



Mafrica Group Jobenar Raya Estate

Yield performance after
applying IBG Bio Fertilizer

Period: 2006 – Current

Location: 16 km from Tatau
town, and 68 km from Bintulu
town, Sarawak, Malaysia.

Introduction

IBG bio fertilizer application in Mafrica group started at Jobenar Raya estate at year 2006. Application started as a trial in A16 – A19 (Treatment) and A20 – A22 (Control). IBG bio fertilizer application had started and which data had been collected since year 2006. This estate has been using IBG bio fertilizer from 2006 – current year and still using. Jobenar Raya had over 2,724.94 hectare (trial area 156 ha), with palms planted on 2001 – 2002, while the whole Mafrica group of plantation has more than 40,000 ha planted of estate fully using IBG bio fertilizer. Jobenar Raya harvesting interval was 12 – 14 days. Rainfall ranging from 3,200 – 4,800 mm. Jobenar Raya is a peat soil estate. Soil type contains Anderson 3 (deep peat). The IBG application results in year 2007 – 2008 is very promising until the Mafrica management decide to fully use on all of its estate

Objective

To evaluate the efficacy of IBG Bio Fertilizer on FFB production of oil palm.

Fertilizer Program

a. Fertilizer programme for the control blocks

- To follow exactly the estate fertilizer programme recommended by Jobenar Raya.

Conventional Manuring Program				
No.	Fertilizer	Dosage	Cost/palm	Cost/ha (148 palms)
1	7:4:34	5.00 kg	RM 8.50	RM 1,258.00
2	Urea	1.00 kg	RM 1.80	RM 266.40
3	MOP	2.00 kg	RM 3.10	RM 458.80
4	Chelated ZnCuB	0.15 kg	RM 0.84	RM 124.32
	Total	8.15 kg	RM 14.24	RM 2,107.52

b. Fertilizer programme for treatment blocks

- IBG fertilizer programme was made by IBG Manufacturing Sdn. Bhd. based on the existing Jobenar Raya's fertilizer program.

IBG Bio Fertilizer Manuring Program				
No.	Fertilizer	Dosage	Cost/palm	Cost/ha (148 palms)
1	IBG OP**	50 ml	RM 4.31	RM 638.25
2	7:4:34	3.00 kg	RM 5.10	RM 754.80
3	MOP	2.50 kg	RM 3.88	RM 573.50
4	Chelated ZnCuB	0.15 kg	RM 0.84	RM 124.32
	Total	5.65 kg + 50 ml	RM 14.13	RM 2,090.87
	Total cost saving/palm		RM 0.11	

** IBG OP (IBG Oil Palm Bio Fertilizer) is product of IBG Manufacturing Sdn. Bhd.

Jobenar Raya conventional program had used 4 round of 8.15 kg of chemical fertilizer. The cost/palm was RM 14.24, and cost/ha was RM 2,107.52. By using IBG bio fertilizer program, application round was 4 round of 5.65 kg of chemical fertilizer + 50 ml of IBG bio fertilizer. The cost/palm was RM 14.13, and cost/ha was RM 2,090.87.

Method of application

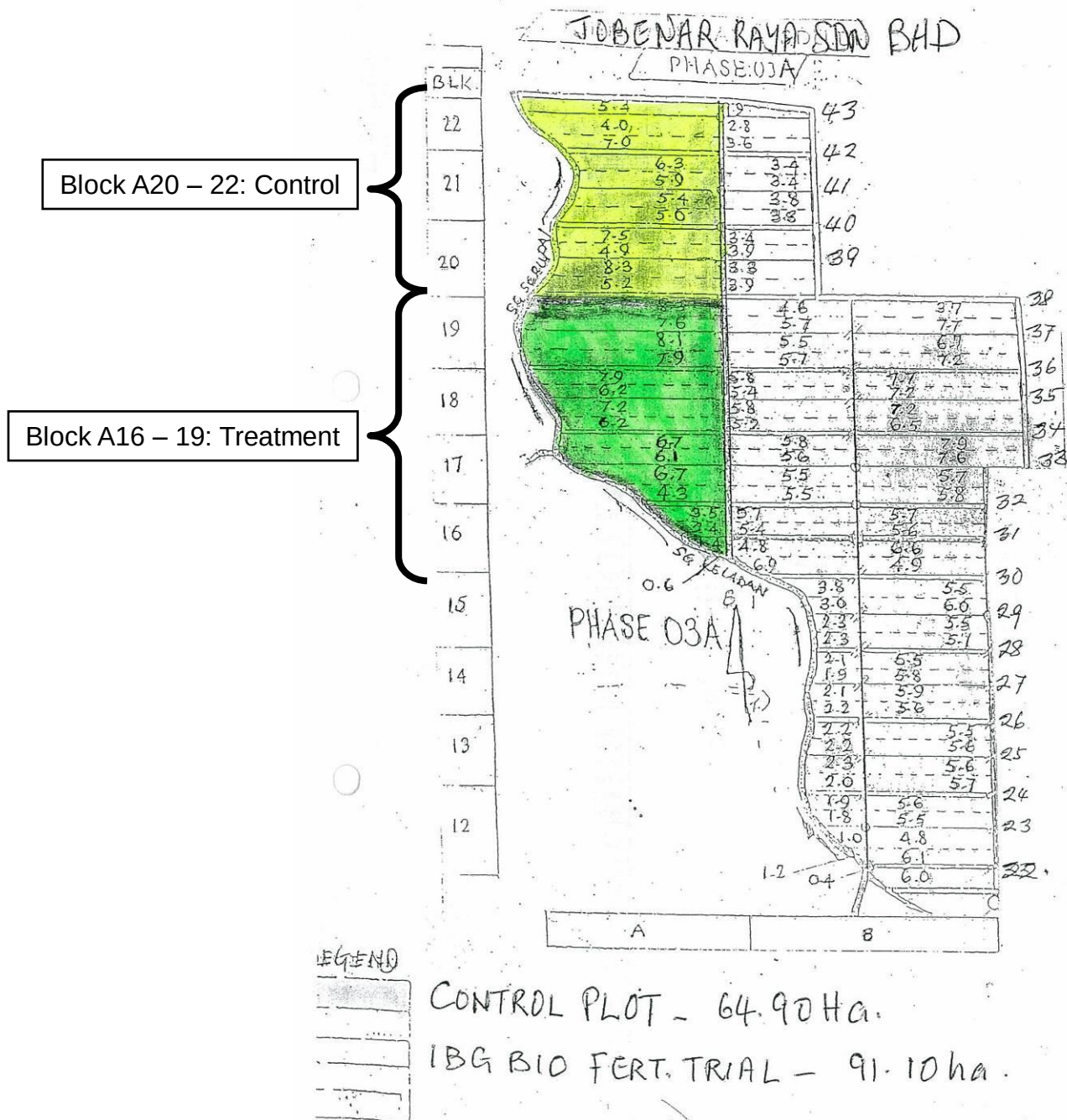
The straight/compound fertilizers are to be applied to the palm circles using ordinary practices by estate while IBG Bio Fertilizer is to be applied to the palm base using Conventional Knapsack Sprayer (CKS).

Yield record

The yield record will be updated in terms of each trial block's total metric ton every year to observe the performance of IBG Bio Fertilizer on the yield increment.

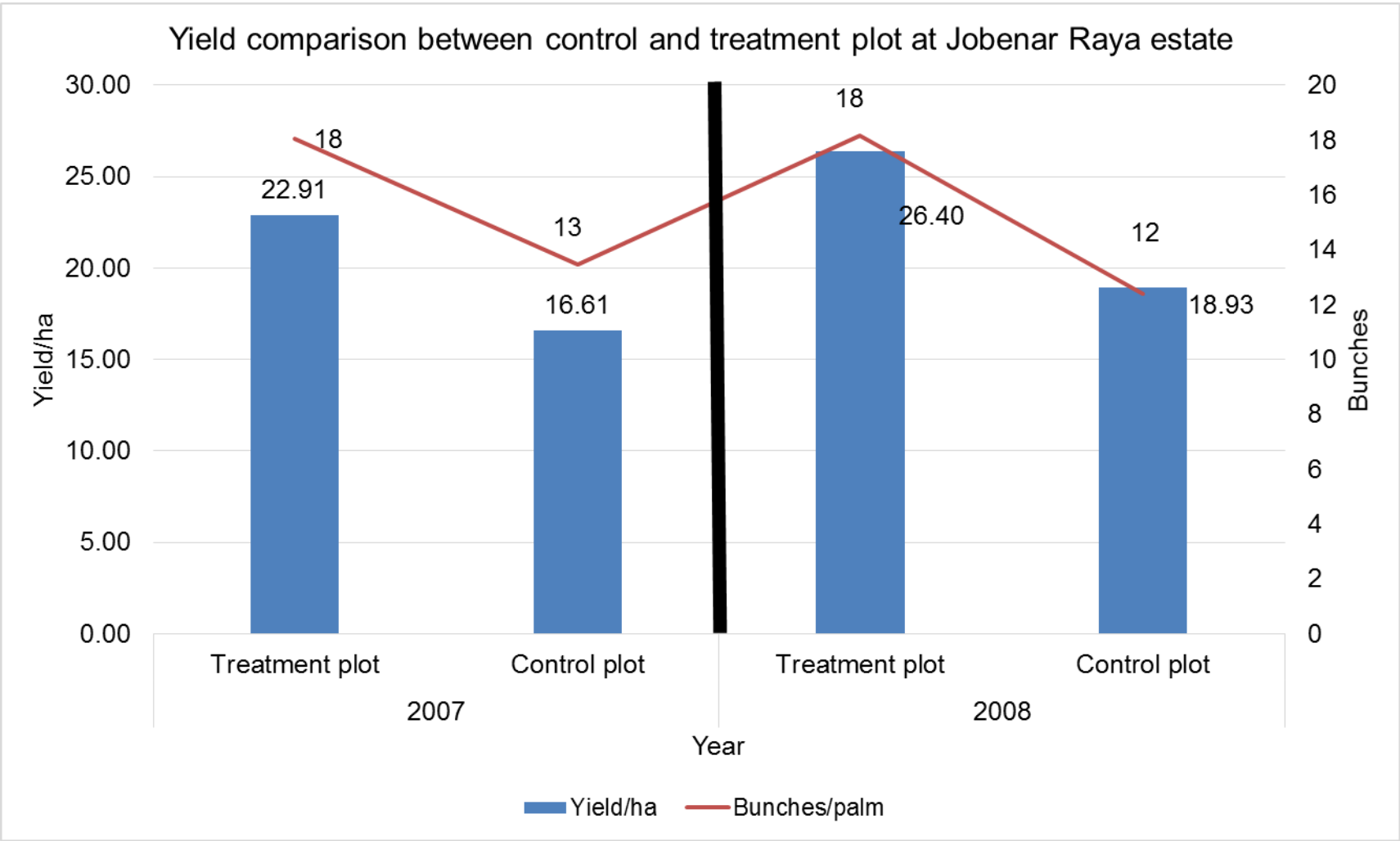
Duration: 2006 – Current

IBG bio fertilizer trial application on Jobenar Raya estate had started since year 2006. At year 2009, IBG bio fertilizer had been fully used on the estate after the promising result of Jobenar Raya.



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OGM

IBG Bio Fertilizer Application on Jobenar Raya estate



2007							
Plot	Hectare (Ha)	Total palms	Total tonnage (mt)	Yield/ha (mt)	Total bunches	Bunches/palm	Average bunch weight (kg)
Treatment Plot	91.10	12,797	2087.14	22.91	230,908	18	9.04
Control Plot	64.90	9,537	1077.80	16.61	128,450	13	8.39
			Difference	38%	Difference	34%	8%

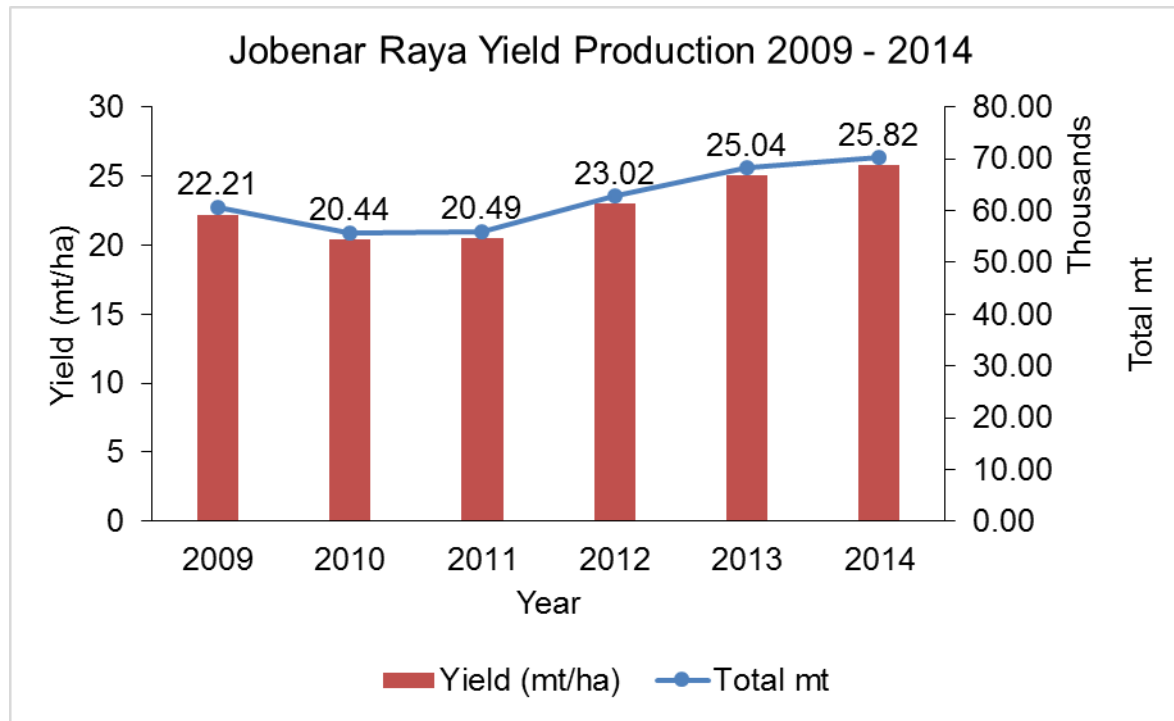
2008							
Plot	Hectare (Ha)	Total palms	Total tonnage (mt)	Yield/ha (mt)	Total bunches	Bunches/palm	Average bunch weight (kg)
Treatment Plot	91.10	12,797	2404.83	26.40	232,492	18	10.34
Control Plot	64.90	9,537	1228.50	18.93	118,216	12	10.39
			Difference	39%	Difference	47%	0%

Yield comparison

In year 2007, treatment plot had achieved 22.91 mt/ha, that is **6.30 mt/ha (38%)** more than control plot (16.61 mt/ha). In terms of bunches/palm, treatment plot (18 bunches) had **5 (34%)** more bunches than control plot (13 bunches). The ABW in treatment plot (9.04 kg) was **0.65 kg (8%)** more than control plot (8.39 kg).

In year 2008, treatment plot had achieved 26.40 mt/ha, that is **7.47 mt/ha (39%)** more than control plot (18.93mt/ha). In terms of bunches/palm, treatment plot (18 bunches) had **6 (47%)** more bunches than control plot (12 bunches). The ABW in treatment plot (10.34 kg) was almost same with control plot (10.39 kg). This estate still applying IBG bio fertilizer on current year but IBG does not record the yield anymore.

Jobenar Raya Yield Production 2009 - 2014



Year	Harvesting Ha	Total mt	Yield (mt/ha)
2009	2,724.94	60,508.16	22.21
2010	2,724.94	55,701.12	20.44
2011	2,724.94	55,846.97	20.49
2012	2,724.94	62,737.92	23.02
2013	2,724.94	68,237.36	25.04
2014	2,724.94	70,367.65	25.82

When IBG was fully used on the estate on year 2009, the effect had been seen after 1 year of application. From year 2009, the yield was 22.21 mt/ha. The yield on year 2010 and 2011 were almost same, 20.44 mt/ha and 20.49 mt/ha. From year 2011, the yield had increased **2.53 mt/ha (12.35%)** to 23.02 mt/ha in year 2012.

There was **2.02 mt/ha (8.77%)** increase from year 2012 to year 2013 (25.04 mt/ha), **0.78 mt/ha (3.12%)** increase from year 2013 to year 2014 (25.82 mt/ha). Overall, by using IBG bio fertilizer, the palm's production had increased from 20.44 mt/ha to 25.82 mt/ha in 4 years, the increment was **5.38 mt/ha (26.32%)**, average yield increment was **1.35 mt/ha/year**.

Visual improvement on Jobenar Raya's palm

2009

Bunches were well formed on the palm.



2012

The palm was growing healthy and bunches were fully ripped.



2010

The palm was growing healthy and less Potassium deficiency symptom on lower frond.



Worker spraying the IBG bio fertilizer.



The management of Mafrika was sharing ideas with their consultant Dr. Gurmit, who is an oil palm expert.

Conclusion

Block	Fertilizer (kg)	Round/year	Cost/palm (RM)	Labour cost/ha*(RM)	Cost/ha (148 palms) (RM)	Total cost/ha (RM)
Control	8.15	4	14.24	32.00	2,107.52	2,139.52
Treatment	5.65 + IBG 50 ml	4	14.13	32.00	2,090.87	2,122.87

Extra yield mt/ha	2.19*
Average price/mt	RM 460.00
Revenue	RM 1,007.40
Cost variance/ha	RM 16.65
Extra earning/ha	RM 1,024.05

* Labour cost/ha (RM 8 per round) and extra yield mt/ha are based on Usaha Sepadan assumption.

IBG bio fertilizer apply on Jobenar Raya estate on January and July every year with the dosage of 50 ml/palm.

In conclusion, by using IBG bio fertilizer, average yield increment was 2.19 mt/ha*. With the price of CPO RM 2,350, the average price/mt was RM 460. Revenue was $RM\ 460 \times 2.19 = RM\ 1,007.40/ha$. With the fertilizer cost variance RM 16.65/ha, extra earning was $RM\ 1,007.40 + RM\ 16.65 = RM\ 1,024.05/ha$. The extra yield of 2.19 mt/ha, together with the fertilizer cost saving, had become a revenue to the estate, contributed RM 1,024.05/ha.

In year 2014, Jobenar Raya had achieved total yield of 70,367.65 mt for the whole estate (total area 2724.94), this estate had attained **25.82 mt/ha**, which is one of the highest yield estates in Sarawak. This is the result from good management, great teamwork and wise fertilizer usage in plantation.

Appendix – Testimony

PALM GROUP HOLDINGS SDN.BHD. (462042 - M)

(Member of Mafrica Group of Companies)

25.1-25.2, Level 25, Wisma Sanyan,

No.1, Jalan Sanyan, 96000 Sibul, Sarawak, Malaysia

Telephone: + 6084-332155 / 0198277155, Fax: + 6084-332153

28th Aug 2010

TO WHOM IT MAY CONCERN

Ladang Jobenar Raya Sdn.Bhd commenced using IBG Oil Palm Bio Fertilizer combined with Chemical Fertilizer for oil palm growth and sustainable yield improvement in 2006 until now.

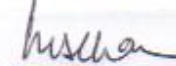
Over the past 4 1/2 years of usage of IBG Bio- Fertilizer, the average yield increase was 18.25% as compared over the control blocks.

For sustainable palm oil production, integrated use of chemical and bio-fertilizer has shown to have a significant improvement in sustaining soil health through earthworm cast formation on the soil surface for oil palm production, reduction dosage of NPK by positive improvement in terms of foliar nutrients level, cost saving and good yield improvement by about 20% over the complete usage of conventional fertilizers.

Currently, our group of eight peat and mineral soils oil palm estates covering a hectareage of 18,885.10 hectares is using the IBG Bio Fertilizers on a large and commercial scale.

For best results, IBG Bio-Fertilizer should be integrated with mineral fertilizers and the latter can be reduced by 20 - 30%.

Yours faithfully,



CHAN WING SAN
Operations General Manager



Appendix - Mafrica IBG Bio Fertilizer Quantity Purchased

Mafrica IBG Bio Fertilizer Quantity Purchased	
Year	IBG Bio Fertilizer Quantity purchased (bottles)
2006	200
2007	255
2008	5,940
2009	19,246
2010	25,535
2011	30,040
2012	32,737
2013	34,125
2014	36,406
2015	42,509

Other Mafrica Estates that have used IBG bio fertilizer
Palmcol Sdn. Bhd.
Jobenar Raya Sdn. Bhd.
Rosebay Enterprise Sdn. Bhd. (Rosebay 1 & 2)
Palmraya Pelita Sikat Platation Sdn. Bhd.
Victoria Square Development Sdn. Bhd.
Saradu Plantation Sdn. Bhd.
Worldsign Harvest Sdn. Bhd.
Titasa Sdn. Bhd.
Palmcol Balingian 2
Spapa Oya
Saradu Balingian

Appendix – Purchase Order

Matrica Maytrading Sdn Bhd (708806-K)

A Member of Matrica Group of Companies

2nd Floor, No. 11, Jalan Mission Sibu Sarawak Malaysia 98000
Tel : +60-84-327228 Fax : +60-84-331586

VIA FACSIMILE

PURCHASE ORDER

IBG Manufacturing Sdn Bhd
No.3, Jalan TPP 3, Taman Perindustrian Putra, Puchong, Selangor.
Malaysia 47130
Tel : 03-80704797 Fax : 03-80704161
Attn : Dato' Yeap Siaw Ping

Number : MM/P15010793
Date : 15 January, 2015
Page No : 1 of 1
No of Print : 1

No	Description Part No/Item Code	Qty UOM	Unit Price (MYR)	Amount (MYR)
Reference No : JR-11 R14110081 /				
MM/S15010371				
1.	AGR00211 IBG OIL PALM BIOFERTILIZER - Malaysia Remarks: DELIVERY PERIOD ON JUNE'2015	2,945 BOT @4LTR/BOT	345.00	1,016,025.00
GRAND TOTAL			MYR*****1,016,025.00	

The grand total of MYR*****1,016,025.00 is the nett amount for our Purchase Order No. MM/P15010793.
Thank you.

PO Number: MM/P15010793
th
Purchase Order 15 January
2015
RM 345/bottle x 2,945 bottles
IBG OP** = RM 1,016,025

Total = RM 1,016,025

** IBG OP (IBG Oil Palm Bio
Fertilizer) is product of IBG
Manufacturing Sdn. Bhd.

Invoice To : Matrica Maytrading Sdn Bhd
Delivery Period :
Notes : Please state our Purchase Order No. & Ref on your
D.O. and Invoice.

Delivery To : Jobenar Raya Site
km70 jalan sibu-btu dalam daerah Bintulu
Buan Land district (Tatau)
Tel : +6084-856990 Fax : +6084-856991
Attn : Mr. Lau Heng Sung

Prepared By :

Verified By :

Authorized By :

Cheng Khing Ping
Date : 15/01/15

Date : 19/1/2015

Date : 24/1/2015 IBG01

Mafrica Maytrading Sdn Bhd (708806-K)**Member of Mafrica Group of Companies**Floor, No. 11, Jalan Mission Sibit Sarawak Malaysia 98000
Tel: +60-84-322728 Fax: +60-84-331596**Top Urgent**

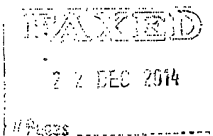
FACSIMILE

PURCHASE ORDER3 Manufacturing Sdn Bhd
3, Jalan TPP 3, Taman Perindustrian Putra, Puchong, Selangor.
Malaysia 47130
Tel: 03-80704797 Fax: 03-80704161
Attn: Dato' Yeat Siaw PingNumber : MM/P14121209
Date : 18 December, 2014
Page No : 1 of 1
No of Print : 1

Description Part No/Item Code	Qty UOM	Unit Price (MYR)	Amount (MYR)
Reference No : JR-11 R14110080 W/S14120565 AGR00211	2,945 BOT @4LTR/BOT	345.00	1,016,025.00
IBG OIL PALM BIOFERTILIZER - Malaysia Remarks: DELIVERY PERIOD- JAN'2015			
GRAND TOTAL		MYR*****1,016,025.00	

The grand total of MYR*****1,016,025.00 is the nett amount for our Purchase Order No. MM/P14121209.
Thank you.PO Number: MM/P14121209th**Purchase Order 18th**
December 2014RM 345/bottle x 2,945 bottles
IBG OP** = RM 1,016,025

Total = RM 1,016,025

** IBG OP (IBG Oil Palm Bio
Fertilizer) is product of IBG
Manufacturing Sdn. Bhd.Invoice To : Mafrica Maytrading Sdn Bhd
Delivery Period :
Notes : Please state our Purchase Order No. & Ref on your
D.O. and Invoice.Delivery To : Jobenar Raya Site
km70 jalan sibu-btu dalam daerah Bintulu
Buah Land district (Tatau)
Tel : +6084-856880 Fax : +6084-856881
Attn : Mr. Lau Hieng Sung

Prepared By :

Verified By :

Authorized By :

Lau Hieng Khing Ping
Date : 18/12/2014

Date : 18/12/2014

Date : 19/12/2014 IBG01

Mafrica Maytrading Sdn Bhd (708806-K)**A Member of Mafrica Group of Companies**25,1-25.2, Level 25, Wisma Sanyan, No.1, Jalan Sanyan, Sibul Sarawak Malaysia 68000
Tel : +60-84-322728, 084-332155 Fax : +60-84-331598

VIA FACSIMILE

PURCHASE ORDERIBG Manufacturing Sdn Bhd
No.3, Jalan TPK 1/3, Taman Perindustrian Kinrara, Puchong, Selangor Darul Ehsan.
Malaysia 47100
Tel : 03-80704797 Fax : 03-80704161
Attn : Dato' Yeap Siaw PingNumber : MMP13120417
Date : 5 December, 2013
Page No : 1 of 1
No of Print : 1

No	Description Part No/Item Code	Qty UOM	Unit Price (MYR)	Amount (MYR)
Reference No : JR-11 R13110002 /				
MM/S13110346				
1.	AGR00211 IBG OIL PALM BIOFERTILIZER - Malaysia	2,254 BOT @4LTR/BOT	345.00	777,630.00
Remarks: DELIVERY PERIOD- DECEMBER 2013 - JANUARY 2014				
GRAND TOTAL				MYR*****777,630.00

The grand total of MYR*****777,630.00 is the nett amount for our Purchase Order No. MM/P13120417.
Thank you.PO Number: MM/P13120417th**Purchase Order 5**
December 2013RM 345/bottle x 2,254 bottles
IBG OP** = RM 777,630

Total = RM 777,630

** IBG OP (IBG Oil Palm Bio
Fertilizer) is product of IBG
Manufacturing Sdn. Bhd.

PLEASE CHOP SIGN & RETURN

FAXED

09 DEC 2013

Pages

Invoice To : Mafrica Maytrading Sdn Bhd
Delivery Period : 30/01/2014
Notes : Please state our Purchase Order No. & Ref on your
D.O. and Invoice.Delivery To : Jobenar Raya Site
km70 jalan sibul-btu dalam daerah Bintulu
Buan-Land district (Tatau)
Tel : +6084-856890 Fax : +6084-856891
Attn : Mr. Lau Heng Sung

Prepared By :

Wong Siaw Hui

Date : 8/12/13

Verified By :

Date : 8/12/13

Authorized By :

Date : 9/12/13

IBG01