AG – Are Synthetic Fertilizers Over-rated?

Kiko influences lower Fertilizer use in ways no one imagines

Kiko Technology™ is a breakthrough singular technology when immersed into normal water and rainwater transforms its energy functionality, allowing for a paradigm shift in multiple applications including agriculture, fisheries, animal husbandry, scale formation and medical delivery systems. For crops, plants & fruit trees Kiko products will lower fertilizer usage in ways no one has ever imagined

The physical science behind Kiko principles are based on Einstein's laws of kinetic energy, the laws of diffusion in gas and liquids, hydrogen activation & weakening bond strength, cell membrane separation & rapid absorption of far infrared energy – which combined, generate stunning and repeatable results. These principles applies to Fertilizer usage and dosage amounts

Synthetic and Organic fertilizers are so well-grained in farming, hydroponics and household gardens that few question its usage except those concerned with environmental and run-off problems into our lakes rivers or underground aquifers.

WHEN DID FERTILIZERS USAGE START

History of Synthetic Fertilizers

During the 1940s Nitrogen was a key component in TNT bombs but after the war many U.S. government-built Nitrogen plants were converted to Fertilizer production. Contrary to public belief Fertilizers are NOT plant food; instead Fertilizers replace nutrients / minerals that crops remove from soils for their plant growth.

The synthetic fertilizer market is $250 billion dominated by Urea (made from Ammonium Cyanate) DAP (di-ammonium phosphates) CAN (calcium carbonate or lime) and potassium chloride (potash)

Historically farmers used manure to fertilize crops as a compost bio-fertilizer. In Asia, farmers still burn stalks such as rice husks to enrich the soil with Carbon equivalents. These types of organic fertilizers are environmentally friendly and co-exist with soil microbes better than synthetics. Likewise peat moss has no nutritional value for plants but help with soil aeration. Coconut husks are popular but again limited nutrition value. Many others are used such as humic or fulvic but tend to be price sensitive

Plants produce their own food (nutrients via photosynthesis) naturally from water, carbon dioxide from the air and energy from the Sun or artificial lighting such as LEDs.

Kiko technology is a paradigm shift based on energy changes far greater than fertilizers acting alone. Kiko enables energy transfer in normal water, in turn to produce more biomass, higher yields, more brix concentrate and longer shelf life than any of these fertilizers described.

Review the field data in our 122 KIKO FACT SHEETS to compare yields with and without Kiko for conventional farming, organic produce, vertical and hydroponic farms. The differential is so stunning that ONE WILL SURMISE THAT FERTILIZERS ARE OVER-RATED.

PURPOSE OF N-P-K FERTILIZERS

NPK are the dominant fertilizers

NITROGEN:
To increase plant leaf growth structure, plant food metabolism and creation of chlorophyll for greener lustier leaves.

Whilst 78% of Earth's atmosphere is Nitrogen, this form is unavailable by plants. Plants require other forms of Nitrogen such as Ammonia (NH_3), ammonium nitrate (NH_4NO_3). The conversion occurs naturally in the soil, a symbiotic relationship (4) requiring soil, water, energy and living microorganisms, allowing nitrite conversion to nitrates and by reversing ammonia to nitrites – this is the proper form of available Nitrogen which is absorbed by plants through their root systems.

PHOSPHATES:
To assist in strong root structure and flowering

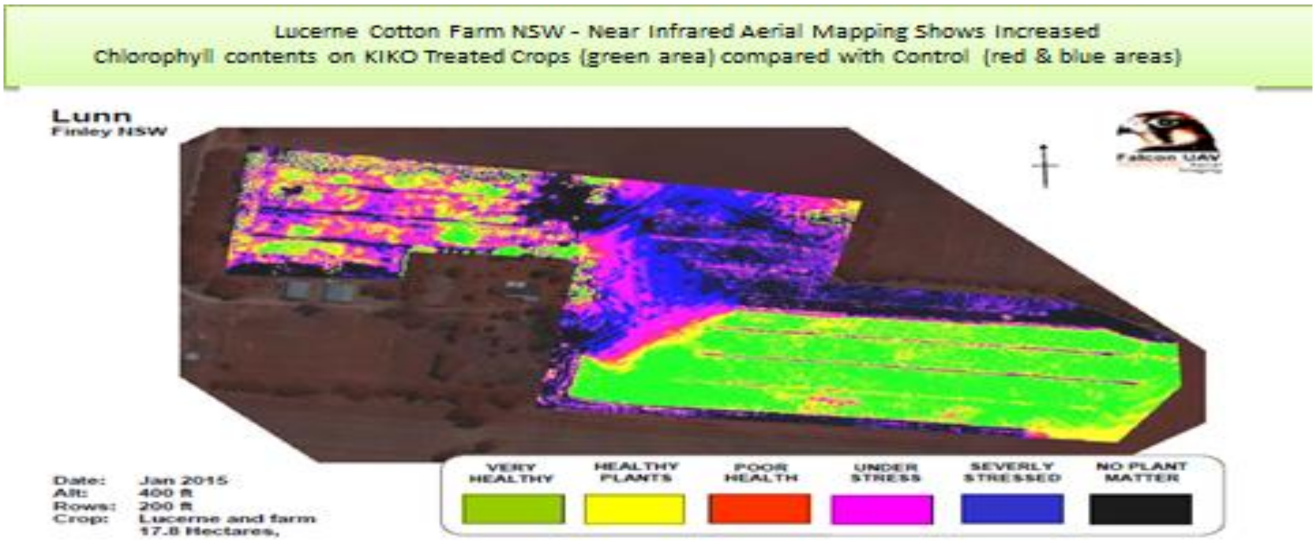
Phosphorous help plants acquire and store energy as well as transport throughout its cells.

POTASSIUM (e.g. commonly called Potash)
To help plants use and transport water nutrients and carbohydrates in plant tissue, resist drought and enhance fruits and vegetables

Potassium helps with enzyme activation to produce ATP (adenosine triphosphate) in turn to help regulate the rate of photosynthesis. Other organic forms of Potassium are Kelp (e.g. seaweed), soybean meal, alfalfa, bat guano, ash

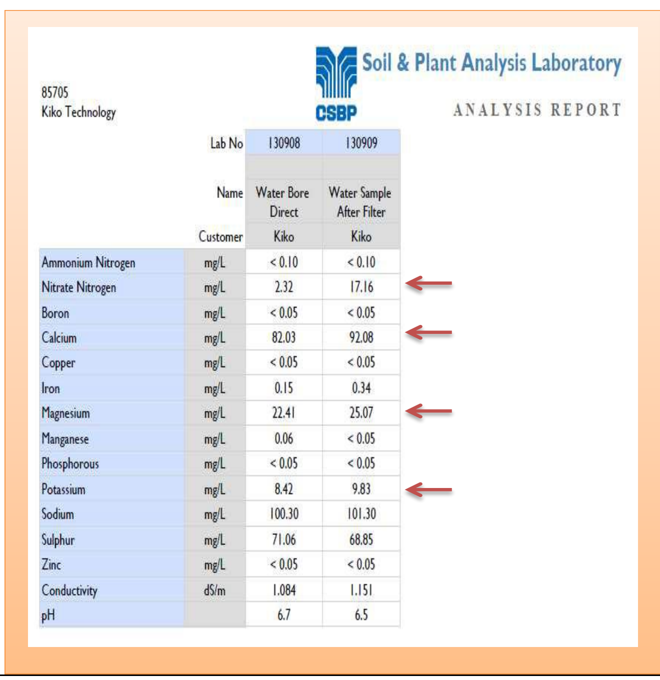
SYMBIOTIC RELATIONSHIPS between Kiko water, soil microbes and less fertilizers

Kiko pellets were added to a Cotton Farm in NSW Australia. The paddocks on the left (CONTROL) were partially irrigated with pivots but mainly dependent on rainwater plus an ample amount of NPK fertilizers due to the variable soil conditions. The addition of the Kiko pellets immediately improved plant growth resulting into an increased chlorophyll content (photo on the right). Synthetic fertilizer dosages were cut substantially, the plants were healthier in the Kiko-treated areas and there was significant less spoilage post-harvest due to improved soil microorganisms



Australia Soil & Plant Analysis Lab supports Kiko's discovery that "energized water" has a symbiotic relationship with soil microbes to turn nitrites to nitrates – the form of Nitrogen critical for plant bio-availability – meaning less fertilizers are required – the interesting question to ask is "how did the Post Kiko soil analysis increase by 640% as Nitrate Nitrogen?"

When electrical conductivity is stabilized with Kiko water, plants will only absorb as much nutrients as it needs, not what suppliers think it needs



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Kiko Technology

CSBP Soil & Plant Analysis Laboratory
ANALYSIS REPORT

	Lab No	130908	130909
	Name	Water Bore Direct	Water Sample After Filter
	Customer	Kiko	Kiko
Ammonium Nitrogen	mg/L	< 0.10	< 0.10
Nitrate Nitrogen	mg/L	2.32	17.16
Boron	mg/L	< 0.05	< 0.05
Calcium	mg/L	82.03	92.08
Copper	mg/L	< 0.05	< 0.05
Iron	mg/L	0.15	0.34
Magnesium	mg/L	22.41	25.07
Manganese	mg/L	0.06	< 0.05
Phosphorous	mg/L	< 0.05	< 0.05
Potassium	mg/L	8.42	9.83
Sodium	mg/L	100.30	101.30
Sulphur	mg/L	71.06	68.85
Zinc	mg/L	< 0.05	< 0.05
Conductivity	dS/m	1.084	1.151
pH		6.7	6.5

Kiko Reduces Fertilizer Dosage

The Australian CSBP – Soil & Plant Analysis Laboratory conducted an analysis on the strawberry trial farm soil sample which was watered by Kiko energized water in July 2013.

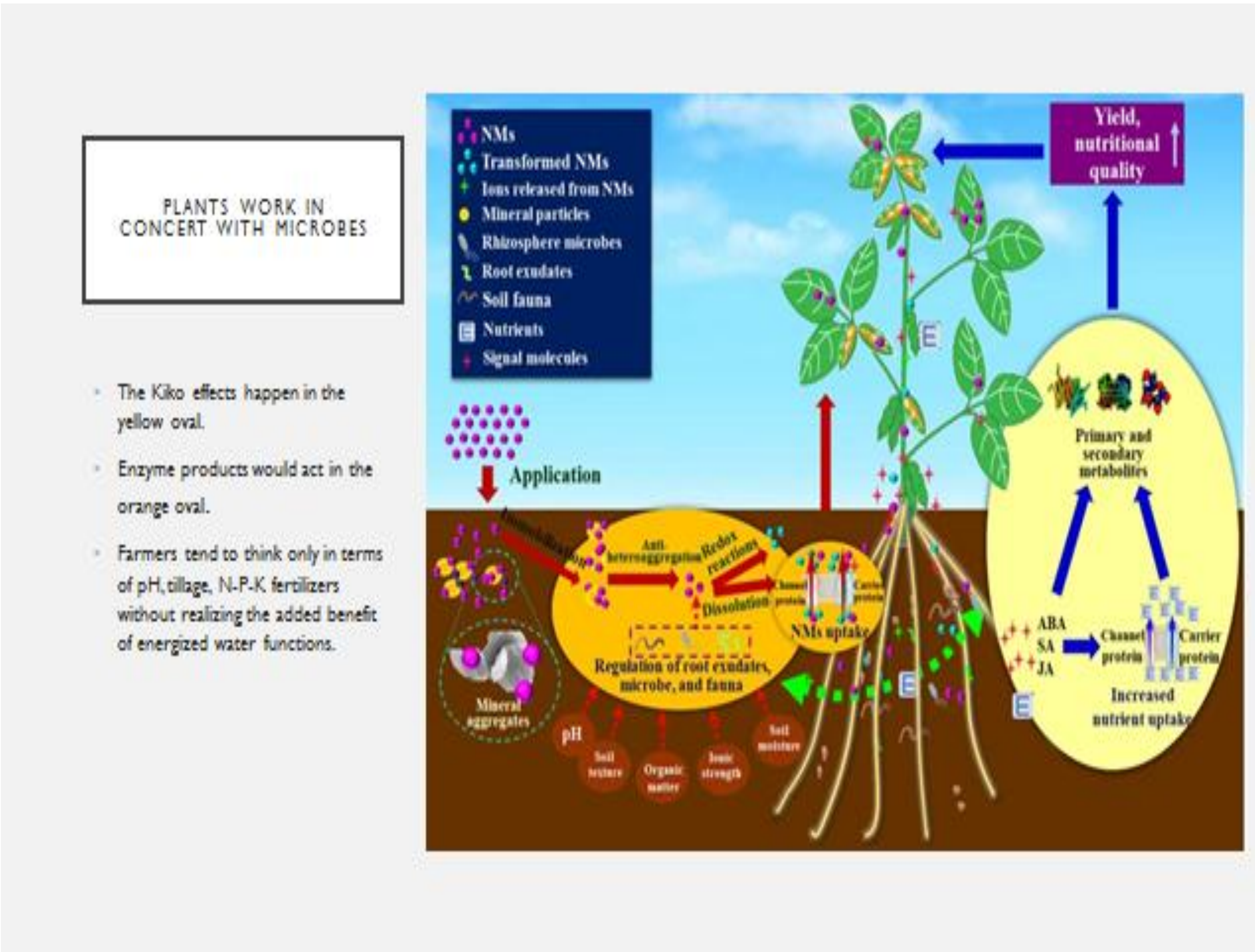
The CSBP report revealed that the sampled soil upon treated by Kiko contained sizeable hike in following nutrient levels:

Types of Nutrient	Before Kiko	After Kiko	Variance
Calcium	82.03	92.08	+ 12 %
Nitrate Nitrogen	2.32	17.16	+ 640 %
Magnesium	22.41	25.07	+ 12 %
Potassium (K+)	8.42	9.83	+ 17 %

This implies more cost saving can be achieved with cut down in fertilizer dosage in agricultural farming after Kiko treatment.

Bacteria play an important role in the Nitrogen cycle. They work anaerobically to take Nitrogen gas in the air and release it to the Soil as ammonia using enzymes called Nitrogenous or "Urease" – which combines Hydrogen and Nitrogen.

The symbiotic relationship between energized water & bacteria is complex but the end results are predictable in terms of higher Yields, longer shelf life, greater or faster photosynthesis, more nutrients for plants to be absorbed and of course improved taste Micro nutrients present in plant tissue varies depending on the crop but range from 0.15 to 400 ppm (or less than 0.04% of dry matter) – these interesting data challenges the industry's common practices to over-dose fertilizers



Kiko studies conducted with Australian Food Fibre & Land Development at University of W.A. Crawley and with the Challenger Institute of Technology, Murdock Campus W.A. indicates that energized water works in concert with soil microbes to reduce fertilizers use and just as importantly, to allow plants to grow to its optimum value

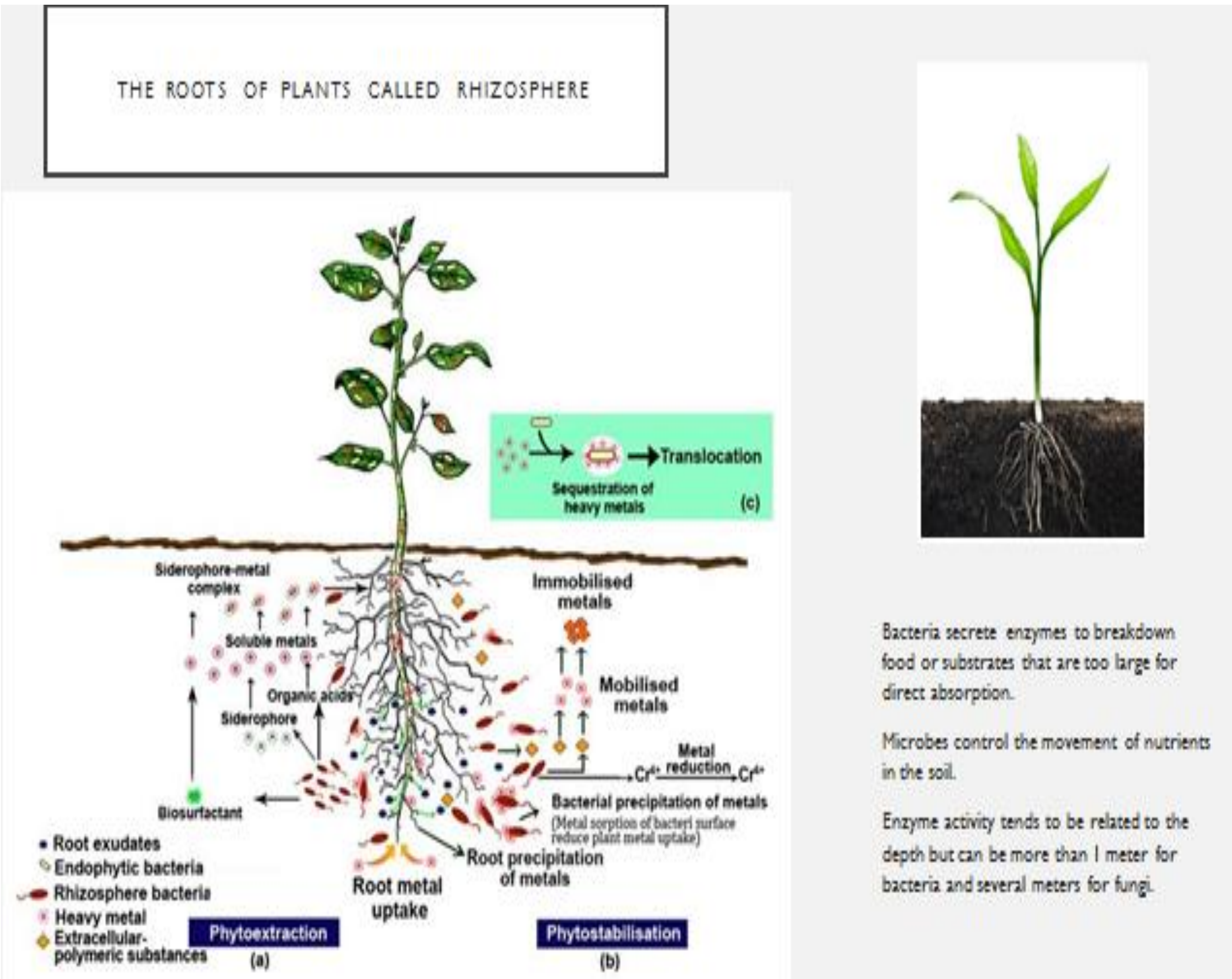
As Dr. Peter Graham stated "normally we dump the water so as to avoid potential buildup of unused nutrients and a drop in pH which affects plant growth. My reaction was to withhold adding any food for a period of four weeks and allow the water solution to become diluted – we added only Kiko water and this lowered the EC level and help alleviate large pH fluctuations"

Besides the studies provided in Australia, Kiko conducted large scale outdoor projects in the wet paddy Rice fields and Sugar Cane.

Of particular importance was the increase in root density, perhaps 50% to 75% greater than the root growth using a variety of NPK formularies. The microbial activity in the soil resulted in less pathogen damage, in particular white grubs & Downey mildew in the Sugar Cane studies. The cost of fertilizers (primarily Urea and Potash) was decreased by about US$ 130 per hectare With about 25,000 hectares of cane planted in Luzon Province, PR the savings are about US$ 3.25 million

In the Palay Rice studies, pathogens tend to delay germination, flowering time and weaken rice grain structure. These problems were resolved by adding Kiko products to the irrigation channels and reducing lime consumption almost entirely. The savings are about US$ 40 per hectare over the trial area of 83 hectares or US$ 3,120 – a godsend to rural poor farmers

Analogous to any crop grown with Kiko water, the root structure was strong, dynamic and thriving with microorganisms. Kiko in concert with soil microbes allowed looser soil compaction, hence notably the roots were able to draw deep into sub soils.



DIFFUSION & ELECTRICAL CONDUCTIVITY SCIENCE

This section will frame the interrelationship between Physics & Botany

The laws of Fluid and Gas Thermodynamics play an instrumental role in plant behavior. Of particular importance is the role of Diffusion and Electrical Conductivity, two key factors arising from the Kiko energy transfer occurring in normal water.

Kiko water transports nutrients minerals and fertilizers rapidly thru its root structure to canopy. This rate is called Diffusion a terminology to express the flow of molecules which permeates all cell activity including plants, animals, fisheries, poultry and humans – plants then use less energy to transport water & minerals & nutrients than with normal water. There is also rapid hydrogen bond de-activation occurring, less friction in the xylem, energetic bacteria proliferation and like a symphony, Nature is exhibiting healthier plant growth.

Diffusion is a topic so few agronomists or farmers understand in terms of plant growth

The other factor driving the availability of nutrients is called Electrical Conductivity. In short, a stable EC means plants do not need to absorb any more nutrients than it requires. The work conducted by Dr. Peter Graham of the Challenger Institute indicated an EC reading between 0.8-1.5 Ms/cm meant his greenhouse plants could decrease fertilizers and nutrients up to 80% Instead of feeding NPK or liquid organic fertilizers 2 to 3 times per week at a 1200-1500 ppm dosage level, he cut this consumption the entire last 8 weeks of a 12 week grow cycle.

Similar dosage reductions were noted by Marcus Dixon master hemp & cannabis grower in L.A. Instead of dosing 1200-1500 ppm of grow or bloom fertilizers, he cut consumption to three dosage across a 12 week grow cycle. Normally his plants grown in normal water required 2-3 additions per week – hence the 80% reduction

Diffusion and superior microbial action also influence the rate of Photosynthesis.

As remarkable as this may seem, the data generated from 21 Kiko field studies support this unique finding. Photosynthesis is the conversion of light to energy and in turn, this energy is used by both plants and microorganisms to increase a plant's chlorophyll reactions – hence the dark green hues

Diffusion allows carbon dioxide to diffuse into the leaves via their small pores called stomata. As well, Oxygen is emitted to the air by Diffusion. The leaves tend to be structurally stronger and noticeably thicker which adds to the increased weight or biomass of any crop or plant

The laws of Diffusion are addressed in works including Einstein, Stokes-Einstein, Marian Smoluchowski, Brownian motion in liquids and by Fick's laws.

Diffusion allows Kiko energy to travel very fast (faster than the speed of sound in air (343 meters per second at 20°C) – hence a few Kiko cartridge can extend and energize large volumes such as water dams/reservoirs, vast grasslands for cattle grazing, forestry, rice fields, sugar cane plantation, cotton & corn acreage as well as municipal city water transport

The laws of Physics are a major economic boom for lowering fertilizer usage – for starters Farmers can lower usage 25% and build up towards 80% reduction depending on their operations

The PHOTOS taken pre and post KIKO installation are visible proof. These are displayed in the Kiko FACT SHEETS, available by contacting a Kiko representative.

KIKO FACT SHEETS:

Refer to the following technical explanations:

TEC - Importance of Diffusion in Liquids
(kinetic energy is the key factor)

TEC – Diffusion in Liquids
(Kiko influence is greater than anyone expected

TEC - Greenhouse Gas Emissions
(FIR energy critical for CO_2 GHG reduction)

AG – Commodity Staple Crops
(Increase productivity via Kinetic energy & the Diffusion rate in water)

AG – Soil microorganisms functions
(Glasshouse W.A. Crawley Western Australia)

AG – Bio-Fertilizer efficiency, growth, yield
(conducted by FFLI, Western Australia)

TEC - Kiko FIR Energy & Chlorophyll effects
(high absorption of FIR energy)

AG – Sugar Cane in Philippines
(conducted by Central Azucarera de Tarlac)

AG – Rice wet paddy fields in Philippines
(conducted by Ministry of Agriculture and Los Banos University R&D department)

AG – Palay wet paddy field Rice in Vietnam
(conducted by CLRRI Cuulong Delta R&D)

AG – Industrial Hemp USA
(conducted by Western States Hemp Nevada)

AG – Greenhouse Cannabis Study in Colorado

AG – Strawberry farming in 3 continents
(Western Australia, Cambridge UK, Oxnard Calif.

AG – Spinach Vegetable
(Dongguan City Guangdong Province, China)

TEC – What is acid rain
(data from Environmental Protection Agency)

AG – Hydroponics Challenger Inst. of Technology
(conducted by Dr. Peter Graham – Horticulture)

TEC – Japan Water Institute, Tokyo
(emissivity of far infrared energy in water)

HOW TO CALCULATE the active ingredients in FERTILIZERS (for reference)

Assume a bag of fertilizers is 50 pounds of NPK 10-10-10
Nitrogen content = 10% x 50# = 5#
Phosphate content = 10% x 50# = 5#
Potassium content = 10% x 50# = 5#

Total Active Ingredients = 15 pounds
The remaining weight is usually a combination of fillers such as sand or granular limestone
And minute amounts of micronutrients (e.g. boron, magnesium, calcium, selenium etc.)

Similar a 50# bag of NPK identified as 16-4-8 has 14# of active ingredients
Nitrogen content = 16% x 50# = 8# / Phosphate 4% x 50# = 2# as P_2O_5 / Potassium 4# as K_2O

Tomato plants require less NPK. Assume a bag of NPK 1-1-4
The active ingredients are 3# and the rest is fillers

Mixing Instructions (for reference – for Liquid Nutrients use)

In Hydroponic / Greenhouse applications, dosages are typically 2-3 times per week for vegetative and then reduced after bloom to 1-2 times per week depending on plant growth.

Clones & Seedlings: 3.0 milliliters per gallon of water
Mild Vegetative: 1.25 to 5 ml /gal
Aggressive Vegetative 2.5 to 6 ml / gal
Transition: 1.25 to 5 ml / gal
Bloom: 5 to 10 ml / gal
Late Bloom 5-15 ml / gal

** **KIKO COMMENTS**: Few to None fertilizer suppliers provide equipment to verify whether their Recommended dosage ratios correlate to Plant Health. The industry is far too subjective.
In many Kiko studies the seed germination rates are a solid indicator of good/average plant yield

For instance, in a 6500 sq. ft. Cannabis Greenhouse, grower applied 6 ml PROMIX Mycorrhizae per gallon of recirculating water. Over a 8 week cycle, 14,150 ml consumed or 1770 ml per week (total nutrient cost is US$19,200 in the CONTROL test and frequent solution dilution)

The KIKO Pilot not only netted 35% more yield but lowered nutrients costs 50%. The stable EC Readings indicated plants did not need more nutrients than it actually required for growth

OUTDOOR Commodity Staple Crops (reference only)

The use of NPK type of fertilizers is prevalent throughout Asia Pacific, in particular rural farms
These are notable field data statistics:

Fertilizer used in wet paddy rice fields: UREA or NPK 14-14-14 and 17-0-17
Fertilizer dosage: 450 kg per hectare (equiv. to 180 kg p.a. or 400# p.a.)
Cost of Fertilizers: US$ 25-50 per 60 kg bag OR $420 to $840 per ton
Cost of Fertilizers per acre: US$ 75 per acre

Kiko impact to reduce fertilizer costs Kiko not only increased yields 25% to 35% the amount of NPK reduction was about $35-50 per acre
Cost of Pesticides: US$ 15-20 per acre sprayed 3 times over grow cycle

NOTEWORTHY: in rural areas farmers are driven by suppliers to use far too much fertilizers or pesticides "led to believe more is better" … with proper branding Kiko should turn this tide.

COST of Fertilizers is a major OPEX item:

UREA US$ price per ton from 2015 to 2020
2016 $194 per ton
2017 $214
2018 $249
2019 $245
Dosage 20# Nitrogen per acre or about 200# UREA per acre

DAP (18% N and 46% P_2O_5)
2021 $590 per ton
2020 $312
Dosage 40# per acre or US$ 12 per acre

POTASH (Potassium Chloride)
2021 $650 per ton
Dosage 90 # up to 120 # per acre
Equivalent to US$ 35 per acre

Compare Nutrient Fertilizer Cost by Types of:

Anhydrous Ammonia 82-0-0
Pounds Nitrogen per ton = 2000# x 82%= 1,640#
Cost of Anhydrous Ammonia: $285 per ton
Cost of Nitrogen per # in 1 ton Anh. Ammonia is US$$285 / 1640# = $0.17 per # of Nitrogen

UAN 28-0-0
Pounds Nitrogen per ton = 2000# x 28% = 560#
Cost of UAN: $225 per ton
Cost of Nitrogen per # in 1 ton UAN = $0.40 per #

NPK 10-34-0
Pounds Nitrogen = 2000# x 10% = 200 # Nitrogen
Pounds P_2O_5 =2000# x 34% = 680# of P_2O_5
Cost of P_2O_5 = $ 260 per ton
Cost of Nitrogen = $ 285 per ton
Cost per # in 10-34-0 = $1.80 per #

Calculate the Cost per acre of NPK:
Assume 20# Nitrogen per acre of 28% UAN
Then at $0.40 per # = US$ 8 per acre

Assume 20# Nitrogen per acre of NPK 10-34-0
Then at 200# of product with P_2O_5 = (200# /2000 # per ton x $260 / ton = $26 per acre

NOTEWORTHY: in commodity crops, such as corn Rice, sugar cane it is cheaper to use a single Fertilizer since soils already contain vast amount Of P_2O_5 or potassium from years of over-use

TRAD QUICKSILVER 15 TRAY (.2 SQUARE METERS) AFTER 4 WEEK GROW
K IKO
Non KIKO

SL-8H CONTROL 40 DAYS
SL-8H 40 DAY w/