INTREPID Trio®

Cocoa

Naturally Balanced Nutrition in Every Granule

Experience higher yields and balanced fertility in cocoa plantations by providing the right nutrients at the right rate, right time, and right place for maximum return. Intrepid Trio is natural langbeinite, a unique mineral with three essential nutrients comprised of 21.5-22% potassium (K_2O), 10.5-10.8% magnesium (Mg), and 21-22% sulfur (S) as sulfates, depending on grade.

Intrepid Trio, also known as Sulfate of Potash Magnesia, allows growers to apply an extremely low chloride potassium (less than 1.5-2.5% Cl depending on grade) and neutral pH fertilizer with the benefit of sulfur and magnesium in the same ratio in each granule. Intrepid Trio is also OMRI Listed and approved for organic farming.

Available in premium, granular and standard grades, Intrepid Trio blends well with other fertilizer materials for an even distribution of nutrients.

Nutrient Removal (kg) (Yield = 1,000 kg Dry Cocoa Beans)

	Beans			Husks			Total		
	N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
Malaysia	20.4	8.3	12.6	10.6	3	52	31	11.3	64.6
Costa Rica	19.3	10.3	13.1	11.5	4.1	41.4	30.8	14.4	54.5
Cameroon	19.2	10.1	12.7	15	4.4	74.4	34.2	14.5	87.1
Nigeria	22.8	9.2	10.1	17	5.3	92.6	39.8	14.5	102.7

[Source: Thong and Ng (1978), Heuveldop et al. (1988), Bayer (1973), Wessel (1985)]

OMRI LISTED® For Organic Use

REGISTERED ORGANIC INPUT MATERIAL cdfa

INTREPID Essential Minerals for Success

When should Intrepid Trio® be applied?

Apply Intrepid Trio in split applications at the beginning of each rainy season, typically in April and September for maximum nutrient uptake. Applying Trio evenly over areas of active roots will ensure good uptake by the plant.

How does potassium (K_2O) affect cocoa?

Potassium plays an important role in the health of cocoa through enhancing photosynthesis, transporting sugars, and activating enzymes that aid in a number of chemical reactions. Adequate potassium in cocoa is key to bean development, increasing size and sugar levels.

Cocoa removes almost twice as much potassium as nitrogen with the majority of this within the husk. Heavy annual removal of nutrients can lead to yield declines in cocoa plantations if nutrients are not replenished annually with a product like Intrepid Trio. The figure below illustrates benefits of an annual fertilizer program in growing cocoa yields long term.

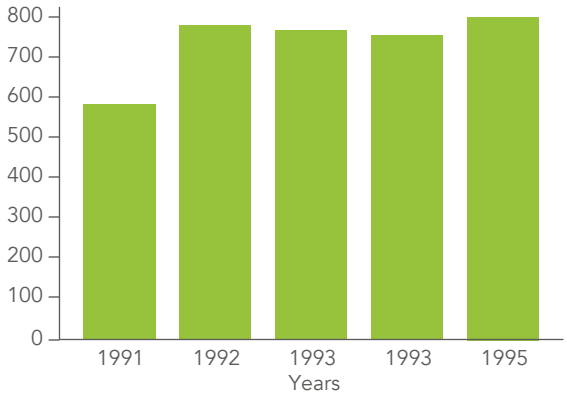

Figure 1. Mean cocoa yield response across fertilizer treatments over a five year period in Santander, Colombia.

(Source: Uribe et. al. 2001)

Intrepid Trio provides three essential minerals readily available as your crop needs them.

What effect does magnesium (Mg) have on cocoa?

Magnesium plays an important role in photosynthesis as the center of the chlorophyll molecule and acts in enzyme reactions forming proteins, and aiding the tree in the manufacture of energy. Magnesium is essential for humans and cocoa powder contains high levels of Mg.

Magnesium uptake in a cocoa plantation can be restricted causing a deficiency when high levels of potassium and calcium fertilizers are used without a magnesium source of nutrients. Applying a balanced fertilizer like Intrepid Trio that has K, Mg, and S in each granule will keep your cocoa plantation balanced with the nutrients it needs to continue to produce high quality beans.

Why is sulfur (S) included in the Intrepid Trio® mixture?

Sulfur is an essential part of vitamins, hormones, and proteins within a plant. Sulfur encourages nitrogen uptake to get the maximum benefit from your applied N fertilizer. Intrepid Trio provides sulfur in the sulfate form which is immediately available to the tree and pH neutral causing no acidifying effect to the soil.

When will Intrepid Trio® be available to cocoa?

Intrepid Trio readily dissolves in the soil slowly, reducing the risk of leaching and providing long-lasting nutrients that are immediately available to the plant.

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REGISTERED cdfa ORGANIC INPUT MATERIAL

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