

2013 Annual Report



www.srif.net.fj

MISSION STATEMENT

To advance the industry by excellence in technology transfer emanating from research results through science that supports innovative activities in sugar related industries and to make the Fiji Sugar Industry productive and sustainable.

BOARD MEMBERS

Professor John Morrison (Chairman)

Mr. Sanjay Prakash (Secretary)

Mr. Jai Gawander (CEO)

Dr. Krishnamurthi

Mr. Sundresh Chetty

Mr. Viliame Gucake

Mr. Mangaiya Reddy

Mr. Seru Vularika

Mr. Suresh Patel

SCIENCE AUDIT COMMITTEE MEMBERS

Dr. Krishnamurthi (Chairman)

Mr. Sanjay Prakash (Secretary)

Mr. Jai Gawander (CEO)

Mr. Mangaiya Reddy

Professor John Morrison

Mr. Sundresh Chetty

Mr. Seru Vularika

CONTENTS

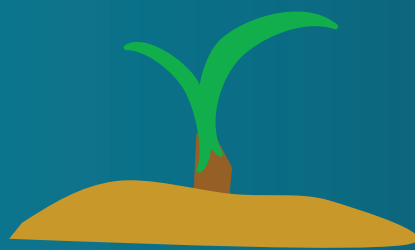
FORWARD	4
PLANT BREEDING	5
CROP PRODUCTION & PROTECTION	21
ANALYTICAL LABORATORY	12
FACP APPENDICIES	25
APPROVED VARIETIES	37
FINANCIAL REPORT	41

FORWARD

The year 2013 witnessed the inauguration of the new and much needed crossing shed facility that was completed at the beginning of the year and was utilized for setting the bi-parental crosses. Two ambitious projects were initiated during the year that included the comparative study on family versus individual selection as an early selection criteria and the Nobilization of the Erianthus species. Both these projects were funded by the ACP-SRP EU funding. A total of 705 crosses were set in 2013 and 233 packets fuzz was imported from West Indies. Some crosses were made with the Erianthus species during the crossing season and seedlings from previous years Erianthus crosses were DNA tested but none of them were positive. A total of 1008 packets of fuzz was sown but there was very poor germination and this continues to be a major challenge for the plant breeding team. The selection and advancement of clones continued in the different stages of the plant breeding program. 300 clones were advanced to the second stage from the 6000 stage 1 seedlings, 93 varieties progressed from stage 2 to stage 3 and 15 clones were advanced to stage 4. No promising varieties were identified in the advanced stage trials. The analytical laboratory continues to provide fertilizer recommendation to farmers that plant cane. 989 soil samples from grower's fields were analysed for planting of sugarcane. Sugarcane samples from Research trials are analysed regularly to identify promising varieties. A new equipment "Spectracane" that has a high throughput automated analyser was purchased and commissioned during the year. 3775 cane samples were analysed using the Spectracane. The production of hot water treatment seedcane continued during the year but the uptake from the nurseries continues to be low and this is due to extended planting times. The availability of quality seedcane of different varieties for planting remains a major challenge and this contributes to the dominance of one variety Mana being planted extensively. Mitigation measures for availability of seedcane has to be seriously looked into if the industry wants to diversify the varieties planted and to maximize sugar make. A preliminary experiment was carried out to monitor the population of cane weevil borer by using the pheromone trap and results show the combination of lures with small pieces of cane had a positive impact in attracting the cane weevil borer. A total of 63 new clones were screened for Fiji leaf gall disease out of which 53 were resistant and 5 susceptible.

My sincere thanks are due to all staff for their hard work and dedication to the institute under testing times.

Chief executive officer



PLANT BREEDING

PLANT BREEDING

PROJECT 1: ACP PROJECT – A COMPARATIVE STUDY OF FAMILY AND INDIVIDUAL MASS SELECTION METHODS AS EARLY SELECTION CRITERIA

The LF2010 series prototype trial Stage 2 was evaluated however trial data could not be analyzed due to passing away of consultant Dr. D. M. Hogarth. A suitable biometrician to help with the analysis is being sought. The actual trial LF2012 series was planted in April 2013 with 27 bi-parental crosses from West Indies and 18 crosses from SRIF polycrosses. The initial requirement of having 100 or 50 families could not be met due to unavailability of fuzz from bi-parental crosses (delay in commissioning of facilities) as well as seedlings from West Indies fuzz being damaged by TC Evan winds.

For LF2013 series trial, further 233 packets were imported from West Indies however it only had 17 bi-parental crosses whereas 103 bi-parental SRIF crosses were sown. However due to poor germination from SRIF crosses, 50 crosses from West Indies having required seedlings were earmarked for planting in 2014.

PROJECT 2: ACP PROJECT - NOBILIZATION OF ERIANTHUS

The Erianthus crosses were continued in 2013 and a total of 57 crosses were conducted. 39 packets of fuzz from 2013 and previous years were sown in 2013 of which 22 packets germinated and the seedlings were planted in the stage 1 trials. The DNA tests were carried out in LF2011 progenies however no positive results were attained.

PROJECT 3: GERMPLASM/ BREEDING PLOTS

The re-planted germplasm as well as old germplasm was maintained, Bed 5 of old germplasm was ploughed out by FSC without consultation hence valuable materials were lost which were still under review. Sampling of the re-planted germplasm was initiated however almost 50% of it got burnt and the small mill results were taken to be unreliable since problems with Spectracane was experienced at the same time.

The breeding plots were maintained and the transfer of materials from farmers land to the SRIF attained land continued. The problems with securing a cane contract again saw delay in ratooning the arrowing beds and eventually the cane had to be discarded. Additional 10 Vietnam varieties (5 *S. officinarum* and 5 Vietnam Erianthus) were included in the breeding plots with flowering anticipated in 2014 season.

PROJECT 4: SUGARCANE CROSSING

A total of 705 crosses were set and the breakdown with % per type is provided in Table 1.0. The crossing event was carried from May to July and the fuzz maturation and packing was done till September. The new crossing shed was available for lantern crosses and a total of 558 crosses were set in the lantern.

Table 1: 2013 Sugarcane Crosses

	Type of cross	No. of cross	%	Total per type	% Per type
Commercial	Poly crosses	77	11		
	Polycross - lantern	28	4	463	66
	Bi-parental	5	1		
	Bi-parental - lantern	353	50		
Experimental	Erianthus	37	5		
	Erianthus - lantern	20	3		
	IJ/IK hybrids	29	4	164	23
	IJ/IK - lantern	51	7		
	Officinarum	2	0.3		
	Officinarum - lantern	25	4		
Backcrosses	Erianthus Hybrids	4	1		
	Erianthus Hybrids - lantern	34	5		
	Erianthus hybrids - poly	1	0	78	11
	Robustum hybrids	2	0.3		
	Robustum hybrids - lantern	37	5		
Total Crosses		705	100	705	100

PROJECT 5: FUZZ SOWING

A total of 1008 packets (comprising 937 unique genetic combinations) were sown for 2013 season from 2011-2013 crosses giving 58% germination. This included 233 packets imported from West Indies. The breakdown of the type of crosses sown from different years is provided in Table 2. The 2013 crosses recorded very poor germination due to unknown reasons however some of the following have been identified that could be the reasons:

- Low temperatures and absence of lighting during anthesis.
- Poorly established cane stalks that were used for crosses due to late ratooning of breeding plots.
- Fuzz handling.
- Inexperienced with new crossing technique and poor monitoring of lantern crosses.
- Clash with preparations for Nobilization workshop therefore diversion of manpower.

Some of this will be investigated in 2014 crossing season.

PROJECT 6: STAGE 1

LF2012 series was evaluated and LF2013 series was planted this year. A total of 300 clones were selected for LF2012 Stage 2 from approximately 6000 seedlings. The criteria used was individual mass selection whereby mean brix of standards together with visual assessment on agronomic characteristics and disease symptoms was used to select test clones. Approximately 9000 seedlings were planted for LF2013 series in December 2013.

PROJECT 7: STAGE 2

LF2011 Stage 2 was evaluated and LF2012 Stage 2 was planted. A total of 93 varieties were selected from LF2011 Stage 2 for Stage 3 based on small mill data and visual field assessment on agronomic and visible disease characteristics. A total of 300 clones were planted for LF2012 stage 2 in December.

PROJECT 8: STAGE 3

LF2010 series was evaluated and LF2011 series planted. LF2010 Stage 4 propagation plots were also planted for LF2010 Stage 4 trials to be planted in 2014. A total of 15 clones were selected for Stage 4 whereas 93 varieties were planted for LF2011 Stage 3.

Table 2: 2013 Fuzz Sowing

TYPE		2011			2012			2013		
		Sown	Germ	%	Sown	Germ	%	Sown	Germ	%
Commercial	Bi-parental							103	5	5
	Bi-parental									
	Poly	148	97	66	171	118	69	25	3	12
	Poly									
Experimental	Ij/ik hybrids	28	15	54	9	1	11			
	Ij/ik hybrids	107	77	72	2		0			
	Officinarum	7	5	71	2		0			
	Officinarum	56	18	32						
	Erianthus	17	7	41						
	Erianthus	22	15	68						
Outcross	Erianthus/ Robustum hybrids				7	5	71			
TOTAL		385	234	61	191	124	65	128	8	6

Table 2: Cont'd

TYPE		Wi			G/total		
		Sown	Germ	%	Sown	Germ	%
Commercial	Bi-parental				103	5	5
	Bi-parental	17	10	59	17	10	59
	Poly				344	218	63
	Poly	216	163	75	216	163	75

Table 2: Cont'd

	TYPE	Wi			G/total		
		Sown	Germ	%	Sown	Germ	%
Experimental	Ij/ik hybrids				37	16	43
	Ij/ik hybrids				109	77	71
	Officinarum				9	5	56
	Officinarum				56	18	32
	Erianthus				17	7	41
	Erianthus				22	15	68
Outcross	Erianthus/ Robustum hybrids				7	5	71
TOTAL		233	173	74	937	539	58

Stage 4 trials

2006 Series

LF2016 series underwent 1st ratoon evaluation in 2012 and the following table shows the data after small mill analysis. The mean of all the parameters is given.

Table 3: 1st ratoon results of LF2006 stage 4

Commercial Varieties	tc/ha	ts/ha	%pocs	%fiber
LF91-1925	154	20.7	14.0	11.6
Mana	126	16.0	13.7	9.8
Naidiri	132	20.0	15.3	11.1
Ragnar	88	12.8	15.1	11.9
Test Varieties				
LF06-525	143	20.3	14.8	11.3
LF06-529	140	20.3	15.1	11.4
LF06-591	138	19.3	14.6	12.1
LF06-320	134	18.5	14.2	13.0
LF06-336	133	17.8	14.1	12.9
LF06-566	127	17.0	14.1	12.3
LF06-165	126	17.1	14.0	14.4
LF06-353	123	17.4	14.9	9.6
LF06-426	121	16.8	14.5	10.7
LF06-372	115	17.3	14.9	12.5
LF06-499	113	16.4	14.9	10.2

Table 3: Cont'd

Commercial Varieties	tc/ha	ts/ha	%pocs	%fiber
Test Varieties				
LF06-539	112	16.0	14.9	11.0
LF06-433	100	14.3	14.0	12.0
LF06-381	100	13.7	14.6	11.6

The trial has 14 varieties in 1st ratoon and was planted both in Drasa and Rarawai. The results show that none of the varieties had mean %pocs better than the best standard i.e. Naidiri whereas only one variety LF06-529 had %pocs equal to Ragnar. All the varieties recorded mean %pocs better than Mana and LF91-1925. A full statistical analysis will be carried out for the trials at the end of 2nd ratoon to identify potential varieties as promising however the varieties will continue to be monitored in the field as well for physical attributes better than commercials.

2007 Series

LF2007 Stage 4 underwent plant crop evaluation in 2012 and the following table provides data on mean for the traits evaluated.

Table 4: Plant crop results of LF2007 stage 4

Variety	tc/ha	ts/ha	%pocs	%fiber
Naidiri	90	14.7	16.2	11.3
Kaba	76	11.3	15.0	11.5
Mana	71	10.8	15.2	10.3
Ragnar	59	8.6	15.9	11.4
Test varieties				
LF07-79	107	16.9	15.7	13.1
LF99-1254	100	16.0	16.3	11.1
LF00-631	100	15.3	15.4	10.4
LF07-117	98	14.5	14.8	11.9
LF07-156	98	15.4	15.6	12.6
LF07-148	95	15.6	16.2	12.5
LF07-397	95	15.8	16.6	12.8
LF99-1126	92	14.7	15.9	11.3
LF00-1057	92	14.0	15.4	11.2
LF07-168	91	14.2	15.7	12.4
LF07-169	90	13.4	14.9	14.2
LF00-491	90	14.0	15.5	11.8
LF07-157	89	12.6	14.2	11.9
LF07-83	88	13.7	15.8	12.2
LF07-124	85	13.2	15.5	12.1

Table 4: Cont'd				
Variety	tc/ha	ts/ha	%pocs	%fiber
Test varieties				
LF07-126	83	12.1	14.8	11.3
LF07-112	80	12.3	15.6	11.2
LF07-81	80	11.6	14.9	11.1
LF07-90	79	11.8	15.2	11.8
LF07-104	76	11.8	15.5	12.0
LF07-488	76	12.3	16.2	11.4
LF07-671	72	11.3	16.2	11.2
LF07-99	71	10.8	15.1	11.7
LF07-669	64	9.1	14.6	10.8
LF07-504	61	10.1	16.2	10.9

The above table shows the results of plant from LF2007 series. The trial has 25 test varieties and was planted in Lautoka, Rarawai, Penang and Labasa. 6 varieties have the mean %pocs less than the mean %pocs of the least standard i.e. Kaba. A full statistical analysis will be carried out for the trials at the end of 2nd ratoon to identify potential varieties as promising however the varieties will continue to be monitored in the field as well for physical attributes better than commercials.

2008 Series (Plant)

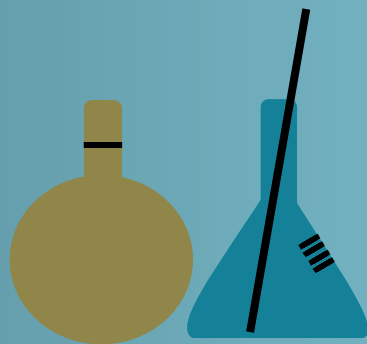
Eighteen varieties from LF2008 series were planted in Lautoka, Rarawai, Penang and Labasa. The trials were planted in May and June 2012. The plant, 1st ratoon and 2nd ratoon crop evaluation for this trial will be due in 2013, 2014 and 2015 respectively.



Seedlings of new varieties in the greenhouse



ANALYTICAL LABORATORY & METEOROLOGY



ANALYTICAL LABORATORY

Analytical laboratory is the base for all research work carried out at Sugar Research Institute of Fiji. Analytical services provided at SRIF analytical laboratory include soil, foliar and cane analysis. Soil and leaf samples are received from the cane belt area in Viti Levu and Vanua Levu. Soil and foliar samples are analyzed for various nutrient elements namely; potassium, phosphorous, calcium, magnesium, as well as pH for soils. Soils are also analyzed for organic matter, nitrogen, electrical conductivity, cation exchange capacity and pH buffering capacity for research projects. Cane samples are analyzed for %pol, %brix, and %fiber for research trials conducted by SRIF. The laboratory also conducts trainings for extension field staffs and growers on fertilizer advisory service.

Soil and leaf analysis

A total of 989 advisory soil samples, 133 research soil samples, 64 advisory leaf samples and 72 research leaf samples were received for analysis. The number of samples received from each district is summarized in the table. 1.1. below;

Table 1: Summary of soil samples for 2013

District	Soil		Leaf	
	Advisory	Research	Advisory	Research
Lautoka	390	28	-	-
Rarawai	276	-	5	-
Penang	25	-	-	-
Labasa	298	105	59	72
Total	989	133	64	72

The laboratory continues to adhere to internal and external quality check programs to ensure reliable data is provided to growers and research staffs. Two staffs attended Soil Analysis for Technicians training at Hill Laboratories in New Zealand to improve hands on skill in soil and leaf analysis. Moreover, a consultant from New Zealand, Brian Daly, trained staffs in laboratory practices and revised soil and leaf analysis methods. Calibration of equipment and instrument as well as documentation of laboratory data and methods was demonstrated to staffs. Flow injection analysis was bought with European Union funding for phosphorus and nitrogen analysis of soil, leaf and water samples.

Cane analysis

A total of 3775 cane samples were analyzed in 2013 from agronomy, and breeding trials as well as small mill project as summarized in the table 1.2.

Table 2: Summary of cane samples 2013

Projects	No. of cane samples analyzed
Agronomy	204
Small mill Project	30
Variety	3541
Total	3775

The laboratory purchased the Spectracane - a new generation of high-throughput, automated sugar cane analyzers of cane analysis for research and development activities (crop improvement, agronomy, diseases). The instrument is capable of analyzing 300 cane samples in a day which will hasten analysis of cane and derivation of data for breeding trials. A total of 3755 cane samples were analysed using Spectracane, 10 samples by Jeffco and 10 by Disintegrator.

Phosphorus project

Phosphorus project, a collaborative project among Fiji, Mauritius and Jamaica, funded by European Union, recommenced from August after installation of Flow Injection Analysis (FIA).

The objective of this project is to identify high P soils, determine the sugarcane farms vulnerability to erosion and runoff and to develop the P index, which will combine the factors of source and vulnerability to transport to identify sources of P movement within a watershed. The expected outcome is to predict soil test P in both agronomic status and environmental status of sugarcane soils, to enlarge scope of current soil P test to indicate environmental status of sugarcane soil and to determine an environmental threshold.

The project officially commenced in April 2011 whereby the rainfall simulator had to be calibrated initially after which the field simulation commenced. Simulated rainfall was applied on 16 sites having 3 slopes each with different rainfall intensities with different soil test phosphorous levels. Runoff was collected in it's entirety for 30 minutes analyzed for total P and dissolved reactive phosphorous. Soil samples were collected from 0-15cm and 15-30cm depths.

A total of 20 sites are proposed to be simulated in a three year period. Each site has an average of 58 runoff samples. Analysis is completed for 14 sites. The project is on hold for a moment due to a problem associated with the UV spectrophotometer machine. The project recommenced in August, 2013 after when FIA was being replaced.

Table 3: Samples collected from sectors

Study Site	Slope and rainfall intensity	Number of sample collected		
		Runoff	Bedload	Soil
1. Vitogo	3 slopes by 3 rainfall intensities	18	-	2
2. Wairabetia	1 slope by 3 rainfall intensities	6	-	2
3. Rarawai	1 slope by 3 rainfall intensities	5	-	2
4. Sabeto_1	2 slope by 3 rainfall intensities	49	5	2
5. Sabeto_2	1 slope by 3 rainfall intensities	25	6	2
6. Sabeto_3	2 slope by 3 rainfall intensities	66	12	3
7. Sabeto_4	2 slope by 3 rainfall intensities	49	12	3
8. Solovi_1	3 slope by 3 rainfall intensities	107	18	4
9. Solovi_2	2 slope by 3 rainfall intensities	70	12	3

Table 3: Cont'd				
Study Site	Slope and rainfall intensity	Number of sample collected		
		Runoff	Bedload	Soil
10. Solovi_3	3 slope by 3 rainfall intensities	81	18	4
11. Solovi_4	3 slope by 3 rainfall intensities	96	18	4
12. Drasa	3 slope by 3 rainfall intensities	78	18	10
13. Nawaicoba	3 slope by 3 rainfall intensities	70	16	8
14. Sonaisali	3 slope by 3 rainfall intensities	74	16	13
Total		794	151	62

Meteorology

INTRODUCTION

The Meteorological station at the Sugar Research Institute of Fiji is equipped with a range of meteorological equipment and maintained by both the staff of SRIF and the technicians of the Fiji Meteorological Station in Nadi.

SUGAR RESEARCH INSTITUTE OF FIJI, DRASA STATION (V77555)

The weather and climate of Fiji was generally influenced by the troughs of low pressure, tropical depressions and disturbances, frontal systems, ridges of high pressure and east to southeast wind flow. While there was no significant extreme weather event recorded in 2013, there were occasions when some parts of the country experienced localized flooding and dry spells. Subsequently, thirty-nine (39) new rainfall and temperature records established.

EL NIÑO SOUTHERN OSCILLATION (ENSO)

The ENSO indicators in the Pacific fluctuated within the neutral range throughout 2013, thus neither El Nino nor La Nina conditions were present.

However, on occasions, the ENSO indicators swung towards La Nina conditions, but could not sustain for long as the atmosphere failed to support the oceanic change. For example, in January and February, sea surface temperatures (SST) approached a borderline La Nina level. Although the atmospheric characteristics of La Nina appeared briefly, the ocean-atmosphere system as a whole did not remain in a La Nina state for long enough to sustain a weak La Nina event.

Moreover, from May to September, the SST's were cooler than average in the far eastern tropical Pacific (Figure 1). However, these cold sea surface temperatures were positioned too far to the east to be considered indicative of a basin-wide La Nina episode. Since then, the SST's have warmed and have been near average till the end of the year. The sub-surface temperatures (between 100 to 150 meters) remained generally near average for first half and slightly warmer than average for the second half of the year. The trade winds also fluctuated within the neutral range, while the tropical cloudiness near the date line was *below normal* from September to December period.

RAINFALL

The annual rainfall for all the 4 mills was above average when compared to the 43 years average. For the month of February, March, May, June, November and December, Lautoka recorded above average rainfall while the rest of the months recorded below average rainfall. For the month of March, May, June, November and December, Rarawai recorded above average rainfall and the remaining months recorded below average rainfall.

For Penang, February, March, April, June, July and October experienced above average rainfall while the other months received less rain compared to the 43 years average. For Labasa, March, June, August to November received above average rainfall while the other months had little rain.

Table 4: Rainfall (mm) for all mills 2013

Mills	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Lautoka Mill													
Monthly Rainfall	106	544	531	84	127	82	17	33	46	75	354	439	2438
No. of rain days	18	19	22	10	9	5	3	8	9	10	22	14	149
43 yrs. Avg. (1971-2013)	377	318	327	192	90	73	54	72	80	101	143	192	2019
% of Average	28	171	162	44	141	112	32	46	56	74	248	229	121
Rarawai Mill													
Monthly Rainfall	218	355	468	111	159	88	9	30	31	96	277	426	2268
No. of rain days	19	20	23	10	11	7	3	11	7	11	24	19	165
43 yrs. Avg. (1971-2013)	390	356	372	197	96	83	43	66	79	110	160	236	2188
% of Average	56	100	126	56	166	106	21	45	39	87	173	181	104
Penang Mill													
Monthly Rainfall	311	462	414	290	140	103	62	31	37	122	116	254	2342
No. of rain days	20	23	25	20	17	9	11	8	3	13	20	10	166
43 yrs. Avg. (1971-2013)	434	347	374	262	154	99	53	71	91	111	157	255	2297
% of Average	72	133	111	111	91	104	117	44	41	110	73	105	102
Labasa Mill													
Monthly Rainfall	329	334	937	40	83	96	27	115	105	216	227	246	2752
No. of rain days	21	26	27	11	17	10	11	15	14	20	20	20	212
43 yrs. Avg. (1971-2013)	411	362	374	240	110	79	53	52	79	121	189	261	2331
% of Average	80	92	251	17	75	122	51	221	133	179	120	94	118

Table 5: Rainfall Data (mm) for Lautoka Mill 2013

Sectors	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Drasa	221	1249	1495	34	104	151	18	35	48	75	363	356	4149
No. of rain days	6	14	22	4	6	4	2	6	7	7	19	13	110
Saweni	82	306	214	23	119	59	5	4	61	40	288	330	1531
No. of rain days	5	10	14	4	5	4	1	3	3	6	19	14	88
Natova	134	510	363	63	164	74	6	12	70	68	394	272	2130
No. of rain days	8	12	16	5	6	6	2	3	3	6	22	13	102
Legalega	67	468	391	101	84	124	12	7	170	124	262	256	2066
No. of rain days	7	15	17	5	4	5	1	2	4	9	17	12	98
Meigunyah	107	422	389	95	96	120	8	7	151	130	216	250	1991
No. of rain days	7	15	18	5	4	5	2	2	5	9	20	12	104
Malolo	184	593	570	235	150	140	8	27	156	126	393	480	3062
No. of rain days	9	16	19	7	4	5	3	4	5	9	21	13	115
Nawaicoba	183	481	429	114	107	66	8	14	78	68	293	375	2216
No. of rain days	10	17	20	8	5	5	3	4	5	8	19	17	121
Yako	0	490	449	92	160	81	3	20	83	81	241	248	1948
No. of rain days	0	17	16	4	4	5	1	2	5	8	9	10	81
Lomawai	63	369	463	126	95	96	4	36	89	92	191	319	1943
No. of rain days	6	13	21	7	7	5	2	3	6	9	12	11	102
Cuvu	138	324	503	50	74	69	13	49	96	92	182	274	1864
No. of rain days	7	18	22	4	9	8	5	7	7	11	6	12	116
Olosara	12	308	508	45	75	91	31	71	101	89	163	250	1744
No. of rain days	3	14	21	4	8	7	4	6	6	11	6	11	101

Table 6: Rainfall Data (mm) for Rarawai Mill 2013

Sectors	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Varoko	175	396	544	161	133	92	0	27	41	116	327	461	2473
No. of rain days	12	12	17	6	4	3	0	1	4	7	14	10	90
Mota	356	560	664	133	110	91	10	51	55	119	179	411	2739
No. of rain days	13	22	22	9	4	5	1	6	3	6	12	13	116
Koronubu	172	535	571	107	98	128	11	19	20	133	157	389	2340
No. of rain days	9	18	20	6	3	5	2	3	4	8	10	15	103
Rarawai	210	481	468	135	170	81	8	31	31	90	237	409	2351
No. of rain days	14	19	23	9	8	3	1	6	7	7	13	19	129

Table 6: Cont'd

Sectors	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Veisaru	155	408	504	112	117	97	6	11	23	128	203	397	2161
No. of rain days	11	15	19	5	5	3	1	2	2	7	12	9	91
Varavu	127	377	463	103	86	72	2	25	21	68	115	386	1845
No. of rain days	12	14	18	6	3	3	1	3	2	8	10	9	89
Naloto	479	476	552	104	94	135	8	79	50	84	176	559	2796
No. of rain days	12	20	22	11	4	4	1	6	3	6	11	13	113
Tagitagi	196	394	697	100	163	132	9	30	34	63	145	283	2246
No. of rain days	6	14	21	7	4	4	1	3	3	7	8	8	86
Drumasi	241	409	607	102	156	107	5	28	32	66	119	268	2140
No. of rain days	8	14	23	8	4	4	1	3	3	7	8	8	91
Yaladro	199	350	552	79	163	102	6	26	29	57	171	179	1913
No. of rain days	6	14	22	7	4	4	1	3	3	5	8	8	85

Table 7: Rainfall Data (mm) for Penang Mill 2013

Sectors	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Ellington 1	94	152	124	73	92	72	28	16	38	92	-	-	781
No. of rain days	3	17	17	13	9	15	13	6	17	15	-	-	125
Malau	311	461	419	257	124	145	67	19	49	122	116	253	2343
No. of rain days	20	21	25	20	15	9	11	7	11	13	19	20	191
Nanuku	48	417	416	109	147	79	30	12	53	48	69	284	1712
No. of rain days	5	13	23	6	4	5	2	2	4	3	3	11	81
Ellington 11	263	330	240	217	113	305	86	34	88	126	149	425	2376
No. of rain days	13	18	15	10	10	10	9	3	5	7	12	16	128

Table 8: Rainfall Data (mm) for Labasa Mill 2013

Sectors	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Waiqele	372	340	785	48	45	89	30	150	110	138	243	312	2662
No. of rain days	19	22	22	7	6	6	3	7	9	11	14	19	145
Wailevu	397	380	994	94	62	61	17	49	104	193	252	310	2913
No. of rain days	18	24	28	9	10	5	4	8	11	14	13	16	160
Vunimoli	341	366	1040	90	130	163	19	111	90	268	140	290	3048
No. of rain days	16	20	24	10	11	8	5	7	10	18	10	16	155
Korowiri (Labasa)	271	407	1026	112	67	60	33	93	139	234	165	232	2839
No. of rain days	20	27	28	12	17	10	9	17	14	18	16	19	207

Table 8: Cont'd

Sectors	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Nagigi (Bucaisau)	315	413	985	118	100	20	42	74	157	225	97	219	2765
No. of rain days	12	21	24	9	10	5	5	9	10	11	7	13	136
Wainikoro	345	353	796	187	142	109	37	88	127	312	165	273	2934
No. of rain days	15	21	25	14	10	7	5	8	7	14	8	15	149
Daku	294	425	632	88	974	85	78	53	162	82	0	121	2994
No. of rain days	10	27	31	8	17	5	9	10	23	12	0	15	167
Natua (Seaqaqa)	322	410	904	153	95	57	49	71	114	197	263	377	3012
No. of rain days	18	24	21	15	8	9	4	9	8	16	17	15	164
Rokosalase	330	347	1028	185	149	0	46	35	160	341	471	462	3554
No. of rain days	12	11	25	5	3	0	4	2	6	12	18	14	112
Naravuka	259	441	733	189	103	82	14	7	140	232	409	0	2609
No. of rain days	9	14	17	9	4	3	2	1	9	15	13	0	96
Kurukuru	329	551	867	245	93	107	63	51	0	330	144	358	3138
No. of rain days	12	21	27	15	9	5	7	12	0	13	11	14	146
Vunivutu	221	389	365	89	37	71	16	58	61	96	62	64	1529
No. of rain days	16	28	20	8	12	10	9	12	13	17	20	15	180
No. of rain days	8	22	21	7	9	6	4	5	14	15	8	5	124
Seaqaqa Sub. St.	324	407	905	156	95	58	50	70	115	93	261	377	2911
No. of rain days	17	23	28	17	8	9	5	8	8	13	16	16	168

RELATIVE HUMIDITY

The relative humidity calculated at 0900 hours was generally above average in Lautoka when compared to the 44 years average.

SUNSHINE

There is no sunshine recorder installed at the Drasa Meteorological station.

EARTH THERMOMETERS

The earth thermometer at the depth of 5cm was slightly higher than the long term average for the months of January, April, May, July and August whereas at the depth of 10cm was above average for the months of July and August. For the 20cm temperatures, only the months of April, May and August have above average values.

AIR TEMPERATURES

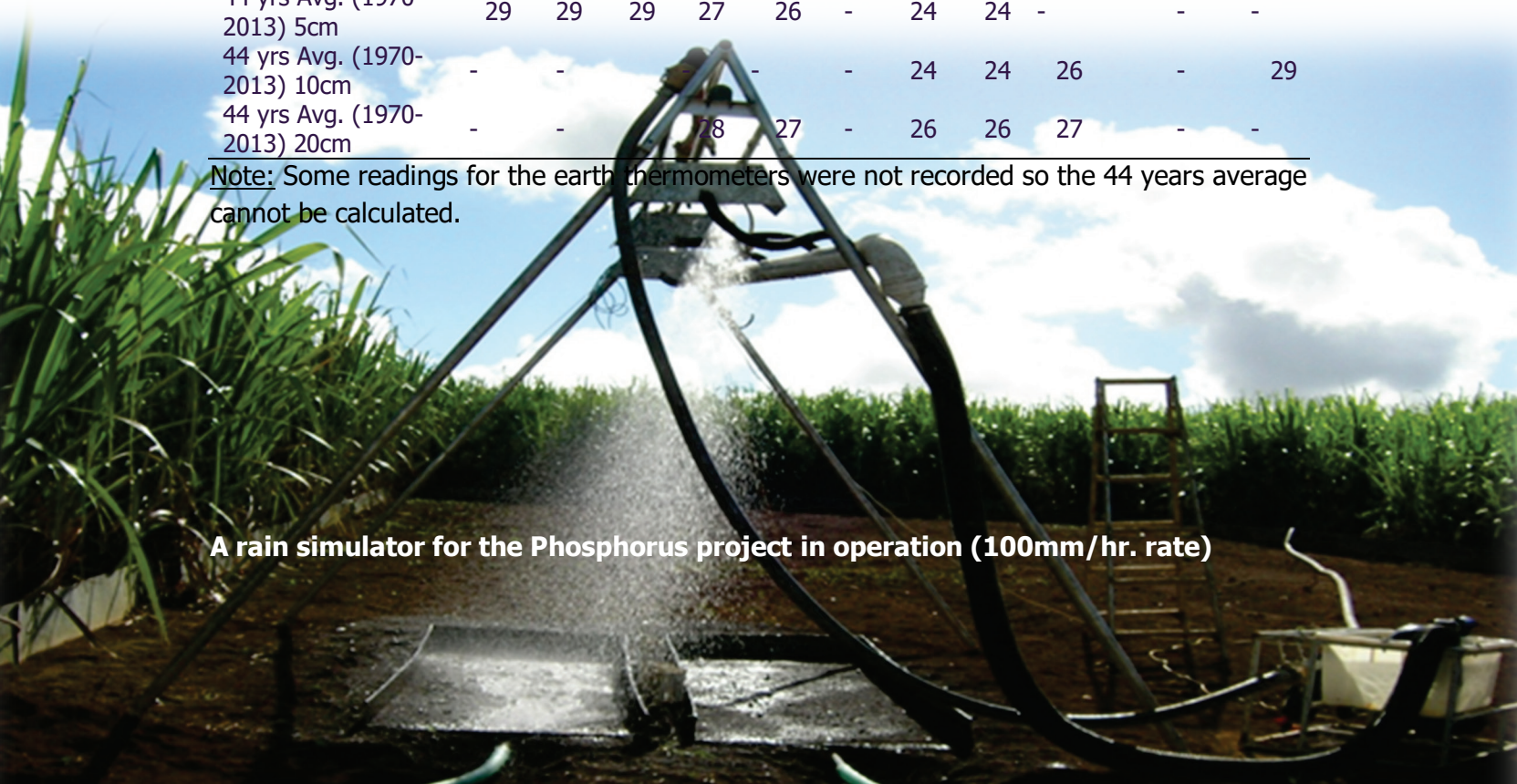
The daytime air temperatures are very close to and above average for the months of February, April to September and November to December and below average for the remaining months. The highest maximum temperature recorded was 34°C for the month of April and the minimum temperature was recorded as 15°C for the month of September.

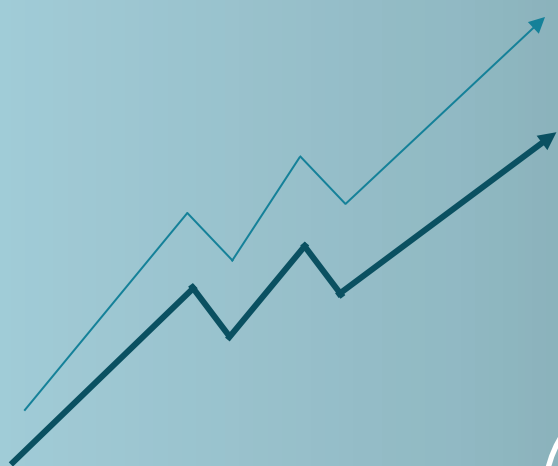
Table 9: Meteorological data for Sugar Research Institute of Fiji, Lautoka 2013

Measurements	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Relative Humidity	71	79	81	75	77	80	72	70	66	63	71	74
44 yrs Avg. (1970-2013)	75	77	77	75	74	72	69	68	69	66	70	72
Air Temperature (°C)												
Mean maximum	31	31	30	31	30	30	29	29	30	30	31	31
Mean Max 44 yrs Avg. (1970-2013)	32	31	31	31	30	28	28	28	29	31	31	31
mean Minimum	24	23	24	23	22	21	20	21	21	22	22	23
Mean Min 44 yrs Avg. (1970-2013)	24	24	24	24	22	20	20	20	21	26	23	23
Mean	28	27	27	27	26	26	25	25	26	26	27	27
Highest Maximum	32	33	32	34	33	33	31	32	24	33	32	32
Lowest Minimum	19	21	18	21	18	17	17	18	15	17	22	19
Raised pan												
Raised pan	-	-		133	166	113	136	58	170	146	230	209
Earth Thermometers												
5cm	29	28	28	28	26	24	24	25	-		-	-
10cm	-	-		-	-	25	24	25	25		-	27
20cm	-	-		29	27	26	25	26	26		-	-
100cm	-	-		-	-	-	-	-	-		-	-
44 yrs Avg. (1970-2013) 5cm	29	29	29	27	26	-	24	24	-		-	-
44 yrs Avg. (1970-2013) 10cm	-	-		-	-	-	24	24	26		-	29
44 yrs Avg. (1970-2013) 20cm	-	-		28	27	-	26	26	27		-	-

Note: Some readings for the earth thermometers were not recorded so the 44 years average cannot be calculated.

A rain simulator for the Phosphorus project in operation (100mm/hr. rate)





CROP PRODUCTION & PROTECTION



SEED CANE NURSERY PROGRAM

Heat treatment of seed cane before planting is used to eliminate bacterial disease such as Ratoon Stunting Disease and some minor fungal diseases prior to the establishment of seed cane nurseries. A long hot-water treatment of 50° C for 2-3 hours temperature/ time range used in Fiji after experimentations of varietal heat tolerance.

Heat treatment for seed cane production continued in the 2013 season. The uptake of seed cane from the estates in 2013 has improved gradually as a result of farmers realizing the benefits of planting seed cane from approved plots.

Table 1: Uptake trend of seed cane from Approved seed plots (2010 – 2013)

Year	Total seed cane available	Total seed cane taken	% uptake to date
2010	4368.0	176.45	4.0
2011	3776.2	237.46	6.3
2012	2268.0	177.31	7.8
2013	490.8	217.80	44.4

The amount of seed cane that was available for planting in 2013 was 490t.

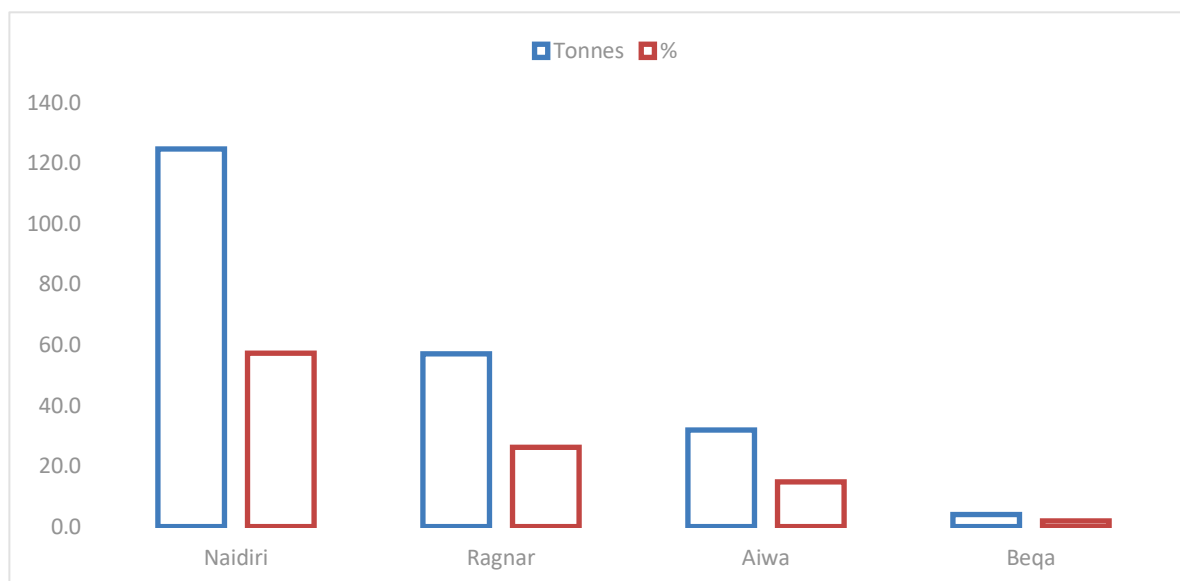


Figure 1: Uptake of varieties in percentage

Naidiri variety had the highest uptake of 57%; followed by Ragnar of 26%; followed by Aiwa of 15% and; Beqa of 2%. It is envisaged that the marketing of these varieties is pertinent to increasing awareness for farmers especially for high sugar varieties and early to mid - maturing varieties

An inspection of the hot water treated seed bed was done and found only minor leaf diseases present. Samples taken for RSD incidence are yet to be analyzed by SRIF Pathology lab. HWT

seed cane sold from the estates totaled 217.8t which was taken by farmers directly including FSC Nursery Officers. A good amount of seed cane was given freely through the SRIF Technology Transfer demonstration plots for “weed control” and “varietal spread” in farmers’ fields.

Cane Weevil Borer

Preliminary experiment was conducted on comparison of *R. ferrugineus* and *R. obscurus* pheromone strength on cane weevil borer in Fiji. In this experiment, monitoring of borer populations was carried out in areas where trials were established using pheromone trap. This project was designed to know the best pheromone to manage the borer population in Fiji. Experiments with different lures of pheromones and cut sugarcane were carried out from April to December, 2013 in Drasa Sector. The following treatment combinations were laid.

Table 2: Summary of study sites	
Treatment details	Locations
1. Lures of pheromone of <i>R. obscurus</i> (R.O) plus small pieces of split cane (SC).	Raviravi
2. Lures of pheromone of <i>R. ferrugineus</i> (R.F) plus small pieces of split cane (SC).	Drasa, No.1 road.
3. Lures of pheromone of <i>R. obscurus</i> (R.O) and <i>R. ferrugineus</i> (R.F) plus small pieces of split cane (SC).	Karavi
4. Control -small pieces of split cane (SC)	Drasa, Johnson Rd
5. The fifth location has the combination of all the four treatments laid in one field randomly.	Drasa, Dam road

Each trap was baited one of the above treatment combinations and set up at each of the five locations in Drasa sector on April 12, 2013. Cane weevils borer in the traps were removed on fortnightly basis and counted.

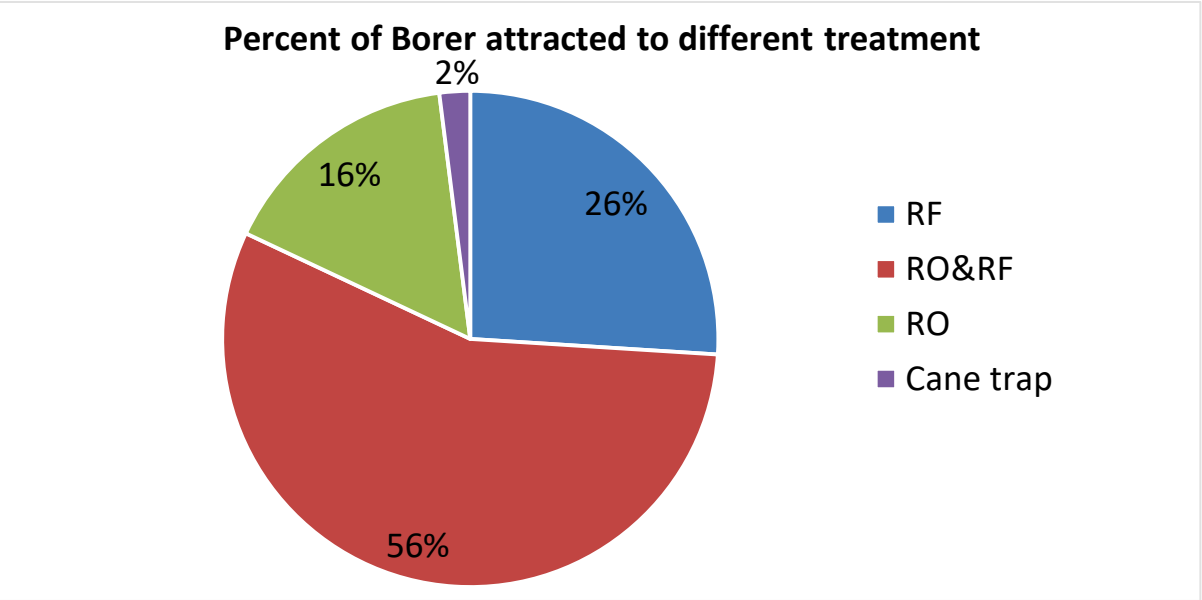


Figure 2: Percent borer to treatment attraction

Therefore, the experiments have showed that the combination of Lures of pheromone of *R. obscurus* (R.O) and *R. ferrugineus* (R.F) plus small pieces of split cane (SC) have the high strength in attracting the cane weevil borer.

Fiji leaf gall disease (FLGD)

The varieties from the stage three selections from the breeding department were sent for screening for Fiji Disease virus. A total 63 clones were sent for testing together with the recommended 10 standards. These clones were from the LF2010 – series. The results which were supported by statistical calculations proved that the standards and days are highly significant ($P < 0.000$). There were negative linear relationships between standards and days ($R^2 = 0.9477$). The linear equation is $y = -6.2245x + 104.62$ resistance to FDV.

Table 3: Number of clones screened for Fiji leaf gall disease

Series screened	Clone Resistance (Ratings)		
	Resistance (1-3)	Moderate (4-6)	Susceptible (7-9)
LF 2010	53	5	5

Disease control

The commercial sugarcane fields are inspected after planting and after harvesting. A roguer walks in between 2nd and 3rd row, checking 2 rows on either side. There-after he walks through every 4th row, inspecting 2 rows on either sides. If disease stools are found in any field, the whole field is rogued row by row. In addition, all field is within a radius of 1 kilometer of any disease field are also inspected. The later operation also allows for inspection of the ratoon cane. Known diseased farms under ratoon cane are inspectd row by row to ensure that the disease do not recur. Ratoon farms on the periphery of the cane growing zones are also checked to prevent the likelihood of any invasion of the disease. The inspectors covered an area of 6910.18 ha consisting of 1092.45ha plant and 5817.73ha ratoon cane. During the season the inspectors removed and destroyed 538 stools of Fiji disease.

Mill District	No. of Farms	Area Rouged (Ha)		No. of FLGD stools
	Inspected	Plant	Ratoon	Rouged
Lautoka	275	86.93	604.77	62
Nadi	495	116.63	1554.69	281
Labasa	544	634.4	2782.8	0
Sigatoka	314	76.11	516.19	164
Rarawai/Tavua	356	178.38	320.18	31
Penang	34	0	39.1	0
Total	2018	1092.45	5817.73	538

Automated watering system for heat treated seedcane

FACP APPENDICES

Appendix 1: Main features of 2013 season compared with 2012

Details	Lautoka		Rarawai		Labasa		Penang		All mills	
	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013
Total registrations (Numbers)	5242	5281	5097	5143	3958	3958	1713	1694	16010	16076
Total farm basic allotments (tonnes)	905267	912182	891486	909103	874558	874558	248938	249846	2920249	2945689
Total registered area (hectares)	22272	22446	21569	21569	18385	18488	7824	7727	70049	70230
Total area cultivated (hectares)	14570	13405	19829	15357	15438	13613	4054	4217	53891	46592
Total area harvested (hectares)	12204	10969	12871	12248	13358	11652	3525	3291	41959	38160
Total farm harvest quotas (tonnes)			891486	909103			181315	162150		
Sugar make actual (tonnes)	46576	40313	44571	58850	44394	62026	19145	18681	154686	179870
Tonnes 94 N.T sugar	48129	41874	45732	60039	45398	63423	19908	19258	159166	184624
Yield tonnes 94 N.T.sugar per hectare	3.8	3.8	3.8	4.7	3.4	5.3	5.6	5.8	4.2	4.9
Tonnes cane per tonnes sugar 94 N.T.	10.3	10.1	10.2	8.5	9.3	8.8	8.9	9.6	10.0	9.3
%POCS	10.66	11.60	10.65	11.54	11.64	11.24	11.53	10.64	11.12	11.3
Cane purity average for season	83.6	81.7	79.6	82.6	82.9	82.4	83.5	81.3	82.4	82
Tonnes cane harvested	481483	405652	508638	498881	413285	546156	143568	159720	1546974	1610409
Tonnes cane crushed	481483	405653	465320	506090	413285	546156	143568	184773	1546372	1610409

Appendix 2: Monthly rainfall(mm) for 2013 compared with long term average

Mills	No. of years	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Lautoka	2013 actual	106	544	531	84	127	82	17	33	46	75	354	439	2438
	105 yrs avg. to 2013	309	323	324	184	98	66	51	69	74	91	128	190	1907
Rarawai	2013 actual	218	355	468	111	159	88	9	30	31	96	277	426	2268
	128 yrs avg. to 2012	358	360	363	288	80	38	29	97	104	146	223	239	2324
Labasa	2013 actual	329	334	937	40	83	96	27	115	105	216	227	246	2755
	125 yrs avg. to 2013	367	362	383	234	110	65	47	51	104	102	206	254	2284
Penang	2013 actual	311	462	414	290	140	103	62	31	37	122	116	254	2342
	116 yrs avg. to 2013	440	354	406	382	123	70	52	91	87	145	155	243	2548

Appendix 3: Crop production details

Crop	Lautoka		Rarawai		Labasa		Penang		All mills	
	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013
Areas harvested (hectares)										
Plant	279	566	665	833	559	1598	158	318	1661	3315
First ratoon	1220	245	1339	646	1896	572	533	143	4989	1606
2nd ratoon	550	1009	914	1232	1114	1593	214	452	2791	4286
Other ratoons	10155	9148	9953	9537	9789	7889	2620	2376	32518	28950
Total	12204	10969	12871	12248	13358	11652	3525	3291	41959	38160
Cane Harvested (tonnes)										
Plant	15059	28993	35333	47120	24529	94898	7315	13003	82236	184014
First ratoon	55265	11622	64017	34020	79898	33040	24959	6823	224139	85505
2nd ratoon	23344	38069	39990	54533	40674	76774	8414	2589	112422	171965
Other ratoons	387815	326968	369298	363208	268184	341444	102880	119306	1128177	1150926
Total	481483	405652	508638	498881	413285	546156	143568	159720	1546974	1520409
Yield tonnes cane per hectare (tch)										
Plant	53.9	51.2	53.1	56.6	43.9	59.4	46.4	40.8	49.5	52
First ratoon	45.3	47.4	47.8	52.7	42.1	57.7	46.8	47.8	44.9	51.4
2nd ratoon	42.4	37.7	43.8	44.3	36.5	48.2	39.4	45.5	40.3	43.9
Other ratoons	38.2	35.7	37.1	38.1	27.4	43.3	39.3	50.2	34.7	41.8
Avg. yield/ha	39.5	37	39.5	40.7	30.9	46.9	40.7	48.5	36.9	43.3
Varieties crushed (% of total cane harvested)										
Ragnar	0.37	0.4	0.36	0.2	23.87	21.5	0.06	0	6.6	5.5
Aiwa	0.36	0.4	0.15	0.2	0.22	0.2	0.01	0.1	0.2	0.2
Beqa	0.02	0	Nil		0.05	0.1	nil	nil	nil	

Appendix 3: Cont'd

Crop	Lautoka		Rarawai		Labasa		Penang		All mills	
	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013
Varieties crushed (% of total cane harvested)										
Galoa	0.04	0	Nil		4.31	5.9	nil	nil	1.2	1.5
Kaba	2.18	2.2	4.4	5.2	0.21	0.4	0.23	0.3	2.2	2
Mali	Nil		Nil		11.13	11.9	0.27	0.3	3	3.1
Mana	94.5	94	93.14	92.4	nil		98.28	95.2	69.2	70.4
Naidiri	1.07	1.1	1.26	0.7	33.69	33.3	0.86	2.8	9.8	9.5
Vatu	Nil		Nil		16.77	17.5	0.05	0.02	4.5	4.4
Waya	Nil		0.27	0.3	8.04	7.7	0.1	0	2.2	2
LF91-1925	0.54	0.8	0.03	0.1	0.48	0.9	nil	0.17	0.3	0.5
Kiuvu	0.52	0.9	0.16	0.3	0.11	0.7	nil	1.07	0.2	0.75
Expt./Others	0.4	0.3	0.22	0.6	1.13	0	0.14	0.03	0.5	0.2
Total	100	100	100	100	100	100	100	100	100	100

Appendix 4: Rainfall (mm) at mill centres

Mills	For 12 months ended 31st December					For 12 months ended 30th September				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Lautoka	2875	1299	3115	3563	2438	2983	899	2422	3384	1570
Rarawai	2591	1655	2779	2640	2268	2932	1101	3029	2351	1469
Labasa	2479	2275	2814	2679	2752	2709	1568	3087	2322	2066
Penang	3064	1643	3246	3000	2342	3165	1342	3335	2793	1850

Appendix 5: Rainfall distribution affecting 2013 crop(mm)

Month	Period	Lautoka	Rarawai	Labasa	Penang
Jul-12	Early	0.0	0.0	6.0	1.8
	Mid	0.0	0.0	0.0	9.0
	Late	14.0	0.0	6.0	7.8
Aug-12	Early	53.1	39.3	35.0	58.2
	Mid	0.1	1.0	3.0	7.9
	Late	0.0	6.1	0.0	9.2
Sep-12	Early	25.7	17.4	6.0	15.6
	Mid	16.5	39.3	26.0	24.8
	Late	254.2	181.4	142.0	174.7
Oct-12	Early	42.9	7.3	24.0	28.1
	Mid	5.3	164.9	109.0	74.6
	Late	71.6	0.5	59.0	44.7
Nov-12	Early	12.9	12.9	17.0	33.3
	Mid	13.4	27.1	53.0	14.0
	Late	8.5	59.5	99.0	12.4
Dec-12	Early	109.2	26.9	105.0	35.8
	Mid	117.5	135.6	128.0	321.0

Appendix 5: Cont'd

Month	Period	Lautoka	Rarawai	Labasa	Penang
Dec-12	Late	8.9	1.9	45.0	73.6
Jan-13	Early	58.3	79.1	261.4	213.4
	Mid	35.3	122.4	51.8	72.4
	Late	12.6	16.2	15.3	25.6
Feb-13	Early	74.0	61.2	105.6	85.6
	Mid	91.3	50.8	75.6	113.0
	Late	378.9	242.9	152.4	264.0
Mar-13	Early	266.0	254.5	486.1	245.8
	Mid	182.3	117.7	133.9	60.2
	Late	82.4	95.8	321.6	108.2
Apr-13	Early	7.0	55.4	4.7	69.1
	Mid	5.5	11.1	4.1	45.3
	Late	71.8	44.4	53.5	175.2
May-13	Early	0.0	13.8	3.8	36.3
	Mid	10.0	15.6	12.4	2.0
	Late	187.2	140.5	50.4	85.9
Jun-13	Early	70.6	50.4	32.5	94.0
	Mid	46.1	30.1	16.5	47.7
	Late	21.9	0.0	10.9	3.5

Early - 1st to 10th of the month Mid - 11th to 20th of the month Late - 21st to end of the month

Appendix 6 : hectares harvested

Mills	Crop	Average for period of five seasons					Last four seasons individually			
		1986/ 1990	1991/ 1995	1996/ 2000	2001/ 2005	2006/ 2010	2010	2011	2012	2013
Lautoka	P	4007	3634	2944	1042	788	684	1344	279	566
	R	19743	20580	19701	19730	14614	13096	10610	11925	10403
	Total	23750	24214	22645	20772	15402	13780	11954	12204	10969
Rarawai	P	3574	2899	3164	1055	1127	1078	1370	665	833
	R	14805	17360	14613	17585	14553	12441	11291	12206	11415
	Total	18379	20259	17777	18640	15680	13519	12661	12871	12248
Labasa	P	2512	3120	2597	1269	1116	1086	2065	559	1598
	R	17181	19604	18348	15911	14039	12888	12389	12799	10054
	Total	19693	22724	20945	17180	15155	13974	14454	13358	11652
Penang	P	1396	1386	1120	542	339	220	522	158	318
	R	5029	4958	4674	4568	3991	3434	3265	3367	2973
	Total	6425	6344	5794	5110	4330	3654	3787	3525	3291

Appendix 6 : Cont'd

Mills	Crop	Average for period of five seasons					Last four seasons individually			
		1986/ 1990	1991/ 1995	1996/ 2000	2001/ 2005	2006/ 2010	2010	2011	2012	2013
All mills	P	11489	11039	9825	3908	3369	3067	5300	1661	3315
	R	56758	62502	57336	57794	47197	41860	37556	40298	34845
	Total	68247	73541	67161	61702	50567	44927	42856	41959	38160

Appendix 7: Tonnes of cane harvested

Mills	Average for period of five seasons					Last four seasons individually			
	1986/ 1990	1991/ 1995	1996/ 2000	2001/ 2005	2006/ 2010	2010	2011	2012	2013
Lautoka	1048942	1283569	1216597	971454	763321	527663	652333	481483	405652
Rarawai	1006366	1017374	957507	878509	738316	522114	663774	508638	498881
Labasa	1015166	1166055	1017061	840388	695728	554575	570468	413285	546156
Penang	332592	291206	309205	239044	213253	175701	208860	143568	159720
All mills	3403066	3758204	3500370	2929395	2410619	1780053	2095435	1546974	1610409

Appendix 8 : Tonnes of cane per hectare harvested

Mills	Crop	Average for period of five seasons					Last four seasons individually			
		1986/ 1990	1991/ 1995	1996/ 2000	2001/ 2005	2006/ 2010	2010	2011	2012	2013
Lautoka	P	65.4	64.7	64.2	63.9	67.2	57.9	68.1	53.9	51.2
	R	54.2	51.2	51.4	45.9	47.6	37.3	52.9	39.1	36.2
	Total	55.5	52.4	53.7	46.8	49.1	38.3	54.6	39.5	37.0
Rarawai	P	64.3	61.2	62.1	59.6	58.8	48.7	62.6	53.1	56.6
	R	52.0	48.1	52.9	46.4	44.8	37.7	51.2	38.8	39.6
	Total	54.2	50.1	53.9	47.1	46.5	38.6	52.4	39.5	40.7
Labasa	P	58.9	59.3	56.5	59.7	56.7	50.6	46.7	43.9	59.4
	R	51.5	50.4	47.4	47.6	43.5	38.8	38.3	30.4	44.8
	Total	51.5	51.3	48.6	48.9	45.8	39.7	39.5	30.9	46.9
Penang	P	63.1	57.2	62.6	54.2	56.3	54.9	53.3	46.4	40.8
	R	48.6	43.1	51.2	46.4	48.3	47.6	55.5	40.5	49.3
	Total	51.1	46.0	53.3	46.8	49.1	48.1	55.2	40.7	48.5
All Mills	P	62.6	61.2	61.8	58.3	59.5	51.9	56.9	49.5	55.5
	R	55.8	48.1	50.0	46.0	45.8	38.7	47.8	36.3	40.9
	Total	53.3	50.2	52.1	47.5	47.3	39.6	48.9	36.9	42.2

Appendix 9 : Hectares harvested in relation to registered area and cultivated area (ha)

Mills	Area (ha)			% of registered and cultivated area harvested	
	Registered	Cultivated	Harvested	Registered	Cultivated
Lautoka	22272	14570	12204	54.8	83.8
Rarawai	21569	19829	12871	59.7	64.9
Labasa	18385	15438	13358	72.7	86.5
Penang	7824	4054	3525	45.1	87.0
Total	70049	53891	41958	59.9	77.9

Appendix 10 : Plant cane harvested as percentage of total cane harvested

Mills	Average for period of five seasons					Last four seasons individually			
	1986/ 1990	1991/ 1995	1996/ 2000	2001/ 2005	2006/ 2010	2010	2011	2012	2013
Lautoka	17	15	13	5	5.5	7.5	14	3.1	7.1
Rarawai	19	14	18	6	8.2	10.1	12.9	6.9	9.4
Labasa	13	14	12	7	8.2	9.9	16.9	5.9	17.4
Penang	22	23	19	11	8.2	6.9	13.3	5.1	8.1
All mills	17	16	15	7	7.4	8.9	14.4	5.3	10.5

Appendix 11: Plant, ratoon yields and percentage of total area harvested - 2013 Crop

Mills	Plant			First ratoon			Other ratoons			All cane	
	tch	Area ha	% of Area	tch	Area ha	% of Area	tch	Area ha	% of Area	tch	Area ha
Lautoka	53.9	279	2.3	45.3	1220	10.0	38.4	10704	87.7	39.5	12204
Rarawai	53.1	665	5.2	47.8	1339	10.4	37.7	10866	84.4	39.5	12871
Labasa	43.9	559	4.2	42.1	1896	14.2	28.3	10904	81.6	30.9	13356
Penang	46.4	158	4.5	46.8	533	15.1	39.3	2834	80.4	40.7	3525
All Mills	49.5	1661	4.0	44.9	4988	11.9	35.1	35308	84.2	36.9	41959

Appendix 12 : Seasonal %POCS in cane

Mills	Rough average for period of five seasons					Last four seasons individually			
	1986/ 1990	1991/ 1995	1996/ 2000	2001/ 2005	2006/ 2010	2010	2011	2012	2013
Lautoka	12.0	12.5	11.4	11.5	10.8	10.9	9.6	10.66	11.60
Rarawai	12.1	12.9	11.4	11.9	10.9	9.6	9.8	10.65	11.54
Labasa	12.4	12.1	11.1	11.5	10.7	10.0	10.0	11.64	11.24
Penang	12.2	12.6	11.1	11.9	11.1	10.6	9.6	11.53	10.64
All Mill Avg.	12.3	12.5	11.2	11.7	11.0	10.9	9.8	11.12	11.26

Appendix 13: Weekly POCS in cane 2013 season

Week no.	Week ending	Lautoka	Rarawai	Labasa	Penang
1	1-Jul-13	10.5	9.6	11.5	10.5
2	8-Jul-13	10.5	10.2	11.2	10.6
3	15-Jul-13	10.9	10.3	11.5	10.7
4	22-Jul-13	10.7	10.2	11.4	10.7
5	29-Jul-13	0	10.4	11.1	10.7
6	5-Aug-13	10.6	10.5	11.3	10.8
7	12-Aug-13	11.8	11	11.2	10.3
8	19-Aug-13	11.8	11.7	11.2	10.8
9	26-Aug-13	12.2	11.6	11	10.6
10	2-Sep-13	11.7	11.7	11	10.7
11	9-Sep-13	11.3	11.7	11.7	10.7
12	16-Sep-13	11.8	12.2	12.2	10.8
13	23-Sep-13	11.9	12.2	11.2	10.8
14	30-Sep-13	12.6	12.2	11.3	10.6
15	7-Oct-13	12.2	12.9	11.5	10.7
16	14-Oct-13	12.1	13	11.4	10.6
17	21-Oct-13	11.3	12.7	10.9	10.5
18	28-Oct-13	10.9	12.2	11	
19	4-Nov-13		12.3	10.6	
20	11-Nov-13		11.2	9.9	
21	18-Nov-13		11.1		
22	25-Nov-13				
23	2-Dec-13				
Season average		11.6	11.5	11.2	10.6

Appendix 14 : Sugar produced (tonnes 94 N.T. equivalent)

Mills	Tonnes sugar 94 N.T equivalent								
	2005	2006	2007	2008	2009	2010	2011	2012	2013
Lautoka	97315	96875	75656	77311	53313	43384	50306	48129	41874
Rarawai	84258	106781	78786	63954	42222	31580	61028	45732	60039
Labasa	90347	83970	68255	53160	57548	40943	45146	45398	63423
Penang	24733	30937	21858	23231	22818	18530	16838	19908	19258
All mills	296653	318563	244555	217656	175901	134436	173318	159166	184594

Appendix 15 : Sugar tonnes 94 N.T equivalent per hectare (tsh)

Mills	Average for period of five seasons					Last five seasons individually				
	1986/ 1990	1991/ 1995	1996/ 2000	2001/ 2005	2006/ 2010	2009	2010	2011	2012	2013
Lautoka	6.55	6.15	5.61	4.92	4.42	3.69	3.15	4.21	3.8	3.8
Rarawai	6.36	6.29	5.61	5.38	4.02	2.79	2.34	4.82	3.8	4.7
Labasa	6.20	6.00	4.95	4.97	3.98	3.80	2.93	3.05	3.4	5.3
Penang	5.70	5.47	5.42	4.65	5.41	5.35	5.07	4.45	5.6	5.9
Average	6.28	6.05	5.39	5.06	4.25	3.59	2.99	4.04	4.2	4.9

Appendix 16 : Length of season (weeks) - Start and finish of crushing (date)

Mills	Average length of season (5 yearly)					Last four seasons individually			
	1986/ 1990	1991/ 1995	1996/ 2000	2001/ 2005	2006/ 2010	2010	2011	2012	2013
Lautoka	28.8	28.0	29.7	27.6	27.0	23.3 24/06/10 to 04/12/10		24.2 26/06/12 to 04/12/12	19.0 02/06/13 To 03/11/13
Rarawai	26.2	25.3	26.5	24.2	28.0	28.0 28/06/10 to 11/01/11	26.6 21/06/11 to 24/12/11	22.8 10/07/12 to 17/12/12	20 26/06/13 To 13/11/13
Labasa	26.6	29.4	30.7	24.1	25.9	28.1 22/06/10 to 29/12/10	22.7 14/07/11 to 20/12/11	16.1 26/06/12 to 16/10/12	19 27/06/13 To 09/11/13
Penang	25.5	21.5	26.2	20.4	22.5	24.6 06/06/10 to 20/11/10	24.6 28/06/11 to 28/11/11	16.3 26/06/12 to 18/10/12	17 25/06/13 To 20/10/13
All mills	26.8	26.1	28.2	24.1	25.9	23.3		19.9	18.7

Appendix 17 : Varieties Percent of hectares harvested

Varieties	Lautoka		Rarawai		Labasa		Penang		All Mills	
	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013
Ragnar	0.37	0.4	0.36	0.2	23.87	21.5	0.06	0	6.6	6.7
Waya	Nil	0	0.27	0.3	8.04	7.7	0.10	0	2.2	2.6
Mali	Nil	0	Nil	0	11.13	11.9	0.27	0.3	3.0	3.6
Galoa	0.04	0	Nil	0	4.31	5.9	nil	0	1.2	1.8
Aiwa	0.36	0.4	0.15	0.2	0.22	0.2	0.01	0.1	0.2	0.2
Kiuva	0.52	0.9	0.16	0.3	0.11	0.7		1.07	0.2	0.5
Mana	94.50	94	93.14	92.4	Nil	0	98.28	95.2	69.2	67.4
LF91-1925	0.54	0.8	0.03	0.1	0.48	0.9		0.17	0.3	0.4
Kaba	2.18	2.2	4.40	5.2	0.21	0.4	0.23	0.3	2.2	2.2
Vatu	Nil	0	Nil	0	16.77	17.5	0.05	0.02	4.5	4.6
Beqa	0.02	0	Nil	0	0.05	0.1		0	nil	

Appendix 17 : Cont'd

Varieties	Lautoka		Rarawai		Labasa		Penang		All Mills	
	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013
Naidiri	1.07	1.1	1.26	0.7	33.69	33.3	0.86	2.8	9.8	10.4
Exp.	nil	0	Nil	0	Nil	0	0.14	0	nil	0.2
Other var.	0.40	0.3	0.22	0.6	1.13	0		0.03	0.5	nil

Appendix 18: Area planted in hectares as % of registered and cultivated areas

Mills	Hectares planted		Hectares planted as % of registered area		Hectares planted as % of cultivated area	
	2012	2013	2012	2013	2012	2013
Lautoka	625	741.2	2.8	3.3	4.3	5.5
Rarawai	904	944.1	4.2	4.4	4.6	6.1
Labasa	1845	1157.3	10.0	6.3	12.0	8.5
Penang	344	285.3	4.4	3.7	8.5	5.5
Total	3718	3127.9	5.3	14.5	6.9	6.8

Appendix 19: Percentage of total area planted by different varieties over three years

Year	Varieties	Lautoka		Rarawai		Labasa		Penang		All mills	
		%	Area ha	%	Area ha	%	Area ha	%	Area ha	%	Area ha
2011	Ragnar	0.5	297	0.7	746	12.2	772			5.0	2023
2012		1.2	625	0.7	904	17.6	1845	nil		9.1	3718
2013		3.8	741	2.3	944	27.2	1157	nil		11.6	3128
2011	Waya			1.0	746	11.7	772			4.8	2023
2012		nil		0.1	904	9.4	1845	39.1	344	8.3	3718
2013		nil		0.6	944	5.0	1157	nil		2.1	3128
2011	Mana	79.0	297	86.3	746	1.6	772	98.7	208	54.2	2023
2012		76.0	625	79.2	904			51.0	344	36.8	3718
2013		69.0	741	63	944			64.6	285	41.3	3128
2011	Galoa		297			7.7	772			2.9	2023
2012		0.1	625	nil		6.5	1845	nil		3.2	3718
2013		1.0	741	nil		6.3	1157	nil		2.7	3128
2011	Vatu					8.9	772			3.4	2023
2012				nil		18.5	1845	0.2	344	9.2	3718
2013				nil		13	1157	0.4	285	4.8	3128
2011	Mali	0.1				13.3	772	0.3	208	5.1	2023
2012			625	nil		10.7	1845	0.2	344	5.3	3718
2013		0.1	741	nil		8.5	1157	nil	285	3.2	3128
2011	Aiwa	0.2	297			0.2	772			0.1	2023
2012		1.3	625	0.2	904	0.1	1845	0.3	344	0.3	3718
2013		1.4	741	1.2	944	0.1	1157	nil		0.7	3128
2011	Beqa		297								
2012		0.4	625	nil		nil		0.3	344	0.1	3718
2013		0.4	741	nil		nil		nil		0.1	3128
2011	Kaba	4.7	297	6.9	746	0.3	772			3.3	2023
2012		5.7	625	10.5	904	0.4	1845	1.6	344	3.9	3718

Appendix 19: Cont'd

Year	Varieties	Lautoka		Rarawai		Labasa		Penang		All mills	
		%	Area ha	%	Area ha	%	Area ha	%	Area ha	%	Area ha
2013		5.3	741	11.4	944	0.5	1157	0.3	285	5.2	3128
2011	Naidiri	2.7	297	1.7	746	42.4	772			17.2	2023
2012		4.4	625	1.4	904	32.7	1845	7.3	344	18.0	3718
2013		8.8	741	2.8	944	34.7	1157	0.3	285	18.4	3128
2011	Kiuva			1.5	746					0.7	2023
2012		8.3				2.6		nil			
2013		5.1	741			2.0	1157	nil		5.5	3128
2011	LF91-1925			0.9	746					1.5	2023
2012		2.5				1.0		nil			
2013		4.6	741			2.4	1157	nil			3128
2011	Experiment	10.8	625	8.1	904	4.1	1845			5.8	3718
2012	Other	0.5	297	0.7	746	12.2	772	1.0		5.0	2023
2013	Varieties	0.2	741	0.2	944	nil		nil			3128

Appendix 20 : Cane transport in Fiji (tonnes of cane harvested and actual method of delivery)

Mills	Year	Delivered portable line		Winch trailer or lorry to mainline		Lorry direct to mill carrier		Total	
		Tonnes	% of Total	Tonnes	% of Total	Tonnes	% of Total	Tonnes	% of Total
Lautoka	2006	11854	1	174057	17	865186	82	1051097	100
	2007	13652	2	158002	21	569577	77	741231	100
	2008	15915	2	179905	24	574754	74	770567	100
	2009	12464	2	168852	23	544730	75	726046	100
	2010	3964	1	129410	25	394094	75	527468	100
	2011	9491	1.5	144569	22.2	498273	76.4	652333	100
	2012	2065	0.4	113819	23.6	365599	75.9	481483	100
	2013	12464	1.7	168852	23.3	544730	75.0	726046	100
Rarawai	2006	44731	4	239872	23	754871	73	1039474	100
	2007	32927	5	184605	25	520946	70	738478	100
	2008	38797	5	184094	25	509470	70	732165	100
	2009	23827	4	164490	25	471034	71	659351	100
	2010	25106	5	126450	24	370460	71	522016	100
	2011	23586	3.6	332792	50.1	307396	46.3	663774	100
	2012	14772	3.6	106393	24.9	387485	71.4	508650	100
	2013	22054	6.3	104779	30.2	220584	64	347417	100
Labasa	2006	3391	1	238591	27	629049	72	871031	100
	2007	2910		233371	31	532847	69	769138	100
	2008	1275		179815	30	423224	70	604314	100
	2009			230735	34	448849	66	679584	100
	2010			171042	34	383485	66	554527	100
	2011	nil	nil	162856	29	407610	71	570466	100

Appendix 20 : Cont'd

Mills	Year	Delivered portable line		Winch trailer or lorry to mainline		Lorry direct to mill carrier		Total	
		Tonnes	% of Total	Tonnes	% of Total	Tonnes	% of Total	Tonnes	% of Total
Labasa	2012	840	0.2	117543	28.4	294902	71.4	413285	100
	2013	nil	nil	137018	25.1	409138	75	546156	100
Penang	2006	3681	1	63499	24	197318	75	264498	100
	2007	3010	1	55450	24	171378	75	229838	100
	2008	3026	1	48285	23	163261	76	214572	100
	2009	11145	6	30977	17	139528	77	181650	100
	2010			44447	25	131254	75	175701	100
	2011	nil	nil	55422	26.5	153438	73.5	208860	100
	2012	nil	nil	38712	27	104856	73	143568	100
	2013	nil	nil	40797	26	118923	75	159720	100
All mills	2006	63657	2	716019	22	2446424	76	3226100	100
	2007	52509	2	128061	16	2298115	82	2478685	100
	2008	59013	3	592099	26	1670704	72	2321620	100
	2009	47436	2	595054	26	1604141	71	2246631	100
	2010	29070	1.6	471349	26.5	1279293	72	1779712	100
	2011	33077	1.6	695639	33.2	1366717	65.2	2095433	100
	2012	17677	1.1	376467	24.3	1152842	74.5	1546986	100
	2013	8630	2	451446	26.2	1293375	74.1	1779339	100

Appendix 21: Percentage burnt cane of total tonnes crushed

Year	Lautoka		Rarawai		Labasa		Penang		Average	
	%	Total	%	Total	%	Total	%	Total	%	Total
1975	18.2	752094	29.1	731917	3.6	485290	14.1	156624	16.3	2,125,925
1976	12.9	917428	28.0	731865	4.9	445798	15.1	154116	15.2	2,249,027
1977	17.7	1044468	28.9	825628	6.9	606154	11.8	198116	16.3	2,674,366
1978	19.1	1043064	25.3	799497	9.6	756793	8.2	250168	15.6	2,849,522
1979	14.9	1699234	25.9	1123509	9.6	940636	15.0	294605	16.4	4,057,984
1980	21.5	1348039	27.4	958414	16.0	782742	18.0	271096	20.7	3,360,291
1981	17.6	1444504	21.2	1248910	19.4	930265	17.0	307753	18.8	3,931,432
1982	23.2	1507831	24.8	1100133	13.6	1140552	13.2	326348	18.7	4,074,864
1983	18.3	639823	18.4	561774	18.0	761454	12.0	239482	16.7	2,202,533
1984	25.1	1731580	8.2	1146140	12.9	1136737	10.0	382030	14.1	4,396,487
1985	28.6	947593	25.2	864264	22.4	934166	16.2	296418	23.1	3,042,441
1986	29.5	1526648	15.1	1204661	15.1	1017372	11.3	360284	17.8	4,108,965
1987	23.8	1090111	34.2	685994	20.9	877652	19.0	306706	24.5	2,960,463
1988	37.7	1116916	15.2	742128	16.0	1034788	19.2	291440	22.0	3,185,272
1989	20.6	1537337	13.6	1250977	12.7	974201	10.0	336418	14.2	4,098,933
1990	24.3	1347531	30.4	1148070	13.7	1171817	14.6	348110	20.8	4,015,528
1991	42.5	1112957	46.4	961961	32.0	1029223	27.6	276261	37.1	3,380,402
1992	52.5	1109778	52.1	962936	44.4	1162108	41.1	297818	47.5	3,532,640
1993	35.6	1341537	33.4	1013627	29.2	1124357	19.4	224383	29.4	3,703,904

Appendix 21: Cont'd

Year	Lautoka		Rarawai		Labasa		Penang		Average	
	%	Total	%	Total	%	Total	%	Total	%	Total
1994	39.0	1337977	36.0	1104246	27.0	1298285	19.8	323743	30.5	4,064,251
1995	43.4	1515880	42.5	1044098	37.6	1216290	28.7	333790	38.1	4,110,058
1996	54.8	1561446	48.1	1229978	39.9	1238443	33.2	349348	44.0	4,379,215
1997	50.7	1160879	49.1	906495	33.5	910137	34.8	302095	42.0	3,279,606
1998	67.0	625763	67.7	406811	54.5	832622	44.6	232825	58.5	2,098,021
1999	41.6	1433143	39.8	992968	17.0	1192735	26.3	339292	32.4	3,958,138
2000	56.1	1301752	54.6	1251282	37.8	911370	49.0	322475	50.6	3,786,879
2001	56.7	906743	50.3	844411	18.9	845444	49.5	208183	42.9	2,804,781
2002	46.8	1137123	41.8	1071579	21.4	938450	33.9	275431	37.1	3,422,583
2003	40.1	890499	32.8	836728	29.3	638851	22.0	243602	33.4	2,609,680
2004	42.7	1032127	39.5	878121	18.3	848533	35.5	242408	34.3	3,001,189
2005	44.4	890779	38.4	761704	25.0	910663	34.9	225594	35.7	2,788,740
2006	60.5	1051097	58.5	1039474	34.4	871031	46.5	264498	51.7	3,226,100
2007	39.0	741231	40.5	738478	39.1	769138	53.5	229844	40.8	2,478,691
2008	50.9	770569	53.6	732165	49.1	604314	48.5	214572	51.1	2,321,620
2009	43.5	726046	33.3	659351	18.6	679584	28.8	181650	31.8	2,246,631
2010	30.4	527663	33.6	522114	18.6	554575	16.3	175701	25.0	1,780,053
2011	28.5	652333	28.2	663774	17.9	570468	26.6	208860	25.3	2,095,435
2012	43.8	481483	44.7	508638	18.7	413285	28.3	143568	35.9	1,546,974
2013	77.8	405652	31.9	498881	14.2	546156	27	159720	36.2	1,610,409

Seedcane mother plot at Drasa Station





APPROVED VARIETIES



List of Approved Varieties

The list of sugarcane varieties approved for planting during 2013 has been revised to include maturity trend. Varieties that are no longer planted have been removed from the approved varieties list. The varieties are recommended to growers on their soil type. The growers have a choice of at least three varieties to plant on their farms as laid down in the Master Award.

Mill/Sectors	Soil types	Varieties recommended on maturity trends	
		Early – mid maturing	Mid – late maturing
Lautoka/Olosara	Rich alluvial soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Poor soils	LF91-1925,	Kaba, Mana,
Lautoka/Cuvu	Flat Fertile soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Poor soils	LF91-1925,	Kaba, Mana,
	Sandy soils	LF91-1925	Kaba, Mana
Lautoka/Lomawai	Flat Fertile soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Poor soils	LF91-1925,	Kaba, Mana,
	Sandy soils	LF91-1925	Kaba, Mana, Galoa
Lautoka/Yako	Flat Fertile soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Poor soils	LF91-1925,	Kaba, Mana,
	Sandy soils	LF91-1925	Kaba, Mana, Galoa
Lautoka/Nawaicoba	Flat Fertile soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Vatu, Kiuva
	Poor soils	LF91-1925,	Kaba, Mana,
	Sandy soils	LF91-1925	Kaba, Mana, Galoa
Lautoka/Malolo	Flat Fertile soil	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Vatu, Kiuva
	Poor soils	LF91-1925,	Kaba, Mana,
Lautoka/Queleloa	Rich alluvial soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Vatu, Kiuva
	Poor soils	LF91-1925,	Kaba, Mana,
Lautoka/Meigunyah	Flat Fertile soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Vatu, Kiuva
	Poor soils	LF91-1925,	Kaba, Mana,
Lautoka/Legalega	Flat Fertile soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Vatu, Kiuva
	Poor soils	LF91-1925,	Kaba, Mana,
Lautoka/Natova	Flat Fertile soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Vatu, Kiuva
	Poor soils	LF91-1925,	Kaba, Mana,
	Sandy soils	LF91-1925	Kaba, Mana, Galoa
Lautoka/Lautoka	Flat Fertile soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Vatu, Kiuva
	Poor soils	LF91-1925	Kaba, Mana

Mill/Sectors	Soil types	Varieties recommended on maturity trends	
		Early – mid maturing	Mid – late maturing
Lautoka/Saweni	Flat Fertile soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Vatu, Kiuva
	Poor soils	LF91-1925,	Kaba, Mana,
	Sandy soils	LF91-1925	Kaba, Mana, Galoa
Lautoka/Lovu	Flat Fertile soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Vatu, Kiuva
	Poor soils	LF91-1925,	Kaba, Mana,
Lautoka/Drasa	Flat Fertile soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Vatu, Kiuva
	Poor soils	LF91-1925,	Kaba, Mana,
	Sandy soils	LF91-1925	Kaba, Mana, Galoa
Rarawai/Varoko	Flat Fertile soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Vatu, Kiuva
	Poor soils	LF91-1925,	Kaba, Mana,
Rarawai/Mota	Flat Fertile soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Vatu, Kiuva
	Poor soils	LF91-1925,	Kaba, Mana,
Rarawai/Naloto	Flat Fertile soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Vatu, Kiuva
	Poor soils	LF91-1925,	Kaba, Mana,
Rarawai/Koronubu	Flat Fertile soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Vatu, Kiuva
	Poor soils	LF91-1925,	Kaba, Mana,
Rarawai/Veisaru	Flat Fertile soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Vatu, Kiuva
	Poor soils	LF91-1925,	Kaba, Mana,
Rarawai/Rarawai	Flat Fertile soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Vatu, Kiuva
	Poor soils	LF91-1925,	Kaba, Mana,
Rarawai/Varavu	Flat Fertile soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Vatu, Kiuva
	Poor soils	LF91-1925,	Kaba, Mana,
Rarawai/Tagitagi	Flat Fertile soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Mana, Kaba, Vatu
	Poor soils	LF91-1925,	Kaba, Mana,
	Saline areas	Naidiri, LF91-1925	Kaba, Mana, Galoa
Rarawai/Yaladro	Flat Fertile soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Vatu, Kiuva
	Poor soils	LF91-1925,	Kaba, Mana,
Rarawai/Drumasi	Flat Fertile soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Mana, Kaba, Vatu
	Poor soils	LF91-1925,	Kaba, Mana,
	Saline areas	Naidiri, LF91-1925	Kaba, Mana, Galoa
Labasa/Waiqele	Flat Fertile soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Vatu, Kiuva
	Poor soils	Naidiri, LF91-1925,	Kaba, Mali,

Mill/Sectors	Soil types	Varieties recommended on maturity trends	
		Early – mid maturing	Mid – late maturing
Labasa/Wailevu	Flat Fertile soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Vatu, Kiuva
	Poor soils	Naidiri, LF91-1925,	Kaba, Mali,
	Saline soils	Naidiri, LF91-1925	Galoa, Vatu
Labasa/Vunimoli	Flat Fertile soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Vatu, Kiuva
	Poor soils	Naidiri, LF91-1925,	Kaba, Mali,
	Saline soils	Naidiri, LF91-1925	Galoa, Vatu, Mali
Labasa/Labasa	Flat Fertile soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Vatu, Kiuva
	Poor soils	Naidiri, LF91-1925,	Kaba, Mali,
	Saline soils	Naidiri, LF91-1925	Galoa, Vatu, Mali
Labasa/Bucaisau	Flat Fertile soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Vatu, Kiuva, Waya
	Poor soils	Naidiri, LF91-1925,	Kaba, Mali,
	Saline soils	Naidiri, LF91-1925	Galoa, Vatu, Mali
Labasa/Wainikoro	Flat Fertile soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Vatu, Kiuva, Waya
	Poor soils	Naidiri, LF91-1925,	Kaba, Mali,
	Saline soils	Naidiri, LF91-1925	Galoa, Vatu, Mali
Labasa/Daku	Flat Fertile soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Vatu, Kiuva, Waya
	Poor soils	Naidiri, LF91-1925,	Kaba, Mali,
	Saline soils	Naidiri, LF91-1925	Galoa, Vatu, Mali
Labasa/Natua	Poor soils	Aiwa, Beqa, Naidiri, LF91-1925,	Ragnar, Kaba, Mali,
	Poor soils	Aiwa, Beqa, Naidiri, LF91-1925,	Ragnar, Kaba, Mali,
	Poor soils	Aiwa, Beqa, Naidiri, LF91-1925,	Ragnar, Kaba, Mali,
	Poor soils	Aiwa, Beqa, Naidiri, LF91-1925,	Ragnar, Kaba, Mali,
Penang/Nanuku	Flat Fertile soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Vatu, Kiuva
	Poor soils	LF91-1925,	Kaba, Mana,
	Salt affected areas	Naidiri, LF91-1925	Galoa
	Viti Vanua area	Naidiri, LF91-1925	Mana, Kaba, Kiuva, Mali
Penang/Malau	Rich alluvial soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Vatu, Kiuva, Mali
	Poor soils	LF91-1925,	Kaba, Mana,
	Salt affected areas	Naidiri, LF91-1925	Galoa
Penang/Ellington	Flat Fertile soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Kiuva
	Medium soils	Aiwa, Beqa, Naidiri, LF91-1925	Ragnar, Kaba, Vatu, Kiuva, Mali
	Poor soils	LF91-1925,	Kaba, Mana,
	Salt affected areas	Naidiri, LF91-1925	Galoa

Sugar Research Institute of Fiji
Financial Statements
For the year ended 31 December 2013

Sugar Research Institute of Fiji

Contents

Directors report	1 - 2
Independent auditor's report	3 - 4
Statements of profit or loss and other comprehensive income	5
Statements of financial position	6
Statements of cash flow	7
Notes to the financial statements	8 - 18

Sugar Research Institute of Fiji

Directors' report

In accordance with a resolution of the Board of Directors, the Directors herewith submit the statement of financial position of Sugar Research Institute of Fiji (the “Institute”) as at 31 December 2013 and the related statement of profit or loss and other comprehensive income and statement of cash flows for the year ended on that date and report as follows:

Directors

The Directors in office during the year and at the date of this report are:

	Date appointed
Professor Rajesh Chandra - Chairman	13/02/2015
Dr K.S Shanmugha Sundaram	13/02/2015
Professor Paras Nath	13/02/2015
Mr Daniel Elisha	13/02/2015
Mr Abdul Khan	13/02/2015
Mr Sundresh Chetty	13/02/2015
Mr Manasa Tagicakibau	13/02/2015

The Institute did not have a Board present from the period 30/09/2012 to 04/05/2014.

The current Chairman and members of the Board were not responsible for the affairs of the Institute in 2013. The Board has taken all necessary steps to have the accounts prepared properly with external input and has ensured that the external auditors have had unfettered access to all documents and information sought by them with the shared aim to ensure that the final accounts represent the true state of affairs of the Institute in 2013, including any liabilities.

State of affairs

In the opinion of the Board the accompanying statement of financial position gives a true and fair view of the state of affairs of the Institute as at 31 December 2013 and the accompanying statement of profit or loss and other comprehensive income and statement of cash flows give a true and fair view of the results and cash flows of the Institute for the year then ended.

Principal activity

The functions of the Institute are outlined under the Sugar Research Institute of Fiji Act No 14 of 2005, which includes promoting by means of research and investigation, the technical advancement, efficiency and productivity of the sugar industry, and to provide its functions, powers, administration and finance and for related matters.

Current assets

The Directors took reasonable steps before the Institute’s financial statements were made out to ascertain that the current assets of the Institute were shown in the accounting records at a value equal to or below the value that would be expected to be realised in the ordinary course of business.

At the date of this report, the Directors are not aware of any circumstances which would render the values attributable to the current assets in the financial statements to be misleading.

Sugar Research Institute of Fiji

Directors' report (continued)

Receivables

The Directors took reasonable steps before the Institute's financial statements were made out to ascertain that all known bad debts were written off and adequate allowance was made for impairment losses.

At the date of this report, the Directors are not aware of any circumstances which would render the above assessment inadequate to any substantial extent.

Related party transactions

All related party transactions have been adequately recorded in the financial statements.

Receivables

The Directors took reasonable steps before the Institute's financial statements were made out to ascertain that all known bad debts were written off and adequate allowance was made for impairment losses.

At the date of this report, the Directors are not aware of any circumstances which would render the above assessment inadequate to any substantial extent.

Related party transactions

All related party transactions have been adequately recorded in the financial statements.

Other circumstances

At the date of this report, the Directors are not aware of any circumstances not otherwise dealt with in this report or financial statements which would render any amounts stated in the accounts to be misleading.

Unusual circumstances

The results of the Institute's operations during the financial year have not in the opinion of the Directors been substantially affected by any item, transaction or event of a material and unusual nature other than those disclosed in the financial statements.

Going concern

The Directors believe that the basis of preparation of accounts is appropriate and the Institute will be able to continue in operation for at least 12 months from the date of this statement.

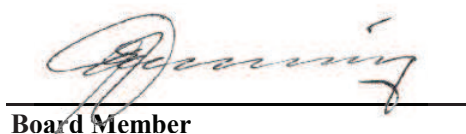
Events subsequent to balance date

There has not arisen in the interval between the end of the year and the date of this report any item, transaction or event of a material and unusual nature likely, in the opinion of the Directors, to affect significantly the operations of the Institute, the results of those operations or the state of affairs of the Institute in subsequent financial years.

Dated at Lautoka this 28th day of April 2017.

Signed in accordance with a resolution of the Board.


Chairman


Board Member



Honourable Commodore Josaia Voreqe Bainimarama
Minister responsible for the Sugar Industry
PO Box 2212
Government
Buildings Suva

Dear Minister,

INDEPENDENT AUDITOR'S REPORT TO THE BOARD MEMBERS OF SUGAR RESEARCH INSTITUTE OF FIJI

Report on the financial statements

We have audited the accompanying financial statements of Sugar Research Institute of Fiji, which comprise the statement of financial position as at 31 December 2013, the statement of comprehensive income, and statement of cash flows for the year then ended, and a summary of significant accounting policies and other explanatory notes as set out in notes 1 to 19.

Directors' and Management's Responsibility for the Financial Statements

Directors and management are responsible for the preparation of financial statements that give a true and fair view in accordance with International Financial Reporting Standards and for such internal control as the directors and management determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with International Standards on Auditing. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation of financial statements that give a true and fair view in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by the management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.



INDEPENDENT AUDITOR'S REPORT TO THE BOARD MEMBERS OF SUGAR RESEARCH INSTITUTE OF FIJI (continued)

Basis of qualification

VAT payable

The financial statements show an amount of VAT payable to the Fiji Government of \$355,965. The VAT status of the Institute is currently being determined with FRCA and it is not presently known what the outcome of this will be. The impact on the amount recorded in the financial statements is currently incapable of determination, and accordingly, we are not able to determine what adjustments, if any, might be necessary to the amounts recorded in the financial statements.

Qualified Opinion

In our opinion, the financial statements give a true and fair view of the financial position of Sugar Research Institute of Fiji as at 31 December 2013 and of its financial performance, its changes in equity and its cash flows for the year then ended in accordance with International Financial Reporting Standards.

Report on Other Legal and Regulatory Requirements

We have obtained all the information and explanations which, to the best of our knowledge and belief, were necessary for the purposes of our audit.

In our opinion;

- i) proper books of account have been kept by the Institute, so far as it appears from our examination of those books;
- ii) the financial statements are in agreement with the books of account; and
- iii) to the best of our information and according to the explanations given to us the financial statements give the information required by the Sugar Research Institute of Fiji Act, 2005 in the manner so required.

28th April, 2017
Nadi, Fiji

KPMG.

KPMG
Chartered Accountants

Sugar Research Insitute of Fiji

Statement of profit or loss and other comprehensive income For the year ended 31 December 2013

	Note	2013 \$	2012 \$
Contributions and grants	5	2,443,763	2,473,084
Estate income		<u>503,412</u>	<u>1,016,461</u>
Total income		2,947,175	3,489,545
Cost of operations	6	(1,466,940)	(1,552,346)
Administrative expenses	7	<u>(1,499,843)</u>	<u>(1,945,588)</u>
Deficit from operations		(19,608)	(8,389)
Finance income	9	<u>19,608</u>	<u>8,389</u>
Deficit before tax		-	-
Income tax benefit	10	<u>-</u>	<u>-</u>
Deficit for the year		<u>-</u>	<u>-</u>

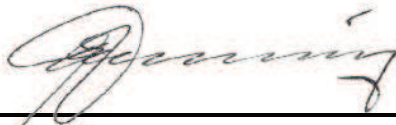
The notes on pages 8 to 18 are an integral part of these financial statements.

Sugar Research Insitute of Fiji
Statement of financial position
As at 31 December 2013

	Note	2013	2012
		\$	\$
Assets			
Current assets			
Cash and cash equivalents	12	2,510,839	3,209,184
Inventories		1,311	1,311
Receivables and prepayments	13	60,562	19,991
Receivable from related parties	17(b)	5,401,276	4,813,861
Total current assets		<u>7,973,988</u>	<u>8,044,347</u>
Non-current assets			
Property, plant and equipment	11	<u>3,981,197</u>	<u>3,751,725</u>
Total non-current assets		<u>3,981,197</u>	<u>3,751,725</u>
Total assets		<u>11,955,185</u>	<u>11,796,072</u>
Liabilities			
Current liabilities			
Deferred income	14	7,840,186	7,708,571
Payable to related parties	17(c)	3,595,739	3,595,739
Employee benefits	15	45,933	43,023
Trade and other payables	16	<u>473,327</u>	<u>448,739</u>
Total current liabilities		<u>11,955,185</u>	<u>11,796,072</u>
Total liabilities		<u>11,955,185</u>	<u>11,796,072</u>

Signed for and on behalf of the Board of Directors.


Chairman


Board Member

The notes on pages 8 to 18 are an integral part of these financial statements.

Sugar Research Institute of Fiji
Statement of cash flows
For the year ended 31 December 2013

	Note	2013 \$	2012 \$
Cash flows from operating activities			
Receipts from stakeholders and donors		2,779,071	5,437,067
Payment to suppliers and employees		(2,933,285)	(3,132,312)
Interest received	9	19,608	8,389
Net cash from operating activities		<u>(134,606)</u>	<u>2,313,144</u>
Cash flows from investing activities			
Acquisition of property, plant and equipment	11	<u>(563,739)</u>	<u>(795,787)</u>
Net cash used in investing activities		<u>(563,739)</u>	<u>(795,787)</u>
Net (decrease) / increase in cash and cash equivalents		(698,345)	1,517,357
Cash and cash equivalents at 1 January		<u>3,209,184</u>	<u>1,691,827</u>
Cash and cash equivalents at 31 December	12	<u>2,510,839</u>	<u>3,209,184</u>

The notes on pages 8 to 18 are an integral part of these financial statements.

Sugar Research Institute of Fiji

Notes to the financial statements

For the year ended 31 December 2013

1. Reporting entity

Sugar Research Institute of Fiji (the "Institute") is a body corporate domiciled in Fiji, established under the Sugar Research Institute of Fiji Act 2005. The address of the Institute's registered office is Drasa, Lautoka, Fiji.

The functions of the Institute are outlined under Sugar Research Institute of Fiji Act No 14 of 2005, which includes promoting by means of research and investigation, the technical advancement, efficiency and productivity of the sugar industry, and to provide its functions, powers, administration and finance and for related matters.

2. Basis of preparation

(a) Statement of compliance

The financial statements have been prepared in accordance with the International Financial Reporting Standards (IFRS) as adopted by the International Accounting Standards Board (IASB).

The financial statements were authorised for issue by the Board of Directors on 28th Apr, 2017

(b) Basis of measurement

The financial statements have been prepared on a historical cost basis except where stated.

(c) Functional and presentation currency

The financial statements are presented in Fijian dollars, which is the Institute's functional currency. All amounts have been rounded to the nearest dollar, unless otherwise indicated.

(d) Use of estimates and judgments

The preparation of financial statements in conformity with IFRS requires management to make judgments, estimates and assumptions that affect the application of accounting policies and the reported amount of assets, liabilities, income and expenses. Actual results may differ from these estimates.

Estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognised in the period in which the estimate is revised and in any future period affected.

3. Significant accounting policies

The principal accounting policies adopted in the preparation of these financial statements are set out below.

(a) Foreign currency transactions

Transactions in foreign currencies are translated to Fiji dollars at exchange rates at the dates of the transactions. Monetary assets and liabilities denominated in foreign currencies at the reporting date are retranslated to Fiji dollars at the exchange rate at that date. The foreign currency gains or losses on translation are recognised in profit or loss.

Sugar Research Institute of Fiji
Notes to the financial statements
For the year ended 31 December 2013

3. Significant accounting policies (continued)

(b) Property, plant and equipment

Recognition and measurement

Items of property, plant and equipment are measured at cost less accumulated depreciation and any accumulated impairment losses. Cost includes expenditure that is directly attributable to the acquisition of the asset. Any gain or loss on disposal of an item of property, plant and equipment are determined by comparing the proceeds from disposal with the carrying amount of property, plant and equipment, and is recognised in profit or loss.

Subsequent costs

The cost of replacing part of an item of property, plant and equipment is recognised in the carrying amount of the item if it is probable that the future economic benefit embodied within the part will flow to the Institute and its cost can be measured reliably. The cost of the day-to-day servicing of property, plant and equipment are recognised in profit or loss as incurred.

Depreciation

Depreciation is calculated to write off the cost of items of property, plant and equipment less their estimated residual values using the straight-line method over their estimated useful lives, and is recognised in profit or loss. The estimated useful lives of property, plant and equipment for current and comparative periods are as follows:

Buildings and land	80 years
Computers	5 years
Fixtures and fittings	10 years
Motor vehicles	6.67 years
Plant and equipment	6.67 - 10 years

Depreciation methods, useful lives and residual values are reassessed at reporting date and adjusted if appropriate.

(c) Financial instruments

(i) Non-derivative financial assets

The Institute initially recognises loans and receivables on the date that they are originated. All other financial assets are recognised initially on the trade date at which the Institute becomes a party to the contractual provisions of the instrument.

The Institute derecognises a financial asset when the contractual rights to the cash flows from the asset expire, or it transfers the rights to receive the contractual cash flows on the financial asset in a transaction in which substantially all the risks and rewards of ownership of the financial asset are transferred. Any interest in transferred financial assets that is created or retained by the Institute is recognised as a separate asset or liability.

Financial assets and liabilities are offset and the net amount presented in the statement of financial position when, and only when, the Institute has a legal right to offset the amounts and intends either to settle on a net basis or to realise the asset and settle the liability simultaneously.

The Institute classifies non-derivative financial assets into loans and receivables.

Sugar Research Institute of Fiji
Notes to the financial statements
For the year ended 31 December 2013

3. Significant accounting policies (continued)

(c) Financial instruments (continued)

(i) Non-derivative financial assets (continued)

Loans and receivables

Loans and receivables are non-derivative financial assets with fixed or determinable payments that are not quoted in an active market. Such assets are initially measured at fair value plus any directly attributable transaction costs. Subsequent to initial recognition loans and receivables are measured at amortised cost using the effective interest method.

Loans and receivables comprise receivables from related parties, other receivables and cash and cash equivalents.

Cash and cash equivalents

Cash and cash equivalents comprises cash at bank and cash on hand.

(ii) Non-derivative financial liabilities

Financial liabilities are initially recognised on the trade date when the Institute becomes a party to the contractual provisions of the instrument. The Institute derecognises a financial liability when its contractual obligations are discharged or cancelled or expire. Financial liabilities are initially measured at fair value less any directly attributable transaction costs. Subsequent to initial recognition these liabilities are measured at amortised cost using the effective interest method.

The Institute has the following non-derivative financial liabilities: trade and other payables and payable to related parties.

Trade and other payables and payable to related party are stated at amortised cost.

(d) Inventories

Inventories are measured at the lower of cost and net realisable value. The cost of inventories is based on the first-in first-out principle, and includes expenditure incurred in acquiring the inventories, production or conversion costs and other costs incurred in bringing them to their existing location and condition.

Net realisable value is the estimated selling price in the ordinary course of business, less the estimated selling expenses.

Sugar Research Institute of Fiji
Notes to the financial statements
For the year ended 31 December 2013

3. Significant accounting policies (continued)

(e) Impairment

(i) Non-derivative financial assets

Financial assets not classified as at fair value through profit or loss are assessed at each reporting date to determine whether there is objective evidence that it is impaired. A financial asset is impaired if objective evidence indicates that a loss event has occurred after the initial recognition of the asset, and that the loss event had a negative effect on the estimated future cash flows of that asset that can be estimated reliably.

Objective evidence that financial assets are impaired includes default or delinquency by a debtor, restructuring of an amount due to the Institute on terms that the Institute would not consider otherwise, indications that a debtor or issuer will enter bankruptcy or the disappearance of an active market for a security because of financial difficulties.

(ii) Non-financial assets

At each reporting date non financial assets are reviewed to determine whether there is any indication of impairment. If any such indication exists, then the asset's recoverable amount is estimated. If estimated recoverable amount is lower, the carrying amount is reduced to its estimated recoverable amount, and an impairment loss is recognised immediately in profit or loss.

(f) Revenue

Grant income

Grants are recognised in the statement of financial position initially as deferred income when there is reasonable assurance that it will be received and that the Institute will comply with the conditions associated with the grant. It is then recognised in the profit or loss as grant income on a systematic basis as related expenses are incurred.

(g) Employee benefits

Superannuation

Obligation for contributions to a defined contribution plan are recognised as an expense in profit or loss when they are due.

Employee entitlements

Liability for annual leave is recognised and measured as the amount unpaid at the reporting date at current pay rates in respect of employee services up to that date.

Short term benefits

Short -term employee benefits obligations are measured on an undiscounted basis and are expensed in profit or loss as the related service is provided.

A liability is recognised for the amount to be paid under short-term benefit if the Institute has a present or constructive obligation to pay this amount as a result of past service provided by the employee and the obligation can be measured reliably.

Sugar Research Institute of Fiji
Notes to the financial statements
For the year ended 31 December 2013

3. Significant accounting policies (continued)

(h) Income tax

The Institute is not subject to income tax.

(i) Receivable from related parties

The amount receivable from related parties are recognised when there is a contractual receivable or a right to receive.

4. Financial risk management

The financial statements do not disclose information relating to the nature and extent of risks arising from financial instruments to which the Institute is exposed at year end, since credit risk, liquidity risk and market risk are not material to the Institute.

5. Contributions and grants

Contributions from stakeholders and grants that compensate the Institute for revenue and capital expenditure are recognised from deferred income as follows:

	2013	2012
	\$	\$
African Caribbean and Pacific Group of States (ACP)	26,885	92,072
Contribution from the Fiji Government	732,621	520,972
European Union	325,147	219,085
Fiji Sugar Corporation (FSC)	558,004	1,130,104
Sugar Cane Growers	746,041	507,204
Mauritius Sugar Research Instititue (MISRI)	13,463	3,647
Fiji Sugar Tribunal	41,602	0
	<u>2,443,763</u>	<u>2,473,084</u>

6. Cost of operations

Advertising	1,620	4,699
Accounting	7,000	7,000
Bank charges	3,702	4,386
Depreciation	334,267	314,459
Electricity	44,475	43,189
EU cost	123,151	45,580
General supplies	207	907
Communciation expenses	14,754	15,048
Material costs	67,939	53,404
Motor vechicle running expenses	239,482	239,310
Overhead expenses	0	1,746
Postage	1,054	674
RAF costs	4,300	12,818
Repairs and maintenances	13,430	13,346
Subcontract expenses	178,541	377,423
Travel	59,567	47,800
Wages and salaries (refer to note 8)	373,451	370,557
	<u>1,466,940</u>	<u>1,552,346</u>

Sugar Research Institute of Fiji
Notes to the financial statements
For the year ended 31 December 2013

	2013	2012
	\$	\$
7. Administrative expenses		
Auditors remuneration - audit	8,085	8,085
- other services	4,110	19,988
Accommodation and meals	8,265	16,871
ACP cost	26,885	92,072
Board fees	-	61,743
CEO security	4,895	9,355
Electricity	9,058	9,836
Fiji National Provident Fund contributions	70,727	68,401
FSC costs	12,585	621,004
General expenses	42,113	71,937
Hire of services	563,297	248,565
ICT consumables	14,535	7,690
ICT license	2,327	9,125
Communication expenses	8,208	7,798
Insurance	15,020	46,642
Legal fees	5,515	-
Medical expense	17,049	4,557
Media and publication	10,885	5,254
MISRI Cost	-	3,647
Freight	22,092	25,386
Rent	75,567	45,946
Repairs and maintenance	8,116	3,911
Stationery	2,485	6,532
Subscriptions	340	650
Training	5,734	7,821
Training and Productivity Authority of Fiji	9,082	8,550
Travel	8,688	13,343
Tuition fees	0	5,677
Visa permit	5,432	3,246
Water	3,967	3,388
Wages and salaries (refer to note 8)	534,781	508,568
	<u>1,499,843</u>	<u>1,945,588</u>

Sugar Research Institute of Fiji
Notes to the financial statements
For the year ended 31 December 2013

	2013	2012
	\$	\$
8. Personnel expenses		
Fiji National Provident Fund contributions	70,727	68,401
Training and Productivity Authority of Fiji	9,082	8,550
Key management compensation - short term benefits	147,206	145,589
Wages and salaries	761,026	733,536
	<u>988,041</u>	<u>956,076</u>

The average number of staff during the year was 71 (2012: 71).

9. Finance income		
Interest received	<u>19,608</u>	<u>8,389</u>

- 10.** In 2012 the Fiji Revenue and Customs Authority confirmed that the entity is not subject to income tax.

Sugar Research Institute of Fiji
Notes to the financial statements
For the year ended 31 December 2013

11. Property, plant and equipment

	Land & building	Fixtures & fittings	Plant & equipment	Motor vehicles	Computers	Work in progress	Total
	\$	\$	\$	\$	\$	\$	\$
Cost							
Balance at 1 January 2012	1,449,244	43,932	847,199	1,051,735	243,157	615,175	4,250,442
Acquisitions	238,031	-	417,839	-	-	139,917	795,787
Transferred during the year	615,175	-	-	-	-	(615,175)	-
Balance as at 31 December 2012	2,302,450	43,932	1,265,038	1,051,735	243,157	139,917	5,046,229
Acquisitions	47,780	-	239,629	86,739	11,365	178,226	563,739
Transferred during the year	139,917	-	-	-	-	(139,917)	-
Balance as at 31 December 2013	2,490,147	43,932	1,504,667	1,138,474	254,522	178,226	5,609,968
Depreciation							
Balance at 1 January 2012	21,916	10,589	200,773	585,917	160,850	-	980,045
Depreciation charge	23,807	4,393	97,960	142,419	45,880	-	314,459
Balance at 31 December 2012	45,723	14,982	298,733	728,336	206,730	-	1,294,504
Depreciation charge	27,360	4,393	137,663	142,419	22,432	-	334,267
Balance at 31 December 2013	73,083	19,375	436,396	870,755	229,162	-	1,628,771
Carrying amount							
At 1 January 2012	1,427,328	33,343	646,426	465,818	82,307	615,175	3,270,397
At 31 December 2012	2,256,727	28,950	966,305	323,399	36,427	139,917	3,751,725
At 31 December 2013	2,417,065	24,557	1,068,271	267,719	25,360	178,226	3,981,197

Sugar Research Institute of Fiji
Notes to the financial statements
For the year ended 31 December 2013

	2013	2012
	\$	\$
12. Cash and cash equivalents		
Cash at bank	2,510,829	3,209,145
Cash on hand	10	39
Cash and cash equivalents in the statement of cash flows	<u>2,510,839</u>	<u>3,209,184</u>
13. Receivables and prepayments		
Other receivables	12,992	12,992
Prepayments	47,570	6,999
	<u>60,562</u>	<u>19,991</u>
14. Deferred income		
Balance at the beginning of the year	7,708,571	6,435,861
Funds received or receivable during the period	2,575,378	3,745,795
Utilised during the period	(2,443,763)	(2,473,085)
Balance at 31 December	<u>7,840,186</u>	<u>7,708,571</u>
This is comprised as follows:		
Contribution from stakeholders	4,572,334	4,301,027
European Union grant	2,179,980	2,505,127
African Caribbean and Pacific Group of States (ACP)	754,050	780,934
Mauritius Sugar Research Instititue (MISRI)	108,020	121,483
Fiji Sugar Tribunal	225,802	-
	<u>7,840,186</u>	<u>7,708,571</u>
15. Employee benefits		
Balance at 1 January	43,023	36,831
Provision during the year	29,022	23,424
Provision utilised during the year	(26,112)	(17,232)
Balance at 31 December	<u>45,933</u>	<u>43,023</u>
16. Trade and other payables		
Trade payables	49,250	47,103
Other payables	68,112	60,078
VAT payable	355,965	341,558
	<u>473,327</u>	<u>448,739</u>

Sugar Research Institute of Fiji
Notes to the financial statements
For the year ended 31 December 2013

17. Related parties

Related parties of the Institute include key stakeholders in the Fiji Sugar Industry, namely, the Government of Fiji, Fiji Sugar Corporation, South Pacific Fertilizers Limited, Sugar Cane Growers Fund and Sugar Cane Growers Council.

Transactions with these parties and outstanding balances at year end are disclosed below.

(a) Board members

The following are the Board members of the Institute during the financial year:

	Date appointed
Professor Rajesh Chandra - Chairman	13/02/2015
Dr K.S Shanmugha Sundaram	13/02/2015
Professor Paras Nath	13/02/2015
Mr Daniel Elisha	13/02/2015
Mr Abdul Khan	13/02/2015
Mr Sundresh Chetty	13/02/2015
Mr Manasa Tagicakibau	13/02/2015

The Institute did not have a Board present from the period 30/09/2012 to 13/02/2015.

Board members emoluments and board expenses are disclosed under Note 7.

	2013	2012
	\$	\$
(b) Receivable from related parties		
Fiji Sugar Corporation	4,501,276	3,913,861
Sugar Cane Growers	900,000	900,000
	<u>5,401,276</u>	<u>4,813,861</u>

Receivable from related parties are interest free and receivable as and when required.

(c) Payable to related parties

Fiji Sugar Corporation	3,595,739	3,595,739
	<u>3,595,739</u>	<u>3,595,739</u>

Payable to related parties are interest free and payable on demand.

Sugar Research Institute of Fiji
Notes to the financial statements
For the year ended 31 December 2013

	2013 \$	2012 \$
17. Related parties (continued)		
(d) Transactions with related parties		
<u>Revenue</u>		
Grant income - Fiji Sugar Corporation	558,004	1,130,104
Grant income - Fiji Government	732,621	520,972
Grant income - Sugar Cane Growers	746,041	507,204
Estate income - Fiji Sugar Corporation	503,412	1,016,461
	<u>2,540,078</u>	<u>3,174,741</u>
<u>Expenses</u>		
Fiji Sugar Corporation costs - expense paid on behalf of SRIF	<u>12,585</u>	<u>621,004</u>

(e) Key management personnel

Key management personnel include the chief executive officer and finance and administration manager of the Institute.

Transactions with key management personnel are no favourable than those available, or which might be reasonably be expected to be available, on similar transactions to third parties on an arm's length.

Key management compensation is disclosed under Note 8.

18. Capital commitments and contingencies

Capital commitments and contingent liabilities as at 31 December 2013 amounted to \$Nil (2012: \$Nil).

19. Events subsequent to balance date

There has not arisen in the interval between the end of the year and the date of this report any item, transaction or event of a material and unusual nature likely, in the opinion of the Directors, to affect significantly the operations of the Institute, the results of those operations or the state of affairs of the Institute in subsequent financial years.

© Sugar Research Institute of Fiji, 2013
P. O. Box 3560, Lautoka
Ph: +679 8921839 & +679 8921840
Email: info@srif.org.fj
Website: www.srif.net.fj

Rarawai (Ba) Office: +679 8907343
Wairuku (Rakiraki) Office: +679 8907344
Batinikama (Labasa) Office: +679 8907345