

Coffee



Crop Advice Sheet

www.icl-sf.com

ICL Specialty
Fertilizers



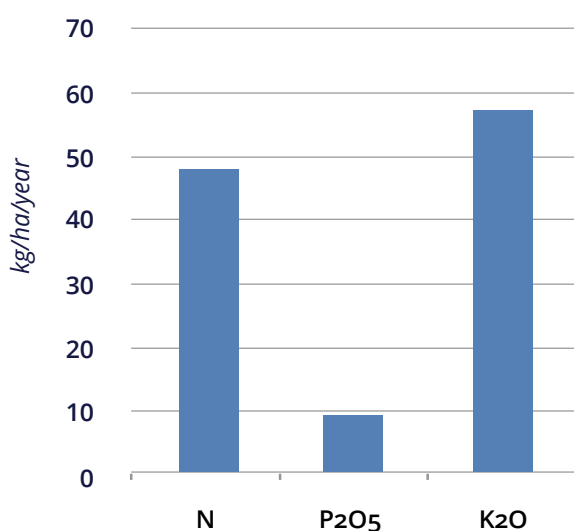
General aspects

General aspects

Among tea and cocoa, coffee trees are part of the group of crops, so called “stimulant” trees. By their nature these trees have to be grown in tropical and subtropical areas. The exact number of species within the genus *Coffea*, is not well known (probably around 90) but the most world trade ones are *C.arabica* and *C. canephora*.

In respect of coffee nutrition, it has been calculated that for a production of 1 MT of green beans, the crop loses, via fruits and removed stems by pruning, approx. 35-60 kg of nitrogen (N), 6-12 kg of P₂O₅, 50-65 kg of K₂O.

Crop removal by fruits and pruning for 1 MT of green beans



These average values are just informative. A proper crop recommendation should be based on soil & water analysis as well as on the results of leaf analysis!

Source: K.C. Willson – *Coffee, Cocoa and Tea*

Nitrogen

This element is essential for vegetative growth. In most commercial plantations, applying nitrogen will increase crop yield, provided other nutrients are applied adequately. Based on local conditions and the expected yield, levels of 50 to 400 kg/ha are usually applied.

Phosphorus

Only small quantities of this nutrient are removed with the crop and pruning. Nevertheless, it's vital for plant growth and it may be in short supply due to soil fixation. Usually, the annual amount of P₂O₅ applied is around 100 kg/ha but it may increase to 200 kg/ha.

Potassium

The amount of potassium in the crop is at least as great as that of nitrogen. It is vital for growth in all part of the plant but particularly important for fruit development. Annual quantities may vary due to various conditions and might be applied up to 500 kg/ha.

Calcium

A small quantity of this element is lost in the crop and pruning. Most soils contain sufficient calcium. Deficiency symptoms are known but rarely seen. Excessive quantities of calcium will inhibit the uptake of potassium.

Magnesium

Since it's a constituent of the chlorophyll as well as taking part in various growth processes, it needs to be sufficient supplied. Application rates of 50-100 kg/ha are usually adequate.

Sulphur

This element is necessary in small quantities. In some soils, deficiency symptoms will appear on young plants after planting out.

Zinc, Iron, Boron

Deficiency symptoms of these trace elements are often seen. If severe, there will be a significant yield reduction. Foliar applications could easily remedy these deficiency symptoms.

Our solution with...

Agromaster®



Superior in performance but simple to use

Agromaster combines ICL's advanced coating technology, E-Max, with specially selected conventional granules. This powerful combination provides controlled release of nitrogen for 2-3 up to 5-6 months (M) and high-quality performance in one uniform product. The product range is ideally to be used for mature plantations.

Benefits

1. Reduces up to 40% N losses, via leaching / volatilization / denitrification.
2. Enhances crop uniformity thanks to controlled release of nutrients.
3. Provides similar of higher yield with reduced number of applications.
4. Less applications = less costs

Agroblen®

The safest nutrition for new plantations.

Agroblen consists of fully coated NPK that makes the product safe to be applied at planting, close to the young root system, without creating any salinity stress.

Benefits

1. 100% coated NPK - full control of nutrient release.
2. Only 1 application for the entire season.
3. Safe for young plants.
4. Environmental friendly – reduces nutrient losses via leaching, volatilization, denitrification.

Nutrivant®

Tailor-made foliar nutrition for every crop

Nutrivant is a high-quality and fully soluble foliar fertilizer. The product consists of tailor-made NPK analysis for every crop needs, enriched with high level of trace elements. Its performance it's further improved by patented technology Fertivant (FV), responsible for faster penetration and long-lasting effect on the plant.

...Our Specialty Fertilizers

Controlled Release & Granul Fertilizers



Analysis (%) / Longevity / Coated % / Dosage	Timing / Method of application	Remarks
New plantations		
17-9-8+4MgO 8-9M - 100% NPK 50-100 grams/plant OR 14-12-9+0.1B 8-9M - 100% NPK 50-100 grams/plant	In planting holes	It could easily be applied during planting, in the planting holes or mixed with the soil.
Mature plantations		
24-6-12+1.3MgO+10.6SO3+3.7CaO + 0.2Zn + 0.2B 2-3M 30% N 300 - 500 kg/ha	2 times/year Around the trees	April and September
16-10-16+1.7MgO+13.7SO3+4.8CaO + 0.2B + 0.2Zn 2-3M 30%N 300 - 500 kg/ha	2 times/year Around the trees	April and September

Foliar Fertilizers

Analysis (%)	Rate kg/ha	Timing and number of applications
Nutrivant Plus 19-19-19+2MgO+TE+FV TE package = 0.01B, 0.005 Cu EDTA, 0.08 Fe EDTA, 0.04 Mn EDTA, 0.005Mo, 0.02Zn EDTA	3-5	Several times over the entire season
Nutrivant Plus - 0-43-18+2MgO+TE+FV TE package = 0.5B+0.2Mn EDTA + 0.2Zn EDTA	3-5	2 times; beginning of grain filling
Nutrivant Plus - 6-18-37+2MgO+TE+FV TE package = 0.2B, 0.005Cu EDTA, 0.08Fe EDTA, 0.04 Mn EDTA, 0.005Mo, 0.02Zn EDTA	3-5	2 times; grain filling - grain maturation

These recommendations are made based on certain conditions. Please choose the right product and dosage according to your soil analysis and fertilizing management! For more information about our products, please visit www.icl-sf.com or contact your local ICL SF area sales manager!

Trial results

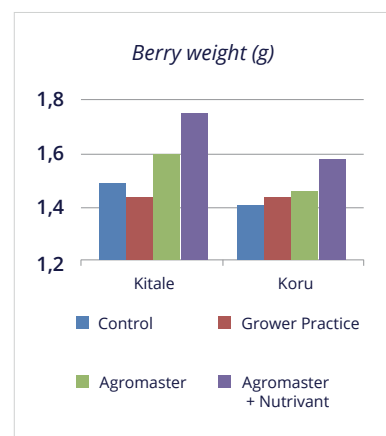
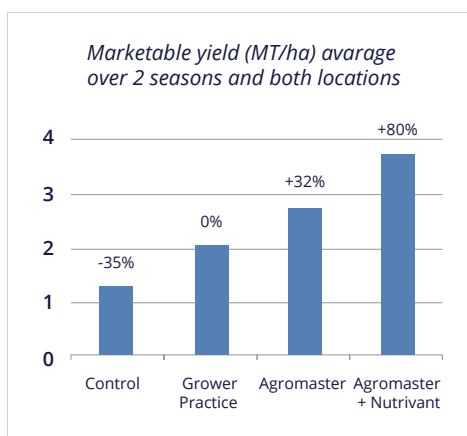
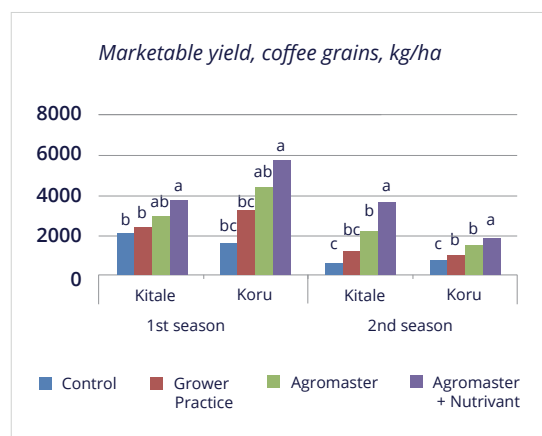
Crop: Coffee arabica
Duration: 2 growing seasons

Country/Location: Kenya / Kitale, Koru
Assessments done by: KARLO – Coffee Research Institute

Objective: To evaluate the influence of Agromaster, as a controlled release fertilizer, and Nutrivant, as foliar feeding, on coffee yield.

Treatments:

Treatment	Products / Analysis (%) Coated % / Longevity (M)	Rate	Number of applications	Timing
Control	-	-	-	-
Grower Practice	Conventional NPK / 17-17-17	250 g/tree	1	6 months before flowering
	CAN / 27-0-0	300 g/tree	2	150 g/tree in 2 split applications During berry expansion
	Foliar NPK	5 kg/ha	7	Dec/Feb/Mar/Jun/Jul/Aug/Sept
Agromaster	Agromaster / 17-17-17 / 40%N / 2-3M	150 g/tree	1	6 months before flowering
	Agromaster / 17-17-17 / 30%N / 2-3M	270 g/tree	1	During berry expansion
Agromaster + Nutrivant	Agromaster / 17-17-17 / 40%N / 2-3M	150 g/tree	1	6 months before flowering
	Agromaster / 17-17-17 / 30%N / 2-3M	270 g/tree	1	During berry expansion
	Nutrivant / 19-19-19 +2MgO+TE+FV	5 kg/ha	7	Dec/Feb/Mar/Jun/Jul/Aug/Sept



Treatment	Marketable yield (MT/ha) average over 2 seasons and 2 locations	Total cost of fertilizers/ha/season (ksh)	ROI (ksh) 1USD = 103 ksh	Differences vs Grower Practice (ksh)
Control	1.33	0	199837.5	-74295
Grower Practice	2.08	37680	274132.5	0
Agromaster	2.74	51030	360157.5	86025
Agromaster + Nutrivant	3.74	65030	496345	136187.5

Conclusions:

Even though the level of N was reduced by 42% and with only 1 application after flowering, plants fertilized with Agromaster showed a statistical significant increase of yield by 32%, and berry weight by 6%. When compared to Grower Practice, Nutrivant further increased the yield and berry weight by 80% and 15% respectively. This product combination, Agromaster / Nutrivant, over 2 growing seasons, constantly provided the best results in respect of yield and berry weight.

ICL Specialty Fertilizers
P.O. Box 40
4190 CA Geldermalsen
The Netherlands
Tel.: +31 (0) 418 655 700
Fax: +31 (0) 418 655 795
Email: info@iclsf.com
www.icl-sf.com



Everris International B.V. (UK, Netherlands, Germany) is certified according ISO - 9001. Everris International B.V. Heerlen is also certified according ISO - 14001 and OHSAS - 18001. Everris International B.V. is a legal entity under ICL Specialty Fertilizers.

