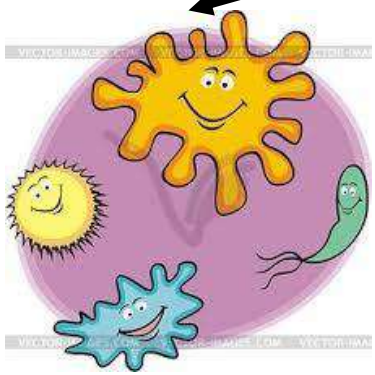
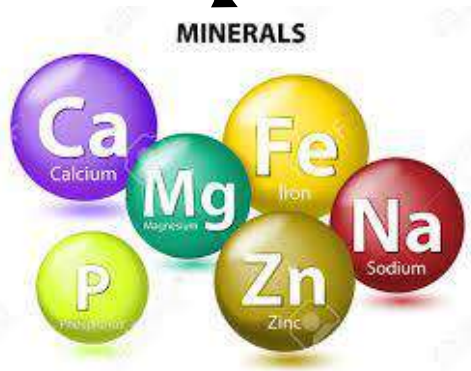

IBG
(649448-K)
IBG 生物肥料系列
通过创新生物技术发展可持续农业

天然的土壤有些什么





益菌　　真菌，放线菌，小昆虫　　有机质　　巨量与微量化学元素　　水分

天然的土壤有些什么

1. 细菌
   - 分解有机质
   - 循环养分
   - 制造腐植土
   - 固氮
   - 促进植物的生长

2. 有机质
   - 成为植物的营养库存
   - 给予细菌食物
   - 回复土壤的养分

天然的土壤有些什么

3. 巨量和微量元素

- 碳、氢，氧
- 氮
- 磷
- 钾
- 钙
- 镁
- 硫
- 锰
- 铜
- 锌
- 钼
- 鹏
- 氯
- 铁

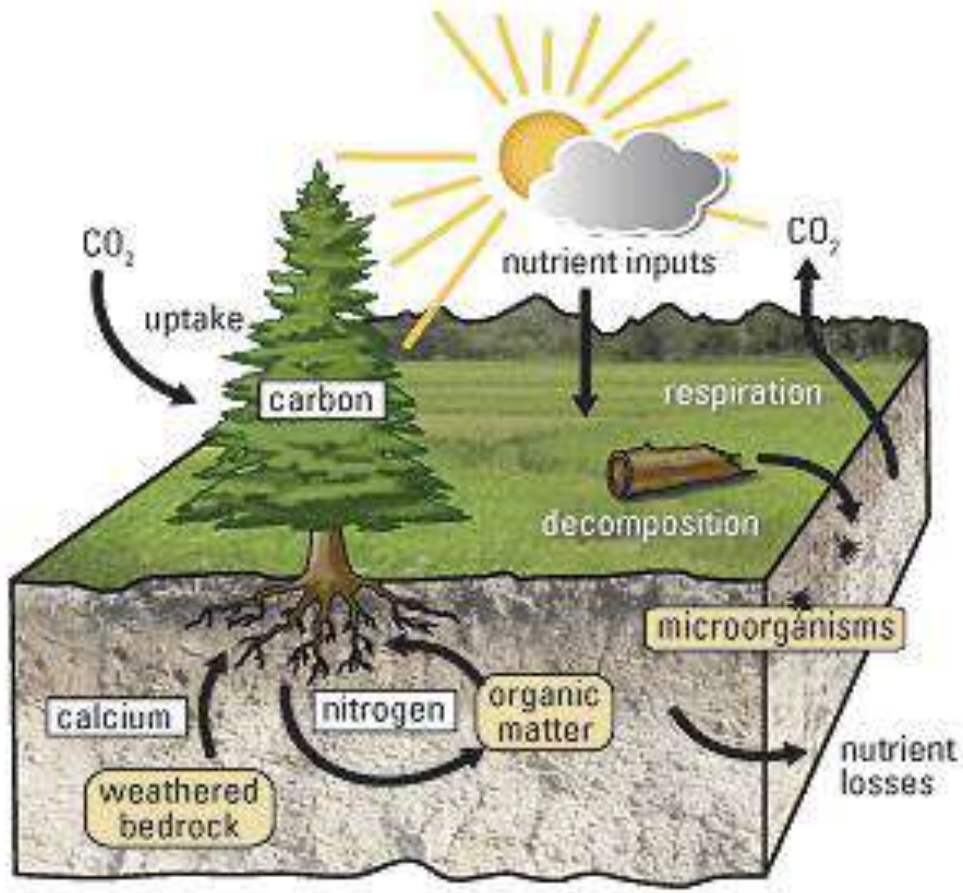
让植物健康生长，形成食物和对抗疾病等

为什么保护土壤那么重要

- 土壤 – 为植物提供水分，营养，空气和保护。
- 植物 – 为人类提供食物和保护。
- 人类 – 但人类却大量使用化肥而破坏土地

- 当土壤因酸性受损时，土壤的免疫系统会降低。不健康的土壤不会产生良好的植物。植物的病症也是变得严重。因此植物不会对人类产生优质的食物。 所以，保护土壤，保障人类健康是重要的。

原始森林阶段


CO_2
uptake
carbon
nutrient inputs
CO_2
respiration
decomposition
microorganisms
calcium
nitrogen
organic matter
nutrient losses
weathered bedrock

农根地开发阶段

化学肥料的重要性

- 土壤含有营养素的天然储备，但这些营养素很多是植物无法获得的形式。
- 这些营养通过天然的分解仅施放少部分，而且这个释放过程太慢，无法补偿农业生产中所需要的营养物质并满足农作物的需求。
- 植物生长需要至少16种营养元素，所以每次被农作物带走的元素是非常多的，被带走多少，就要补充多少，这是对土地的公平交易。
- 因此，为了补充土壤营养的不足，化学肥料被推荐使用以增加产量，进而增加农民盈利。

化学肥料的好处与坏处

早期使用

好处

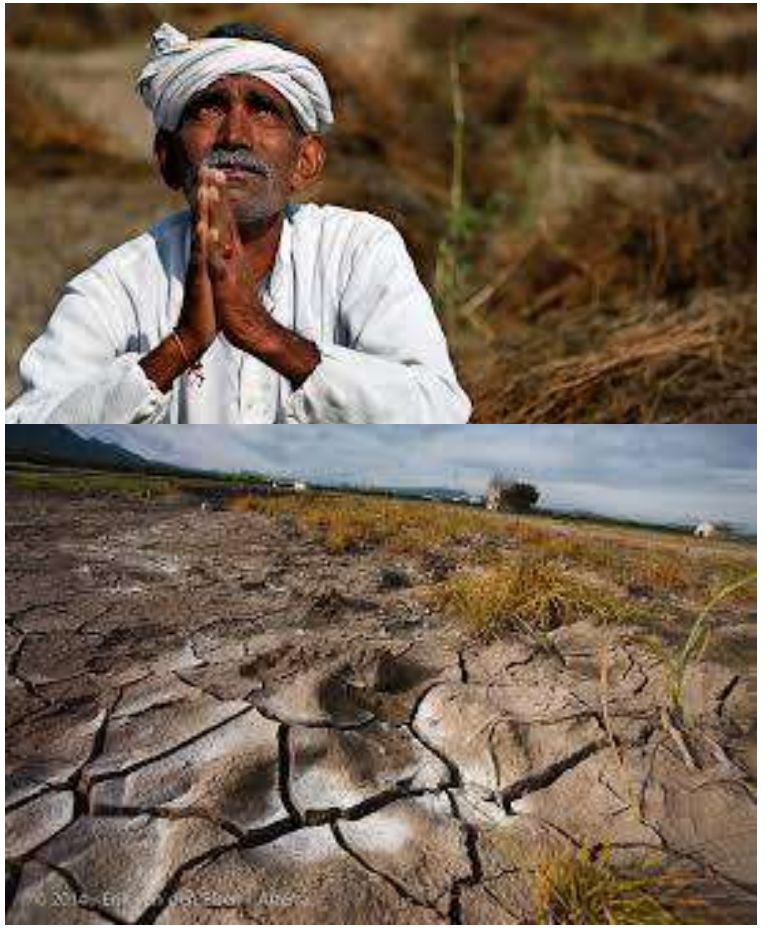
- 农作物生长快速而且肥大。
- 营养丰富。
- 支撑植物的生长。
- 提高产量。

化学肥料的好处与坏处

坏处

- 植物毒性和污染。
- 导致土壤枯竭，并导致土壤变酸。
- 干扰自然土壤生态学，破坏土壤结构。

长期使用



破坏的土壤与健康的土壤

肥料的种类

化学肥料

西药

效果快速，但有很多坏处。

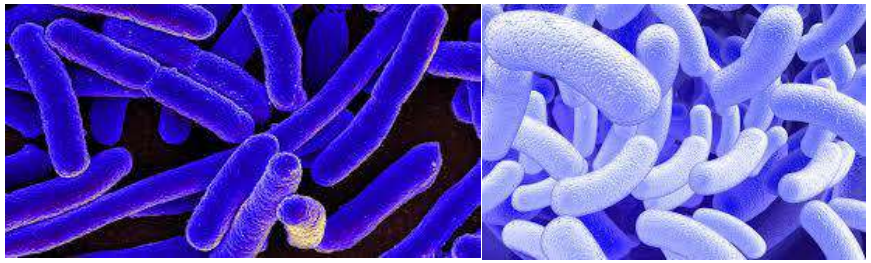
- 长期使用化学肥料 = 长期服用西药 = 虽然快速和有效但有很多副作用。

肥料的种类

有机肥料

中药/传统药方

效果慢，但没有副作用。



细菌/微生物

保健品

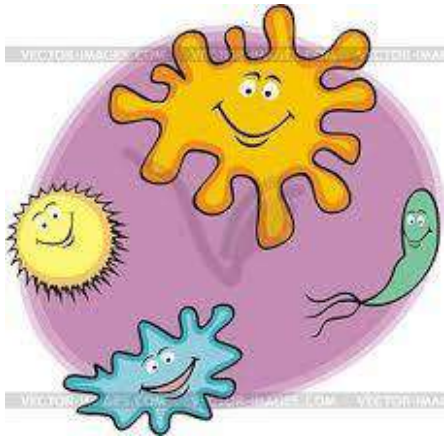
相对的安全和可靠，长期使用能够修复和保育土壤。

什么是IBG生物肥料

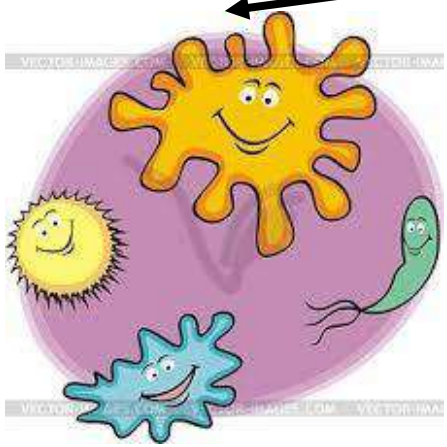
土壤保健最佳的组合

有机质

细菌/微生物



IBG生物肥料里面有什么



1克有超过1千万的有益微生物

芦荟、海藻、腐殖酸、氨基酸、鱼精

- 生物肥料里面的含菌量每克一定要超过百万单位才能称之为生物肥料。我们的产品每克的含菌量至少达到千万单位。

- 再者，生物肥料如果只有良菌的存在，良菌在没有有机质的情况下，也不能存活很久，良菌必须要在有机质和微巨量元素的配合下，才能达到回复土壤的效果。我们完美的有机物质混合物将使微生物能够存活在土壤中。

- 这两个的组合就是土壤里面原本拥有的东西。IBG生物肥料能够提供完整的元素供植物生长，让植物吸收的更好。

IBG MANUFACTURING SDN. BHD. 199801017236 (473365-H)
No. 3, Jalan TPP 3, Taman Perindustrian Putra, 47130 Puchong, Selangor Darul Ehsan.
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IBG Manufacturing Sdn. Bhd. accredited by Standards Malaysia under accreditation number 494 for Chemical and Microbiology Tests

TEST REPORT

Customer: Production Department
IBG Manufacturing Sdn Bhd
No. 3, Jalan TPP 3,
Taman Perindustrian Putra,
47130 Puchong,
Selangor Darul Ehsan.

Lab Number : IBG-QC-02523
Date received : 10th July 2023
Date tested : 10th – 12th July 2023
Date reported : 12th July 2023

Sample description : Liquid Biofertilizer
Sample marking : Durian 05/07/23 MAS-F030-2307-01

Test parameter	Method	Unit	Results
Total plate count, PCA @ 37°C for 48 hours	In House Method, TM-IBG-03-001, based on AS 1766.1.3, 1991	cfu/g	1.1×10^8
pH @ 23.0°C	In House Method, TM-IBG-02-004, based on pH meter	-	4.02
*Total Organic Matter	In House Method, TM-IBG-02-025, based on AOAC 967.05, MS 417: Part 2: 1994, Clause 3 & MS 417: Part 2: 1994, Clause 5	% w/w	55.10

* Not accredited

总细菌计数: 10^7 cfu/克

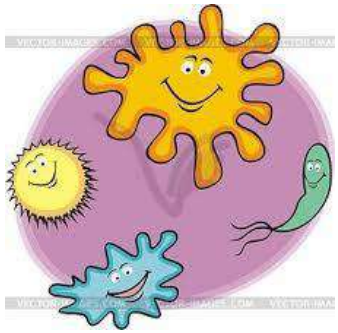
LEE CHOON HOONG
Senior Microbiologist
BSc (Hons) in Biomedical Science

Dr. LINDA NG YIAN YIAN
Chief Technical Officer
BSc (Hons), MSc, PhD, FMIC
(IKM No.: F/0100/1958/89/92/13)

The results reported relate only to the items tested as received.
This test report shall not be reproduced except in full without the approval of the laboratory

ISO/IEC 17025
SG08/01790

IBG生物肥料内含



有益微生物 - 改善吸收和分解有机物质，一克有超过1千万的有益微生物。

芦荟、海藻、腐殖酸、氨基酸、鱼精 - 改善土壤有机质含量。

IBG生物肥料的施放

分量

请注意，IBG生物肥料替代了化学肥料的30％。 因此，使用IBG生物肥料后，您的材料成本不会改变。

为何选择IBG生物肥料

- 提高植物的生产效率。
- 提供了一种经济可行的支援。
- 土壤健康保护。
- 有效地帮助植物吸收养分。
- 减少化肥的用量。
- 降低植物的根的疾病。
- 节省储存室的空间。

一个健康的人不太可能患上任何疾病。

一个健康的植物将不太可能得到任何疾病。

土壤用IBG生物肥料处理后，微生物可以帮助有机物分解和土壤矿化。 在分解过程中释放氮和磷，从而可以减少氮肥和磷肥。

International Journal of Microbiology Research, ISSN: 0975-5276, Volume 1, Issue 2, 2009, pp-23-31

Biofertilizers: A novel tool for agriculture

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[2]Rai foundations
[3]Padmashree Dr. D.Y. P
[4]V.V.P. Engir
[5]Sindhu Maha
[6]Dr. D. Y. Pat

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Original scientific paper

The possible role of bio-fertilizers in agriculture

ianna Marozsán[1], Szilvia Veres[2], Éva Gajdos[2], Nór

stry Corporation,
gricultural and Techr
hysiology,

Chapter 1

Potential and Possible Uses of Bacterial and Fungal Biofertilizers

Francesco Gentili
Ari Jumpponen

INTRODUCTION

During the past four decades we have witnessed the doubling of the human population and a concurrent doubling of food production (Vance, 2001). Plant nutrition has played a key role in this dramatic increase in demand for and supply of food. Increases in crop production have been made possible through the use of commercial man-made fertilizers. The use of nitrogen (N) fertilizer has increased almost ninefold and phosphorus (P) more than fourfold (Vance, 2001). The tremendous increase of N and P fertilization, in addition to the introduction of highly productive and intensive agricultural systems, has allowed these developments to occur at relatively low costs (Schultz et al., 1995; Vance, 2001). The increasing use of fertilizers and highly productive systems have also created environmental problems such as deterioration of soil quality, surface water, and groundwat
as air pollution, reduced biodiversity, and suppr
(Schultz et al., 1995; Socolow, 199
Environmental poll
be either direct or indi
aged use of fertilizers
and denitrification. Indirectly, the production (use of fossil fuel
Bosch process) and transport (combustion of fo
in airborne CO_2 and N pollut
terrestrial ecos

CHILEANJAR

EFFECTS OF BIOFERTILIZERS COMBINED WITH DIFFERENT SOIL AMENDMENTS ON POTTED RICE PLANTS

Arshad Javaid[1]*

International Journal of Agriculture: Research and Review. Vol., 2 (6), 699-704, 2012
Available online at http://www.ecisi.com
ISSN 2228-7973 ©2012 ECISI Journals

ECISI

BIOFERTILIZER AFFECTS YIELD AND YIELD COMPONENTS OF WHEAT

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ABSTRACT: In order to study effects of biological fertilizers, chemical fertilizers and bacterial growth enhancers (PGRP) on yield and yield factors of wheat (*Triticum aestivum*) and to reduce chemical fertilizers and improve soil and plant nutrition, an experiment was carried out in research field of Agriculture and Natural Resources University of Ramin, Iran in crop year of 2009-2010. The experiment was performed in split plot-factorial design arranged in a complete randomized block design with three replications. In this study, chemical factor was the base plot in three levels (Control, half of local recommended and total local recommended) and the biological fertilizer (Nitroxin and bio-phosphor) were the secondary factors with three levels (Control, 0.5 and 1 liter per hectare). Results indicate that the use of biological fertilizers lead to significant differences in grain number per spike, grain weight, biological yield and harvest index. Combined treatments of microorganisms (Aztv bacteria and Pesudomonas fluorescent) and chemical fertilizers had the greatest impact on the studied traits. Analyze of variance suggest that highest yield of grain was achieved by complete use of all three fertilizers in recommended fertilizer rate compared to control treatment. Overall, the results showed that, biological fertilizers have a significant role in improving yield and yield components of wheat, and Bio-fertilizers with chemical fertilizers may be useful to increase the yield and reduce environmental pollution.

Key words: wheat, yield, yield components, Biofertilizer.

INTRODUCTION

Given the increasing world population, more than ever feel the need to increase food production. For this purpose, four solutions (increase in area under cultivation, yield per unit area, yield per unit
achieved. In agronomic techniques, by using high quality inputs, agronomic management practices etc. can raise yield per unit area (khavazi *et al.*, 2005). S

While utilize Bio-fertilizers importing a large population of effective microorganisms in the active field of root system,
provides sustainable agriculture (Muhammad *et al.*, 2008). Production of Rhizobium inoculums types of biological fertilizers, especially in developed countries and

许多研究表明，生物肥料的使用确实有助于植物生长和可持续的土壤保养

马来亚大学和其他大学所做的研究，发表于2020年12月19日

processes

MDPI

Article

The Effects of Biofertilizers on Growth, Soil Fertility, and Nutrients Uptake of Oil Palm (Elaeis Guineensis) under Greenhouse Conditions

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Received: 5 August 2020; Accepted: 10 September 2020; Published: 19 December 2020

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Abstract: The full dependency on chemical fertilizers in oil palm plantation poses an enormous threat to the ecosystem through the degradation of soil and water quality through leaching to the groundwater and contaminating the river. A greenhouse study was conducted to test the effect of combinations of biofertilizers with chemical fertilizer focusing on the soil fertility, nutrient uptake, and the growth performance of oil palms seedlings. Soils used were histosol, spodosol, oxisol, and ultisol. The three treatments were T1: 100% chemical fertilizer (NPK 12:12:17), T2: 70% chemical fertilizer + 30% biofertilizer A (CF + BFA), and T3: 70% + 30% biofertilizer B (CF + BFB). T2 and T3, respectively increased the growth of oil palm seedlings and soil nutrient status but seedlings in oxisol and ultisol under T3 had the highest in almost all parameters due to the abundance of more efficient PGPR. The height of seedlings in ultisol under T3 was 22% and 17% more than T2 and T1 respectively, with enhanced girth size, chlorophyll content, with improved nutrient uptake by the seedlings. Histosol across all treatments has a high macronutrient content suggesting that the rate of chemical fertilizer application should be revised when planting using the particular soil. With the reduction of chemical fertilizer by 25%, the combined treatment with biofertilizers could enhance the growth of the oil palm seedlings and soil nutrient properties regardless of the soil orders.

Keywords: plant growth promoting rhizobacteria; oil palm seedlings nursery; biofertilizers; chemical fertilizer

1. Introduction

The agriculture sector is considered as one of the economy pillars in many developing nations [1]. However, continuous use of agrochemicals such as chemical fertilizers and pesticides in this sector is detrimental to human health such as infant methemoglobinemia [2] and which also cause ecological imbalance [3,4]. The use of chemical fertilizer will also cause air and ground water pollution resulting

The temperature ambience was 28–33 °C. The experiments were conducted in the Complete Block Design (CBD) with four replicates for each treatment in a single trial. Liquid biofertilizer A (BFA) (effective microorganisms: 1×10^7 CFU/mL) and biofertilizer B (BFB) (effective microorganisms: 1×10^6 CFU/mL) were purchased from local Malaysian manufacturers. BFA consists of *Bacillus* spp. such as *Bacillus cereus* JCM 2152, *Bacillus amyloliquefaciens* strain MPA 1034 and *Bacillus tequilensis* strain 10b *Lactobacillus* spp.; *Azospirillum* spp. and *Rhizobium* spp. Meanwhile, BFB consists of a very diverse group of microbes: Actinomycetes such as *Kocuria rhizophila*, *Arthrobacter methylotrophus*, *Bacillus* spp. such as *B. pumilus*, *B. subtilis* (subspecies Spizizenii), *B. vallismortis*, *B. Thurengiensis*, *B. mycoides*, *B. mucilaginosus*, *Brevibacillus reuszeri*, *Paenibacillus polymax*, and *Paenibacillus azoreducens*. *Azospirillum brasilense* and fungus such as *Aspergillus niger* and *Aspergillus awamori*; yeast such as *Saccharomyces cerevisiae* Hansen were also the beneficial microbes contained in the biofertilizer. The micro and macro nutrient with the organic matter of the biofertilizers were listed in Table 2. NPK blue with the formulation ratio of (12 N:12 P_2O_5:17 K_2O: 2 MgO + TE) was used as the chemical fertilizer. The experiment consists of three treatments: [T1] 100% of CF, [T2] 70% CF + 30% BFA, and [T3] 70% CF + 30% BFB. The amount and dose of fertilizers applied was listed in Table 3. Treatments were done for four rounds (every 30 days).

Table 1. Chemical properties of histosol, spodosol, ultisol, and oxisol.

Soil Properties	Histosol	Spodosol	Ultisol	Oxisol
pH	3.23	5.49	3.83	4.33
Total N (%)	0.61	0.34	0.10	0.12
Availlable P (mg/kg)	75.81	36.66	25.99	32.78
Exchangeable K (mg/kg)	455.2	487.93	358.33	471.1

Table 2. The micro and macro nutrient, and the organic matter of the biofertilizer A and biofertilizer B.

Micro and Macro Nutrients	Biofertilizer A	Biofertilizer B
N	7%	5–6%
P	6%	8–9%
K	9%	10–11%
Ca	2%	-
Mg	1%	0.5–1.0%
Su	1%	-
Bo	0.5%	0.9–1.1%
Fe	50 ppm	282 ppm
Cu	15 ppm	18.4 ppm
Mn	10 ppm	35.8 ppm
Zn	15 ppm	51.4 ppm
Mo	12 ppm	-
Organic matter	Aloe vera Seaweed extract Fulvic acid Amino acid Protein	Aloe vera Seaweed extract Humic acid Amino acid Fish emulsify

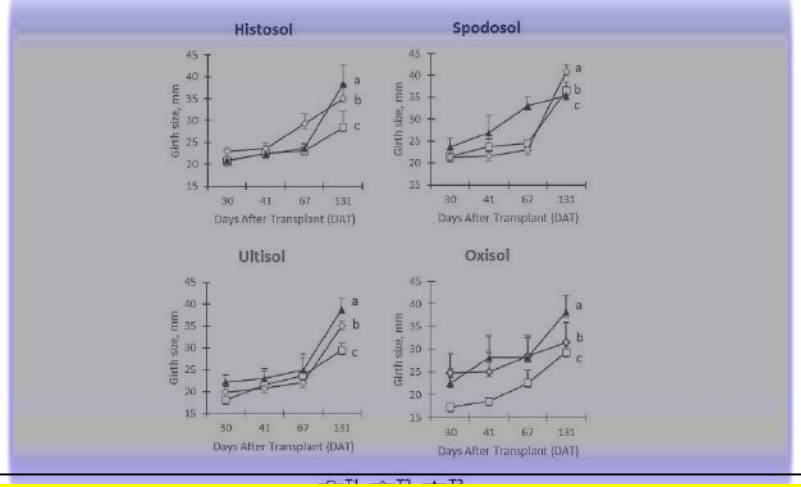
生物肥料B = IBG
生物肥料

Table 3. Chemical fertilizer and biofertilizer application. The biofertilizer was diluted with 200 mL of distilled water before applied to a single seedling.

Month	Control Plot Dosage per Palm (g seedlings^{-1}) 100% Chemical Fertilizer	Treatment Plot (NPK 12-12-17-2 + TE) 75% Chemical Fertilizer	Biofertilizer (mL)
1	15	10	2
2	20	15	2
3	25	20	3
4	30	25	3

T1 = 100% 化学肥料
T2 = 生物肥料A
T3 = 生物肥料B = IBG 生物肥料

depicted the highest chlorophyll reading throughout the last two months of treatment period. The chlorophyll content of seedlings in T3 planted using histosol declined after 30 DAT but increased after 41 DAT and show a slight change from 67 and 131 DAT. Seedlings in ultisol under the same treatment reached the highest peak at 41 DAT with the chlorophyll content reading of 63.18 but decreased to 62.50 at 131 DAT. A steady increase in the chlorophyll content was seen in seedlings under oxisol but it remained the lowest reading throughout the last three months during the treatment period. The addition of biofertilizers seems also to have a positive impact on the chlorophyll reading of the seedlings.



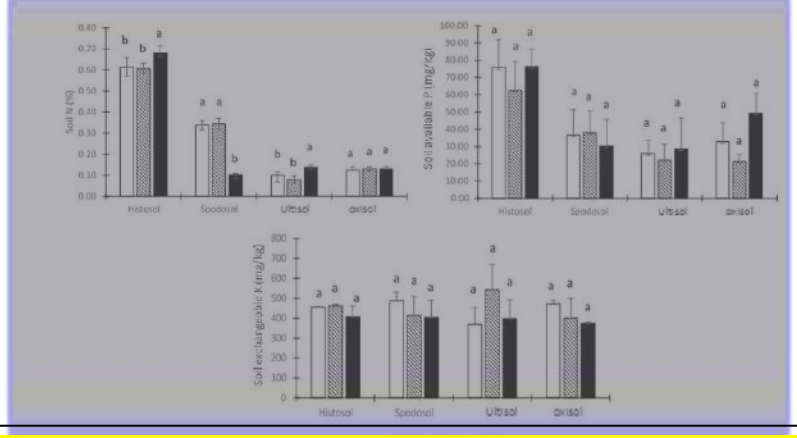
在T3地段下，Histosol，Ultisol和Oxisol中的所有幼苗的树身最大

Means sharing the same letter across treatments do not differ significantly at p-value ≤ 0.05.

Table 4. Aboveground biomass (ABG) and root dry weight with ABG:root. Different letters represent significant differences in Tukey's HSD comparison. Means sharing the same letter across treatments do not differ significantly at p-value ≤ 0.05.

Soil	Treatment	ABG	Root	Root:ABG
Histosol	T1	57.97 ± 9.92b	16.22 ± 4.46a	0.28 ± 0.03a
	T2	62.07 ± 3.47a	16.10 ± 3.31a	0.26 ± 0.04ab
	T3	59.50 ± 17.47b	15.09 ± 3.61a	0.26 ± 0.04b
Spodosol	T1	49.62 ± 14.32b	14.25 ± 4.21a	0.29 ± 0.02a
	T2	63.48 ± 7.08ab	16.52 ± 0.92a	0.26 ± 0.02ab
	T3	64.53 ± 4.99a	15.84 ± 1.17a	0.25 ± 0.02b
Ultisol	T1	53.61 ± 3.80b	11.70 ± 0.68a	0.22 ± 0.01ab
	T2	66.34 ± 2.50ab	15.20 ± 1.26a	0.23 ± 0.02a
	T3	70.39 ± 7.98a	13.92 ± 1.60a	0.20 ± 0.00b
Oxisol	T1	65.97 ± 4.61b	15.55 ± 2.95a	0.24 ± 0.06ab
	T2	58.70 ± 11.13ab	14.30 ± 1.03a	0.25 ± 0.02a
	T3	78.21 ± 14.91a	16.44 ± 0.95a	0.22 ± 0.00b

最高的ABG干质量是从Oxisol和Ultisol在T3下处理过的油棕树苗中获得的。



在所有实验中，尤其是在T3地段中，氮含量均显着较高。

the same letter across treatments do not differ significantly at p-value ($p \leq 0.05$).

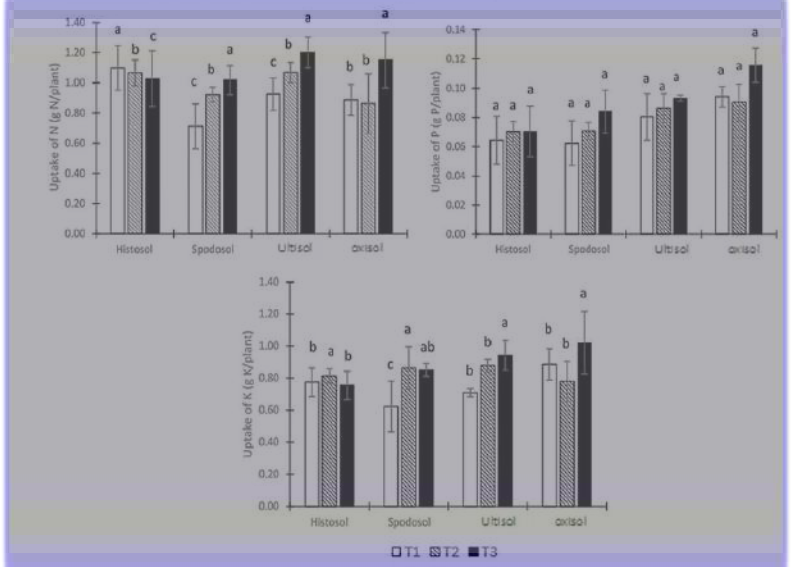


Figure 5. NPK uptake by the seedlings at time of harvest. Vertical bar represents the standard deviation. Different letters represent significant differences in Tukey's HSD comparison. Means sharing the same letter across treatments do not differ significantly at p-value ($p \leq 0.05$).

总体而言，在T3下用Ultisol进行测的幼苗的NPK的吸收最高。

From the present study, the addition of biofertilizers alongside with chemical fertilizers have shown not only enhanced oil palm seedlings growth in terms of the height, girth size, and chlorophyll, it also improves the nutrient uptake of the seedlings and soil nutrient status at a reduced rate of chemical fertilizer. Reduction on the rate of the chemical fertilizer may be needed to avoid over-fertilization of the oil palm seedlings.

(Aaronn, Rosazlin A, Tau Chuan L, *et al*. (2020).

从目前的研究来看，生物肥料与化学肥料的结合不仅显示出油棕幼苗在身高，树身和叶绿素方面的增长，而且在化肥施用率的降低下，还改善了幼苗对营养的吸收及土壤的养分状况。 化肥的施用量可能需要降低，以避免油棕幼苗过度施肥。

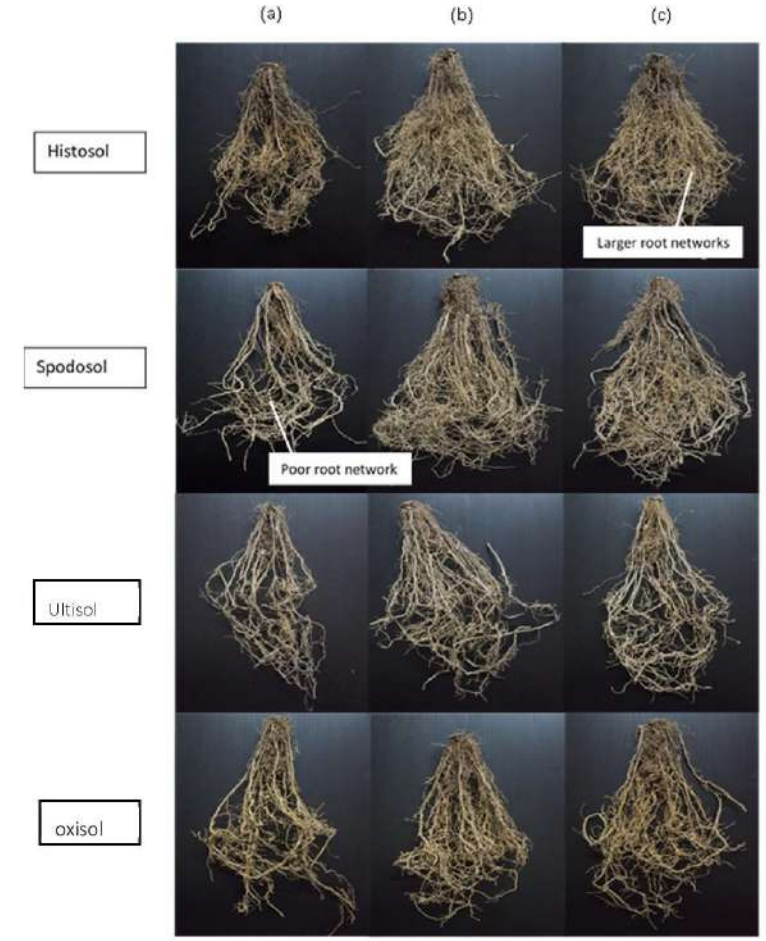


Figure 6. Roots of oil palm seedlings at the end of treatment. (**a**)T1, (**b**) T2, and (**c**) T3. The roots of oil palm seedlings treated with T3 were more in number, longer with more root hairs followed by seedlings in T2 then 100% T1 plots.

4. Discussion

4.1. Growth Performance of Fronds

FAO in 2011 states that about 175.5 million tons of chemical fertilizer is used in agriculture to achieve an optimum crop yield [29]. The enormous amount of chemical fertilizers deposited into soil causes a severe pollution of the river and groundwater which poses serious environmental

CONFIDENTIAL

COLLABORATION AGREEMENT

BETWEEN

MALAYSIAN AGRICULTURAL RESEARCH AND DEVELOPMENT INSTITUTE (MARDI)

AND

IBG MANUFACTURING SDN. BHD.

IN RELATION TO THE DEVELOPMENT OF IBG MULTIPURPOSE BIO FERTILIZER FOR RICE CULTIVATION

CONFIDENTIAL

FINAL REPORT ON

DEVELOPMENT OF IBG MULTIPURPOSE BIO FERTILIZER FOR RICE CULTIVATION

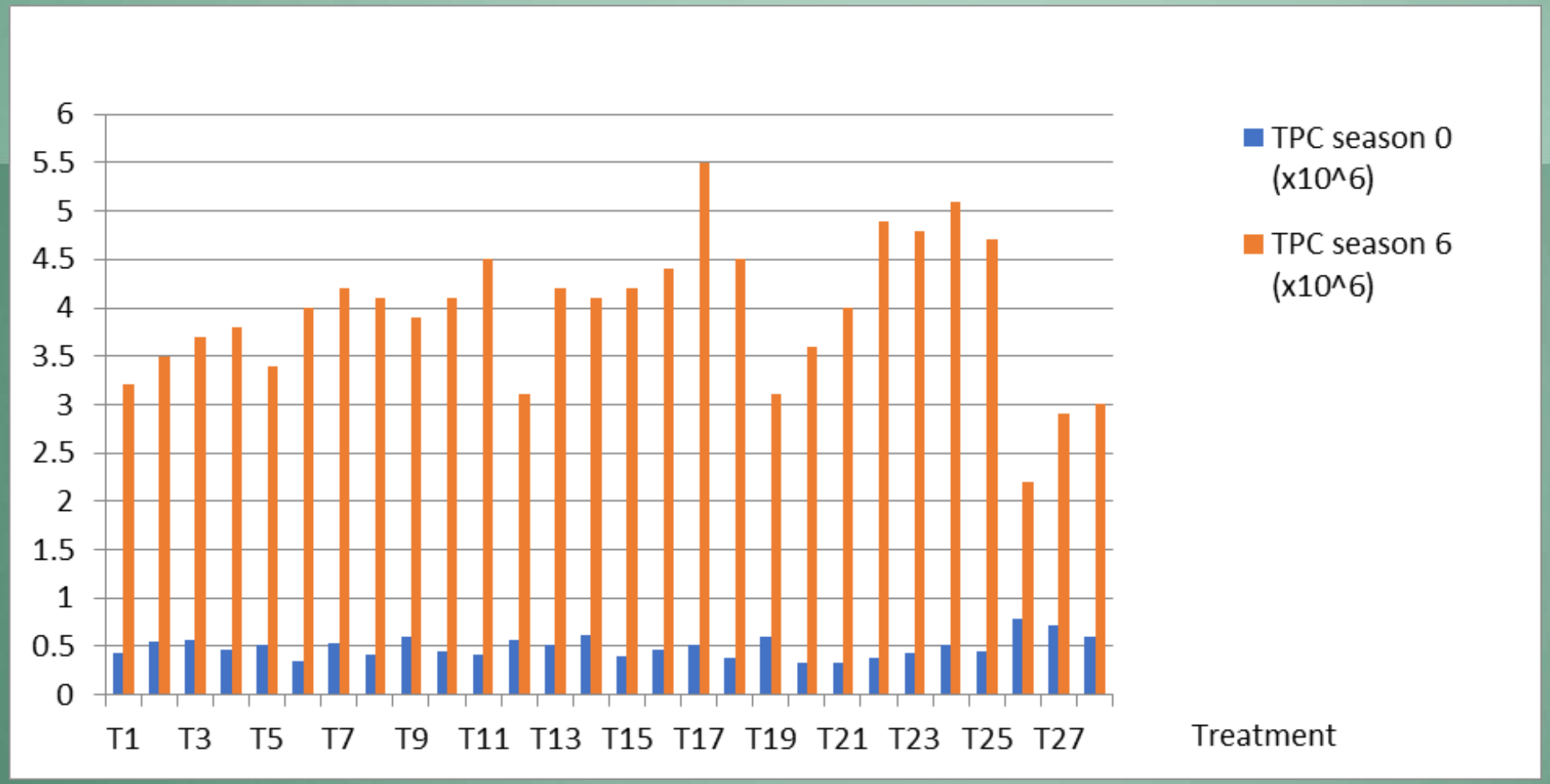
15th February 2017 – 30th May 2020 (6 Seasons)

摘要

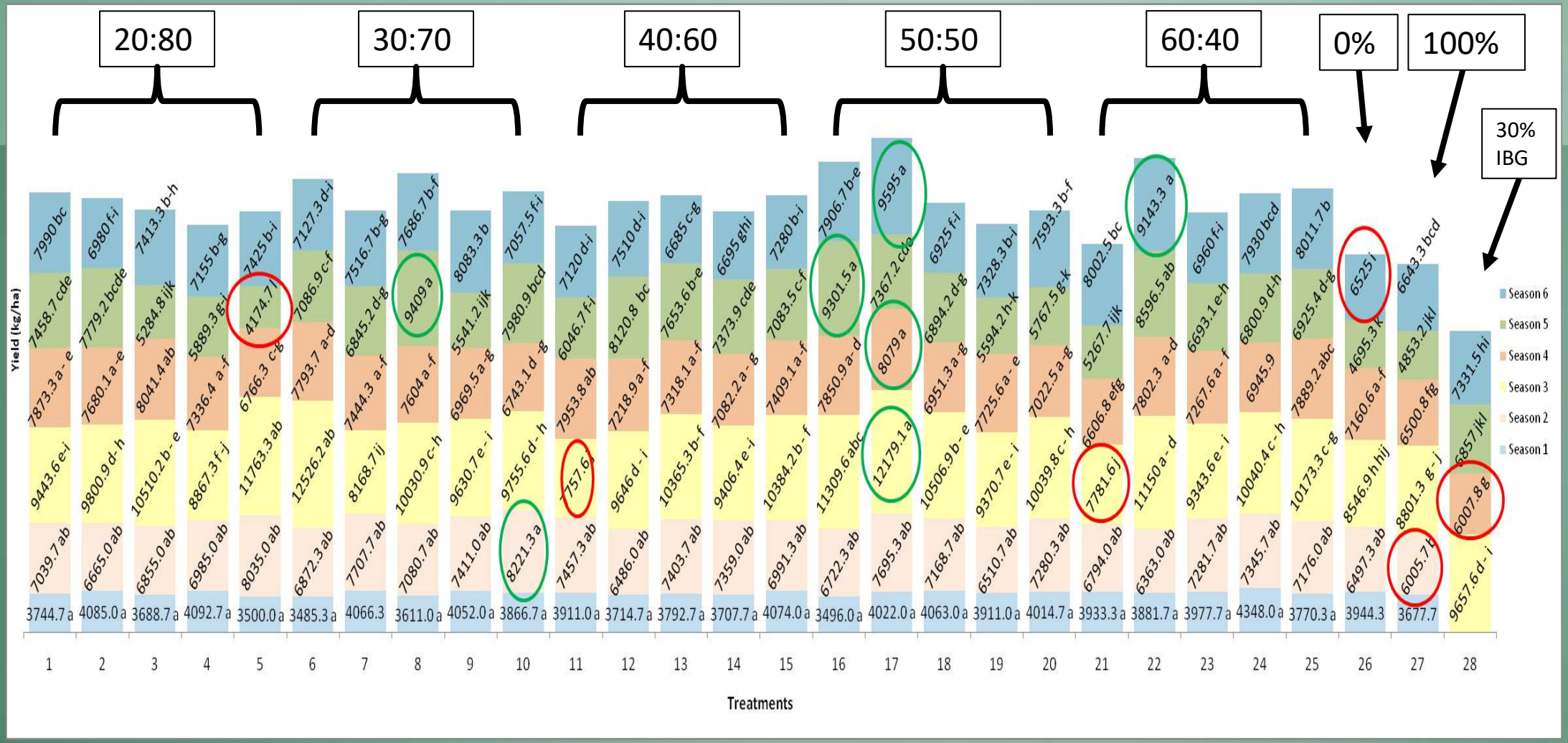
- MARDI与IBG Manufacturing Sdn. Bhd.该研究于2017年4月11日签署进行研究的合作协议。研究在MARDI Tanjung Karang进行了为期40个月（6个种植季节）。这项研究的主要目的是确定IBG多功能生物肥料和津贴肥料的结合，以满足水稻作物的施肥需求。研究结果表明，以5公升/公顷的比例施用T17实验（比例为50:50（IBG：补贴肥料）的组合）是最好的实验方法，因为在第3、4和6季中有最高的产量。在第6季T17的增产比T26（对照地块未施肥）高出40％。秸秆的数量也有显着影响，并且与产量呈正相关。使用IBG产品可增加土壤中的微生物群，这对土壤中氮，磷，钾和导电率的正增长也具有积极作用。

Treatments	pH (%)	Total C (%)	Total N (%)	C:N Ratio (%)	Total P (%)	Available P (%)	Exchangeable (%)				CEC (%)	Conductivity (%)
							K	Mg	Ca	Na		
T1	9.70	1.57	126.67	-55.19	581.31	1092.91	2073.68	-1.08	3.42	73.05	-0.86	2072.79
T2	13.82	-20.45	58.97	-49.96	398.77	1261.82	1418.26	23.12	2.33	56.71	-12.35	741.91
T3	10.00	-4.62	150.00	-61.85	714.79	1843.02	1587.30	-9.25	-29.12	44.08	-25.62	1745.97
T4	14.10	0.73	113.89	-52.90	575.36	2381.31	1570.99	15.47	0.83	119.89	4.46	1222.89
T5	10.92	-4.27	121.05	-56.69	510.59	1159.63	1140.35	-12.88	-40.93	11.28	-29.96	1251.22
T6	10.44	-13.33	81.82	-52.33	266.53	869.88	941.22	15.98	4.45	25.30	-11.20	373.36
T7	12.48	-9.81	128.57	-60.54	667.27	1438.54	1541.27	0.13	-5.68	81.41	-4.55	1359.66
T8	28.87	11.02	91.89	-42.14	611.53	1023.24	1466.19	24.60	87.85	89.22	-4.55	568.25
T9	-2.56	17.47	138.71	-50.79	658.46	1045.79	1355.63	42.50	-16.95	87.10	-2.04	469.23
T10	9.33	12.20	130.30	-51.28	521.93	1034.07	1199.24	0.12	-16.52	35.17	-18.95	739.53
T11	5.81	-3.97	59.46	-39.78	184.58	508.57	817.56	12.97	-11.12	55.25	1.21	922.29
T12	12.41	12.60	162.50	-57.10	520.15	1184.76	1285.14	0.00	-6.84	25.71	-2.86	960.87
T13	9.96	6.67	83.33	-41.82	482.20	958.97	709.47	0.53	-7.78	14.93	-5.62	724.38
T14	11.76	-13.08	43.90	-39.60	230.77	770.98	899.24	20.98	15.12	33.33	-16.54	421.08
T15	13.63	7.51	100.00	-46.25	399.82	747.89	827.45	-1.96	-13.13	9.52	-4.12	659.58
T16	8.57	-8.05	87.88	-51.06	358.06	1152.45	1113.49	8.09	-9.29	87.59	-10.04	1342.86
T17	8.75	-8.62	97.44	-53.72	388.42	1070.20	1433.80	-2.98	-17.30	26.50	9.55	971.57
T18	9.65	-8.93	50.00	-39.29	464.61	1608.87	1149.62	20.12	-1.34	108.00	1.82	1567.87
T19	9.16	8.08	75.00	-38.24	377.71	943.23	674.43	-3.41	-11.63	-0.78	-1.72	500.68
T20	17.51	-2.55	84.21	-47.10	638.92	1510.68	1456.35	18.29	5.57	69.72	-10.62	1085.19
T21	12.38	-2.85	81.58	-46.50	430.78	808.88	748.59	-10.40	-23.39	27.76	-3.98	633.22
T22	10.54	-8.96	75.68	-48.18	527.02	786.69	1064.29	9.79	-3.62	120.24	-19.60	1158.93
T23	17.11	0.39	102.86	-50.51	569.94	1552.84	971.62	-2.54	-3.81	47.85	-11.20	963.26
T24	11.61	-3.79	105.71	-53.23	595.70	1323.33	1452.50	14.23	-10.14	122.09	-2.18	1198.94
T25	10.17	0.35	68.42	-40.42	251.03	1134.51	1153.38	-2.01	-15.80	37.60	-8.43	845.80
T26	14.26	1.36	10.53	-8.30	43.88	135.09	-23.20	-19.71	-26.00	-18.07	8.61	-22.62
T27	0.56	-2.81	0.00	-2.81	-15.04	211.58	-32.11	-33.14	-41.56	-26.32	20.00	-42.47
T28	8.65	4.00	20.00	-13.33	56.00	66.49	-4.44	-3.74	-42.44	-3.16	6.52	-4.76
Average	10.86	-1.69	85.80	-44.93	414.99	1013.19	1069.49	4.01	-10.22	45.19	-5.88	806.40

pH值的变化可能会导致微生物结构和功能的变化，从而导致土壤总碳，总磷和有效磷的减少。 含有结合氮的细菌的产品可增加总氮，并有助于土壤变化C:N



使用IBG生物肥料进行的为期3年的研究（6个季节）显示土壤细菌显着增加。 图1显示，**经过处理的地段的TPC比未处理的地段（对照地块）高很多。**



- 季节性组合分析显示，第1季没有显着差异。
- 与对照相比，第2季的结果显着，因为T10贡献了最高的显着产量。
- 在第3和第4季中可以看到趋势，因为**T17贡献了最高的产量（12.18公吨/公顷和8.08公吨/公顷）**。这表明产品应用在第3季达到了稳定性。
- 在第5季，T16的单产最高（9.30公吨/公顷）。与T17相比，T16的IBG浓度略低。
- 在第6季，与T26相比，**T17（9.60吨/公顷）和T22（9.14吨/公顷）**贡献了最高的单产。差异至少为40%。

INSTITUT PENYELIDIKAN DAN KEMAJUAN PERTANIAN MALAYSIA
Malaysian Agricultural Research and Development Institute
MARDI Seberang Perai
Beg Berkunci No. 203
Pejabat Pos Kepala Batas
13200 Kepala Batas, Pulau Pinang
MALAYSIA

KEMENTERIAN PERTANIAN DAN INDUSTRI MAKANAN

Tel: 04-575 7930 / 9920 / 8402
Faks: 04-575 1725
Laman Web: www.mardi.gov.my
Email : aman@mardi.gov.my

Rujukan Kami : MDI/PR2/PA/29-02
Tarikh : 11 Disember 2020

Ketua Pegawai Eksekutif
IBG MANUFACTURING SDN BHD
No.3 Jalan TPP 3,Taman Perindustrian Putra,
47130 Puchong,Selangor

UP: Dato' Yeat Siaw Ping

Melalui

Pengarah
Pusat Penyelidikan Padi dan Beras
Ibu Pejabat MARDI
43400 Serdang
Selangor Darul Ehsan

DR. ASFALIZA BT. RAMLI
Pengarah
Pusat Penyelidikan Padi & Beras
MARDI

YBrs Dato'

Laporan Akhir Projek Kolaborasi MARDI-IBG MANUFACTURING SDN BHD

Adalah dimaklumkan, surat dari pihak MARDI MDI/PR2/PA/29-02 adalah dirujuk.

2. Setelah perbincangan dan pembentangan laporan hasil kajian, dengan ini pihak MARDI telah memenuhi obligasi 6.1 dan 10.1 seperti termaktub dalam perjanjian kolaborasi bertarikh 11 April 2017 dan bersama-sama ini disertakan laporan akhir kepada pihak IBG MANUFACTURING SDN BHD.

3. Kerjasama pihak YBrs Dato' didahului dengan ucapan ribuan terima kasih

(DR.HARTINEE BINTI ABBAS)
Timbalan Pengarah
Program Agronomi dan Sistem Pengeluaran, (PR2)
Pusat Penyelidikan Padi dan Beras
MARDI Pulau Pinang

Ringkasan Laporan Kajian

Satu Perjanjian Kolaborasi untuk menjalankan kajian di antara MARDI dan IBG Manufacturing Sdn. Bhd. telah dimeterai pada 11 April 2017. Kajian ini dilaksanakan di MARDI Tanjong Karang selama 6 musim penanaman dalam tempoh jangkamasa 40 bulan. Objektif utama kajian ini ialah untuk menentukan kombinasi IBG Multipurpose Bio Fertilizer dan baja subsidi untuk keperluan pembajaan tanaman padi. Dapatan kajian menunjukkan aplikasi rawatan T17 (kombinasi nisbah 50:50 (IBG:baja subsidi) dengan kadar 5 liter/ha merupakan rawatan yang terbaik kerana trend hasil yang tertinggi secara ketara pada musim 3, 4 dan 6. Perbezaan peningkatan hasil bagi musim terakhir iaitu ke-6 adalah sebanyak 40% berbanding dengan T26 (plot kawalan tiada pembajaan). Bilangan tangkai turut dipengaruhi secara ketara oleh rawatan dan mempunyai kolerasi positif dengan hasil. Penggunaan produk IBG juga didapati turut meningkatkan populasi mikrob di dalam tanah yang turut mempengaruhi peningkatan positif terhadap nitrogen, fosforus, kalium dan konduktiviti di dalam tanah.

PRODUCT COMMERCIALIZATION AGREEMENT

BETWEEN

MALAYSIAN AGRICULTURAL RESEARCH AND DEVELOPMENT INSTITUTE (MARDI)

AND

IBG MANUFACTURING SDN. BHD. (REG. NO.: 199801017236 (473365-H))

****

IN RELATION TO THE IBG PADDY BIO FERTILIZER

****

This Product Commercialization Agreement dated 8th. September 2017 (hereinafter referred to as this "Agreement").

BETWEEN

MALAYSIAN AGRICULTURAL RESEARCH AND DEVELOPMENT INSTITUTE a statutory body incorporated in Malaysia under the Malaysian Agricultural Research and Development Institute Act 1969 [*Act 11*] and having its headquarters office at MARDI Headquarters, Persiaran MARDI-UPM, 43400 Serdang, Selangor Darul Ehsan, (hereinafter referred to as "MARDI") of the one part;

AND

IBG MANUFACTURING SDN. BHD. (Company Registration No.: 199801017236 (473365-H)) a business registered under the law of Malaysia and having its registered address at Suite 9-13A, Level 9, Wisma UOA II, Jalan Pinang, 50450, Kuala Lumpur, Wilayah Persekutuan and its business address at No. 3, Jalan TPP3, Taman Perindustrian Putra Puchong, 47130, Selangor (hereinafter referred to as "the Company") on the other part.

MARDI and the Company are hereinafter referred to as "the Parties" collectively and each as "the Party".

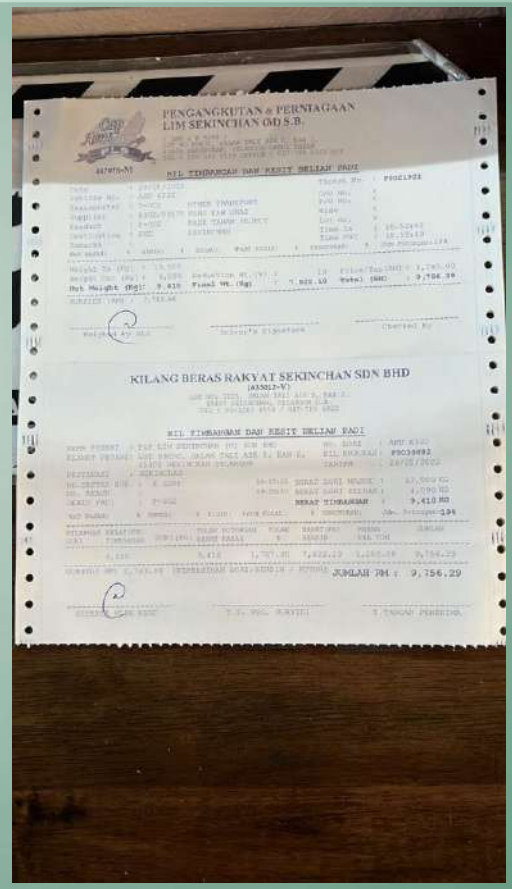
WHEREAS:

A. MARDI and the Company has entered into the Collaboration Agreement in relation to the "Development of IBG Multipurpose Bio Fertilizer for Rice Cultivation" dated 11 April 2017 (hereinafter referred to as the "Collaboration Agreement"). Pursuant to Clause 13 of the Collaboration Agreement, the Parties agree that any future commercialization of IBG Multipurpose Bio Fertilizer in relation to the rice cultivation shall be formalized and secured in a separate written agreement detailing the rights and responsibilities of the Parties, including any financial commitments (if any).

B. Pursuant to the above, the Company is desirous to produce, market, distribute and sell the IBG Multipurpose Bio Fertilizer for rice cultivation in any territory / country in the world and MARDI agrees for the Company to lead the commercialization of the IBG Multipurpose Bio Fertilizer subject to the terms and conditions as stated in this Agreement.

C. For the purpose of the Company commercializing the IBG Multipurpose Bio Fertilizer pursuant to this Agreement, both Parties agree to name and commercialize the IBG Multipurpose Bio Fertilizer for rice cultivation as "IBG Paddy Bio Fertilizer" (hereinafter referred to as "the Product") subject to the terms and conditions hereinafter set forth in this Agreement.

Kilang Beras Rakyat Sekinchan Sdn. Bhd.



五月，年份2022 7.84 吨/公顷
十一月，年份2022 8.27吨/公顷

MEMORANDUM OF AGREEMENT

BETWEEN

MALAYSIAN PALM OIL BOARD

AND

IBG MANUFACTURING SDN BHD

ON

THE RESEARCH & DEVELOPMENT OF ENDOPHYTIC BACTERIA AS LIQUID FORMULATION FOR CONTROLLING *Ganoderma* AND OTHER PLANT DISEASES

MPOB
MALAYSIAN PALM OIL BOARD
MINISTRY OF PLANTATION INDUSTRIES AND COMMODITIES, MALAYSIA
www.mpob.gov.my

UNIVERSITI MALAYA

IBG® (473365-H)

MEMORANDUM OF AGREEMENT

ON

RESEARCH COLLABORATION

BETWEEN

UNIVERSITI MALAYA

AND

IBG MANUFACTURING SDN. BHD.
COMPANY REGISTRATION NO.: 199801017236 (473365-H)

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马币 4.2 亿

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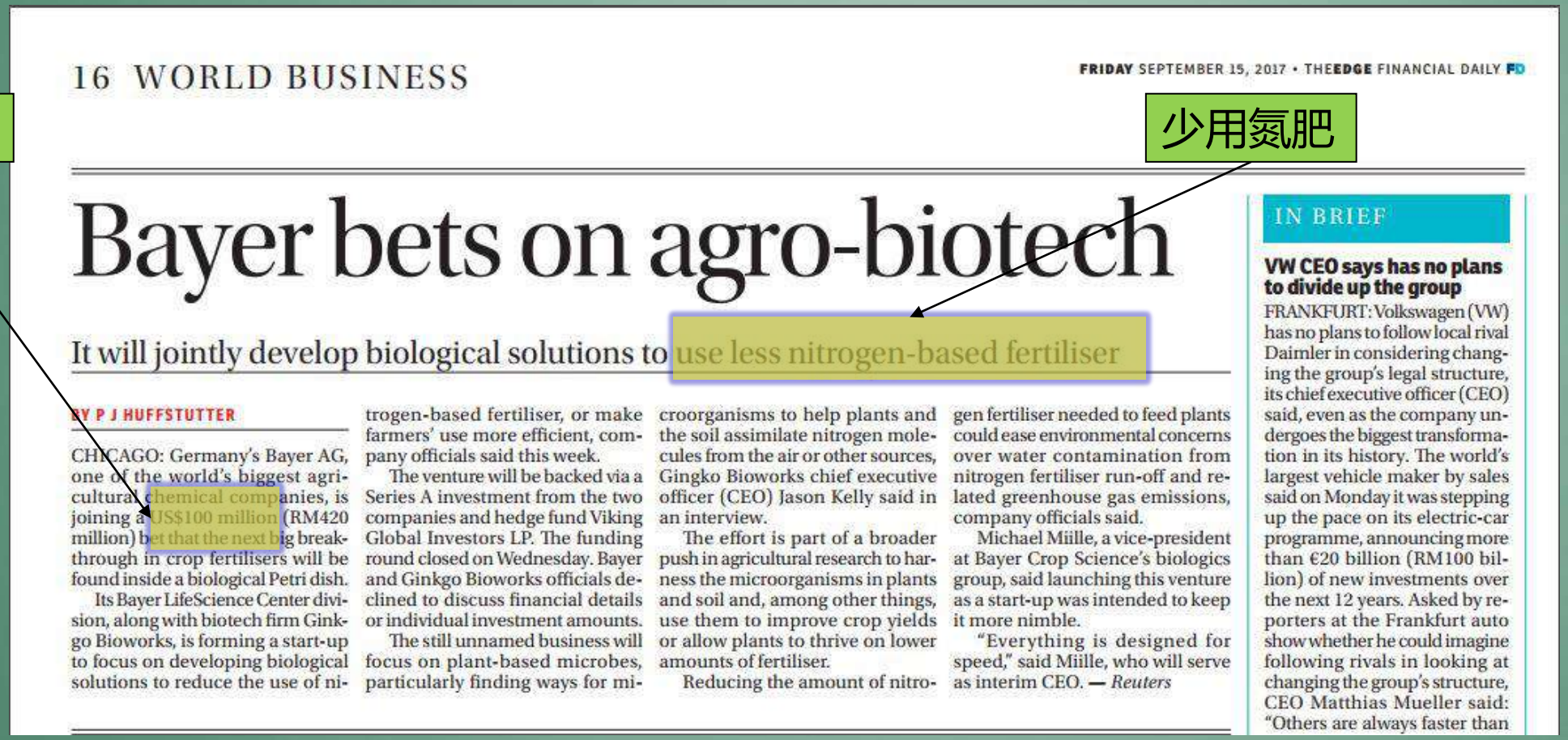


16 WORLD BUSINESS

FRIDAY SEPTEMBER 15, 2017 • THEEDGE FINANCIAL DAILY

Bayer bets on agro-biotech

It will jointly develop biological solutions to use less nitrogen-based fertiliser

BY P J HUFFSTUTTER

CHICAGO: Germany's Bayer AG, one of the world's biggest agricultural chemical companies, is joining a US$100 million (RM420 million) bet that the next big breakthrough in crop fertilisers will be found inside a biological Petri dish.

Its Bayer LifeScience Center division, along with biotech firm Ginkgo Bioworks, is forming a start-up to focus on developing biological solutions to reduce the use of nitrogen-based fertiliser, or make farmers' use more efficient, company officials said this week.

The venture will be backed via a Series A investment from the two companies and hedge fund Viking Global Investors LP. The funding round closed on Wednesday. Bayer and Ginkgo Bioworks officials declined to discuss financial details or individual investment amounts.

The still unnamed business will focus on plant-based microbes, particularly finding ways for microorganisms to help plants and the soil assimilate nitrogen molecules from the air or other sources, Gingko Bioworks chief executive officer (CEO) Jason Kelly said in an interview.

The effort is part of a broader push in agricultural research to harness the microorganisms in plants and soil and, among other things, use them to improve crop yields or allow plants to thrive on lower amounts of fertiliser.

Reducing the amount of nitrogen fertiliser needed to feed plants could ease environmental concerns over water contamination from nitrogen fertiliser run-off and related greenhouse gas emissions, company officials said.

Michael Miille, a vice-president at Bayer Crop Science's biologics group, said launching this venture as a start-up was intended to keep it more nimble.

"Everything is designed for speed," said Miille, who will serve as interim CEO. — *Reuters*

IN BRIEF

VW CEO says has no plans to divide up the group

FRANKFURT: Volkswagen (VW) has no plans to follow local rival Daimler in considering changing the group's legal structure, its chief executive officer (CEO) said, even as the company undergoes the biggest transformation in its history. The world's largest vehicle maker by sales said on Monday it was stepping up the pace on its electric-car programme, announcing more than €20 billion (RM100 billion) of new investments over the next 12 years. Asked by reporters at the Frankfurt auto show whether he could imagine following rivals in looking at changing the group's structure, CEO Matthias Mueller said: "Others are always faster than

独特优势

1.提高土壤有机质的利用率，从而减少水土流失

2. 微生物以根部天然分泌的生长因子元素，提高营养成分运输

3. 通过磷，钾释放细菌，减少损失

4. 提高植物生长

5. 增加结花率和比例

6. 增加果实的重量和品质

7. 提供非酸性氮肥

释放后3个月至三年以上可以看到上述所有效果

IBG Manufacturing Sdn. Bhd.

关于 IBG Manufacturing Sdn. Bhd.

IBG Manufacturing Sdn. Bhd.自1998年起在马来西亚设立工厂。该公司于2004年7月隶属于IBG Bio Ventures Sdn. Bhd. IBG Manufacturing缴足资本为200万令吉。

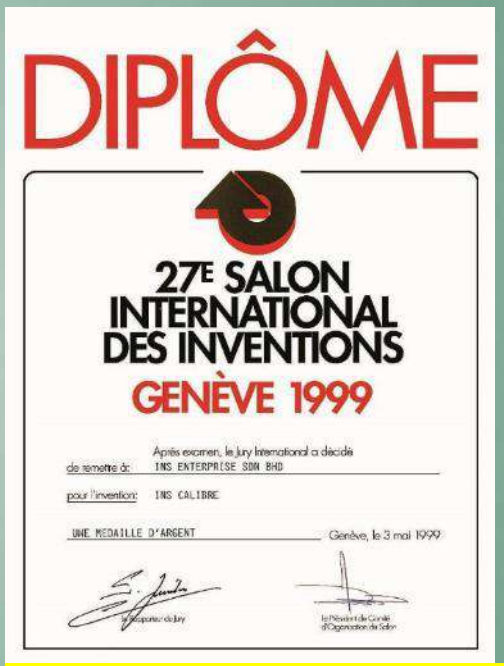
我们的哲学:

“绿色世界的创新生物技术将最终对我们的人类有益”

奖项和认证

1999 年《马来西亚ITEX国际发明展》发明与设计比赛金奖

第一个生物肥料在马来西亚申请专利PI20062236



《1999年日内瓦国际发明奖》银奖

奖项和认证

Our reference: CSSD/BNX-100437/LOA/sz

14 January 2009

Mr. Yeat Siaw Ping
Chief Executive Officer
IBG Manufacturing Sdn Bhd
No. 3, Jalan TPK 1/3
Taman Perindustrian Kinrara
47100 Puchong
Selangor

Tel: 03-80704797
Fax: 03-80704161

Dear Mr. Yeat,

LETTER OF AWARD OF BIONEXUS STATUS AND TAX INCENTIVE TO IBG MANUFACTURING SDN BHD (475365-H) ("the Company")
BioNexus Ref. No. : BNX-100437

We refer to the following documentation submitted by the Company to our Client Support Services Division:

(a) the completed BioNexus Status application form dated 24 March 2008 applying for BioNexus Status;
(b) the final business plan, financial projections and relevant documents; and
(c) all agreed variations or modifications to the above mentioned documents in paragraph (b) above pursuant to letter/ meetings (if any),

collectively to be referred to as the "Application Documents".

We are pleased to inform you that the Minister of Finance, in concurrence with the recommendation made by Malaysian Biotechnology Corporation Sdn Bhd, has APPROVED your Company's application for the BioNexus Status and 100% tax exemption of the statutory income for a period of ten (10) years under Income Tax (Exemption) (No. 17) Order 2007 [P.U. (A) 371/2007] on 27 March 2008 ("Effective Date"). Kindly take note that the Company has been conferred the BioNexus Status and tax exemption subject to its acceptance of such status and full compliance with the attached Terms and Conditions:

a) **Qualifying Activities.**
The Company must conduct only the following Qualifying Activities:
Research, development and production of bio-fertilizers.

b) **Location of Operations.**
The Company must conduct the Qualifying Activities at the following location:
No. 3, Jalan TPK 1/3
Taman Perindustrian Kinrara
47100 Puchong
Selangor
Malaysia

MALAYSIAN BIOTECHNOLOGY CORPORATION SDN BHD

生物科技核心业务地位 – 从大马生物科技机构取得 – IBG被认证为国家生物技术重点领域的行业参与者。***享有10年100％的免税优惠。***

《2006年亚洲生物科技奖》银奖

ISO 9001 认证; ISO 17025 认证实验室（化学和微生物实验室）。

AWARDS & CERTIFICATIONS

2011 国际标准品质奖

企业白金奖 PLATINUM BUSINESS AWARD 2016

2016 杰出成就奖 – 马来西亚中小型企业工会

2016 产品与卓越服务奖

2018 肥料产品品质杰出大奖 – 第四届大马神农楷模奖

2018 创业楷模既相扶奖

2020 菲律宾 Halal 认证

2023 马来西亚科技展 (MTE) 金奖（与MPOB合作）

实验室 – ISO/IEC 17025认证

研究与开发

IBG Manufacturing Sdn Bhd 建立了最高科技研发中心，以支持其强大的研发计划。研发中心致力于尖端技术，从广泛的研究到开发具有自主知识产权和巨大营销潜力的世界级生物肥料产品。

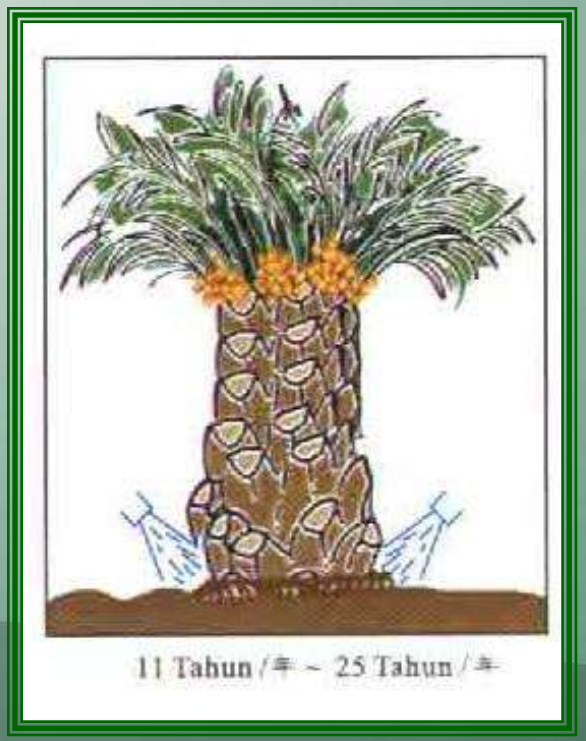
我们已经建立了实验领域，以确保持续的产品升级和创新。

油棕的应用方法

油棕宗

6个月 – 3年

3年 – 11年



11年 – 25年

IBG 生物肥料施用方法

劳工成本分析：
一个工人7个工作时间能够覆盖约2.5公顷（324树）

< Kiri

Semburan akar dan batang. Pastikan semburan cukup basah pada kadar 1 lit./ pokok dan semburan pada paras 1 kaki dari paras tanah. Semua bahagian akar atau dicelah pertemuan antara tanah dan batang pokok disembur cukup basah.
Bagi Pam CKS 16 lit. semburan untuk 16 pokok sahaja.

在使用前必须通过测量容器测量其喷洒出来的数量。

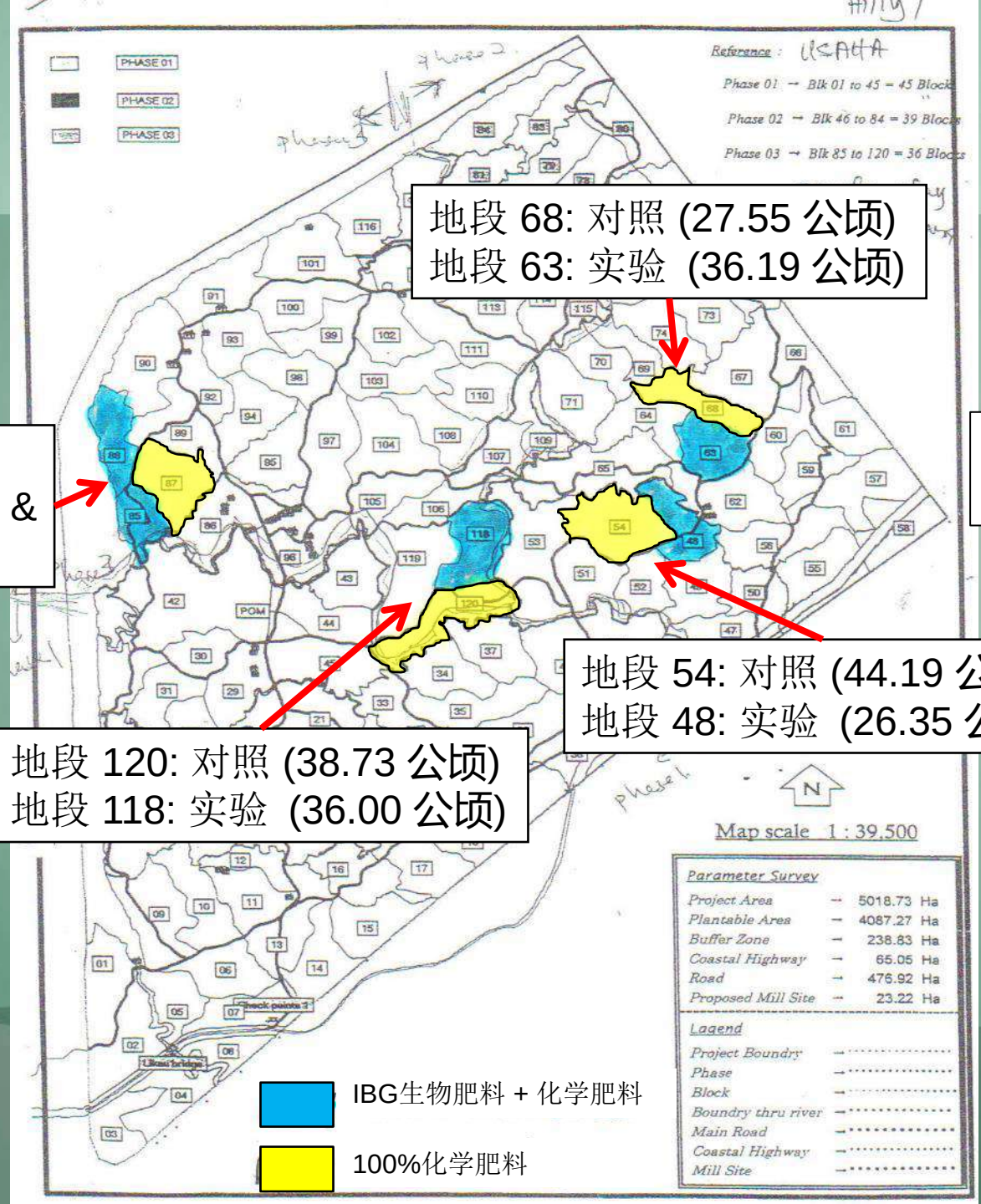
Woodman

油棕园丘应用

IBG生物肥料的产量表现

矿物土壤
Usaha Sepadan园丘

- 4,000 公顷
- 2001年 – 2002年种植
- 收成间隔: 12 – 14天
- 雨量: 3,200 – 3,500 毫米
- 土壤种类: 沙土，沙粘土，沙壤土，沙质红土，珊瑚地，等等。
- 自2002年使用IBG生物肥料。


地段 68: 对照 (27.55 公顷)
地段 63: 实验 (36.19 公顷)
地段 87: 对照 (35.83 公顷)
地段 85 & 88: 实验 (20.29 公顷 & 34.12 公顷)
对照: 146.30 公顷
实验: 152.95 公顷
地段 54: 对照 (44.19 公顷)
地段 48: 实验 (26.35 公顷)
地段 120: 对照 (38.73 公顷)
地段 118: 实验 (36.00 公顷)
IBG生物肥料 + 化学肥料
100%化学肥料
Map scale 1 : 39,500
Parameter Survey
Project Area 5018.73 Ha
Plantable Area 4087.27 Ha
Buffer Zone 238.83 Ha
Coastal Highway 65.05 Ha
Road 476.92 Ha
Proposed Mill Site 23.22 Ha
Legend
Project Boundry
Phase
Block
Boundry thru river
Main Road
Coastal Highway
Mill Site

Usaha Sepadan 园丘传统的施肥计划与IBG生物肥料的施肥计划之间的成本比较

IBG 生物肥料 (4 公升)	RM 345
硫酸铵	RM 750
磷矿粉	RM 1,550
氯化钾	RM 2,100
氧化镁	RM 460
硼酸盐	RM 3,800
尿素	RM 1,400
8:8:8	RM 5,100
7:4:34	RM 2,250

常规施肥计划				
No.	肥料	分量	成本/树	成本/公顷 (130 树)
1	硫酸铵	1.50 公斤	RM 1.13	RM 146.25
	氯化钾	1.50 公斤	RM 3.15	RM 409.50
2	磷矿粉	2.00 公斤	RM 3.10	RM 403.00
3	硫酸铵	1.50 公斤	RM 1.13	RM 146.25
	氯化钾	1.50 公斤	RM 3.15	RM 409.50
4	氧化镁	1.00 公斤	RM 0.46	RM 59.80
5	硼酸盐	0.10 公斤	RM 0.38	RM 49.40
6	硫酸铵	1.50 公斤	RM 1.13	RM 146.25
	氯化钾	1.50 公斤	RM 3.15	RM 409.50
	共	12.10 公斤	RM 16.77	RM 2,179.45

IBG生物肥料施肥计划				
No.	肥料	分量	成本/树	成本/公顷 (130 树)
1	IBG 生物肥料 (4 公升)	40 毫升	RM 3.45	RM 448.50
2	硫酸铵	0.75 公斤	RM 0.56	RM 73.13
	氯化钾	2.00 公斤	RM 4.20	RM 546.00
3	磷矿粉	1.30 公斤	RM 2.02	RM 261.95
	氧化镁	0.70 公斤	RM 0.32	RM 41.86
4	硼酸盐	0.100 公斤	RM 0.38	RM 49.40
5	硫酸铵	0.75 公斤	RM 0.56	RM 73.13
	氯化钾	2.00 公斤	RM 4.20	RM 546.00
	共	7.60 公斤 + 40 毫升	RM 15.69	RM 2,039.96
	总成本节省/树		RM 1.07	

自2004年 – 2007 年Usaha Sepadan园丘的产量数据

地方 1	种植日期	树/公顷	吨/公顷				
			28 - 39个月	40 - 51个月	52 - 63个月	64 - 75个月	
			2004	2005	2006	2007 估计	
实验 (地段 48) (26.35 公顷)	1-Jun	132	8.67	12.60	19.77	25.00	
对比 (地段 54) (44.19 公顷)	1-Jun	135	6.75	10.43	17.97	23.00	平均
产量差别			1.92	2.17	1.80	2.00	1.97
地方 2	种植日期	树/公顷	吨/公顷				
			27 - 38个月	39 - 50个月	51 - 62个月	63 - 74个月	
			2004	2005	2006	2007 估计	
实验 (地段 63) (36.19 公顷)	1-Jul	132	8.23	11.78	18.19	24.00	
对比 (地段 68) (27.55 公顷)	1-Jul	130	5.77	9.35	15.91	21.00	平均
产量差别			2.46	2.42	2.28	3.00	2.54
地方 3	种植日期	树/公顷	吨/公顷				
			25 to 29个月	30 to 41个月	42 to 53个月	54 to 65个月	
			2004八月 – 12月	2005	2006	2007 估计	
实验 (地段 118) (36.00 公顷)	2-Apr	114	1.88	5.55	10.48	18.00	
对比 (地段 120) (38.73 公顷)	2-Apr	109	1.56	4.79	9.92	16.00	平均
产量差别			0.32	0.76	0.56	2.00	0.91
地方 4	种植日期	树/公顷	吨/公顷				
			25 to 33个月	34 to 45个月	46 to 57个月	58 to 70个月	
			2004四月 – 12月	2005	2006	2007 估计	
实验 (地段 85 & 88) (54.41 公顷)	1-Dec	110	5.42	7.83	18.82	24.00	
对比 (地段 87) （35.83 公顷)	1-Dec	105	4.17	6.21	12.41	20.00	平均
产量差别			1.25	1.63	6.41	4.00	3.32

平均增长: 2.19 吨/公顷

IBG生物肥料已于2006年全面投入使用，但直至2007年仍在继续。

自2004 – 2006 年Usaha Sepadan 圆丘所收集的叶面数据

地方1						
叶面分析 (干物质%/p.p.m.)	地段	2004	2005	2006	平均	差别
氮	实验	3.22	3.15	2.66	3.01	**0.37**
	对照	2.35	2.90	2.66	2.64	
磷	实验	0.210	0.180	0.151	0.180	**0.02**
	对照	0.170	0.164	0.144	0.160	
钾	实验	1.24	1.24	1.11	1.20	**0.10**
	对照	0.86	1.31	1.11	1.09	
镁	实验	0.39	0.36	0.31	0.35	**0.04**
	对照	0.28	0.36	0.31	0.32	
钙	实验	0.50	0.57	0.59	0.55	**-0.07**
	对照	0.74	0.53	0.59	0.62	
硼	实验	28.00	29.00	17.40	24.80	**0.67**
	对照	28.00	28.00	16.40	24.13	

地方2						
叶面分析 (干物质%/p.p.m.)	地段	2004	2005	2006	平均	差别
氮	实验	2.52	2.72	2.71	2.65	**-0.19**
	对照	2.79	3.08	2.64	2.84	
磷	实验	0.170	0.170	0.155	0.170	**-0.02**
	对照	0.190	0.214	0.139	0.180	
钾	实验	1.47	1.18	1.02	1.22	**0.08**
	对照	1.30	1.13	0.99	1.14	
镁	实验	0.39	0.33	0.35	0.36	**0.01**
	对照	0.33	0.39	0.33	0.35	
钙	实验	0.74	0.54	0.59	0.62	**0.02**
	对照	0.61	0.63	0.58	0.61	
硼	实验	28.00	21.00	17.00	22.00	**6.00**
	对照	18.00	15.00	15.00	16.00	

自2004 – 2006 年Usaha Sepadan 圆丘所收集的叶面数据

地方3						
叶面分析 (干物质%/p.p.m.)	地段	2004	2005	2006	平均	Variance
氮	实验	2.64	2.60	2.63	2.62	**-0.08**
	对照	2.75	2.84	2.52	2.70	
磷	实验	0.170	0.210	0.155	0.180	**0.01**
	对照	0.160	0.215	0.135	0.170	
钾	实验	1.26	1.17	1.05	1.16	**0.00**
	对照	1.27	1.16	1.06	1.16	
镁	实验	0.33	0.42	0.43	0.39	**0.01**
	对照	0.31	0.41	0.42	0.38	
钙	实验	0.58	0.57	0.65	0.60	**0.03**
	对照	0.56	0.59	0.56	0.57	
硼	实验	20.00	18.00	20.00	19.33	**-0.67**
	对照	27.00	17.00	16.00	20.00	

地方4						
叶面分析 (干物质%/p.p.m.)	地段	2004	2005	2006	平均	Variance
氮	实验	2.55	2.89	2.65	2.70	**-0.14**
	对照	2.79	3.08	2.64	2.84	
磷	实验	0.160	0.200	0.155	0.170	**-0.01**
	对照	0.190	0.214	0.139	0.180	
钾	实验	1.29	1.09	1.03	1.14	**0.00**
	对照	1.30	1.13	0.99	1.14	
镁	实验	0.36	0.39	0.32	0.36	**0.01**
	对照	0.33	0.39	0.33	0.35	
钙	实验	0.72	0.56	0.54	0.61	**0.00**
	对照	0.61	0.63	0.58	0.61	
硼	实验	25.00	18.00	15.00	19.33	**3.33**
	对照	18.00	15.00	15.00	16.00	

总结

对照		
肥料	成本/树	成本/公顷 (130 树)
12.10 公斤	RM 16.77	RM 2,179.45
次/年	劳工成本/次/公顷	6 次/公顷
6	RM 8	RM 48
	共成本/公顷	RM 2,227.45

实验		
肥料	成本/树	成本/公顷 (130 树)
化学 肥料 7.60 公斤	RM 12.24	RM 1,591.46
IBG 40 毫升	RM 3.45	RM 448.50
次/年	劳工成本/次/公顷	5 次/公顷
5	RM 8	RM 40
	共成本/公顷	RM 2,079.96

额外产量(吨)/公顷	2.19
平均价格/吨	RM 700.00
收入	RM 1,533.00
成本差异/公顷	RM 147.49
额外收入/公顷	RM 1,680.49

Usaha Sepadan的产量数据

		2008 有生产的树	2008	2007 有生产的树	2007	2005 五月– 2006 四月		2006 五月– 2007 四月		2007 五月– 2008 四月	
地段	公顷	树	树/公顷	树	树/公顷	产量(吨)	果粒	产量(吨)	果粒	产量(吨)	果粒
地段1	1,591.36	207,825	131	194,383	122	21,861	3,642,683	29,033	3,793,036	43,723	5,109,813
地段2	1,302.43	159,229	122	145,413	112	16,050	2,738,255	22,110	2,808,184	36,258	4,236,127
地段3	1,193.42	131,801	110	119,255	100	9,419	1,751,543	14,456	2,087,504	26,660	3,220,672
共	4,087.21	498,855	122	459,051	112	47,330	8,132,481	65,599	8,688,724	106,641	12,566,613

Usaha Sepadan的产量数据

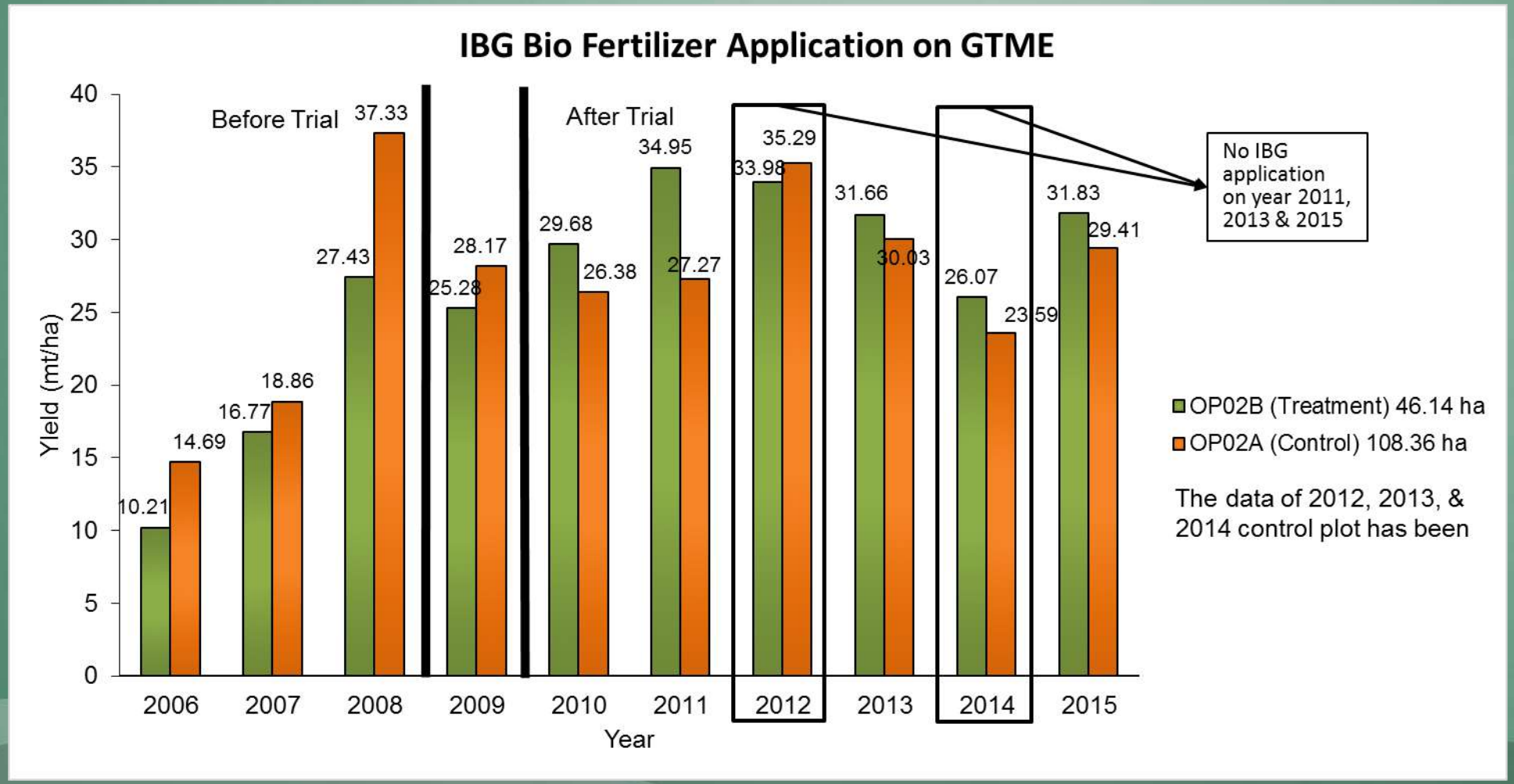
			平均果粒重量			果粒/树			产量/公顷			产量/130树		
地段	公顷	种植日期	2005五月–2006四月	2006五月–2007四月	2007五月–2008四月	2005五月–2006四月	2006五月–2007四月	2007五月–2008四月	2005五月–2006四月	2006五月–2007四月	2007五月–2008四月	2005五月–2006四月	2006五月–2007四月	2007五月–2008四月
地段1	1,591.36	2001一月 - 2001四月	6.00公斤	7.65公斤	8.56公斤	18.74	19.51	24.59	13.74吨	18.24吨	27.47吨	14.62吨	19.42吨	27.35吨
地段2	1,302.43	2001四月 - 2001十一月	5.86公斤	7.87公斤	8.56公斤	18.83	19.31	26.60	12.32吨	16.98吨	27.84吨	14.35吨	19.77吨	29.60吨
地段3	1,193.42	2001十一月 - 2002四月	5.38公斤	6.93公斤	8.28公斤	14.69	17.50	24.44	7.89吨	12.11吨	22.34吨	10.27吨	15.76吨	26.30吨
共	4,087.21		5.82公斤	7.55公斤	8.49公斤	17.72	18.93	25.19	11.58吨	16.05吨	26.09吨	13.40吨	18.58吨	27.79吨

IBG在Usaha Sepadan园丘的施用自2003年开始。从2003年至2006年，平均产量提高为2.19吨/公顷。 在2007年，IBG生物肥料已被完全用于园丘。

GENTING TANAH MERAH ESTATE

- 地点: 丹那美拉，柔佛
- 地段: 对照田地– 108.36 公顷
  实验田地 – 46.14 公顷
- 种植年份: 2002
- 自2008年使用IBG生物肥料。

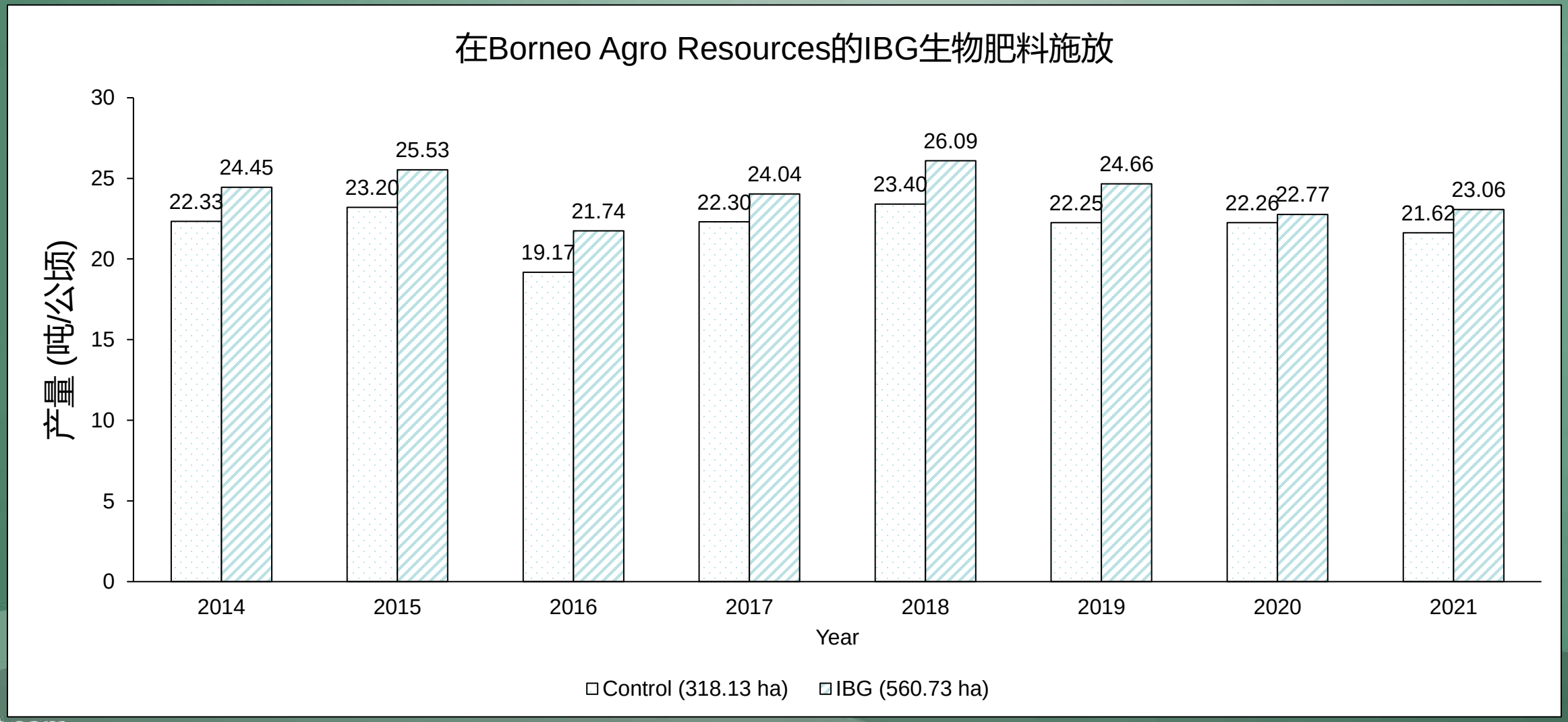
在GTME的IBG生物肥料施放



BORNEO AGRO RESOURCES SDN. BHD.

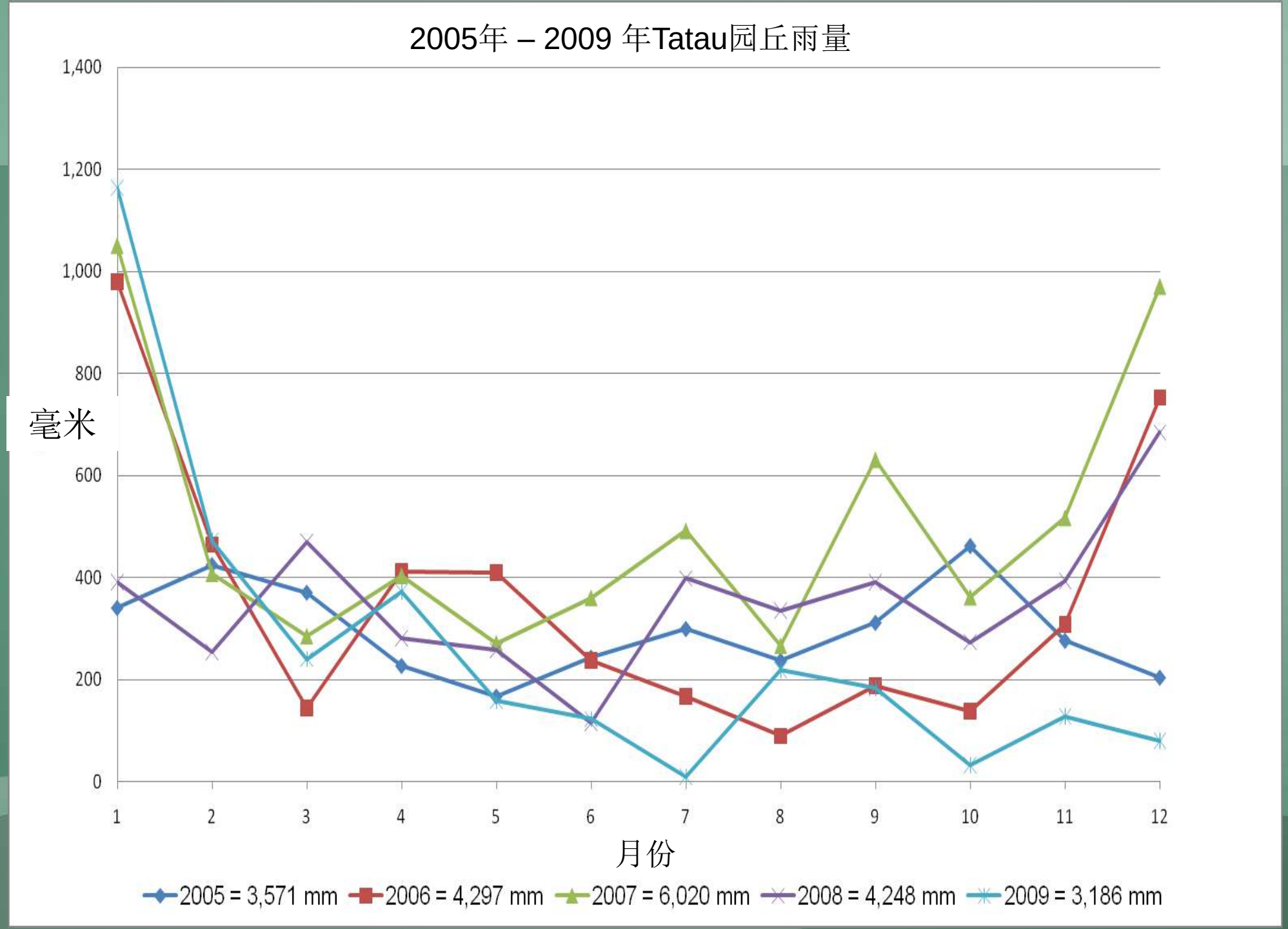
- 地点: Maskat 园丘，民都鲁, 砂劳越。
- 地段:　　对照田地： 403.63 公顷 - 2018，318.13 公顷 – 2021
  实验田地： 339.57 公顷 - 2018，560.73 公顷 – 2021
- 种植年份: 2003 - 2005
- 自2014年7月年使用IBG生物肥料。

在Borneo Agro Resources的IBG生物肥料施放



泥炭土壤

- Tatau园丘 (自2004年种植5,600 公顷)
- Semanok园丘 (自2004年种植2,700 公顷)
- Tamar园丘(自2001 – 2002年种植4,000 公顷, 1,300 公顷是Alan Batu)
- IBG生物肥料于2007年因Usaha Sepadan园丘的理想产量后开始。


2005年 – 2009 年Tatau园丘雨量
1,400
1,200
1,000
800
600
400
200
0
毫米
1
2
3
4
5
6
7
8
9
10
11
12
月份
2005 = 3,571 mm
2006 = 4,297 mm
2007 = 6,020 mm
2008 = 4,248 mm
2009 = 3,186 mm

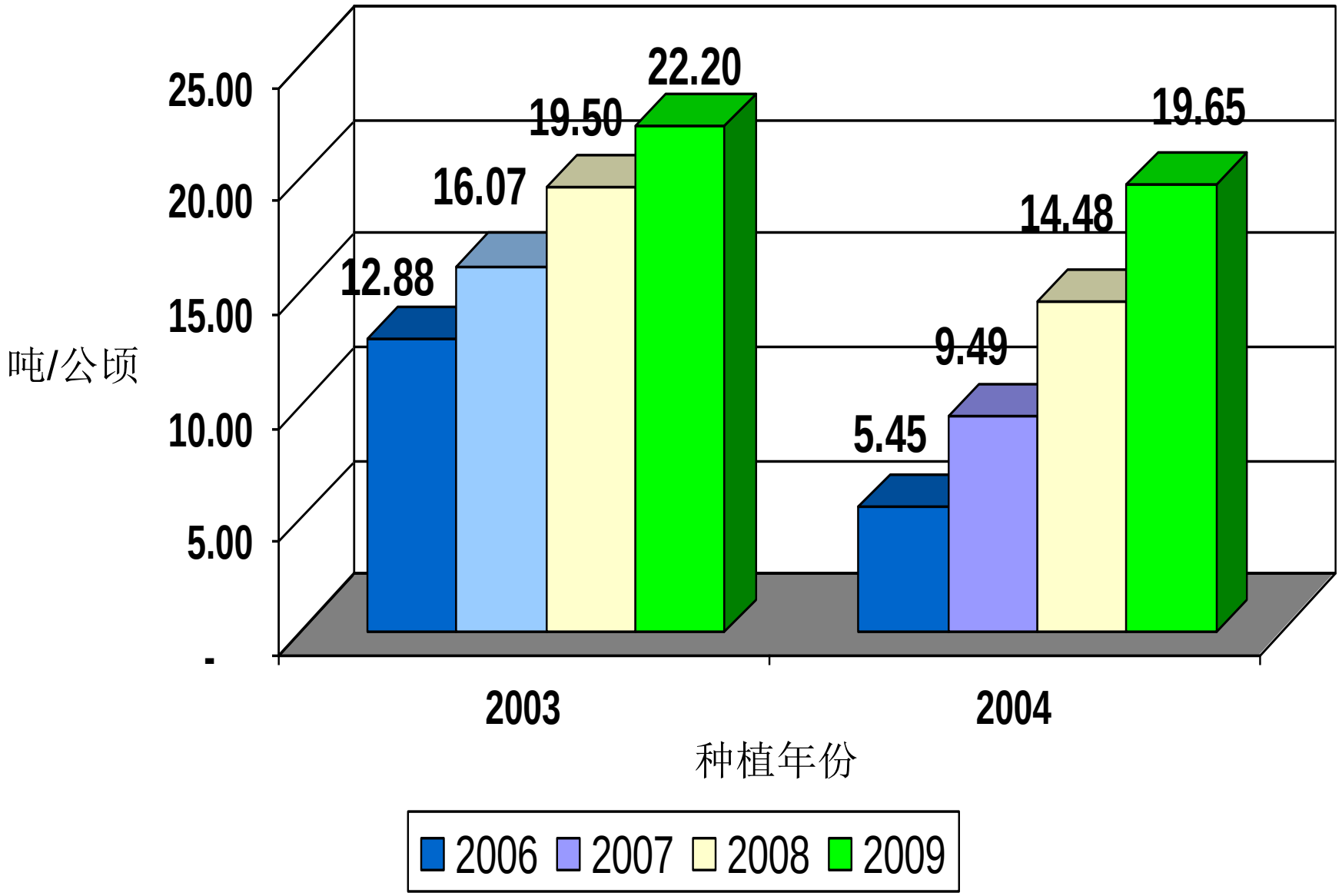
Tatau 园丘传统的施肥计划与IBG生物肥料的施肥计划之间的成本比较

IBG 生物肥料 (4 公升)	RM 345
硫酸铵	RM 750
磷矿粉	RM 1,550
氯化钾	RM 2,100
氧化镁	RM 460
硼酸盐	RM 3,800
尿素	RM 1,400
8:8:8	RM 5,100
7:4:34	RM 2,250

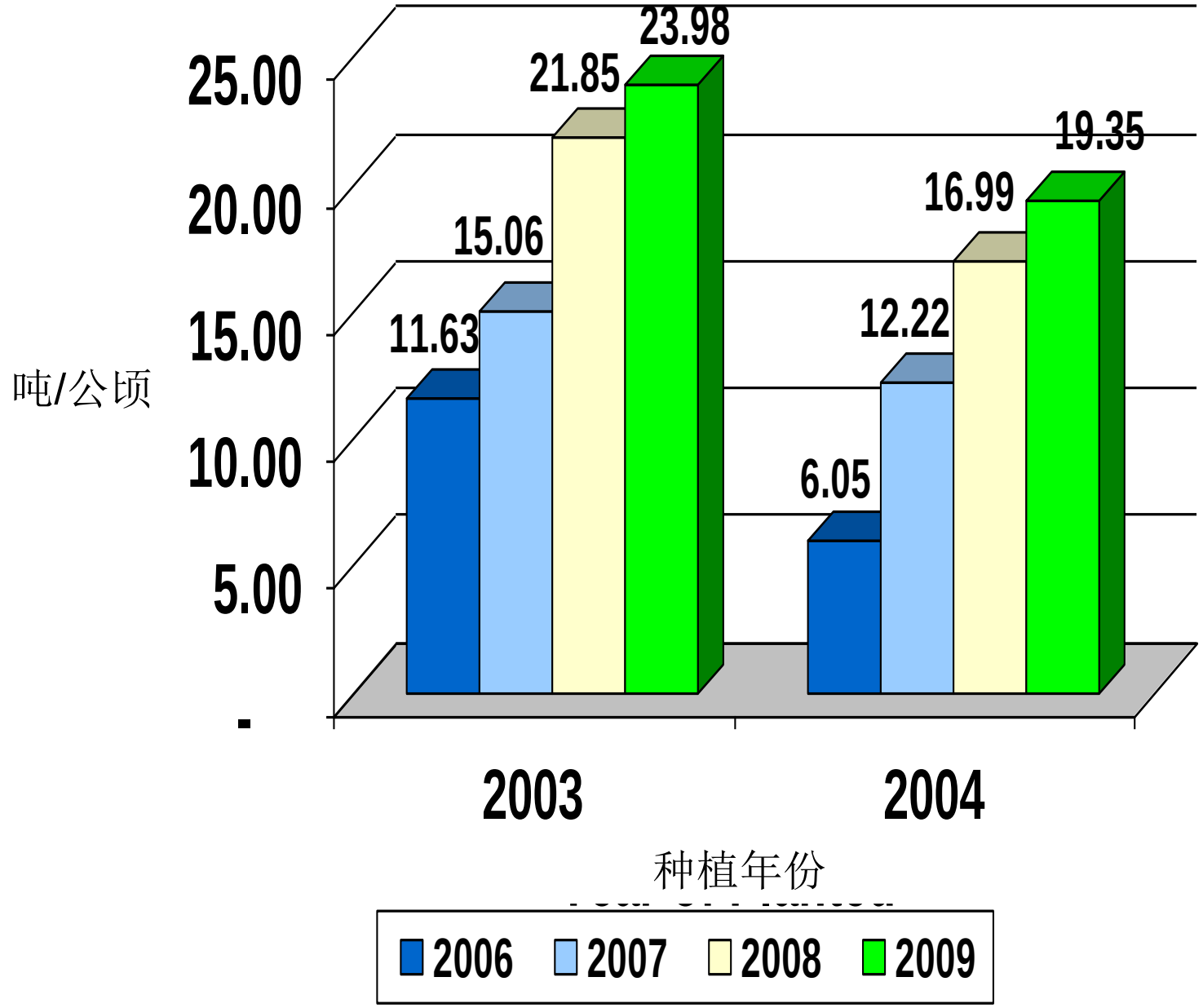
常规施肥计划				
No.	肥料	分量	成本/树	成本/公顷 (150 树)
1	尿素	0.50 公斤	RM 0.70	RM 105.00
	氯化钾	2.00 公斤	RM 4.20	RM 630.00
2	尿素	0.50 公斤	RM 0.70	RM 105.00
	氯化钾	2.00 公斤	RM 4.20	RM 630.00
3	磷矿粉	1.00 公斤	RM 1.55	RM 232.50
4	微量元素	0.125 公斤	RM 0.64	RM 95.63
	硼酸盐	0.15 公斤	RM 0.57	RM 85.50
5	尿素	0.50 公斤	RM 0.70	RM 105.00
	氯化钾	2.00 公斤	RM 4.20	RM 630.00
		8.78 公斤	RM 17.46	RM 2,618.63

IBG生物肥料施肥计划				
No.	肥料	分量	成本/树	成本/公顷 (150 树)
1	氯化钾包装土埋	5.00 公斤	RM 10.50	RM 1,575.00
2	IBG 生物肥料 (4 公升)	20 毫升	RM 1.73	RM 258.75
3	微量元素	0.125 公斤	RM 0.64	RM 95.63
	硼酸盐	0.15 公斤	RM 0.57	RM 85.50
4	IBG 生物肥料 (4 公升)	20 毫升	RM 1.73	RM 258.75
	共	5.28 公斤 + 40 毫升	RM 15.16	RM 2,273.63
	总成本节省/树		RM 2.30	

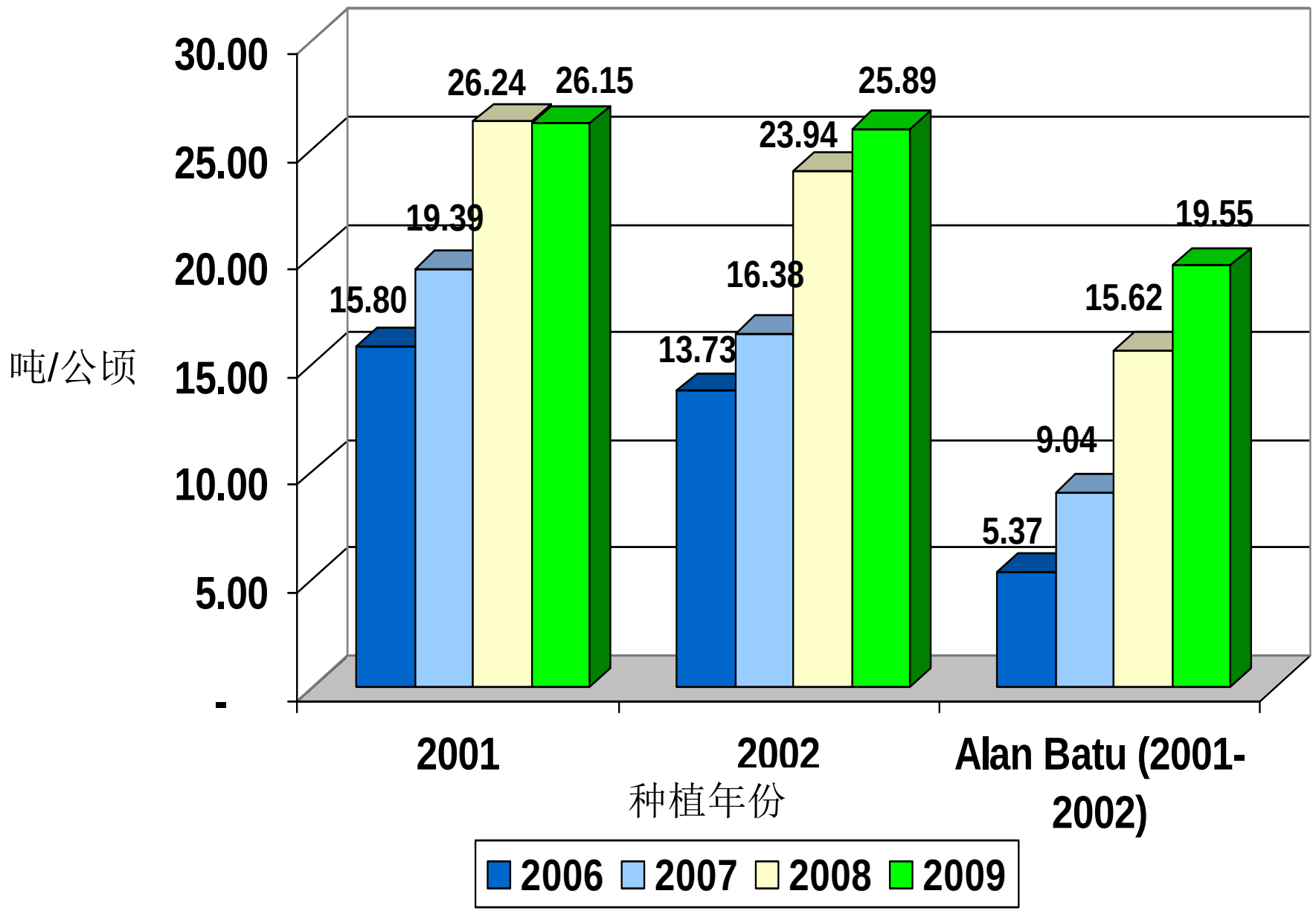
2006年 – 2009 年Tatau生产产量



2006年 – 2009 年Semanok生产产量



2006年 – 2009 年Tamar生产产量



总结

对照		
肥料	成本/树	成本/公顷 (150 树)
8.78 公斤	RM 17.46	RM 2,618.63
次/年	劳工成本/次/公顷	5 次/公顷
5	RM 8	RM 40
	共成本/公顷	RM 2,658.63

实验		
肥料	成本/树	成本/公顷 (150 树)
化学肥料 5.28 公斤	RM 11.71	RM 1,756.13
IBG 40 毫升	RM 3.45	RM 517.50
次/年	劳工成本/次/公顷	4 次/公顷
4	RM 8	RM 32
	总成本/公顷	RM 2,305.63

额外产量(吨)/公顷	2.19
平均价格/吨	RM 700.00
收入	RM 1,533.00
成本差异/公顷	RM 353.00
额外收入/公顷	RM 1,886.00

WOODMAN KUALA BARAM ESTATE SDN. BHD.

(616631-U)

Lot 306, Jalan Krokop, P. O. Box 1437, 98008 Miri, Sarawak.
Tel: 085-419321 (8 Lines) Fax: 085-435470 / 416759 / 420145

DATE : 25th May 2010

To Whom It May Concern:

This serve to certify that the IBG Microorganism Bio Fertilizers is a high technology product which Woodman Group Of Companies are using such as Usaha Sepadan Estate on mineral soil. Tamar Estate, Tatau Estate and Semanok Estate are on peat area for several years, area coverage approximately **18,000 Ha** since 2003 till at present.

After using this IBG-BIO Fertilizers product, it is proven that this product really benefits us through cost saving at 20% generally, maintain and improve its productivity, reducing labour cost, improve the soil structure and maintain adequate soil moisture without extra cost where the quantity of micro-organism in the soil create healthy natural environment for the palm growth where we reduce our chemical cost at 30% generally.

We do not hesitate to recommend any clients or company to use this product where it is mutual benefit for long term purposes.

Thank you,

我们毫不犹豫地推荐任何客户或公司使用本产品以达到互惠的长期目的。

Yours truly,
WOOMAN KUALA BARAM ESTATE SDN. BHD.

MR. ANTHONY JAU
Senior Plantation Manager

JOBENAR RAYA SDN. BHD.

(Mafrica Maytrading Sdn. Bhd.其中一间子公司)

- 地点: Jobenar Raya Sdn. Bhd.， 民都鲁, 砂劳越。
- 地段: 对照田地 – 64.90 公顷
  实验田地 – 91.10 公顷
- 土壤种类: Anderson 3 (深泥炭)
- 种植年份: 2001

在Jobenar Raya 园丘进行的产量生产（2006年 - 2008年）的比较。

地段	公顷	吨/公顷		
		2006	2007	2008
对照	64.90	14.91	16.61	18.93
实验	91.10	17.66	22.91	26.40
差别		2.75	6.30	7.47

Jobenar Raya Sdn. Bhd. 园丘传统的施肥计划与IBG生物肥料的施肥计划之间的成本比较

IBG 生物肥料 (4 公升)	RM 345
硫酸铵	RM 750
磷矿粉	RM 1,550
氯化钾	RM 2,100
氧化镁	RM 460
硼酸盐	RM 3,800
尿素	RM 1,400
8:8:8	RM 5,100
7:4:34	RM 2,250

常规施肥计划				
No.	肥料	分量	成本/树	成本/公顷 (148 树)
1	7:4:34	5.00 公斤	RM 11.25	RM 1,665.00
2	尿素	1.00 公斤	RM 1.40	RM 207.20
3	氯化钾	2.00 公斤	RM 4.20	RM 621.60
4	微量元素	0.15 公斤	RM 0.77	RM 113.22
	共	8.15 公斤	RM 17.62	RM 2,607.02

IBG 生物肥料施肥计划				
No.	肥料	分量	成本/树	成本/公顷 (148 树)
1	IBG OP**	50 毫升	RM 4.31	RM 638.25
2	7:4:34	3.00 公斤	RM 6.75	RM 999.00
3	氯化钾	2.50 公斤	RM 5.25	RM 777.00
4	微量元素	0.15 公斤	RM 0.77	RM 113.22
	共	5.65 公斤 + 50 毫升	RM 17.08	RM 2,527.47
	总成本节省/树		RM 0.54	

总结

对照		
肥料	成本/树	成本/公顷 (148 树)
8.15 公斤	RM 17.62	RM 2,607.02
次/年	劳工成本/次/公顷	4 次/公顷
4	RM 8	RM 32
	共成本/公顷	RM 2,639.02

实验		
肥料	成本/树	成本/公顷 (148 树)
化学 肥料 5.65 公斤	RM 12.77	RM 1,889.22
IBG 50 毫升	RM 4.31	RM 638.25
次/年	劳工成本/次/公顷	4 次/公顷
4	RM 8.00	RM 32
	共成本/公顷	RM 2,559.47

额外产量(吨)/公顷	5.51
平均价格/吨	RM 700.00
收入	RM 3,857.00
成本差异/公顷	RM 79.55
额外收入/公顷	RM 3,936.55

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 Sibu,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 hectarage 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

在过去的4 1/2年的IBG生物肥料的使用中，与对照地段相比，平均产量增加了18.25%

为获得最佳效果，IBG生物肥料应与化学肥料结合，后者可减少20-30%。

2015年IBG生物肥料在MAFRICA的施用

公司	种植公顷	地段	种植年份	IBG生物肥料施用量/树/年	IBG生物肥料使用
Palmcol Sdn. Bhd	5,190.20	5	2007 - 2010	50 毫升	6,647 瓶
Jobenar Raya Sdn. Bhd.	2,832.07	4	2000, 2004 - 2005	50 毫升	5,890 瓶
Jobenar Balingian					1,614 瓶
Rosebay Enterprise Sdn. Bhd. (Rosebay 2)	2,507.97	2	2005 - 2006	50 毫升	3,574 瓶
Palmraya Pelita Sikat Platation	1,736.00	2	2007 - 2010	50 毫升	3,002 瓶
Palmraya Pelita Meruan Plantation	4,820.07	6	2000 - 2010	50 毫升	7,404 瓶
Victoria Square Development Sdn. Bhd.	3,657.30	2	2008 - 2010	50 毫升	2,698 瓶
Saradu Plantations Sdn. Bhd	地段 1: 2,000 公顷				4,297 瓶
Worldsign Harvest Sdn. Bhd.	6,000.00				5,763 瓶
Palmraya Pelita Sepapa Oya Plantation Sdn. Bhd.					1,468 瓶
Titasa Sdn. Bhd.					152 瓶
共	**40,000.00**				**42,509 瓶**

2016年IBG生物肥料在MAFRICA的施用

公司	种植公顷	地段	种植年份	IBG生物肥料施用量/树/年	IBG生物肥料使用
Palmcol Sdn. Bhd	5,190.20	5	2007 - 2010	50 毫升	6,888 瓶
Jobenar Raya Sdn. Bhd.	2,832.07	4	2000, 2004 - 2005	50 毫升	3,440 瓶
Jobenar Balingian					5,040 瓶
Rosebay Enterprise Sdn. Bhd. (Rosebay 2)	2,507.97	2	2005 - 2006	50 毫升	3,574 瓶
Palmraya Pelita Sikat Platation	1,736.00	2	2007 - 2010	50 毫升	2,880 瓶
Palmraya Pelita Meruan Plantation	4,820.07	6	2000 - 2010	50 毫升	7,544 瓶
Victoria Square Development Sdn. Bhd.	3,657.30	2	2008 - 2010	50 毫升	4,296 瓶
Saradu Plantations Sdn. Bhd	地段 1: 2,000 公顷				6,704 瓶
Worldsign Harvest Sdn. Bhd.	6,000.00				7,802 瓶
Palmraya Pelita Sepapa Oya Plantation Sdn. Bhd.					2,364 瓶
Titasa Sdn. Bhd.					120 瓶
共	**40,000.00**				**50,152 瓶**

2017年IBG生物肥料在MAFRICA的施用

公司	种植公顷	地段	种植年份	IBG生物肥料施用量/树/年	IBG生物肥料使用
Palmcol Sdn. Bhd	5,190.20	5	2007 - 2010	50 毫升	6,808 瓶
Jobenar Raya Sdn. Bhd.	2,832.07	4	2000, 2004 - 2005	50 毫升	4,632 瓶
Jobenar Balingian					5,668 瓶
Rosebay Enterprise Sdn. Bhd. (Rosebay 2)	2,507.97	2	2005 - 2006	50 毫升	3,022 瓶
Palmraya Pelita Sikat Platation	1,736.00	2	2007 - 2010	50 毫升	3,066 瓶
Palmraya Pelita Meruan Plantation	4,820.07	6	2000 - 2010	50 毫升	3,792 瓶
Victoria Square Development Sdn. Bhd.	3,657.30	2	2008 - 2010	50 毫升	2,420 瓶
Saradu Plantations Sdn. Bhd	地段 1: 2,000 公顷				6,660 瓶
Worldsign Harvest Sdn. Bhd.	6,000.00				6,836 瓶
Palmraya Pelita Sepapa Oya Plantation Sdn. Bhd.					1,064 瓶
Titasa Sdn. Bhd.					0 瓶
共	**40,000.00**				**43,964 瓶**

PRIORITY POTENTIAL SDN. BHD.

(Golden Agro Sdn. Bhd.其中一间子公司)

- 地点: Priority Potential 园丘，木胶，沙捞越。
- 地段 :　　对照田地– 156.78 公顷
  实验田地 – 253.24 公顷
- 种植年份: 2012 - 2013
- 自2017年1月年使用IBG生物肥料。

在Priority Potential的IBG生物肥料施放

			吨/公顷												共
地段	种植年份	**公顷**	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	
K1 (对照)	Nov-12	16.00	0.34	0.20	0.40	0.30	0.27	0.57	0.80	0.81	0.76	0.78	0.74	0.82	6.78
K2 (对照)	Nov-12	15.97	0.56	0.39	0.80	0.59	0.47	0.73	1.21	1.40	1.04	1.04	1.02	1.04	10.29
K9 (对照)	Jan-13	19.97	0.34	0.28	0.39	0.42	0.49	0.86	0.69	1.20	0.83	0.99	0.92	0.93	8.35
L1 (对照)	Nov-12	23.56	0.59	0.31	0.59	0.78	0.76	1.01	1.14	1.68	1.43	1.48	1.11	1.12	12.00
L8 (对照)	Nov-12	20.00	0.39	0.28	0.30	0.55	1.31	1.03	0.72	1.31	1.20	1.48	1.06	0.72	10.33
L9 (对照)	Dec-12	20.00	0.46	0.38	0.33	0.45	1.22	0.88	0.70	0.94	1.00	1.51	0.79	1.20	9.86
L10 (对照)	Dec-12	20.00	0.48	0.36	0.34	0.44	0.78	1.44	0.73	1.48	1.07	1.18	1.99	0.91	11.20
N6A (对照)	Sep-12	6.30	0.61	0.58	0.50	0.82	0.64	1.63	1.30	2.45	1.52	1.81	1.50	0.92	14.27
N8 (对照)	Sep-12	14.98	0.65	0.51	0.39	0.62	0.60	1.40	1.29	2.23	1.67	1.39	1.50	0.73	12.98
平均			0.49	0.37	0.45	0.55	0.73	1.06	0.95	1.50	1.17	1.30	1.18	0.93	10.67
K3 (IBG)	Dec-12	15.94	0.48	0.31	0.64	0.56	0.50	0.88	1.37	1.57	1.13	1.15	1.07	1.05	10.70
K4 (IBG)	Jan-13	15.94	0.50	0.30	0.68	0.52	0.49	1.00	1.30	1.80	1.17	1.28	1.07	1.22	11.33
K5 (IBG)	Jan-13	15.90	0.46	0.28	0.65	0.67	0.68	1.06	1.57	2.11	1.20	1.24	1.16	1.28	12.36
K6 (IBG)	Jan-13	20.80	0.66	0.40	0.91	0.75	0.70	1.07	1.40	1.90	1.25	1.26	1.16	1.47	12.93
K7 (IBG)	Jan-13	20.00	0.73	0.45	1.13	1.14	1.19	2.03	1.62	2.17	1.57	1.57	1.55	1.58	16.72
K8 (IBG)	Jan-13	20.04	0.39	0.29	0.35	0.43	0.52	1.17	0.72	1.28	1.08	1.24	1.27	1.22	9.97
L2 (IBG)	Nov-12	23.56	0.89	0.82	0.95	1.12	0.99	1.26	1.42	1.42	1.52	1.78	1.18	1.31	14.65
L3 (IBG)	Nov-12	23.56	0.86	0.68	0.98	0.87	1.18	1.61	1.43	1.75	1.48	1.66	1.10	1.32	14.93
L4 (IBG)	Nov-12	23.56	0.73	0.60	0.86	0.49	1.53	1.62	1.43	1.78	1.51	1.64	1.14	1.26	14.60
L5 (IBG)	Nov-12	23.56	0.68	0.64	0.91	0.50	1.81	1.62	1.39	1.90	1.48	1.80	1.27	1.14	15.14
L6 (IBG)	Nov-12	20.00	0.58	0.53	0.74	0.45	1.52	1.36	1.32	1.97	1.50	1.71	1.34	1.26	14.28
L7 (IBG)	Nov-12	20.00	0.57	0.45	0.94	0.61	1.82	1.45	1.39	1.82	1.43	1.93	1.27	0.81	14.49
N7 (IBG)	Aug-12	10.38	0.74	0.75	0.74	1.34	1.06	1.97	1.79	2.56	1.71	1.97	1.58	0.92	17.13
平均			0.64	0.50	0.81	0.73	1.08	1.39	1.40	1.85	1.39	1.56	1.24	1.22	13.79

PHOENIX PERKS SDN. BHD.

(Ngan & Ngan Holdings.其中一间子公司)

- 地点: 民都鲁，沙捞越。
- 地段: 对照田地 – 0.00 公顷
  实验田地 – 1,395.55 公顷
- 种植年份: 各种
- 自2022年8月年使用IBG生物肥料。

Year	Total mt	Total ha	Total mt/ha
2017	802.87	1,395.55	0.58
2018	10,789.06	1,395.55	7.73
2019	21,845.30	1,395.55	15.65
2020	24,975.68	1,395.55	17.90
2021	36,158.67	1,395.55	25.91
2022 (start using IBG at August - September 2022)	30,574.61	1,395.55	21.91
2023 (until September)	31,733.76	1,395.55	22.74

PRIORITY POTENTIAL SDN. BHD.

(Golden Agro Sdn. Bhd.其中一间子公司)

- 地点: Priority Potential 园丘，木胶，沙捞越。
- 地段 :　　对照田地– 156.78 公顷
  实验田地 – 253.24 公顷
- 种植年份: 2012 - 2013
- 自2017年1月年使用IBG生物肥料。

…20,000 公顷

…15 年…

…28 – 29 吨/公顷…

…改善土壤质量和结构…灵芝病感染低于2%…

TAMACO PLANTATION SDN. BHD.
P.O. Box 60486,
91114, Lahad Datu Sabah.

Date: 26th January 2022

To whom this may concern,

Truthfully, we have been struggling finding the right supplement for the palms to grow healthily through sustainable ways. When the IBG was introduced back in the days, the effects were seen. Result were observable might vary due to the condition and type of the soil. Make it in three years supervision, if the sustainability of the plantation is maintained, why don't we give a try proceeding its usage? It resembles a good definition of bio-friendly product that will help a lot planters to move forward with legit mission and vision.

Thank you.

Sr. Regional Manager (Sabah)
Hadrawi Mohd Arip

TAMACO PLANTATION SDN. BHD.
P.O. Box 60486,
91114, Lahad Datu Sabah.

Date: 26th January 2022

To whom this may concern,

Tamaco Plantation Sdn. Bhd. has been using IBG biofertilizer since year 2006 until now in the oil palm plantation in Bintulu and Lahad Datu with a total hectarage of about 20,000.

More than 15 years after using the IBG biofertilizer, the main effects we had seen is that the oil palm yield has been increased and maintained at 28 – 29 mt/ha when compared with non-treatment oil palm. We had witnessed the recovery and improvement of the soil's quality and structure. While our neighboring estates suffering from high infection of Ganoderma, the infection in our estate has remained low in relative, less than 2% only.

Besides, with the improvement of soil chemical and biological properties, the palm's physiology has been ameliorated. The frond pruning and bunch harvesting had become easier than before using IBG biofertilizer, thus the cost of the palm and soil's health maintenance and the cost of chemical fertilizer application has been reduced drastically. Also, it is easy to apply in the field.

These effects can only be seen after 3 months – 3 years application of IBG biofertilizer depending on the soil type condition.

Hereby, we encourage any customer or company to use this product for long term benefits.

Thank you.

Sr. Regional Manager (Sabah)
Hadrawi Mohd Arip

我们鼓励任何客户或公司使用该产品以获长期利益。

我们的国际生意

Ministry of Agriculture	2013 - 2014	206,572 公顷
		619,716 公升
Felda Agriculture Service Sdn. Bhd.		研究
Felcra Urus Estet Sdn. Bhd.		研究
Risda Plantation Sdn. Bhd.		研究
Espek Sdn. Bhd.		研究
IOI Research Centre		研究
Hap Seng Plantation Sdn. Bhd.		研究
Genting Plantation Research Centre		研究
MARDI, MPOB, UM		研究
Woodman Plantations Sdn. Bhd.		45,000 公顷
Tamaco Plantations Sdn. Bhd.		20,000 公顷
Mafrica Maytrading Sdn. Bhd.		40,000 公顷
Melangking Oil Palm Plantation Sdn. Bhd.		8,000 公顷
Golden Star Ace Sdn. Bhd. (Rimbunan Hijau)		30,000 公顷
Borneo Agro Resources Sdn. Bhd.		10,000 公顷

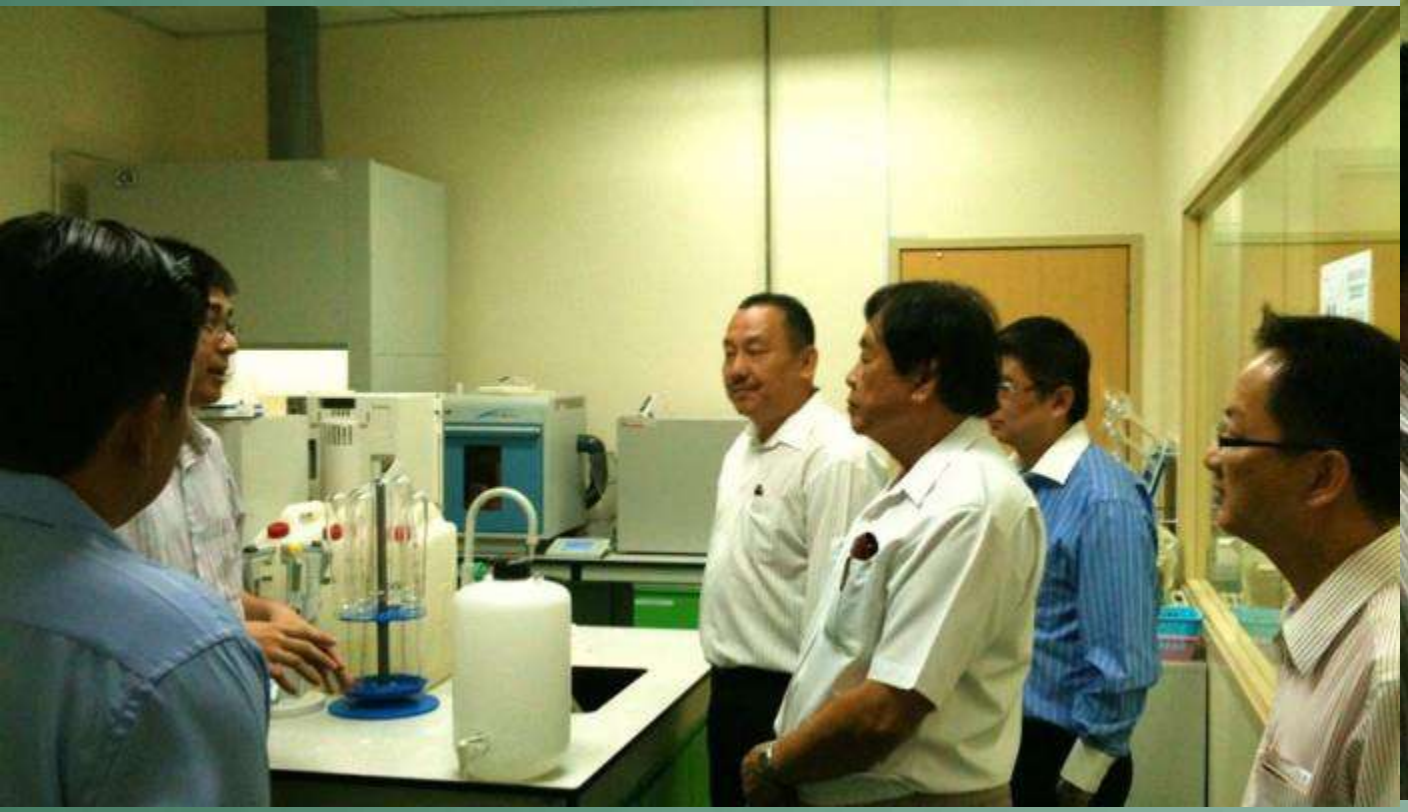
和其他如Kwantas，SALCRA，Sawit Kinabalu等等小园主

IBG Manufacturing Sdn. Bhd.

欢迎大家到此参观

企业拜访 – 云顶种植园

企业拜访 – 常青集团Tan Sri Datuk Sir 张晓卿



企业拜访 - 1/6/2016，星期三，农业发展研究所总监(MARDI) Datuk Dr. Sharif， 农业部总监(DOA)Dato‘ Ahmad Zakaria， 全国农民组织(NAFAS)董事会Tuan Haji Ahmad

企业拜访 – 6/12/2016, 星期二,
全国农民组织(NAFAS) 主席 Dato’ Seri Saipol

8/12/2016，星期四，签约仪式 NAFAS-IBG

企业拜访 – 31/3/2017，星期五，砂拉越农业部总监Datu赖

企业拜访 –
Golden Star Ace 集团董事经理 Mr. Kevin Ko Yeu Ying

企业拜访 – 9/8/2019，星期五，马来西亚种植及原产业部

园丘拜访 – 14/10/2019，星期一，和MPOB拜访TAMACO

企业拜访 – 24/6/20，星期三，Incorporated Society of Planters 主席Datuk Haji Daud bin Haji Amatzin

企业拜访 – 9/7/2020，星期四，马来西亚农业及食品工业部秘书长Dato' Zainal Azman Bin Abu Seman

企业拜访 – 30/7/2020，星期四，Ekovest

企业拜访 – 23/9/2021，星期四，双威大学 Professor Leong

企业拜访 – 13 & 27/10/2020，慕达农业发展机构（MADA）corp 首席执行官 Mohamad Anuar Bin Pir Mohamad 和 MADA 主席 YB Ahmad Tarmizi Bin Sulaiman

企业拜访 – 13/10/2021，星期三，马大Professor Ling Tau Chuan和Dr. Rosazlin Abdullah

企业拜访 – 18/10/2021，星期一，MPOB 总监 Datuk Dr. Ahmad Parveez Hj Ghulam Kadir, 生物与可持续发展研究部主任 Dr. Idris Abu Seman, 植物病理学和生物安全主管 Dr. Mohd. Hefni bin Rusli

企业拜访 – 02/11/2021，星期二, 关氏首席执行员 Alvin 关元华, PC Mr. Sri Renganathan S. Muthiah

企业拜访 – 08/04/2022，星期五，砂拉越农业现代化及区域发展部长, YB Dato Sri Dr. Stephen Rundi Utom

企业拜访 – 26/07/2022，星期二，SALCRA 最高管理层

企业拜访 – 07/09/2022，星期三， 诺丁汉大学林汉龙教授

企业拜访 – 07/10/2022，星期五， Sime Darby Plantation Research Sdn. Bhd. Dr. Sim Choon Cheak 和 Dr. Teh Chee Keng

企业拜访 – 27/10/2022，星期四，United Malacca Berhad 首席执行官 Mr. Young，PC Mr. Low 和MPOB

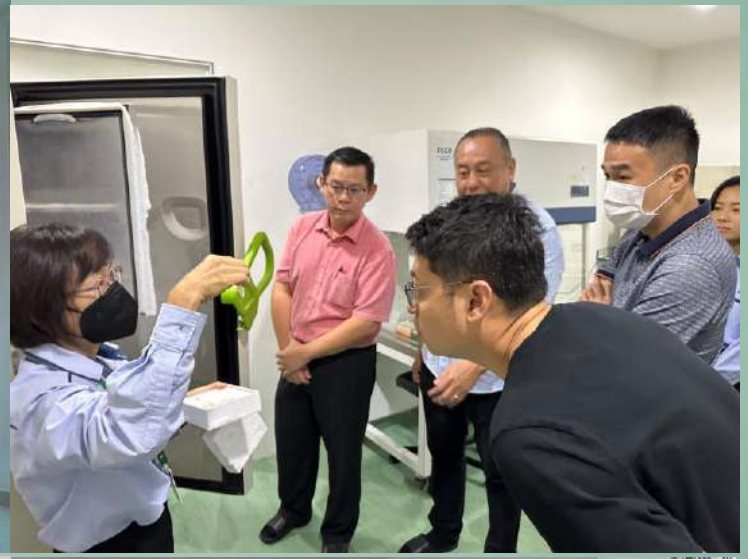
19th December 2022, Monday, Sawit Kinabalu Group MD Datuk Bacho Jansie

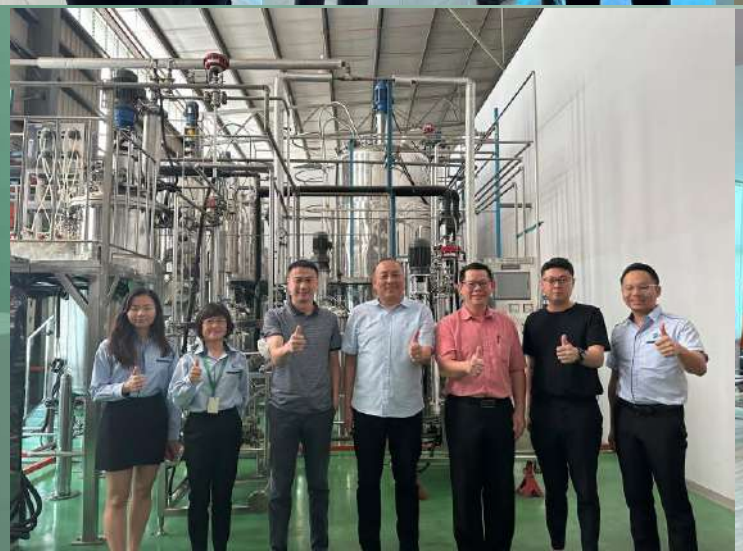
园丘拜访 – 19/12/2023，星期一，Sawit Kinabalu Group MD Datuk Bacho Jansie

企业拜访 – 13/1/2023，星期五，农业局

企业拜访 – 30/1/2023，星期五，Mardi Fertilizer Technology Programme, Soil Science, Water & Fertilizer研究中心总监 Dr. Rosliza Binti Jajuli，副总监 Dr. Ganisan Krishnen，和 Paddy and Rice 研究中心总监 Dr. Mohd. Syaifudin Bin Abdul Rahman

企业拜访 – 3/5/2023，星期三，友旺集团





企业拜访 – 6/6/2023，星期二，FGV，由农学和战略农作物主管Dr. Then Kek Hoe带领




企业拜访 –2/8/2023，星期三，吉隆坡甲洞集团CEO TSDS李爱贤，AAR董事 Mr.Tey，副董事 Dr. Tasren

企业拜访 – 19/10/2023，星期四，FGV Fertiliser, 由En. Hamdan带领

谢谢你

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