



MPOB F4  
**BIO-CHEMICAL  
FERTILIZER**

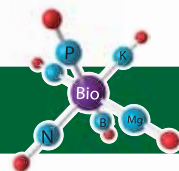


# OIL PALM

No more problematic soil . Better nutrient and water retention . High yields



# RealStrong Bio-Chemical Fertilizer



## MPOB F4

- Specifically designed for oil palm
- Balanced chemical nutrients, bound by plant-based organic matters and microorganisms
- Combination of 3 in 1 complete fertilizer and environmental friendly
- A tailor made fertilizer for oil palm as a result of successful collaboration between the Malaysia Palm Oil Board (MPOB) with ALL COSMOS INDUSTRIES SDN BHD

### The oil palm crop

The oil palm (*Elaeis guineensis*) is a fast expanding crop in the tropics. The plant has many uses: as food, industrial material and energy source, so far there is no substitute yet in sight. Demand is strong, it correlates with population and economic growth. Only few countries in the world are blessed with land and climate for its efficient propagation.

### Bio-Chemical fertilizer

Bio-Chemical fertilizer is a fertilizer for day-to-day agriculture. It is chemical materials (N, P, K, Mg, B, TE) combined with plant-based organic matters and microbes for long term sustainable crop yields.

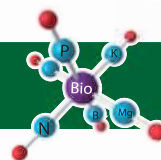
### Effective microorganisms (EM)

Microbes are the oldest form of life on earth. They fix nitrogen from air and soil, dissolve phosphate and potassium to break down organic material so that they are in the form absorbable by plant roots.

### Integrating inorganic and organic materials

Integrating inorganic and organic fertilizer can increase the soil pH and thus the efficiency of nutrient uptake by the crop and enhance the retention of nutrients in the soil in the long term to improve the soil quality.

# Application Recommendation of MPOB F4



MPOB F4 is recommended one application in every 4 months for palms between 1 to 15 years old.

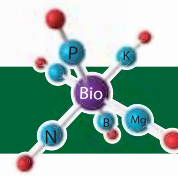
	1st Application	2nd Application	3rd Application
1st Year	0.5kg/palm	1.0kg/palm	1.5kg/palm
2nd Year	1.5kg/palm	2.0kg/palm	2.0kg/palm
3rd Year	2.2kg/palm	2.2kg/palm	2.2kg/palm
4th Year	2.4kg/palm	2.4kg/palm	2.4kg/palm
5th Year till 15 years	2.5kg/palm	2.5kg/palm	2.5kg/palm

For oil palms above 15 years old, use RealStrong Max K (N:8 P<sub>2</sub>O<sub>5</sub>:8 K<sub>2</sub>O:20), 2.5kg/palm once every 4 months. This general recommendation serves as a guide, depending on plant age, soil nutrient status, weather conditions and management practices.

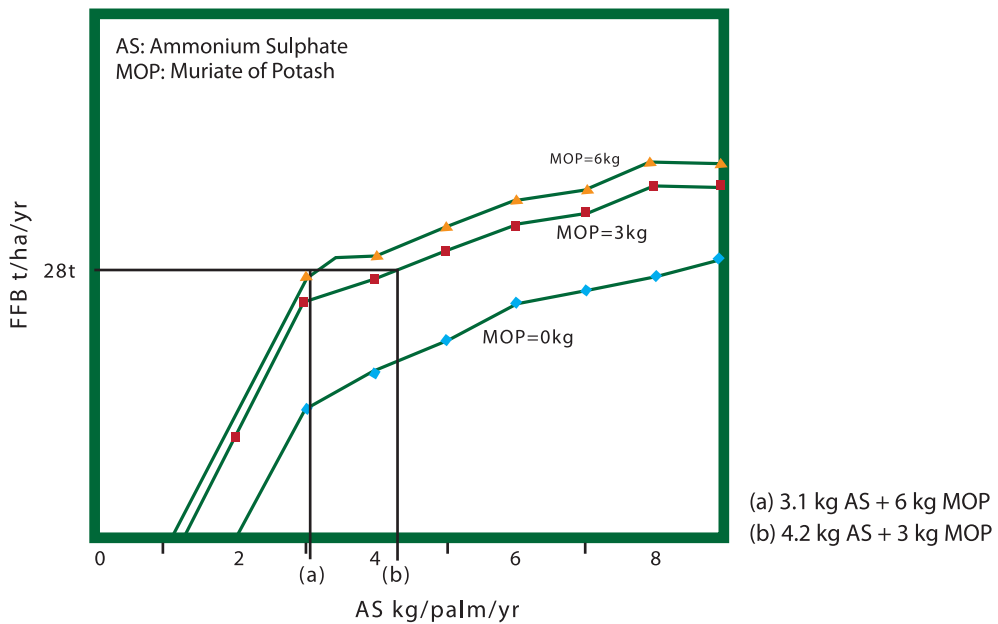
**MPOB F4 contains**

N:9 P<sub>2</sub>O<sub>5</sub>:6 K<sub>2</sub>O:18 MgO:2 B<sub>2</sub>O<sub>3</sub>:0.5 + TE  
Chemical 70% + Organic 20% + Zeolite 10%

# RealStrong Bio-Chemical Fertilizer



## HIGHER REVENUE GAIN BY APPLYING OPTIMUM BALANCED FERTILIZER

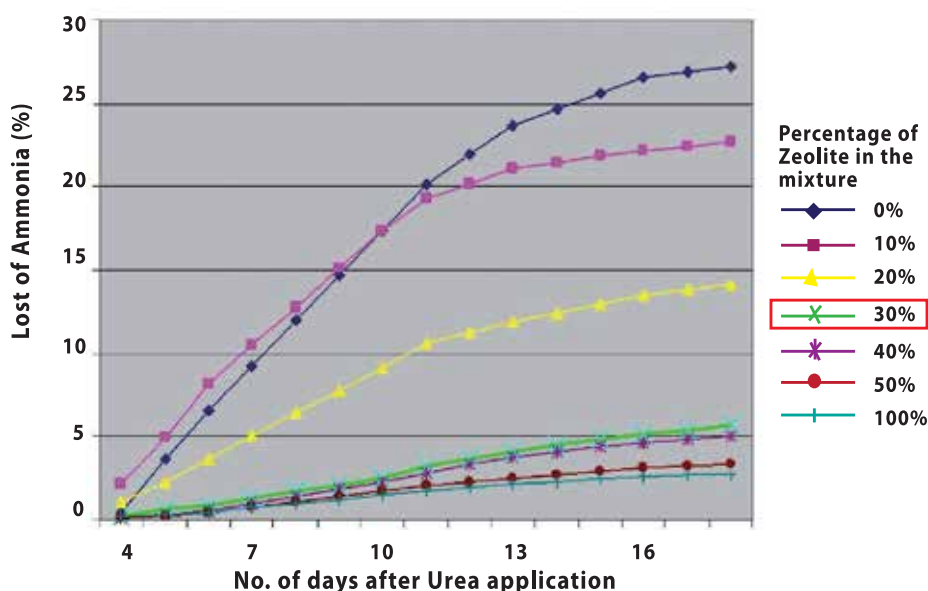


	Fertilizer (kg/ palm)	N(%)	P <sub>2</sub> O <sub>5</sub> (%)	K <sub>2</sub> O(%)	MgO(%)	Borate(%)	FFB (t/ha/yr)
T1	9.2	8.0	7.0	16.3	2.9	0.6	33
T2	8.0	9.2	4.0	26.3	-	-	27

Source: Mohammed, A.T., Bakar H.A., Zakaria, Z.Z. & Darus A. (2003). Formulation of balanced fertilizer for oil palm. MPOB Information Series, 178. In T1, potassium is 1 time more than the nitrogen content; in T2, potassium is nearly 2 times more than the nitrogen content. T1 achieved higher tonnages even though less potassium was applied.

## CUMULATIVE LOSS OF NH<sub>3</sub> FROM UREA VOLATILIZATION WITH DIFFERENT COMBINATIONS OF ZEOLITE AND UREA MIXTURE

Zeolite decreases ammonia loss (see graph below) from urea by trapping the volatilized gas in its pores structure.



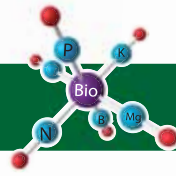
Mixing zeolite with urea can also enhance phosphorus uptake by plants. The zeolite-PR exchange-induced dissolution system enables better P release in response to plant demand. The model of P release proposed is as follows:  $PR + NH_4^+ - zeolite \rightarrow Ca^{2+} - zeolite + NH_4^+ + PO_4^{3-}$

Source: Ahmad Tarmizi Mohammed; Ahmad Afandi Murdi; Zakaria Abas; Wahid Omar; Mazli Eswaand Zin ZAWAWI ZAKARIA, (2007) MPOB Series 346.

MPOB F4 contains 10% zeolite and 20% organic matters that is taken as equivalent to 30% zeolite which help in reducing the lost of ammonia.

This general recommendation serves as a guide, depending on plant age, soil nutrient status, weather conditions and management practices.

# MPOB F4 Testimonials



**BEFORE**

**AFTER**

**Improves soil conditions and overcomes problematic soil**



**Raise soil pH to help nutrient absorption**



**Increases fresh fruit bunches**



**RealStrong MPOB F4** helps your crop absorb and benefit from the balanced nutrients in the fertilizer. Its composition improves soil fertility and structure, neutralising harmful diseases and toxins.

For fruitful results, go for **RealStrong** fertilizer!



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