Hyfer Organically Coated Urea Fertilizer on the Growth and Fruit Yield Development of Cavendish Banana

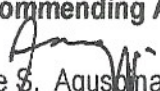
Proponent:

Agrotiger Philippines Corporation

Prepared by:


Michelle L. Abao
Agronomy Section Supervisor
Researcher, FPA-PNT 285

Recommending Approval


Lorie S. Aguilera, Ch.E.
RDC OIC Manager/
Researcher, FPA-PNT 164

Approved by:


Ely B. Elizan
Technical Services Director



Marsman Estate Plantation Incorporated
Research Development Center
Soil Fertility and Plant Nutrition Section
Marsman Compound, Sto. Tomas, Davao del Norte

Efficacy Evaluation of Hyfer Organically Coated Urea Fertilizer on the Growth and Fruit Yield Development of Cavendish Banana

LS. Aguspina¹, ML Abao², WC Pabelonia³, CA Hinayon⁴, CA Buhat⁴

ABSTRACT

The trial was conducted at Marsman Estate Plantation Inc. (MEPI), Sto. Tomas Davao del Norte from March 23, 2018 to March 8, 2019. Based on the result of the study, data on plant vegetative growth showed no significant difference among treatments in all parameters tested. While on fruit yield data, only hand calibration at the proximal had significant difference among treatments. Generally, application of T1 (Urea-2 bags/has.), T2 (Hyfer urea-1 bag/has.) and T3 (Hyfer urea-2bags/has.) had comparable effects to plant growth development and fruit yield of Cavendish banana. But in terms of numerical value, T3 produced heavier bunches than other treatments. Therefore, Hyfer Organically Coated Urea (46-0-0) fertilizer @ 2 bags/hectare is also a good source of nitrogen for Cavendish banana production.

¹OIC-Manager/Researcher, ²Researcher, ³Field Technician-⁴ Data Collector

INTRODUCTION

Hyfer Urea is organically coated urea fertilizer distributed by Agrotiger Philippines Corporation with sustained release formula and insect repelling action. Thus this study was conducted to determine the efficacy of Hyfer Organically Coated Urea Fertilizer in boosting the nutrient absorption of urea to improve plant growth development and fruit yield on Cavendish banana.

METHODOLOGY

The trial was conducted at Marsman Estate Plantation, Inc. (MEPI), Sto. Tomas, Davao del Norte from March 23, 2018 to March 8, 2019. MEPI is an established Cavendish banana plantation since 1969.

The experimental area is plain with sandy loam soil and with drip irrigation system. The experimental design was RCBD with four (4) replication per treatment. The recommendation rate, frequency and methods of application of the different treatments are presented in Table 1 below.

Table 1. Treatments

Treatment	Description	Rate per Hectare	Frequency of Application	Methods of Application
T1	Control (Urea)	2 bags of 50-kg urea (50 gm/hill)	Monthly (every 30 days)	Broadcast
T2	Hyfer Urea @ 1 bag/hectare	1 bag of 50-kg Hyfer coated urea (25 gm/hill)	Monthly (every 30 days)	Broadcast
T3	Hyfer Urea @ 2 bags/hectare	2 bags of 50-kg Hyfer coated urea (50 gm/hill)	Monthly (every 30 days)	Broadcast

Hyfer Urea Fertilizer was applied through broadcast application every month from vegetative stage of banana plants up to its fruiting stage.

The plant care operations, fruit care operations and all other banana cultural practices were done by the Production Team following the standard operating procedures of banana plantation.

The Hyfer Urea application and data collections were performed by the Research Team. Test plants were properly tagged during the trial installation for height and girth measurement and fruit yield data collection.

RESULT AND DISCUSSION:

In analyzing the data, Analysis of Variance (ANOVA) was used and Least Significance Difference (LSD) Test for Pairwise Mean Comparison of Treatment @ 5% level of significance using the Statistical Tool for Agriculture Research (STAR) version 1.0

Plant Vegetative Growth

The height and girth of the test plants were measured every 15 days from its vegetative stage (1 meter in height from the base) up to its shooting stage to determine the effect of **Hyfer Urea** on the plant growth development of Cavendish banana.

Table 2. Average Plant Height and Girth measurement as affected by the different treatments. Data gathered from March 23, 2018 to December 10, 2018.

Treatment Code	Description	Average Height of test plants (cm)	Average Girth of test plants (cm)
T1	Control Urea (2 bags/hectare)	230.6	45.60
T2	Hyfer Urea (1 bag/hectare)	225.10	45.25
T3	Hyfer Urea (2 bags/hectare)	231.93	45.89
P value		0.0988	0.8312
% CV		6.14	9.19

Based on statistical analysis of data, there were no significant difference among treatments on plant growth development. It means that the result of other treatments were comparable with the control. But numerically, T3 had better plants stand compared with other treatments.

Table 3. Average Plant Height and Girth of mother plants and follower plants at shooting stage as affected by the different treatments. Data gathered from August 15, 2018 to December 10, 2018.

Treatment Code	Description	Av. Height of mother plants @ shooting (cm)	Average Girth of mother plants @ shooting (cm)	Av. Height of follower @ shooting stage of mother plants (cm)	Av. Girth of follower @ shooting stage of mother plants (cm)
T1	Control Urea (2 bags/hectare)	289.65	65.49	132.12	19.02
T2	Hyfer Urea (1 bag/hectare)	288.32	64.81	127.45	16.64
T3	Hyfer Urea (2 bags/hectare)	290.07	66.43	138.62	19.77
P value		0.0279	0.0249	0.2663	0.2688
% CV		5.84	9.64	21.98	41.93

Based on the results indicated in table 3, it showed that there were no significant difference among treatments on its height and girth measurement at shooting stage. Results are also comparable with the control. But in terms of numerical value, T3 had better effects than the other treatments.

Table 4. Average number of functional leaves at shooting stage and at harvest as affected by the different treatments. Data gathered from August 15, 2018 to December 10, 2018 and October 31, 2018 to March 8, 2019, respectively.

Treatment Code	Description	Average Number of functional leaves at shooting	Average Number of functional leaves at harvest
T1	Control Urea (2 bags/hectare)	11.96	5.01
T2	Hyfer Urea (1 bag/hectare)	11.86	5.16
T3	Hyfer Urea (2 bags/hectare)	12.22	5.20
P value		0.0593	0.6905
% CV		5.79	20.09

One of the indicators of a healthy banana plants is the number of functional leaves at shooting stage and at harvest. For the number of functional leaves at shooting and at harvest there were no significant difference among treatments.

Fruit Yield Data

The fruits were harvested at 10th-11th week after bagging to evaluate the effects of **Hyfer Urea** in improving the yield and quality of the fruits.

Table 5. Average Fruit Hand Calibration as affected by the different treatments. Data gathered from October 31, 2018 to March 8, 2019.

Treatment Code	Description	Average Proximal hand calibration	Average Distal hand calibration
T1-	Control Urea (2 bags/has.)	43.52 a	37.6
T2-	Hyfer Urea (1 bag/has.)	42.88 b	37.47
T3-	Hyfer Urea (2 bags/has.)	43.85 a	37.85
P value		0.0001	0.3564
% CV		2.32	3.09

Means with the same letter are not significantly different

In terms of proximal hand calibration, there were significant difference among treatments. While on distal hand calibration, data showed no significant difference among treatments.

Table 6. Average Finger length as affected by the different treatments. Data gathered from October 31, 2018 to March 8, 2019.

Treatment Code	Description	Average Finger length of Proximal hand (cm)	Average Finger length of Distal hand (cm)
T1-	Control Urea (2 bags/has.)	21.52	16.80
T2-	Hyfer Urea (1 bag/has.)	21.40	16.55
T3-	Hyfer Urea (2 bags/has.)	21.59	16.94
P value		0.5688	0.0782
% CV		2.69	4.59

The length of fruit fingers at the proximal and distal hands were also measured to determine the size of the fingers. In table 6, showed that there were no significant difference among treatments for finger length measurements. Results were comparable in all treatments.

Table 7. Average Number of Hands and Bunch Weight as affected by the different treatments.
Data gathered from October 31, 2018 to March 8, 2019.

Treatment Code	Description	Average Number of Hands per bunch	Average Bunch Weight (kgs)
T1-	Control Urea (2 bags/has.)	8.50	26.75
T2-	Hyfer Urea (1 bag/has.)	8.25	26.34
T3-	Hyfer Urea (2 bags/has.)	8.85	27.24
P value		0.2372	0.4165
% CV		9.08	11.19

In table 7, data showed that there was no significant difference among treatments in terms of the number of hands produced per bunch as affected by different treatments.

For the data on bunch weight, result also showed that there was no significant difference among treatments. It means that the effects of the different treatments: T1-Control (urea), T2- Hyfer urea (1 bag/ha.), T3- Hyfer urea (2 bags/ha) on the harvested fruits were just comparable. But numerically plants applied with Hyfer urea (2 bags/ha) produced heavier bunches than other treatments.

Summary and Conclusion

Based on the result of the study, data on plant vegetative growth showed no significant difference among treatments in all parameters tested. While on fruit yield data, only hand calibration at the proximal had significant difference among treatments. Generally, based on the results, application of T1 (control), T2 (Hyfer urea-1 bag/ha.) and T3 (Hyfer urea-2bags/ha.) had comparable effects to plant growth development and fruit yield of Cavendish banana. But in terms of numerical value T3 (2 bags/ha.) produced heavier bunches than other treatments. Therefore, Hyfer Organically Coated Urea (46-0-0) fertilizer @ 2 bags/hectare is also a good source of nitrogen for Cavendish banana production.