



A REPORT on KIKO TECHNOLOGY™ TO INCREASE SUGAR CANE PRODUCTION IN THE PHILIPPINES

Prepared by: Kiko Technology Limited
Date: March 3rd 2014

SYNOPSIS of the TRIAL RESULTS

Water is one of the most fundamental resources for the agriculture sector, yet one of the least understood and largely taken for granted. The Kiko Technology was formulated on the scientific premise that water's harmonics at a molecular level can be accelerated (e.g. phonon molecular theory), in turn increasing productivity for any earth-grown or hydroponic crop.

This one-year study on a 3.3 hectare plot with newly planted cane points sends a powerful message to all global sugar planters and millers. The results yield a phenomenal 70% more tillers at day 90 count; 11.3% more PS/TC at the final harvest; and 24.5% more raw sugar profits. For this harvest, the add-on profit corresponds to Peso 53,460 per hectare – nearly doubling the farmer's net income. In addition the Kiko Technology improves soil conditions with vibrant healthy cane minimizing white grub, Downey Mildew Fungus and rodent damage.

INTRODUCTION TO THE PHILIPPINES SUGAR INDUSTRY

The Sugar Cane industry in the Philippines sits at its crossroad facing a severe tariff reduction by end year 2015 and more global competition. The market as of January 05 2014 planted 420,000 hectares yielding approximately 10 million tons cane milled to 1 million tons of raw sugar. At the current sugar price of Peso 1,350 per 50 kg bag, the revenues are Peso 27 billion per annum.

The plight of the planters problems are further compounded by three factors: the relatively low yields due to the land reform policies, the threats from smuggled sugar valued at Peso 900 million in Year 2013, and perhaps more significantly, the possibility that raw sugar prices drop 30-50% to Peso 800-900 per 50 kg bag.

As a result, both planters and closely-interlinked sugar millers are struggling with these uncertainties and face strategic planning decisions to offset these threats. The current practice resolves about seed variety, farm management costs and efficiency, irrigation accessibility and new fertilizers and chemicals to combat pests and insects.

The **KIKO TECHNOLOGY™** provides a complementary technique to these long in-grained farming practices –via the “physics of water” e.g. water frequency at a molecular level - “Water” is the most fundamental resource, yet the most overlooked component to increase farm yield. This report validates a year-long study in cooperation with Mr. Nicomedes B. Romero Jr. the technical consultant at Central Azucarera de Tarlac, Philippines.

The Kiko Technology is a Game Changer. The 24.5% more raw sugar profit or an extra Peso 53,460 per hectare (based at current sugar price Peso 1,350 per bag) presents an unprecedented opportunity for sugar planters, millers, government organizations and R&D efforts. Kiko Technology provides a sustainable solution to address the industry's 2016 tariff reductions and profitability concerns.

SUMMARY of the KIKO TECHNOLOGY™ RESULTS

The science behind the Kiko Technology™ was developed by the Founder Mr. James T. Osugi a former engineer in the NASA aerospace program. There is a global climatic change, denied or otherwise by governments, yet verifiable by sophisticated laboratory testing (e.g. equipment such as Nuclear Magnetic Resonance, Far Infrared spectrometers, surface tension dynes et al.)

The continuous atmospheric damage means today's water simply does not vibrate as fast as it once did 60 years ago. Kiko Technology allows our water to become vibrant in nano-seconds; the action coined "energized or activated water". The fundamentals behind the science are seemingly mysterious yet the field results are quantified yields, freshness, shelf life and productivity. The technology is formulated in Japan, the carrier being natural volcanic stones that change the molecular interrelations including bond structure, surface tension, far infrared absorption and harmonic motion (the science is related to "phonon molecular theory").

Benefit Summary for Sugar Cane Planters

PARAMETERS	BENEFITS ACHIEVED WITH KIKO TECHNOLOGY™
Cane variety	PHIL 74-64 for Control and Kiko-treated cane points
Cane tiller count	70% more mill-able tillers by day 90; larger stalk diameter; sturdier & healthier
Late tillers – month 10	Nil for Kiko-treated; Control yellowish & mature with late tillers by month 10
Sugar yields per ha	24.5% more by weight; corresponds to 40 more 50-kg bags; Peso 53,460 more profit
LKG/TC	Control: 1.705 versus Kiko-treated 1.90; Luzon historically 1.55
PS/TC	Control: 1.348 versus Kiko-treated 1.50 a 11.3% increase
TC per ha	Kiko: 105 TC and Control 93 TC per ha; tested over 3.3 hectares in sandy loamy soils
Stalk & root structure	Cleaner & healthier; far more efficient water & nutrient uptake
Pests & fungus	Nil Downey mildew fungus or white grubs; no rodent bites – implies pesticides savings
Soil Conditions	Improved pH; phosphorous levels remained high - implies less urea usage
Ratoon	The next phase of validation; objective to increase more than one ratoon

Kiko Technology is intelligently developed and is low cost, easy to install and improves the soil condition and plant health. At first glance, it looks simple, yet underneath it all, Kiko products are backed by years of R&D to bring water back to "what it once was".

This proprietary formulation proves water's harmonics at the molecular level plays an important role in farming. The Kiko Technology is not enzymes, chemicals or synthetic fertilizers. Instead it adds energy that assists photosynthesis.

The Science behind the Kiko Technology™

PARAMETERS	the WHYs and HOWs of KIKO TECHNOLOGY™
H-O-H molecular harmonics	Reduces molecular bond; faster absorption of nutrients – measureable by NMR
Far infrared emissions (FIR)	Increases FIR from <10% to >80%; photosynthesis adjunct – tested by FIR spectrometers
Surface Tension	Lowers water bonding strength; accelerates toxin discharge by plant roots & stalks
Separation effects	Separates toxins at molecular level; helps minimize bacterial build-up
Kiko products	Technology packaged into easy to install cartridges; five per hectare
FDA compliance	Kiko products comply with FDA Clean Water Act of 1975 for drinking water
Compatible with	Existing farm practices, organic and synthetic fertilizers and seeds
Processing know-how	Developed using proprietary heating & cooling techniques – Made in Japan

TESTING PROTOCOL by Mr. Nicomedes B. Romero Jr., Technical Consultant of Central Azucarera de Tarlac

This year-long study commencing on January 15 2013 was conducted at Hacienda Bantog Gerona, Philippines covering 3.3 hectares under the supervision of Mr. Nicomedes B. Romero Jr. of Central Azucarera de Tarlac Philippines.

First, fresh cane points were cut and soaked at 6 treatment intervals ranging from one to 24 hours (refer to experimental grid layout map). 120 cane points soaked in a water container with one Kiko cartridge and 120 cane points soaked in normal water. The Kiko-treated area is 72 square meters laid in a grid of 6 treatments x 5 cane points per meter x 4 rows (representing the 4 replications). The Control grid was an identical protocol - soaked in normal water, laid 5 cane points per meter x 6 treatments x 4 rows or 120 cane points within a 72 square meter area.

One (1) Kiko cartridge containing the proprietary frequency-induced volcanic stones was buried 5 cm below the soil surface within the Kiko-treated area. The cartridge was 20 meters from road side. The Control grid was situated 400 meters away. The cane variety is PHIL 74-64.

The total planted cane at Hacienda Bantog Gerona is 3.3 hectares divided into equal halves. One half the Kiko-treated and the other is the Control. From January 15 to February 20 2014 the entire 3.3 hectares were cut and tested.

The normal commercial dosage is 5 Kiko cartridges per 10,000 square meters of planted cane (a hectare). But in this study the trial area was limited to 72 square meters within each designated 1.65 hectare area. One of the objectives of the protocol is to evaluate how far the energy travels and if the small treated area influences tiller and cane throughout.

The protocol included soil alkalinity tests at four test sites located at Plastado Gerona (3.3 ha), Patling Capas (5 ha), Sapang Tagalog (5 ha) and Palublub Lawy (5 ha). Kiko Technology releases dormant minerals and OH-ions from deep sub-soils into top soils. This protocol verifies Kiko Technology influence upon soils condition and pest damage.

Tarlac faced heavy rains in the July to October timeframe, particularly Typhoon Santi on October 14 2013. Selective cane stalks were milled early in November (month 10) and again in December 23 (month 11) in order to compare PS/TC, Picul sugar and insect damage. Then the entire 3.3 hectares were cut between January 17 and February 19 2014. Kiko Technology increased the cane brix sweetness Lkg/TC by 11.8 %: Kiko-treated: 1.90 versus Control: 1.705.

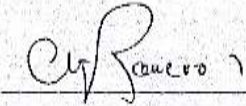
The most astounding qualitative features, in addition to the extra yields and healthier plants were:

Pests & Insects	Nil damage from Downey mildew fungus, white grubs or rodent bites
Cane Sweetness	Cane cutters remarked "Kiko cane tastes like Sprite" by November 2013
Brix Sweetness	Control matured faster in month 10; signs of late tillers and insect damage
Soil Improvement	The soil color and alkalinity improved over the 12 months
Cane Cutting	Kiko-treated cane were healthier sturdier and easier to cut
Ratoons	Ratoon should improve noticeably based on these cane results
Kiko influenced 3.3 ha area	Yields were 105.23 TC per ha corresponding to Peso 53,460 more profits. Control yields are also very high at 93 TC per ha – partially attributed to soaking

Acknowledged by:

For and on behalf of
KIKO TECHNOLOGY LIMITED
Acknowledged by:

Authorized Signature(s)
Kiko Technology Limited
Mr. James T. Osugi - Founder


Central Azucarera de Tarlac
Mr. Nicomedes B. Romero Jr. - Technical Consultant

ATTACHMENT - SUGAR CANE TEST

TEST CONDUCTED BY:	Mr. Nicomedes B. Romero Jr. – Central Azucarera de Tarlac Philippines Mr. James T. Osugi – Founder, Kiko Technology Limited Mr. Wilton Ngo – Kiko Water Sciences Inc., Philippines		
TEST LOCATIONS IN TARLAC (4)	Plastado Gerona – Palublob Lawy – Sapang Tagalog – Patling Capas The test covered an area of over 50 kilometers		
SOIL ANALYSIS BY:	Applied Microbiological Research Laboratory, San Miguel Tarlac City		
PLANTER'S NAME / LOCATION	Four (4) regions within Tarlac Province, North Luzon, Philippines: Delia Aguana, Gerona – Eleazar Beltan, Lawy – Ador Viesca, Tagalog and Feliciano Baligod, Capas		
TRIAL STARTED DATE:	January 15 2013	TRIAL ENDED DATE:	20 February 2014
VARIETY OF SUGAR CANE	PHIL 74-64 (an older generation with a 12-13 months growth cycle)		
OBJECTIVES OF TRIAL:	<p>To demonstrate that Kiko Technology™ will increase the quality and quantity of sugar cane stalks & raw sugar content by energizing water and soil moisture.</p> <p>a) improve the tillers counts b) improve the quality of the soil alkalinity and pH c) increase the sugar Lkg/TC content to enhance the net profits, d) reduce fertilizer/pesticide/fungicide dosage & cost e) minimize or eliminate fungus, rodent & white grub damage</p>		
KIKO versus CONTROL AREA	Hacienda Bantog Gerona 3.3 hectares divided equally into Control and Kiko. Within each 72 sq. meters tested at 4 replications. Cane points soaked rendering 6 treatments. Only one (1) Kiko cartridge added to the 72 sq. meters area. The pH soil test conducted in 4 regions covering 50 kilometer.		
TON CANE PER HECTARE	Sugar cane yield in Tarlac are typically 50 to 60 tons per hectare, depending on soil conditions, the mm of rainfall and seed variety. At times 90-105 TC per ha. This trial test yielded 105 ton cane per hectare over the 1.65 ha plot of land		
CONTROL FARMING PRACTICES	For this trial validation, the farmers adopted the same farming practices for the entire 3.3 hectare area, e.g. plough & harrow and fertilizer & chemicals usage		
SCIENCE of KIKO TECHNOLOGY™	Kiko Technology is a revolutionary science that activates or energizes water, whether that water is sourced from rain, deep wells or drinking water. The technology improves the “physics of water” without adding or using any chemicals or mechanical filtration techniques. The science is measureable, sustainable and changes how farmers should use water to improve farm yields, quality of products and reduce operational expenses.		

KIKO TECHNOLOGY IS A GAME CHANGER FOR SUGAR PLANTERS

70% more primary and secondary tillers after three months of new planting

24.5% more raw sugar content

Kiko-treated yield: 105 TC per ha versus 93 TC per ha for Control area – each area is 1.65 hectares

Historic yields in Hacienda Bantog Gerona are 70 TC per ha.

Cane points soaked between 8 - 24 hours produced more tillers than cane points soaked 1-3 hours

Kiko Technology will reduce the cost of materials including urea, potash and pesticides

Dormant minerals and OH- ions deep in the sub-soil are drawn upwards improving soil alkalinity and organic matter.

Kiko Technology imparts a frequency that impairs and minimizes the damage caused by mildew fungus, white grub insects and by rodents.

Kiko Technology has shown similar scientific phenomenon in many other crops, in addition to sugar cane.

A TYPICAL SUGAR CANE PLANTING COSTS & EXPECTED INCOME PER HECTARE PER CYCLE IN PHILIPPINE

Field Operations	Rental Rate Peso	Manpower Peso	Materials Peso
A. Land Operations			
1. Light Harrowing	1400		
2. Deep Plowing	4300		
3. Heavy Harrowing	2500		
4. Organic Fertilizer Application		400	5600
5. Light Harrowing	1400		
B. Cost of Planting Materials			
1. Planting materials			12000
2. Cost of Hauling	500	500	
C. Planting			
1. Mechanical planting	2500		
2. 8 Men labor @P200/man		1600	
D. Fertilizer			
1st Dosage :			
Urea 2 bags/ha @P 1,120/bag			2240
(16-20-0) 4 bags/ha @P1,010/bag			4040
2nd Dosage:			
Urea 4 bags/ha @P1,120/bag			4480
Potash (0-0-60) 4 bags/ha @P1400/bag			5600
E. Cultivation			
1. Ordinary Cut Away	1300		
2. Multi Weeder	1100		
3. Interrow Disc	1200		
4. Ten Tynes ordinary	1300		
5. Ten Tynes with fertilizer	1500	600	

F. Irrigation	1440	600	
G. Weeding Chemicals		400	1000
Subtotal cost by line item	P 20,440	P 4,100	P 34,960
Total Cost per hectare per cycle	P 59,500		
Comparison Gross Income per hectare	Parameter	Control	Kiko-treated
Assume 60 TC per ha. (atypical yields)	PSTC	1.348	1.50
Piculs sugar = TC x PSTC	Picul sugar	80	90
Weight in kg = Piculs x 63.25	Weight (kg)	5,060	5,692
No. of 50 kg bags = weight / 50	No. of bags	101	114
Gross Income @ Peso 1,350 per bag	Gross Income	P 136,500	P 153,900
Projected Extra Net Income per ha	Kiko extra income	----	P 17,600
Other tangible benefits to planters	Pesticides Fungicides	Less use	P 2-5,000
	Urea / Potash	Less 2-4 bags	P 6-15,000
	Stressed plants	Less late tillers	unknown
	Higher ratoon yields	-----	unknown
Trial results in this 3.3 ha Gerona study conducted between Jan 2013 to Feb 2014	The Kiko-treated yielded 105 TC per ha and Peso 53,460 more profits – if the less insect damage were factored, profits are much more.		

DATA FOR CANE POINT GERMINATION FROM 25 JAN 2013

The first phase of this study is to compare the germination yields and rate of growth with and without Kiko energized water. The cane points were soaked in a container with one (1) Kiko Tritan cartridge on January 25 2013 and planted

Objective	To validate the effect of KIKO on the germination of cane points, comparing tiller counts based on soaking from one hour to a maximum of 24 hours.
Materials	Tested on six (6) soaking treatments with five (5) cane points per linear meter. 4 replications. Kiko-treated area has 120 cane points. Control area identical or 120 cane points
Germination area	The germination area is 42 square meters, an area sufficient for cane point tiller count.
Seed variety	PHIL 74-64
Method	Two (2) containers were filled with water. Soak 120 cane points per container. Container A contained one Kiko cartridge. Container B is the Control cane points. After one (1) hour soak, five (5) cane points were planted immediately. Repeat for time intervals up to 24 hours soaking. Standard planting is 40,000 cane points per ha at 4 c/p per linear meter
6 Treatments: Soaking intervals Relative humidity	A - 1 hour soak B - 2 hours C - 3 hours D - 8 hours E - 12 hours F - 24 hours
Total test area	Hacienda Bantog Gerona over a 3.3 hectare area divided equally between Control and Kiko-treated. The distance between Control and Kiko-treated cane planting is 400 meters.
Layout – pH soils	Random Complete Block Design (RCBD) shows the location of the soil pH evaluation Kiko Cartridges installed: Gerona (1), Sapang Tagalog (1), Lawy (2), Patling Capas (3)

DATA FOR 90 DAYS CANE POINT GERMINATION from Jan 25 to April 25 2013

The data were replicated four times at 6 different soaking treatments. Freshly harvested tops of stalk cane were cut into individual setts and soaked in Kiko-containing water and in control water (e.g. nil Kiko cartridges). Five (5) cane points were planted per linear meter x 6 treatments. Each of the Kiko-treated and Control area is 72 sqm. At this stage of germination, 100% of the cane points are primary.

Water moisture should increase bud germination due to the absorption of a higher relative humidity. The tillers were counted one month later on February 15 2013. The below results indicate the Kiko-treated cane point soaked more than 3 hours produced more tillers. There are 23% more Kiko-treated tillers than Control at Month One (1).

The rest of the 3.3 hectare land was laid according to the standard density (4) cane points per linear meter. Each cane point has one primary eye bud. At 4 cane points per meter there are 12 eye buds. Each bud produces 8-10 tillers or a maximum of 96 -120 tillers of primary, secondary and tertiary variety. The tertiary tillers should be buried.

Kiko-treated cane points are 23% more germination than Control after 20 days

KIKO-TREATED TILLERS x REPLICATIONS February 15 2013						
TREATMENT / Replicates	I	II	III	IV	TOTAL	MEAN
A (1 hr.)	1	1	5	1	8	2 -
B (2 hrs.)	4	4	4	2	14	3
C (3 hrs.)	4	9	3	6	22	5.5
D (8 hrs.)	5	5	8	7	25	6.25
E (12 hrs.)	3	7	6	8	24	6
F (24 hrs.)	7	6	7	7	27	6.75
Total tillers germinated	24	32	33	31	120	
Mean/Replicate tillers					30	+ 23%

CONTROL TILLERS x REPLICATIONS (Soak normal water) Feb 15 2013						
TREATMENT / Replicates	I	II	III	IV	TOTAL	MEAN
A (1 hr.)	2	2	5	4	13	3.25
B (2 hrs.)	6	6	4	2	18	4.5
C (3 hrs.)	2	2	2	5	11	2.75
D (8 hrs.)	3	2	6	4	15	3.75
E (12 hrs.)	7	3	3	7	20	5
F (24 hrs.)	7	6	4	3	20	5
Total tillers germinated	27	21	24	25	97	
Mean/Replicate tillers					24.25	

TILLER GERMINATION LAYOUT PLAN FROM 25 Jan 2013 to 25 Apr 2013

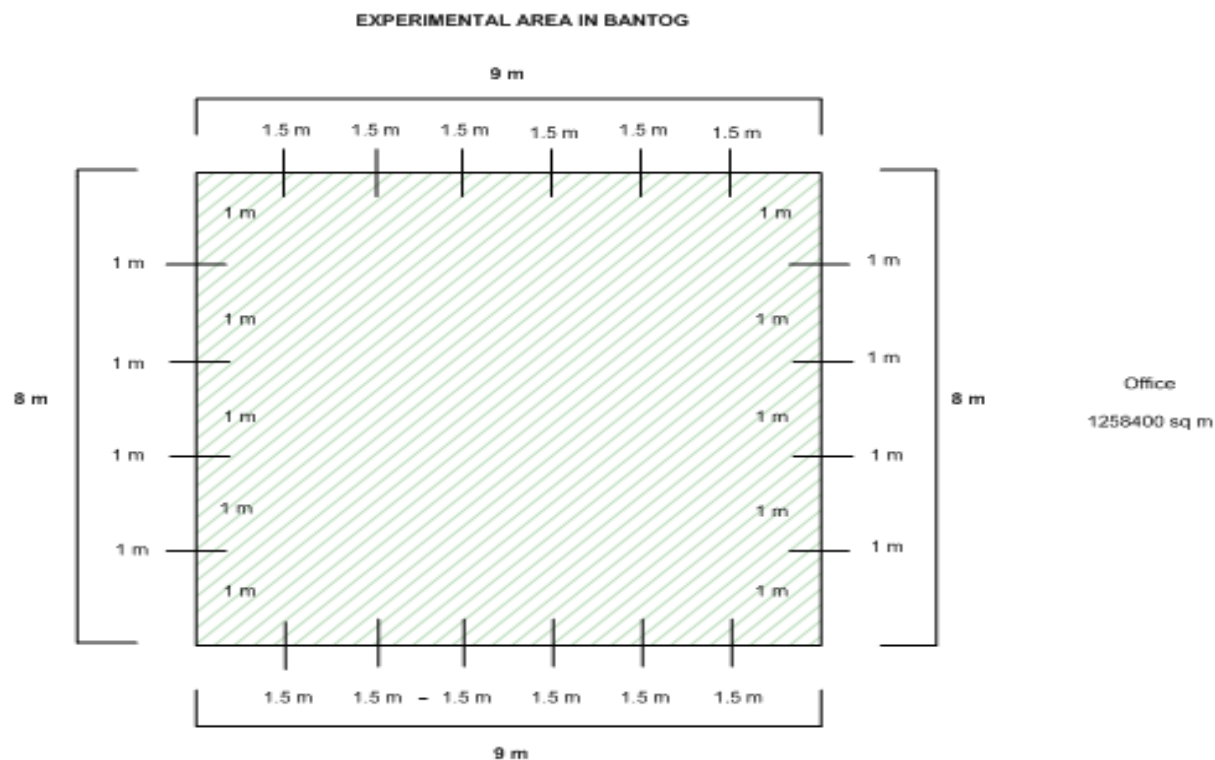
Test region: Hacienda Bantog, Gerona

Total planted area: 3.3 hectares

120 cane points planted in a 72 sqm. Kiko Treated area. 120 cane points planted in another 72 sqm. Control area.

90 days is considered a reasonable timeline for the final tiller count.

KIKO TREATED – 120 cane points soaked in Kiko water (6 treatments x 5 Cane Points x 4 rows)



IV	E	C	F	D	A	B
III	F	E	A	B	C	D
II	C	D	E	F	B	A
I	A	B	C	D	E	F



CONTROL – 120 cane points soaked in normal water (6 treatments x 5 cane points x 4 rows)

IV –	E	C	F	D	A	B
III –	F	E	A	B	C	D
II –	C	D	E	F	B	A
I -	A	B	C	D	E	F

April 25 2013

Plants are very sensitive to energized water which improves nutrient uptake, toxin separation and waste discharge. **There were 70% more Kiko-treated tillers than Control in the first 90 days.**

KIKO TREATED REPLICATED TILLER COUNT (Jan 25 - Apr 25 2013)

TREATMENT/Replicate	I	II	III	IV	TOTAL	MEAN	% vs. Control
A (1 hr.)	40	10	16	22	88	22	25%
B (2 hrs.)	14	17	36	19	86	21.5	30%
C (3 hrs.)	14	41	14	30	99	24.75	83%
D (8 hrs.)	22	42	27	37	128	32	110%
E (12 hrs.)	24	19	37	45	125	31.25	127%
F (24 hrs.)	23	28	45	25	121	30.25	61%
Total tillers					647	161	+ 70%

CONTROL (Nil Kiko) TILLER COUNT (Jan 25 - Apr 25 2013)

TREATMENT/Region	I	II	III	IV	TOTAL	MEAN
A (1 hr.)	7	23	23	17	70	17.5
B (2 hrs.)	14	15	20	17	66	16.5
C (3 hrs.)	8	5	25	16	54	13.5
D (8 hrs.)	10	9	21	21	61	15.25
E (12 hrs.)	19	6	12	18	55	13.75
F (24 hrs.)	21	12	17	25	75	18.75
Total tillers					381	95

90 DAYS IS A REPRESENTABLE TIMELINE TO COMPARE THE TILLER COUNT:

On 25 April 2013, three (3) months after cane point germination the KIKO-TREATED cane seeding produced 162 mill-able tillers against 95 tillers in Control, an astounding 70% increase. From April 25 thru October 2013 spot checks were made to identify whether the extra tillers were of primary secondary or tertiary variety. Kiko-treated cane stalks responded favorably due to the far infrared energy absorption feature – one of salient strengths of the Kiko Technology to assist photosynthesis.

Clearly the energized water has a botanical and / or bio engineering symbiotic relationship to soil conditions, pH (due to more OH- ion separation), organic carbon and organic matter. The net effect is faster nutrient uptake into the root and stalk structure. The Kiko-treated cane was greener and taller at this timeline.

The 3 months tiller count is unprecedented. Mr. Jing Romero continuously tested pH soil conditions on a monthly basis. The root structure was denser, the fibers stronger, greener and the plants less stressed. Kiko Technology energizes moisture in the air as well as soil moisture as deep as 20 - 30 meters depth.

DATA on THE SOIL ALKALINITY IN ALL THE 4 TEST REGIONS

TEST BY: MICROBIOLOGICAL LABORATORY, CENTRAL AZUCARERA OF TARLAC (CAT)

Full breakdown of soil pH analysis reports as per Test Certificates dated 5th, 28th March, 4th & 30th May 2013 released by CAT are listed in Appendix.

PH TEST ON KIKO TECHNOLOGY

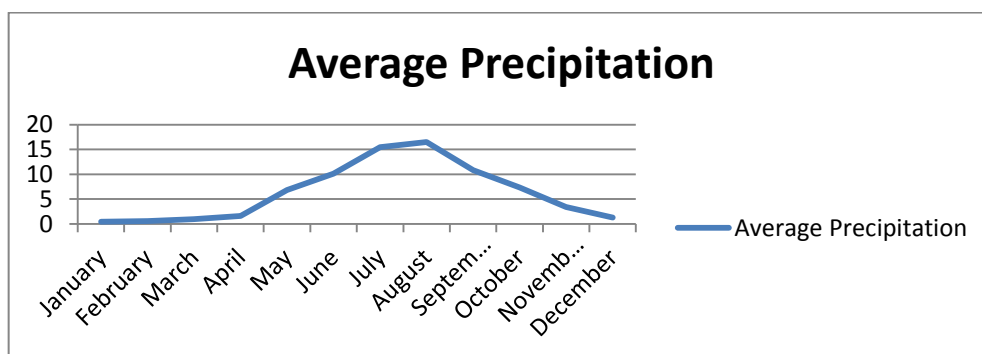
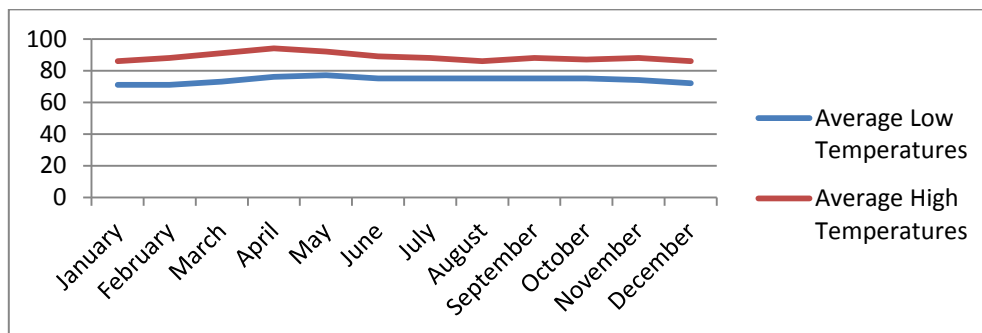
NAME OF PLANTERS	LOCATION	LOT #	INITIAL PH	ONE WEEK	ONE MONTH	2ND MONTH
DELIA AGUANA	GERONA	1A	5.90	5.18	5.40	5.81
DELIA AGUANA	GERONA	1B	5.90	5.99	6.15	6.38
DELIA AGUANA	GERONA	1C	5.80	5.34	5.58	5.86
DELIA AGUANA	GERONA	1D	5.50	5.17	6.05	6.17
ADOR VIESCA	SAPANG TAGALOG	44A	5.00	5.32	5.27	5.57
ADOR VIESCA	SAPANG TAGALOG	44B	5.00	5.34	5.21	5.46
ADOR VIESCA	SAPANG TAGALOG	44C	5.00	5.21	5.05	5.44
ADOR VIESCA	SAPANG TAGALOG	44D	5.50	4.79	4.99	5.37
ELEAZAR BELTRAN	LAWY	61A	5.00	5.76	5.65	5.66
ELEAZAR BELTRAN	LAWY	61B	4.80	5.54	5.23	5.33
ELEAZAR BELTRAN	LAWY	61C	5.00	5.45	5.16	5.18
ELEAZAR BELTRAN	LAWY	61D	5.00	6.40	6.46	6.22
FELICIANO BALIGOD	PATLING	60A	5.50	5.35	4.89	5.51
FELICIANO BALIGOD	PATLING	60B	5.10	5.41	4.83	5.50
FELICIANO BALIGOD	PATLING	60C	5.40	4.98	5.14	5.99
FELICIANO BALIGOD	PATLING	60D	5.10	4.99	4.75	5.38
FELICIANO BALIGOD	PATLING	60E	5.40	4.78	4.31	5.19
FELICIANO BALIGOD	PATLING	60F	5.50	5.49	5.02	5.42

THE CAUSE OF INCREASING AND DECREASING pH IS DIRECTLY RELATED TO HEAVY RAINFALL:

- The pH or acidity of soil decreases slightly every time it rains – but rebounds with warm weather.
- Global weather patterns reveal higher and higher amounts of acidic ions (e.g. especially CO₂) in rain.
- Scientists verify that over the past 60 years there is a continuous deterioration of the Earth’s stratosphere, notably more carbon dioxide (CO₂) CO HC SO_x and NO_x emissions that negatively affects plant growth, absorption of nutrients and photosynthesis.
- Kiko Technology allows plants to naturally absorb more FIR (a safe energy emitted by the Sun); quickly separate and discharge wastes via its roots and fiber membrane structure; improve soil conditions including soil pH, organic carbon and organic matter absorption; and assist to negate the acid rain phenomenon – the overall effect being a healthier plant.
- Acid rain is an unwanted by-product of industrial progress. The improvement in the soil pH across the four regions provides further validation of the Kiko Technology.
- Most importantly, this study allows farmers to raises questions for reducing urea combinations or potash. Energized water provides a simpler and cost effective solution.
- Kiko Technology energizes sub soils as well, releasing dormant minerals and OH⁻ ions so vital for plant growth. Roots are longer, denser and tend to grow vertically downwards instead of spreading horizontally.
- Nevertheless all farmers are well aware that abnormal and excessive conditions will occur season to season – the worst being excessive typhoons or severe drought.
- Typhoon Santi struck Northern Luzon on October 14 2013 causing damage and twisted cane stalk for both the control and Kiko-treated area in Hacienda Bantog Gerona. Stalk lengths measured in November 2013 and again on December 23 indicate lots of shorter-than-normal cane stalk.

WEATHER TEMPERATURE & PRECIPITATION IN TARLAC AREA FROM JAN TO DEC 2013

Average Temperature



- Precipitation in Tarlac, Luzon North Philippines was comparatively higher than Central & Southern Philippines. Frequent rainstorms (e.g. more acid rain) affects cane stalk growth. Typhoon Santi was especially damaging.

DATA ON AN EARLY CANE HARVEST - COMPARE Month 10 (23 November 2013) TO MONTH 11 Dec 23 2013

Over 120 cane stalks were cut and milled twice – November 23 2013 and December 23 2013

The findings are startling and provide several key salient points to any cane planter:

- Many of the Control cane stalk cut early in Month 10 were ready for harvest; but not the Kiko stalks.
- The Control cane was mature; quite yellowish; many late tillers, more stalk weight and 9% more sucrose content than the ultra-green Kiko-treated stalk. PSTC was higher in Control cane (1.06) than Kiko-treated cane (0.98).
- The Control cane showed visible signs of white grubs, Downey mildew fungus and rodent bites but Kiko-treated stalk showed NIL signs of any pest or insect damage.
- Of particular note, the cutters remarked how much easier to cut the Kiko-cane which tasted “like Sprite”.
- The second cutting and milling was conducted on December 23. At this growth a complete reversal occurred. The brix sweetness for the Control cane increased only 6% whereas the Kiko-treated cane increased 37%.
- These observations validate that energized Kiko water allows crops to mature naturally without so much sucrose evaporation as in the Control cane.

SUGAR CANE PER STALK WEIGHT COMPARISON (in kilogram per stalk) Nov – Dec 2013

STALK WEIGHT Kiko-Treated Nov 23 2013							STALK WEIGHT Kiko-treated Dec 23 2013							
Treatments	1	2	3	4	Total	Mean	Treatments	1	2	3	4	Mean	% vs. Nov	
A (1 hr.)	1.69	2.19	1.67	1.37	6.92	1.73	A (1 hr.)	1.5	1.4	1.48	1.48	1.47	-15%	
B (2 hrs.)	2.23	1.57	2.03	1.61	7.44	1.86	B (2 hrs.)	1.56	1.4	1.73	1.28	1.49	-19.9%	
C (3 hrs.)	1.97	2.23	1.36	1.71	7.27	1.82	C (3 hrs.)	1.7	1.65	1.7	1.35	1.6	-12%	
D (8 hrs.)	2.18	1.46	1.03	1.57	6.24	1.56	D (8 hrs.)	1.8	1.5	1.4	1.95	1.66	6.4%	
E (12 hrs.)	1.76	1.8	1.43	1.72	6.71	1.68	E (12 hrs.)	1.75	1.65	1.7	1.65	1.69	0.6%	
F (24 hrs.)	1.63	1.31	1.44	1.62	6.0	1.5	F (24 hrs.)	1.85	2.05	1.7	1.65	1.56	4%	
					Mean	1.70						Mean	1.58	-7.1%

STALK WEIGHT Control Nov 23 2013							STALK WEIGHT Control Dec 23 2013							
Treatments	1	2	3	4	Total	Mean	Treatments	1	2	3	4	Mean	% vs. Nov	
A (1 hr.)	2.1	2.31	2.26	1.88	8.59	2.15	A (1 hr.)	1.7	2.45	2.38	2.08	2.15	Nil	
B (2 hrs.)	2.07	2.25	1.23	2.15	7.7	1.92	B (2 hrs.)	2.35	1.9	2.25	1.55	2.01	4.7%	
C (3 hrs.)	1.89	2.16	1.95	1.64	7.64	1.91	C (3 hrs.)	1.35	1.4	1.25	1.7	1.43	-25.1%	
D (8 hrs.)	1.8	2.04	1.8	1.49	7.13	1.78	D (8 hrs.)	2.48	2.88	2.18	2.25	2.20	23.6%	
E (12 hrs.)	2.28	1.82	2.07	1.83	7.0	1.75	E (12 hrs.)	1.25	2.18	2.15	1.8	1.85	5.7%	
F (24 hrs.)	2.17	1.24	1.72	1.84	6.97	1.74	F (24 hrs.)	1.04	1.25	1.7	1.1	1.27	-27%	
					Mean	1.90						Mean	1.82	-4.2%

The stalk weight was lower primarily due to the effects of Typhoon Santi on October 14.

North Luzon was hit particularly hard with heavy rains in early November – many stalks lengths twisted and damaged. Even though Control stalks were longer & heavier in November and December, the Kiko-treated stalks contained more sucrose.

SUGAR CANE STALK DIAMETER COMPARISON (measured in inches) Nov 23 to December 23 2013

Perhaps the stalk diameter is a better indication of health of the cane stalks.

By December 23 2013 the stalk continued to constantly grow, a 11.3% diameter increase.

Control diameter remained constant in the 4 replications.

The internodes for the Kiko-treated stalks are visibly wider apart than Control.

STALK DIAMETER Kiko-Treated Nov 23 2013							STALK DIAMETER Kiko treated Dec 23 2013						
Planted by Region	1	2	3	4	Total	Mean	Treatments	1	2	3	4	Mean	% vs Nov
A (1 hr.)	1.11	1.15	1.05	0.96	4.27	1.07	A (1 hr.)	1.15	1.04	1.1	1.04	1.08	0.9%
B (2 hrs.)	1.17	1.02	1.12	1.05	4.36	1.09	B (2 hrs.)	1.12	1.05	1.02	1.25	1.11	1.8%
C (3 hrs.)	1.16	0.89	0.93	1.0	3.98	1.00	C (3 hrs.)	1.33	1.24	1.8	1.09	1.37	37%
D (8 hrs.)	1.27	0.97	0.87	1.04	4.15	1.04	D (8 hrs.)	1.2	1.18	1.11	1.28	1.19	14%

E (12 hrs.)	1.1	1.19	0.97	1.05	4.31	1.08		E (12 hrs.)	1.28	1.13	1.15	1.07	1.16	7.5%
F (24 hrs.)	1.0	1.27	0.99	1.15	4.41	1.10		F (24 hrs.)	1.13	1.23	1.15	1.09	1.15	4.5%
			Mean dia.			1.06					Mean dia.		1.18	11.3%

STALK DIAMETER Control Nov 23 2013							STALK DIAMETER Control Dec 23 2013						
Treatment by Region	1	2	3	4	Total	Mean	Treatments	1	2	3	4	Mean	% vs Nov
A (1 hr.)	1.22	1.13	1.2	1.05	4.60	1.15	A (1 hr.)	1.34	1.31	1.32	1.29	1.32	15%
B (2 hrs.)	1.21	1.17	0.9	1.15	4.43	1.11	B (2 hrs.)	1.08	1.12	1.13	1.15	1.12	0.9%
C (3 hrs.)	1.18	0.97	1.1	1.15	4.40	1.10	C (3 hrs.)	1.09	0.98	1.0	1.02	1.02	-8%
D (8 hrs.)	1.32	1.17	1.01	1.1	4.60	1.15	D (8 hrs.)	1.19	1.58	1.15	1.21	1.28	11%
E (12 hrs.)	1.25	1.15	1.14	1.05	4.59	1.15	E (12 hrs.)	0.84	1.15	1.13	1.0	1.03	-11%
F (24 hrs.)	1.22	1.13	1.0	0.95	4.30	1.08	F (24 hrs.)	0.82	0.99	0.98	1.19	1.00	8%
	Control		Mean dia.			1.12		Control		Mean dia.		1.12	Nil
	Kiko-treated		Mean dia.			1.06		Kiko-treated		Mean dia.		1.18	11%



Nov 23 2013

LEFT: Kiko stalks: greener & darker; 6% less sucrose but 11% larger diameter by Dec 23

RIGHT: Control –very yellowish; late tillers



**Nov 23 2013
Control stalks:**

Pale yellowish shorter internodes than Kiko

More late tillers in month 10-11 – not a good sign – visible insect & fungus

STALK LENGTH Kiko-Treated Nov 23						STALK LENGTH Kiko-Treated Dec 23							
Treatment	1	2	3	4	Mean	Treatment	1	2	3	4	Mean	% vs Nov	
A (1 hr.)	108	128.8	130.2	119	121.5	A (1 hr.)	80	76.5	93	97.5	86.8	-28.6%	
B (2 hrs.)	119.4	111.6	122.6	104.8	114.6	B (2 hrs.)	100.5	113	111.5	97	105.5	-7.9%	
C (3 hrs.)	119.2	122	117.2	122	120.1	C (3 hrs.)	115	100	88	74.5	94.4	-21.4%	
D (8 hrs.)	111.4	133.8	114	114	118.3	D (8 hrs.)	94.5	99.5	88	96	94.5	-20.1%	
E (12 hrs.)	117.8	102.2	119.4	120.8	115.1	E (12 hrs.)	90.5	96	87	96	92.4	-19.7%	
F (24 hrs.)	130.4	120.6	117	110.2	119.6	F (24 hrs.)	101.5	101.9	92	95.5	97.7	-18.3%	
Total	Mean				118.2	Total	Mean				95.2	-19.5%	

STALK LENGTH CONTROL Nov 23						STALK LENGTH CONTROL Dec 23							
Treatment	1	2	3	4	Mean	Treatment	1	2	3	4	Mean	% vs Nov	
A (1 hr.)	113.8	136.4	134.4	126.2	127.7	A (1 hr.)	101.5	101.5	92	95.5	97.6	-23.5%	
B (2 hrs.)	116.8	130.6	118.8	132.4	124.6	B (2 hrs.)	120	106.5	124	105.5	114	-8.5%	
C (3 hrs.)	112.6	104.4	121.4	107	111.4	C (3 hrs.)	99	90	93	94	94	-15.6%	
D (8 hrs.)	118.3	131.2	118.6	105.6	118.4	D (8 hrs.)	120	119	104.5	106.5	112.5	-5.0%	
E (12 hrs.)	123.2	117.6	123.6	122.6	121.8	E (12 hrs.)	89	115.5	107	84	98.9	-18.8%	
F (24 hrs.)	113.8	127	131.6	143.2	128.9	F (24 hrs.)	104.5	103.5	89	92.5	97.4	-24.4%	
Total	Mean				122.1	Total	Mean				102.4	-16.1%	

ASSESSMENT OF CANE STALKS BETWEEN NOVEMBER 23 AND DECEMBER 23 2013

Key salient points between month-to-month growth (November to December)

- The Kiko-treated stalks progressively increased its sucrose content – 37% more versus 6% in Control.
- The greenish color in November started to mature to it's a typical yellowish stalk characteristics by Dec 23.
- Kiko-treated stalk diameter continued to enlarge whereas the Control stalks ran its course.
- The Control stalks continued to produce late tillers; Kiko-treated stalks NIL.

- Control stalks show more and more evidence of white grub and mildew fungus attack: Kiko-Treated NIL
- The internodes are visibly longer for the Kiko-treated stalks implying greater sucrose storage volume.
- KIKO stalk fiber is cleaner and whiter fibers versus the Control and much easier to cut, expediting harvest.
- All the cane in the entire 3.3 hectares was affected by Typhoon Santi in the October 14 timeframe.
- Milling selectively chosen from a pool of 120 cane points for each of the Kiko-Treated and Control areas.

January 15 2014 to February 2014

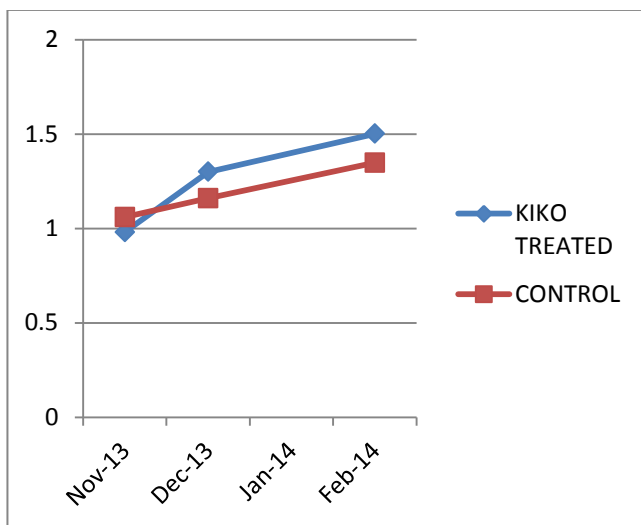
FINAL HARVEST: THE ENTIRE 3.3 HECTARE AREA AT HACIENDA BANTOG GERONA

Method: CAT laboratory at Central Azucarera de Tarlac (Sucrose Concentration Analysis) to measure PSTC

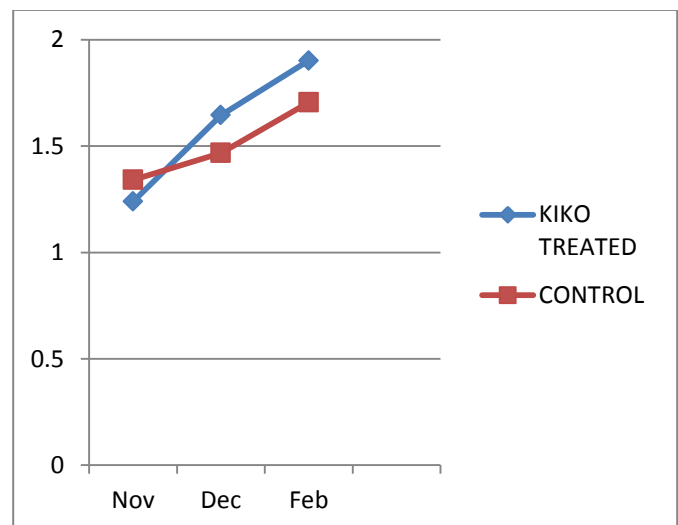
Conversion ratio: PS/TC x 1.265 = Lkg/TC

PSTC / LkgTC Count / Test Dates	Kiko-Treated		Control		
	PSTC	LkgTC	PSTC	LkgTC	vs. Kiko
19 Nov 2013 (Month 10) – 24 sqm area	0.98	1.239	1.06	1.341	
25 Dec 2013 (Month 11) – 24 sqm. area	1.30	1.645	1.16	1.467	
18 Feb 2014 (Final Harvest for entire 3.3 ha)	1.501	1.901	1.348	1.705	+11.4%
PSTC Increase (Nov to Dec)	0.32	0.406	0.10	0.126	
PSTC increase (Dec to Feb)	0.20	0.255	0.188	0.238	
PSTC % increase month-to-month					
Nov to Dec 2013	32.7%		9.4%		
Dec to Feb 2014	15.5%		16.2%		
Nov to Feb 2014	53.3%	53.3%	27.1%	27.1%	
Kiko Technology allows cane stalk to mature slower than Control, then peaking at 12 months	Brix sweetness increased rapidly in last 2 months		Control cane matured early with many late tillers		

PS/TC SWEETNESS TREND



Lkg/TC SWEETNESS TREND





Cut sugar cane is crushed to extract juice



Sucrose concentration of cane juice is analyzed in laboratory & measured in PSTC

HACIENDA BANTOG GERONA – actual harvest statistics provided by Central Azucarera de Tarlac

Total 3.3 hectares (1.65 ha Control and 1.65 ha Kiko-Treated) was harvested between Jan 15 2014 and Feb 19 2014

- The Kiko-Treated net cane tonnage is 12.1% more tonnage than Control.
- The PS/TC difference between Kiko and Control is 11.3%.
- Kiko-treated area: 105 TC per ha versus Control: 93 TC per ha.
- Soaking cane points prior to planting improves yields for both Kiko-treated and Control.
- The historic average for Hacienda Bantog Gerona is 70 TC per ha.

Cost impact to sugar planters and millers:

- Given that the cost of operations for most farmers ranges between Peso 55,000 to 60,000 per hectare, the Kiko Technology is viewed as a Game Changer.
- On the basis of Peso 1,350 per 50 kg bag of sugar, the Kiko Technology **added Peso 53,460 per hectare extra profits** on the basis of this 3.3 hectare comparison.

Kiko-treated Cane final harvest Feb 2014 for 1.65 ha						Control cane final harvest Jan-Feb 2014 for 1.65 ha					
Harvest date	Plate #	PSTC	Net tons	Kg of sugar	Bags sugar	Harvest date	Plate #	PSTC	Net tons	Kg of sugar	Bags sugar
Feb 11	CMB 746	1.69	14.42			Jan 19	CBJ 383	1.38	16.42		
Feb 17	CBJ 138	1.57	17.72			Jan 16	WDZ 731	1.23	10.60		
Feb 17	CCT 641	1.61	23.03			Jan 16	CBJ 138	1.23	17.95		
Feb 17	CBJ 138	1.56	14.31			Feb 12	CBJ 215	1.30	13.19		
Feb 18	CEL 440	1.45	14.78			Feb 13	CBJ 215	1.41	13.78		
Feb 18	XLB 529	1.42	23.99			Feb 14	CBJ 215	1.27	13.28		
Feb 18	CCT 641	1.27	15.61			Feb 17	CBJ 383	1.40	21.35		
Feb 18	CKG 617	1.45	14.86			Feb 18	CMV 746	1.21	17.77		
Feb 19	CBW 170	1.51	17.93			Feb 19	CKG 617	1.51	20.16		
Feb 19	CBJ 383	1.48	17.00			Feb 19	CBJ 138	1.54	10.49		
Total	10 trucks		173.6	9984	200	Total	10 trucks		154.9	8020	160
----- Compare	per ha Kiko vs. Control (per hectare)	1.50 ----- +12.1% more TC	105.23 ----- +12.1% more TC	P 270,000 ----- + P 53,460 more income		----- Compare	per ha PSTC Kiko: Control (per hectare)	1.348 ----- +11.3% more income	93.93 ----- +11.3% more income	P 216,540 ----- +11.3% more income	

KIKO-TREATED & CONTROL: SOIL ANALYSIS AFTER CANES CUT

17 JANUARY 2014 BY CENTRAL AZUCARERA OF TARLAC (CAT) - Data from Gerona Region

CENTRAL AZUCARERA DE TARLAC
San Miguel, Tarlac City


APPLIED MICROBIOLOGICAL RESEARCH LABORATORY


Results of Soil Analysis


Date: January 17, 2014


Date Sampled: January 14, 2014
 Date Analyzed: January 17, 2014
 Sample From: Mr. Nicomedes Romero

SAMPLE	Lot No	pH	%OC	%OM	%N _t	P, ppm	K, ppm
Ernesto Agustin, Bantog, Gerona, 5 Hac	5C	5.99	0.60	1.97	0.06	75.80	42.40
Ernesto Agustin, Bantog, Gerona, 5 Hac	5T	5.88	0.60	1.97	0.06	103.20	46.60

Analyzed by:

LIEZL B. PUNZALAN
 Senior Research Analyst / II. Research Analyst


ALLAN DE AUSEN
 II. Research Analyst

Checked by:

NEILA M. SICAT
 Supervisor, R & D


RENE T. ROSARIO
 Dept. Mgr., Laboratories

SOIL ALKALINITY ANALYSIS ON MAJOR MINERALS: Analysis by CAT

Major Mineral Types	KIKO TREATED	CONTROL
Phosphate, ppm	103.2	75.8
Improvement percentage	+ 36.1 %	N.A.
Nitrogen, ppm	0.06	0.06
Potassium, ppm	46.60	42.40
Improvement percentage	+ 9.9 %	N.A.

- Phosphate content improved by a staggering 36% after KIKO treatment which indicates that up to 4 bags of urea fertilizer dosage can be reduced over time, saving Peso 5,000 @ P 1250 per bag.
- KIKO improves the OH⁻ ions and mineral content in the soil which in turn triggers a domino effect to negate the acid rain (e.g. HCO₃ or HSO_x).
- Similarly less potash would be needed to raise acid soil. The savings could be at least Peso 7-15,000 per ha.

PEST & RODENT DAMAGE OBSERVATION ON KIKO-TREATED & CONTROL CANE

Pest Types	KIKO TREATED CANE	CONTROL (estimated damaged %)
Cane Bores / white grubs	Not Visible	<p data-bbox="857 317 943 344">< 10 %</p> 
Downey Mildew Fungus	Not Visible	<p data-bbox="857 831 943 858">< 10 %</p> 
Rodent	Not Visible	<p data-bbox="841 1320 927 1348">< 10%</p> 

CONCLUSIONS

- 1) Kiko Technology improves water utilization at the molecular level by an action called harmonics (e.g. frequency of water). This frequency is not visible to the human eye; however for plants animals and living organisms the effects seen in this trial study are from a scientific viewpoint, comparable to the 200+ other studies. Many crop yields increased from 10% to 90% above and beyond Control including Palay rice, strawberries, tomato, spinach, okra, zucchini, chili, lime orchards, flowers and other agriculture crops.
- 2) Kiko Technology presents Game Changing opportunities for sugar cane planters. The improvements quantified in this report include more cane yields, sucrose content, freshness and resistance to pest and rodent damage.
- 3) Kiko Technology improves soil conditions by penetrating dormant and tightly bond minerals and OH- ions deep in the sub-soil. More R&D effort is required but this study presents sufficient qualitative observations that a healthy vibrant soil lessens insect and fungus damage.
- 4) Kiko cartridges are best used by burying in the Earth spaced about 20 - 30 meters (the rate is 5 cartridges spaced evenly over one hectare area). However this study also confirms that cane points with higher relative humidity in the first 24 hours will influence and increase germination rates.
- 5) This study also confirmed that the energy within the Kiko volcanic stones will spread over a very large surface area. The spread moves horizontal and vertical to a depth at least 20-40 meters. The resistance to FIR energy is another wavelength frequency called microwaves which are emitted by the Sun.
- 6) Kiko Technology is currently conducting work on improving cane ratoon fields in Bacolod, verifying similar benchmarks as presented in this report. The Philippine farmers typically cut once (e.g. one ratoon) but if Kiko Technology can add another 1 - 2 ratoons, the sugar cane industry will truly benefit.
- 7) This study opens the opportunity for future R&D cooperative efforts such as in the fields of plant entomology, nutrient uptake, urea formulations, seed technology or adopting frequency or quantum energy techniques to combat insects and pests.
- 8) Overall this study verifies that the science behind Kiko Technology changes the physics of water, including moisture particles, and this has a knock-on, Game Changer effect for sugar cane output and health.

END OF KIKO REPORT

APPENDIX

SUGAR CANE PRE-TRIAL BENCHMARK LOG SHEET FORMAT

TEST PARTNER DETAILS			
TEST LOCATION			
PROJECT COORDINATORS	Mr. James Osugi, Founder Kiko Technology Group Limited Mr. Wilton Ngo, Managing Director, Kiko Water Sciences Inc.		
TRIAL START DATE		TRIAL END DATE	
OBJECTIVES	To improve the cane seed germination & tillers counts, minimize or eliminate rodent and pest damage, increase the sugar Lkg/TC content, improve the pH of soil that generate savings in fertilizer, fungicide dosage, all contributing to the enhancement in net profit in each rotation.		
TRIAL PROCEDURES	Specify Protocol. Kiko treated & Control planted with same seed variety & with identical cultivation procedures.		

PARAMETERS	CONTROL (No Kiko)	TEST (Kiko)
Seed variety		
Seed variety characteristics (describe if any)		
DATA ON SUGAR CANE AT HARVEST BEFORE MILLING		
Days from Cane Point Germination Stage to Harvest (specify time of year if relevant)		
Cane Point Germination Observation		
Cane Point germinated No. in identical replication		
Cane point germination difference percentage (%)		
Final Tiller Count per sq. meter		
Tiller Count Difference by percentage (%)		
Average Biomass weight per individual Cane stalk (gram)		
Difference by percentage (%)		
Average Individual Cane Stalk Length less root (in cm)		
Circumference (in cm)		
Root Length (in cm)		
Appearance of cane plants, tillers, leaf (free format)		
Appearance of roots (in cm)		
Observation on Pests (bacteria, insects, rodents, etc.)		
<Specify pest type and remarks>		
<Specify pest type and remarks>		
<Specify pest type and remarks>		

YIELD PERFORMANCE		
Yield in tons in whole 100 hectares		
Difference by tons/100 hectares		
Difference by percentage (%)		
Yield in tons/hectare		
Difference by tons/hectare	-	
Difference by percentage (%)	-	
DATA ON SUGAR CANE QUALITY		
Sucrose percentage (%)		
Ratio of Top/Bottom Brix		
Fiber percentage (%)		
Moisture analysis		
INFORMATION ON FERTILIZER// PESTICIDES// HERBICIDES DOSGAE & SAVING		
FERTILIZERS		
LIME		
No of dosage/Cost per each dosage/hectare		
Total cost incurred /hectare (in Peso)		
UREA		
No of dosage/Cost per each dosage/hectare		
Total cost incurred /hectare (in Peso)		
POTASH		
No of dosage/Cost per each dosage/hectare		
Total cost incurred /hectare (in Peso)		
Total Saving achieved (if any in Peso)		
PESTICIDES		
No of dosage/Cost per each dosage/hectare		
Total cost incurred /hectare (in peso)		
Total Saving achieved (if any in Peso)		
HERBICIDES		
No of dosage/Cost per each dosage/hectare		
Total cost incurred /hectare (in peso)		
Total Saving achieved (if any in Peso)		
MARKET INFORMATION		
Pre-Mill Sugar Cane Market Price (State currency and unit – e.g. per M Ton or per bag ... etc.)		
Difference in percentage (if any)		
Other remarks on Pricing Factors (if any)		
COMMENTS FROM THE FARMER		
<enter here>		
OTHER NOTES & REMARKS BY CLIENT		



CENTRAL AZUCARERA DE TARLAC
San Miguel, Tarlac City

APPLIED MICROBIOLOGICAL RESEARCH LABORATORY
CERTIFICATE OF SOIL ANALYSIS

Date: March 5, 2013

Name of Client/Customer: Mr. Nicomedes Romero, Jr (Cane Intensification Program)
Source of Sample: Plastic
Analytical Parameters Requested: pH
Name of Person who submitted: Mr. Nicomedes Romero, Jr
Date / Time Received: February 28, 2013 / 10:45 am
Date Analyzed: March 5, 2013 / 7:45 am
Date Reported: March 5, 2013

SAMPLE/PLANTER'S NAME	Location	Lot #	Area	pH
1 Soil Sample / Delia Aguana	Plastad Gerona	1A	4.0	5.18
2 Soil Sample / Delia Aguana	Plastad Gerona	1B	4.0	5.99
3 Soil Sample / Delia Aguana	Plastad Gerona	1C	4.0	5.34
4 Soil Sample / Delia Aguana	Plastad Gerona	1D	4.0	5.17
5 Soil Sample / Ador Viesca	Sapang Tagalog	44A	7.0	5.32
6 Soil Sample / Ador Viesca	Sapang Tagalog	44B	7.0	5.34
7 Soil Sample / Ador Viesca	Sapang Tagalog	44C	7.0	5.21
8 Soil Sample / Ador Viesca	Sapang Tagalog	44D	7.0	4.79
9 Soil Sample / Feliciano Baligod	Patling Capas	60A	5.0	5.35
10 Soil Sample / Feliciano Baligod	Patling Capas	60B	5.0	5.41
11 Soil Sample / Feliciano Baligod	Patling Capas	60C	5.0	4.98
12 Soil Sample / Feliciano Baligod	Patling Capas	60D	5.0	4.99
13 Soil Sample / Feliciano Baligod	Patling Capas	60E	5.0	4.78
14 Soil Sample / Feliciano Baligod	Patling Capas	60F	5.0	5.49
15 Soil Sample / Eleazar Beltram	Palublub Lawy	61A	5.0	5.76
16 Soil Sample / Eleazar Beltram	Palublub Lawy	61B	5.0	5.54
17 Soil Sample / Eleazar Beltram	Palublub Lawy	61C	5.0	5.45
18 Soil Sample / Eleazar Beltram	Palublub Lawy	61D	5.0	6.40

Remarks: None

Analyzed by:



NEILA M. SICAT
 Supervisor, R&D

Checked by:



MARVIN S. AQUINO
 Supervisor

Noted by:



RENE T. ROSARIO
 Assistant Division Manager, Control Services



CENTRAL AZUCARERA DE TARLAC
 San Miguel, Tarlac City
APPLIED MICROBIOLOGICAL RESEARCH LABORATORY
CERTIFICATE OF SOIL ANALYSIS

Date: March 28, 2013

Name of Client/Customer: Mr. Nicomedes Romero, Jr (Cane Intensification Program)
Source of Sample: Plastic
Analytical Parameters Requested: pH
Name of Person who submitted: Mr. Nicomedes Romero, Jr
Date / Time Received: March 23, 2013 / 9:30 AM
Date Analyzed: March 28, 2013 / 8:30 AM
Date Reported: March 28, 2013

SAMPLE/PLANTER'S NAME	Location	Lot #	Area	pH
1 Soil Analysis / Delia Aguana	Plastado Gerona	1A	4.0	5.40
2 Soil Analysis / Delia Aguana	Plastado Gerona	1B	4.0	6.15
3 Soil Analysis / Delia Aguana	Plastado Gerona	1C	4.0	5.58
4 Soil Analysis / Delia Aguana	Plastado Gerona	1D	4.0	6.05
5 Soil Analysis / Eleazar Beltran	Palublob Lawy	61A	5.0	5.65
6 Soil Analysis / Eleazar Beltran	Palublob Lawy	61B	5.0	5.23
7 Soil Analysis / Eleazar Beltran	Palublob Lawy	61C	5.0	5.16
8 Soil Analysis / Eleazar Beltran	Palublob Lawy	61D	5.0	6.46
9 Soil Analysis / Ador Viesca	Sapang Tagalog	44A	7.0	5.27
10 Soil Analysis / Ador Viesca	Sapang Tagalog	44B	7.0	5.21
11 Soil Analysis / Ador Viesca	Sapang Tagalog	44C	7.0	5.05
12 Soil Analysis / Ador Viesca	Sapang Tagalog	44D	7.0	4.99
13 Soil Analysis / Feliciano Baligod	Patling Capas	60A	5.0	4.89
14 Soil Analysis / Feliciano Baligod	Patling Capas	60B	5.0	4.83
15 Soil Analysis / Feliciano Baligod	Patling Capas	60C	5.0	5.14
16 Soil Analysis / Feliciano Baligod	Patling Capas	60D	5.0	4.75
17 Soil Analysis / Feliciano Baligod	Patling Capas	60E	5.0	4.31
18 Soil Analysis / Feliciano Baligod	Patling Capas	60F	5.0	5.02

Remarks: None

Analyzed by:

LIEZL B. PUNZALAN

Sr. Research Analyst

Checked by:

NEILA M. SICAT

Supervisor, R&D

Noted by:

RENE T. ROSARIO

Assistant Division Manager, Control Services



CENTRAL AZUCARERA DE TARLAC

San Miguel, Tarlac City

APPLIED MICROBIOLOGICAL RESEARCH LABORATORY

CERTIFICATE OF SOIL ANALYSIS


Date: May 4, 2013

Name of Client/Customer: **Mr. Nicomedes Romero, Jr (Cane Intensification Program)**
 Source of Sample: Plastic
 Analytical Parameters Requested: pH
 Name of Person who submitted: Mr. Nicomedes Romero, Jr
 Date / Time Received: April 30, 2013
 Date Analyzed: May 4, 2013
 Date Reported: May 4, 2013

SAMPLE/PLANTER'S NAME	Location	Lot #	Area	pH
1 Soil Analysis / Delia Aguana	Plastado Gerona	1A		5.81
2 Soil Analysis / Delia Aguana	Plastado Gerona	1B		6.38
3 Soil Analysis / Delia Aguana	Plastado Gerona	1C		5.86
4 Soil Analysis / Delia Aguana	Plastado Gerona	1D		6.17
5 Soil Analysis / Eleazar Beltran	Palublob Lawy	61A	5.0	5.66
6 Soil Analysis / Eleazar Beltran	Palublob Lawy	61B	5.0	5.33
7 Soil Analysis / Eleazar Beltran	Palublob Lawy	61C	5.0	5.18
8 Soil Analysis / Eleazar Beltran	Palublob Lawy	61D	5.0	6.22
9 Soil Analysis / Ador Viesca	Sapang Tagalog	44A		5.57
10 Soil Analysis / Ador Viesca	Sapang Tagalog	44B		5.46
11 Soil Analysis / Ador Viesca	Sapang Tagalog	44C		5.44
12 Soil Analysis / Ador Viesca	Sapang Tagalog	44D	7.0	5.37
13 Soil Analysis / Feliciano Baligod	Patling Capas	60A	5.0	5.51
14 Soil Analysis / Feliciano Baligod	Patling Capas	60B	5.0	5.50
15 Soil Analysis / Feliciano Baligod	Patling Capas	60C	5.0	5.99
16 Soil Analysis / Feliciano Baligod	Patling Capas	60D	5.0	5.38
17 Soil Analysis / Feliciano Baligod	Patling Capas	60E	5.0	5.19
18 Soil Analysis / Feliciano Baligod	Patling Capas	60F	5.0	5.42

Remarks: None

Analyzed by:



NEILA M. SICAT
 Supervisor, R&D

Checked by:



MARVIN S. AQUINO
 Supervisor

Noted by:



RENE T. ROSARIO
 Assistant Division Manager, Control Services



CENTRAL AZUCARERA DE TARLAC
 San Miguel, Tarlac City
APPLIED MICROBIOLOGICAL RESEARCH LABORATORY
CERTIFICATE OF SOIL ANALYSIS

Date: June 4, 2013

Name of Client/Customer: Mr. Nicomedes Romero, Jr (Cane Intensification Program)
Source of Sample: Plastic
Analytical Parameters Requested: pH
Name of Person who submitted: Mr. Nicomedes Romero, Jr
Date / Time Received: May 30, 2013
Date Analyzed: June 3, 2013
Date Reported: June 3, 2013

SAMPLE/PLANTER'S NAME	Location	Lot #	Area	pH
1 Soil Analysis / Delia Aguana	Plastado Gerona	1A	4.0	5.95
2 Soil Analysis / Delia Aguana	Plastado Gerona	1B	4.0	5.96
3 Soil Analysis / Delia Aguana	Plastado Gerona	1C	4.0	5.50
4 Soil Analysis / Delia Aguana	Plastado Gerona	1D	4.0	5.41
5 Soil Analysis / Eleazar Beltran	Palublob Lawy	61A	5.0	5.48
6 Soil Analysis / Eleazar Beltran	Palublob Lawy	61B	5.0	5.52
7 Soil Analysis / Eleazar Beltran	Palublob Lawy	61C	5.0	6.58
8 Soil Analysis / Eleazar Beltran	Palublob Lawy	61D	5.0	5.16
9 Soil Analysis / Ador Viesca	Sapang Tagalog	44A	7.0	5.52
10 Soil Analysis / Ador Viesca	Sapang Tagalog	44B	7.0	5.37
11 Soil Analysis / Ador Viesca	Sapang Tagalog	44C	7.0	5.48
12 Soil Analysis / Ador Viesca	Sapang Tagalog	44D	7.0	4.59
13 Soil Analysis / Feliciano Baligod	Patling Capas	60A	5.0	5.46
14 Soil Analysis / Feliciano Baligod	Patling Capas	60B	5.0	5.94
15 Soil Analysis / Feliciano Baligod	Patling Capas	60C	5.0	5.68
16 Soil Analysis / Feliciano Baligod	Patling Capas	60D	5.0	6.73
17 Soil Analysis / Feliciano Baligod	Patling Capas	60E	5.0	4.98
18 Soil Analysis / Feliciano Baligod	Patling Capas	60F	5.0	5.25

Remarks: None

Analyzed by:

LIEZL B. PUNZALAN
 Sr. Research Analyst

Checked by:

NEILA M. SICAT
 Supervisor, R&D

Noted by:

RENE T. ROSARIO
 Assistant Division Manager, Control Services

Appendix 5

PSTC CONTROL 19 Nov 2013


CC: Chief Operating Officer
Res. General Manager
Head, Field Services

CATPA
ABICAL
Unit Copy

Analyses of Cane Samples CROP YEAR 2013-2014

Name of Planter	BRIX	% POL	PURITY	PSTC	LOCATION	LOT #	ZN	WT.	H.M.	PCS	VARIETY	REMARKS
C-T4-R1	17.90	15.64	87.37	1.09	-	-	-	-	-	-	-	-
C-T3-R3	17.10	15.24	89.10	1.08	-	-	-	-	-	-	-	-
C-T5-R1	17.30	15.31	88.50	1.08	-	-	-	-	-	-	-	-
C-T1-R4	17.20	15.29	88.89	1.08	-	-	-	-	-	-	-	-
C-T2-R2	18.20	16.16	88.79	1.16	-	-	-	-	-	-	-	-
C-T4-R4	18.90	16.59	87.77	1.19	-	-	-	-	-	-	-	-
C-T6-R4	18.40	15.36	83.48	1.01	-	-	-	-	-	-	-	-
C-T5-R4	17.20	15.44	89.77	1.11	-	-	-	-	-	-	-	-
C-T2-R4	17.40	14.75	84.77	0.97	-	-	-	-	-	-	-	-
C-T1-R2	17.80	15.62	87.75	1.10	-	-	-	-	-	-	-	-
C-T1-R1	18.50	17.01	91.95	1.29	-	-	-	-	-	-	-	-
C-T5-R3	18.20	16.50	90.66	1.23	-	-	-	-	-	-	-	-
C-T1-R3	15.90	13.66	85.91	0.88	-	-	-	-	-	-	-	-
C-T4-R3	19.30	17.70	91.71	1.36	-	-	-	-	-	-	-	-
C-T6-R1	16.90	14.95	88.47	1.04	-	-	-	-	-	-	-	-
C-T3-R4	20.10	18.32	91.14	1.41	-	-	-	-	-	-	-	-
C-T2-R1	17.40	15.36	88.28	1.08	-	-	-	-	-	-	-	-
C-T6-R3	16.20	12.92	79.75	0.73	-	-	-	-	-	-	-	-
C-T6-R2	16.10	14.06	87.33	0.94	-	-	-	-	-	-	-	-
C-T3-R1	16.40	14.20	86.59	0.94	-	-	-	-	-	-	-	-
C-T3-R2	19.20	16.97	88.38	1.24	-	-	-	-	-	-	-	-
C-T5-R2	15.20	13.30	87.50	0.87	-	-	-	-	-	-	-	-
C-T4-R2	17.60	15.60	88.64	1.11	-	-	-	-	-	-	-	-
AVERAGE:	23	17.50	15.44	88.23	1.09							

Remarks: It is suggested that samples to the Laboratory be complete up to tax. The Laboratory shall be responsible for the removal of cane tags for uniformity. For more effective monitoring and evaluation, complete data pertaining to the cane samples should be indicated in sample label/tag.


NOEL Y. MARCELO
Officer, Raw Sugar Laboratory

Date Analyzed: November 23, 2013
Report No. 12 - 2013-2014

CC, Chief Operating Officer
Res. General Manager
Head, Field Services

CATPA
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Unit Copy

Analyses of Cane Samples
CROP YEAR 2013-2014

Name of Planter	BRIX	% POL	PURITY	PSTC	LOCATION	LOT #	ZN	WT.	H.M.	PCS	VARIETY	Notes
K-T3-R4	20.70	19.45	80.70	1.57	-	-	-	-	-	-	-	-
K-T4-R4	19.10	15.53	81.31	0.99	-	-	-	-	-	-	-	-
K-T5-R4	17.00	14.68	86.35	0.99	-	-	-	-	-	-	-	-
K-T4-R4	16.60	13.29	80.06	0.77	-	-	-	-	-	-	-	-
K-T2-R4	17.10	14.37	84.04	0.92	-	-	-	-	-	-	-	-
K-T2-R2	16.80	14.66	87.26	1.00	-	-	-	-	-	-	-	-
K-T5-R3	16.60	14.20	85.54	0.93	-	-	-	-	-	-	-	-
K-T6-R1	15.10	12.02	79.60	0.65	-	-	-	-	-	-	-	-
K-T1R2	16.90	14.27	84.44	0.92	-	-	-	-	-	-	-	-
K-T5-R1	15.60	13.02	83.46	0.79	-	-	-	-	-	-	-	-
K-T6-R2	16.90	12.72	75.27	0.64	-	-	-	-	-	-	-	-
K-T1-R4	17.20	15.02	87.33	1.03	-	-	-	-	-	-	-	-
K-T6-R4	16.40	14.56	88.78	1.01	-	-	-	-	-	-	-	-
K-T5-R2	15.70	13.74	87.52	0.91	-	-	-	-	-	-	-	-
K-T3-R3	16.20	13.98	86.30	0.92	-	-	-	-	-	-	-	-
K-Y6-R3	17.60	15.65	88.92	1.11	-	-	-	-	-	-	-	-
K-T1-R3	19.00	17.46	91.89	1.34	-	-	-	-	-	-	-	-
K-T4-R3	19.50	17.41	89.28	1.29	-	-	-	-	-	-	-	-
K-T4-R1	16.50	14.86	90.06	1.05	-	-	-	-	-	-	-	-
K-T3-R1	16.30	13.78	84.54	0.88	-	-	-	-	-	-	-	-
K-T1-R1	17.10	15.24	89.12	1.08	-	-	-	-	-	-	-	-
K-T2-R3	17.40	15.16	87.10	1.04	-	-	-	-	-	-	-	-
K-T2-R1	16.60	14.71	88.61	1.02	-	-	-	-	-	-	-	-
K-T3-R2	15.20	12.56	82.63	0.74	-	-	-	-	-	-	-	-

AVERAGE: No. of samples: 24 **17.05 14.68 85.42 0.98**

Remarks: It is suggested that samples to the Laboratory be complete up to tips. The Laboratory shall be responsible for the removal of cane tops for uniformity. For more effective monitoring and evaluation, complete data pertaining to the cane samples should be indicated in sample label/tag.


NOELY MARCELO
Officer, Raw Sugar Laboratory

Date Analyzed: November 23, 2013
Report No. 13 - 2013-2014

Central Azucarera de Tarlac (CAT)



Central Azucarera de Tarlac

Headquarters: JCS Bldg 119 Dela Rosa cor Carlos Palanca Sts. Legaspi Village Makati; NCR 1257

Status: Listed

Legal Form: Public Limited Company

Operational Status: Operational

CIBI: 0000000727

Financial Auditors: SGV & Co. (2011)

Incorporation Date: June 21, 1927

Total Employees: 749

Tel: (63 2) 8183911

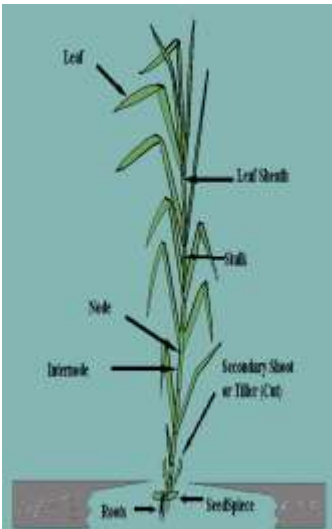
Central Azucarera de Tarlac (CAT) is a sugar milling company CAT produces raw and refined sugar, alcohol and carbon dioxide. The company owns a 334,268 sqm plant in Barrio San Miguel, Tarlac. Affiliate Hacienda Luisita provides around 1/3 of the cane requirements of the company as well as nearby sugarcane farms.

CAT's sugar mill and refinery has a capacity of 7,200 ton can and 8,000 50Kg bags per day, respectively. Sugar cane is first processed into raw sugar and then processed further.

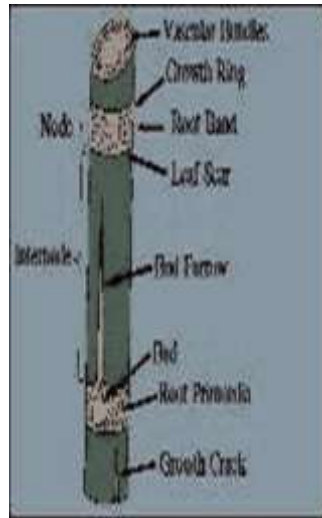


Appendix 8

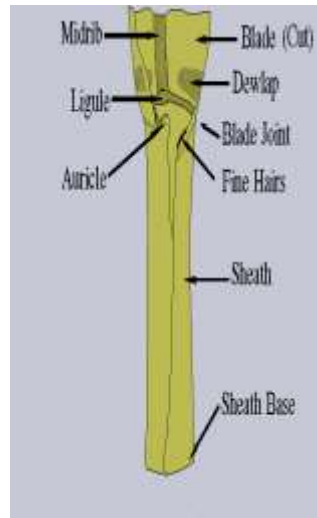
The Sugar Cane Plant



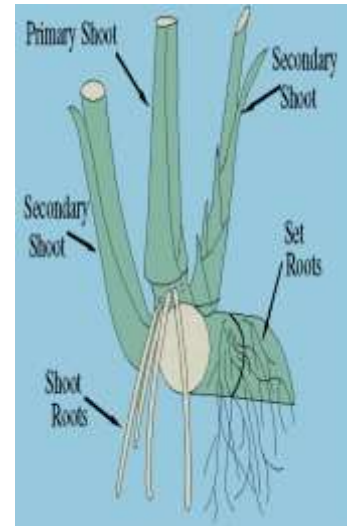
Plant



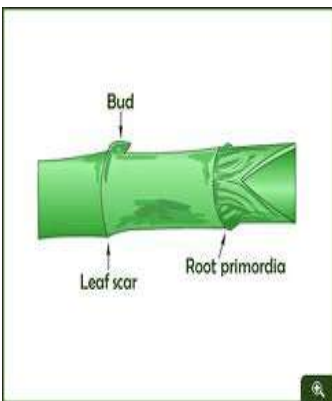
Stalk



Leaf



Root



Cane Point



Soaking Cane Points



Cane seed planting in Furrow