FIG Pacific Small Island Development States

GIS & RS Decision Making Tool for the Sugar Industry

Vasiti Soko Litidamu

History of the Sugar Industry

1862 : The first sugar produced in Fiji was made on the Island of Wakaya

1870 – 1883 : started exporting

1880 : Colonial Sugar Refining Company

1883 – 1959: 1st mill in Nausori but unfortunately closed down in 1959

1886: Rarawai Mill

1894: Labasa Mill

1903: Lautoka Mill

1881: PenangMill

- Total number of farmers 15,948 as of December 2012.

Sugar Industry

Stakeholders

1. FSC
2. Sugar Cane Growers Council
3. Sugar Industry Tribunal
4. Sugar Cane Growers Fund
5. Sugar Research Institute Fiji

All under the Ministry of Sugar
Minister: Hon.Prime Minister

Definitions:

Stakeholders

1. FSC – Millers
2. Sugar Cane Growers Council – Growers
3. Sugar Industry Tribunal – Independent
4. Sugar Cane Growers Fund - Financial Assistant to Growers
5. Sugar Research Institute Fiji – Research

How the Project Begun

1. Fiji Government along with the Sugar Industry stakeholders joined hands with the Walloon Government of Belgium to a cost sharing project that saw the development of this important tool – Using GIS & RS

2. I-MAGE Consul is a private company in Belgium who has been tasked to assist the industry in developing this tool.

Support the development of decision making tools for the Sugar Industry

4 main areas

1. Cleaning of existing data – FSC database + ACIAR/FLIS data => expand on this to include: cane variety, age, size of the plot, and the land tenure

2. Mapping the above data spatially – ArcGis

3. Web Mapping – Open Source

4. Remote Sensing Application


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Policies and Practices for Responsible Governance
Fiji 18–20 September 2013
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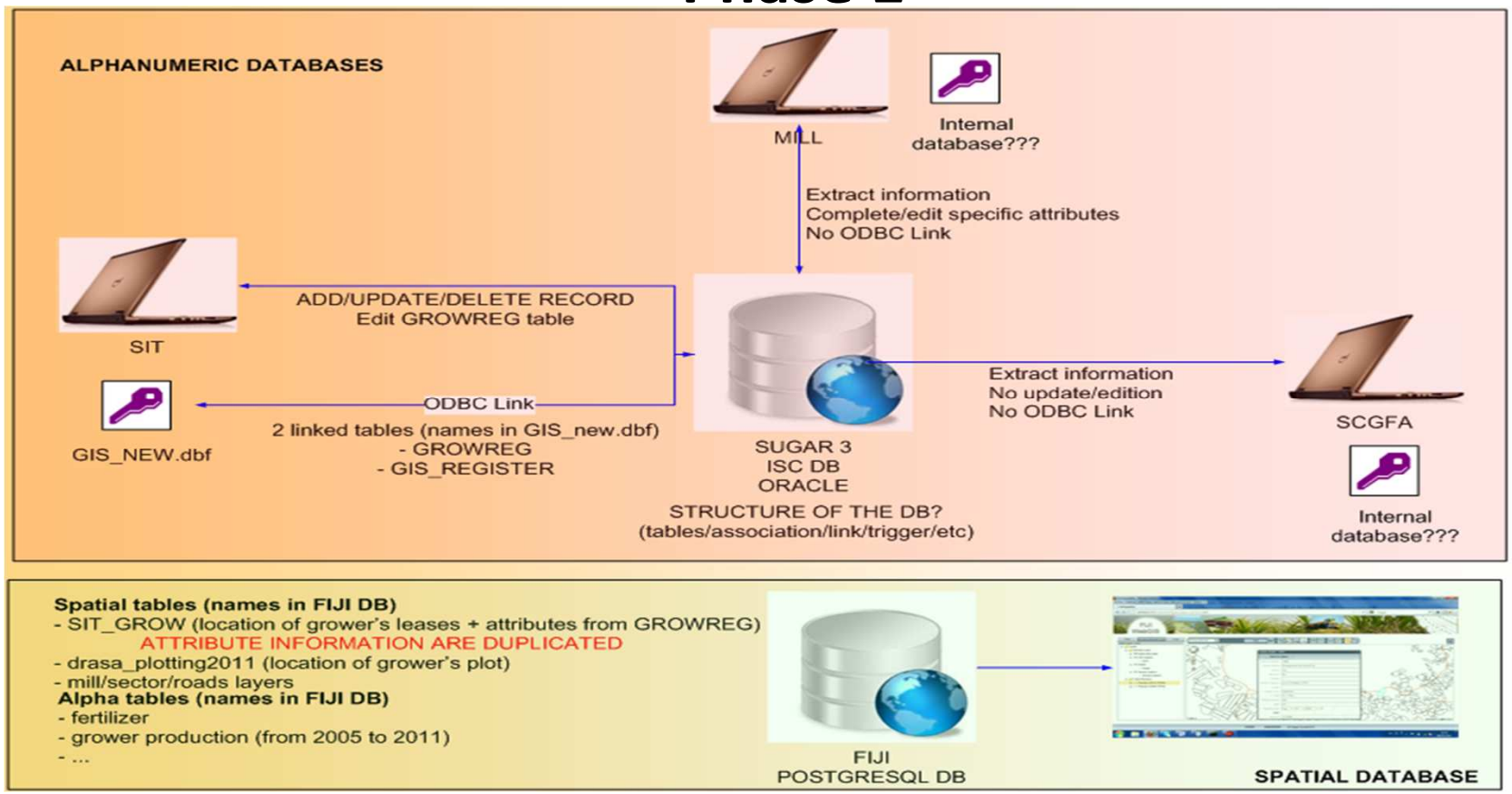
Phase 1


ALPHANUMERIC DATABASES
MILL
Internal database???
Extract information
Complete/edit specific attributes
No ODBC Link
SIT
ADD/UPDATE/DELETE RECORD
Edit GROWREG table
ODBC Link
GIS_NEW.dbf
2 linked tables (names in GIS_new.dbf)
- GROWREG
- GIS_REGISTER
SUGAR 3
ISC DB
ORACLE
STRUCTURE OF THE DB?
(tables/association/link/trigger/etc)
Extract information
No update/edition
No ODBC Link
SCGFA
Internal database???
Spatial tables (names in FIJI DB)
- SIT_GROW (location of grower's leases + attributes from GROWREG)
ATTRIBUTE INFORMATION ARE DUPLICATED
- drasa_plotting2011 (location of grower's plot)
- mill/sector/roads layers
Alpha tables (names in FIJI DB)
- fertilizer
- grower production (from 2005 to 2011)
- ...
FIJI
POSTGRESQL DB
SPATIAL DATABASE

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Policies and Practices for Responsible Governance

Fiji 18–20 September 2013

Mapping

Sector :112
Grower N°
Lease N° *no entry*

Information about the farm:

Lease Type
NLTB
Freehold ☒
Crown holder

Grower owns the lease?
YES ☒
NO

Yields
2010 (tons): 1200
Expected in 2011 (tons): 1500

	Sugarcane variety																Age of crop				Surface estimation
	Mana	Mali	Naidiri	Ragnar	Vatu	Aiwa	Boga	Galoa	Kaba	Waya	Yasawa	Spartan	Ono	Vomo	Homer	LF911925	Kona	SF*	LF*	NP*	Ratoon**	acres
Plot 1	X																				5	2
Plot 2	X																				5	2,5
Plot 3		X																			1	4,5
Plot 4	X																				5	1,5
Plot																						
Plot																						
Plot																						
Plot																						
Plot																						
Plot																						

* SF=Short Fallow
LF=Long Fallow
NP=New Plantation
** Ratoon : indicate the number in the cell

= tick the cell if concerned
= write cells

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UN-GGIM-AP

Phase 2 - Digitising

Table

Bulivou_Merge

FID	Shape *	Id	Sector	Grower_nb	Lease_Type	File_Ref	Own	2012_Yield	2013_Yield	T_LeaseExp	A_Undcane	Plot_nb	Variety	Age	Ar
1116	Polygon	0	323	8797	Native	4/9/7320	No	324	350	129	22	10	Vatu	R7	
1117	Polygon	0	323	8797	Native	4/9/7320	No	324	350	129	22	11	Vatu	R5	
1118	Polygon	0	323	8797	Native	4/9/7320	No	324	350	129	22	9	Vatu	R6	
1119	Polygon	0	323	8797	Native	4/9/7320	No	324	350	129	22	12	Others	R6	
1120	Polygon	0	323	8798	Native		No	310	360	83	23	1	Naidiri	R3	
1121	Polygon	0	323	8798	Native		No	310	360	83	23	2	Vatu	R8	
1122	Polygon	0	323	8798	Native		No	310	360	83	23	3	Vatu	R7	
1123	Polygon	0	323	8798	Native		No	310	360	83	23	4	Vatu	R7	
1124	Polygon	0	323	8798	Native		No	310	360	83	23	5	Vatu	R7	
1125	Polygon	0	323	8798	Native		No	310	360	83	23	6	Naidiri	NP	
1126	Polygon	0	323	8798	Native		No	310	360	83	23	9	Vatu	R15	
1127	Polygon	0	323	8798	Native		No	310	360	83	23	10	Vatu	R15	
1128	Polygon	0	323	8798	Native		No	310	360	83	23	11		LF	
1129	Polygon	0	323	8798	Native		No	310	360	83	23	8	Naidiri	R3	
1130	Polygon	0	323	8798	Native		No	310	360	83	23	7	Vatu	R10	
1131	Polygon	0	323	8801	Native	4/9/7317	No	200	300	40	27	1	Vatu	R2	
1132	Polygon	0	323	8801	Native	4/9/7317	No	200	300	40	27	2	Vatu	R6	
1133	Polygon	0	323	8801	Native	4/9/7317	No	200	300	40	27	3	Others	R4	
1134	Polygon	0	323	8801	Native	4/9/7317	No	200	300	40	27	5	Vatu	R7	
1135	Polygon	0	323	8801	Native	4/9/7317	No	200	300	40	27	6	Naidiri	R4	
1136	Polygon	0	323	8801	Native	4/9/7317	No	200	300	40	27	4		SF	
1137	Polygon	0	323	8801	Native	4/9/7317	No	200	300	40	27	7	Vatu	R8	
1138	Polygon	0	323	8801	Native	4/9/7317	No	200	300	40	27	8	Vatu	R8	
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1142	Polygon	0	323	8801	Native	4/9/7317	No	200	300	40	27	12	Naidiri	NP	
1143	Polygon	0	323	8801	Native	4/9/7317	No	200	300	40	27	13	Vatu	R8	
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1145	Polygon	0	323	8801	Native	4/9/7317	No	200	300	40	27	15	Naidiri	R4	
1146	Polygon	0	323	8802	Native		No	205	250	30	19	1	Naidiri	NP	
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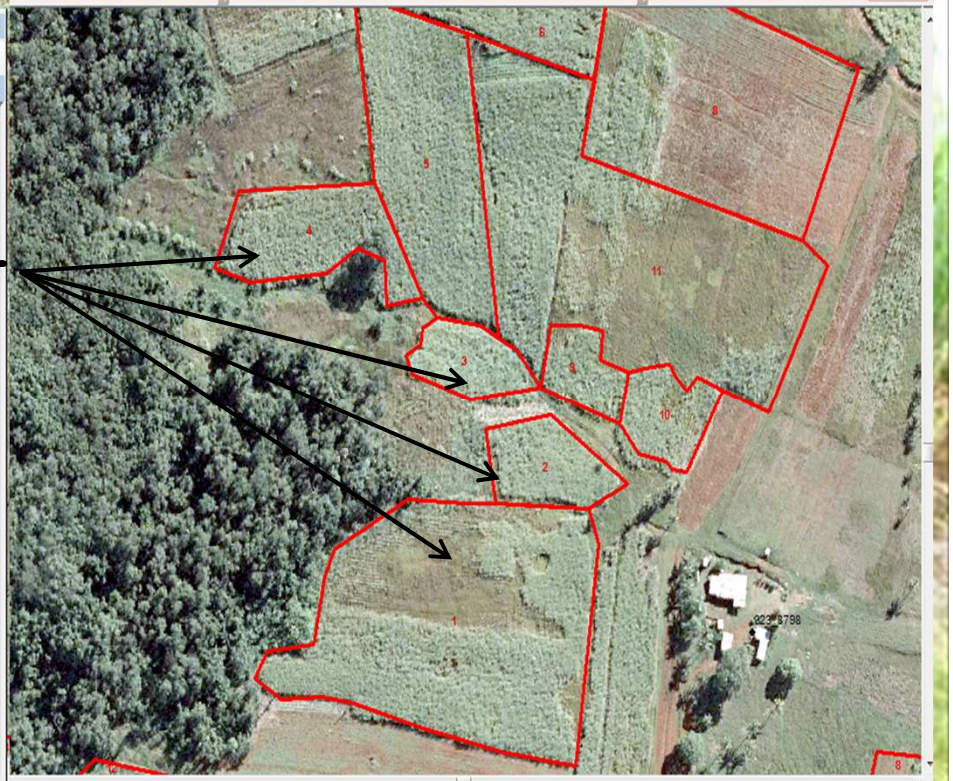

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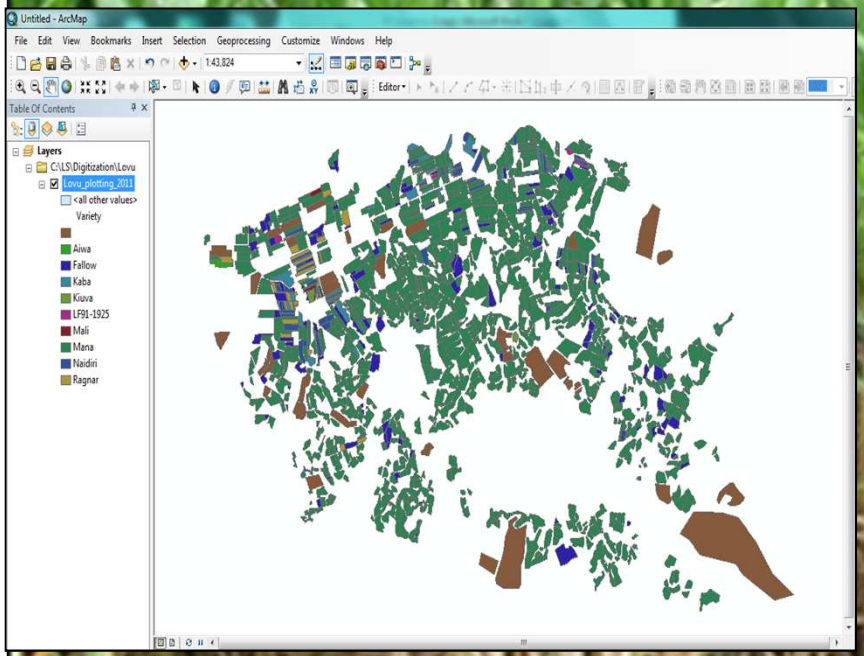
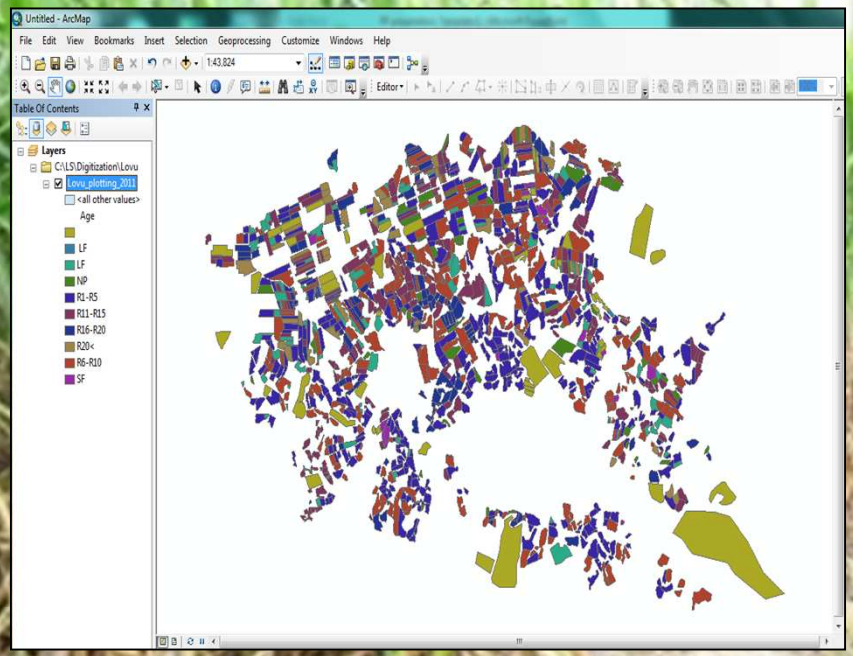
Variety Map

Age Map





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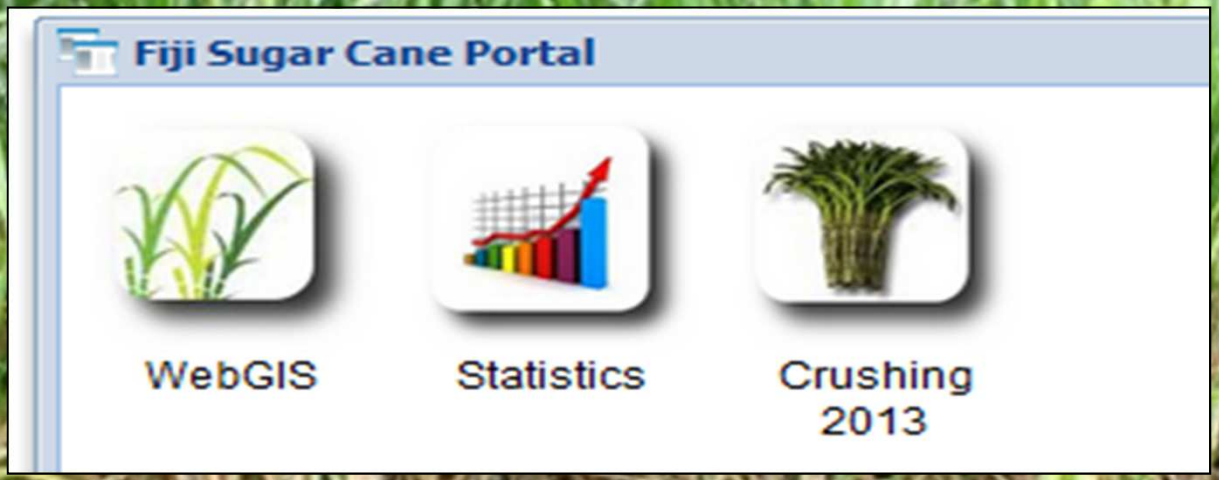
Phase 3 - Web Mapping - Portal



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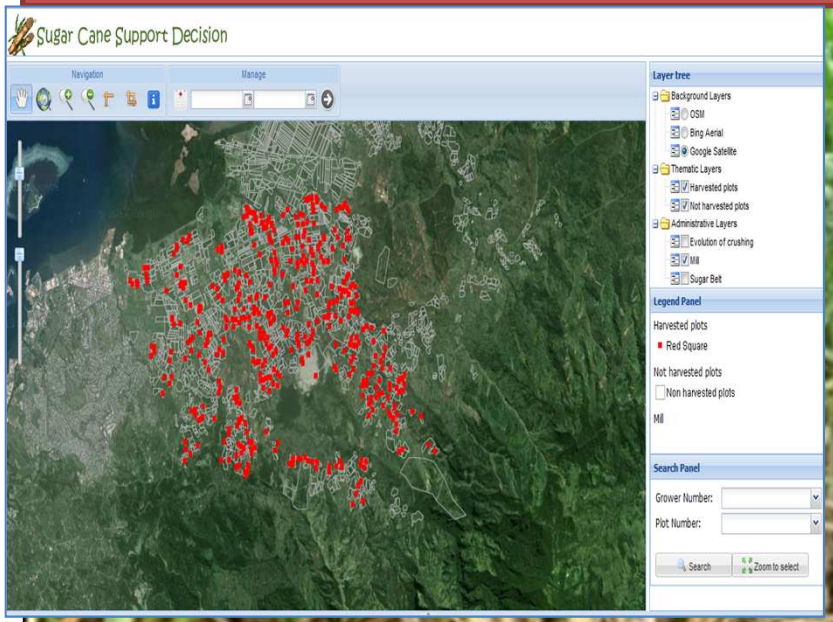
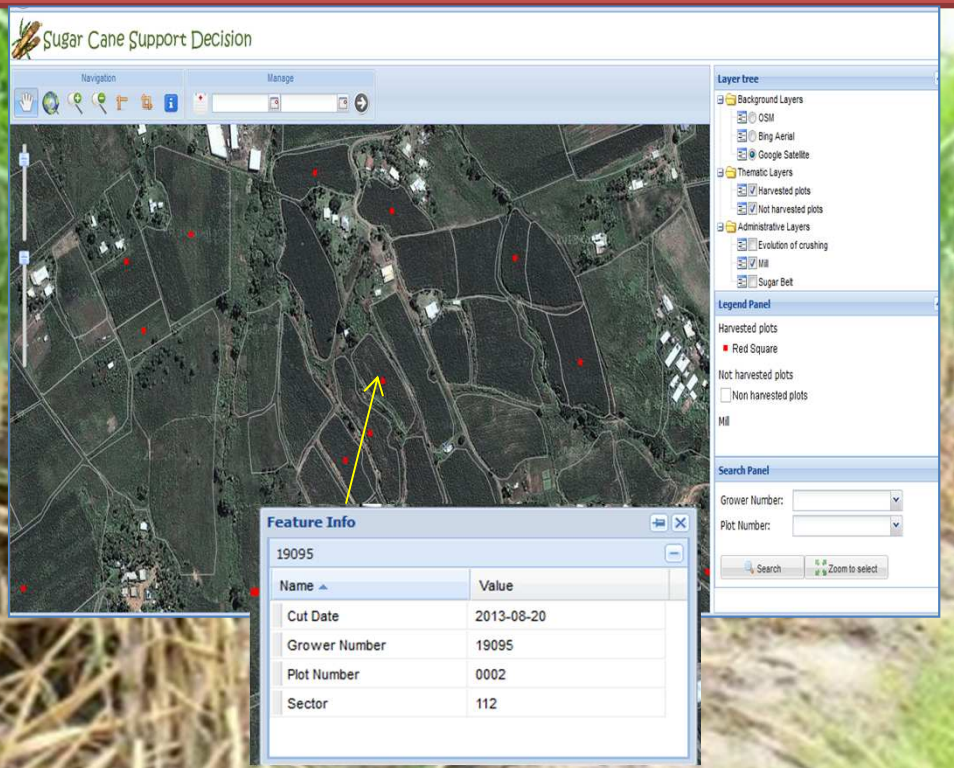
Crushing





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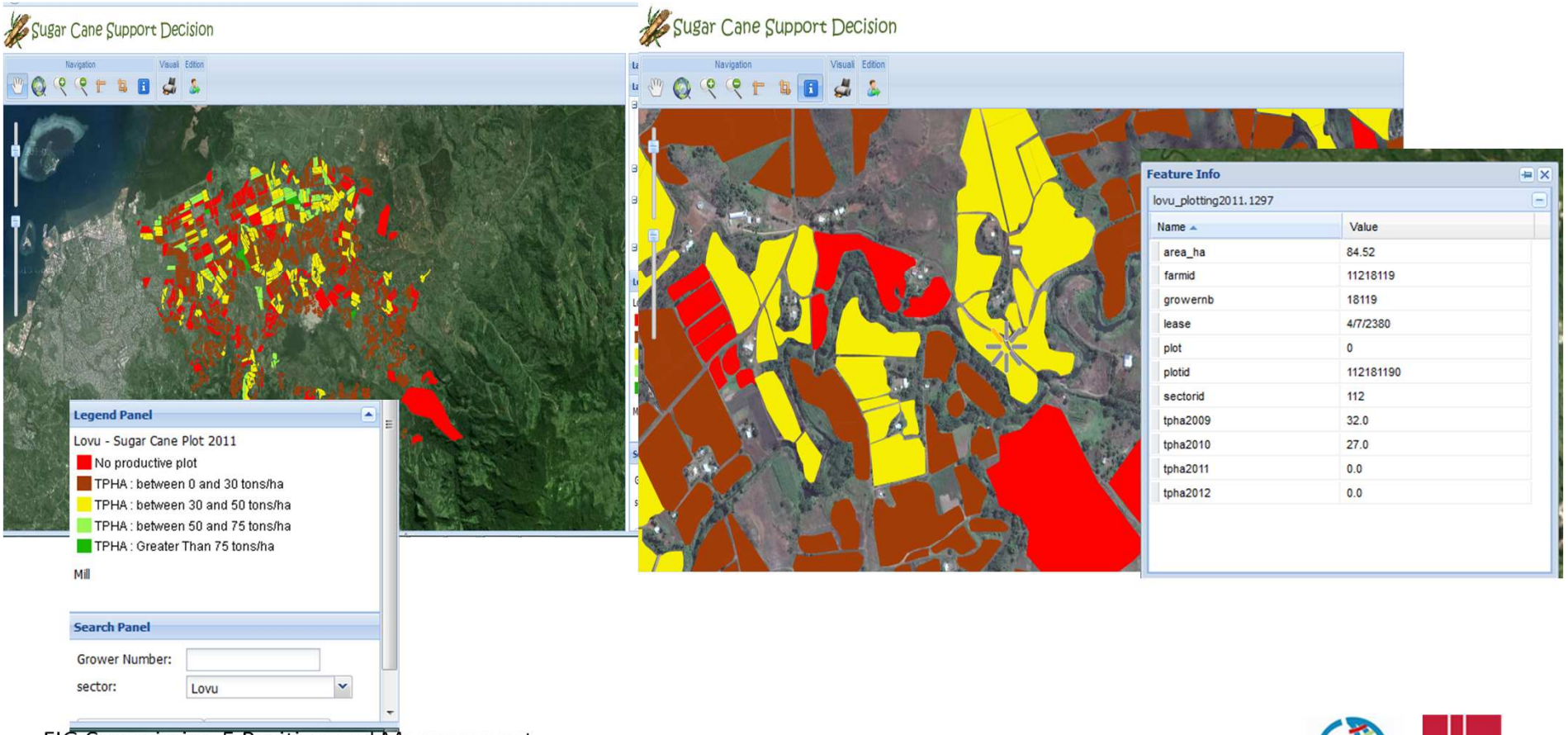
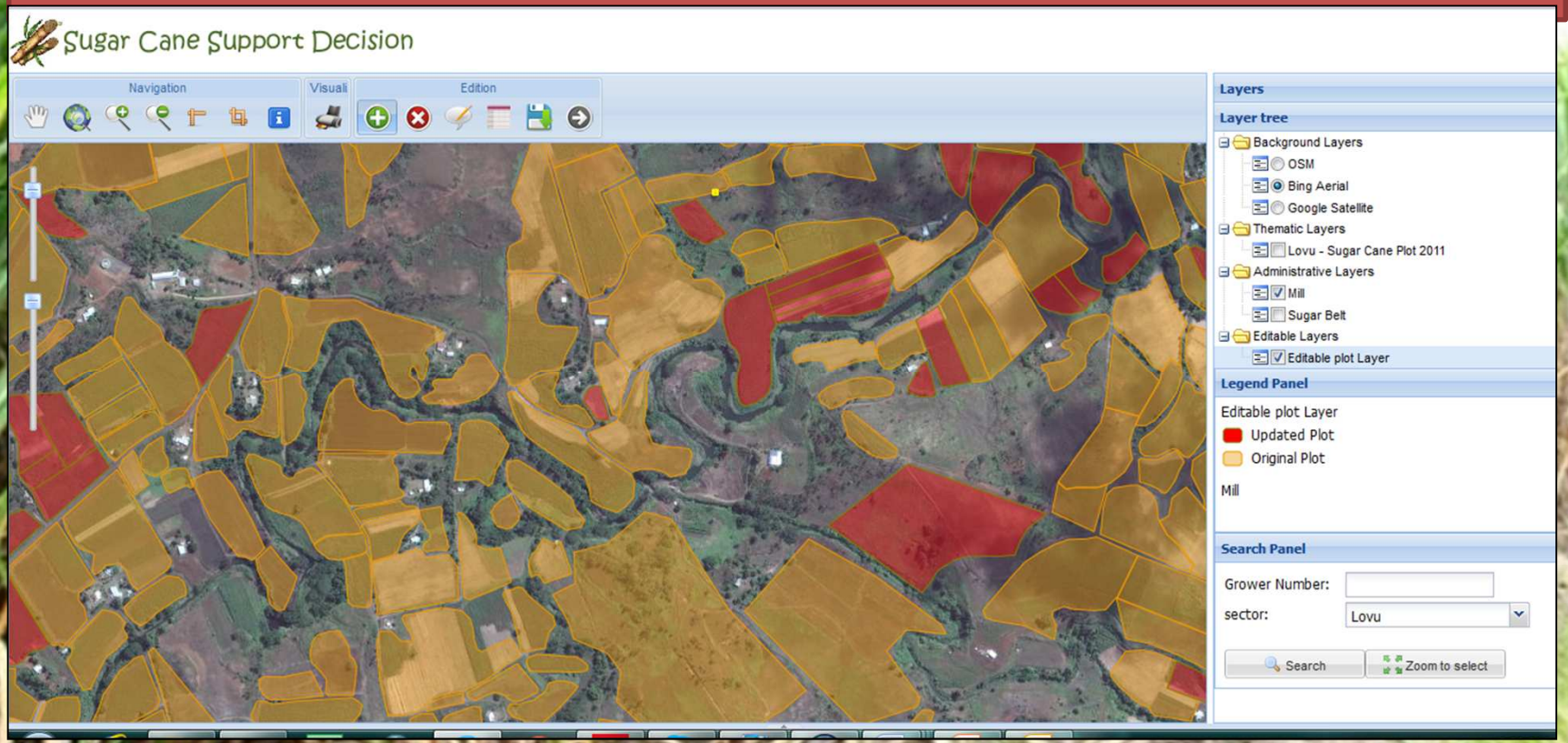
WEBGIS – THEMATCI MAPPING



User friendly

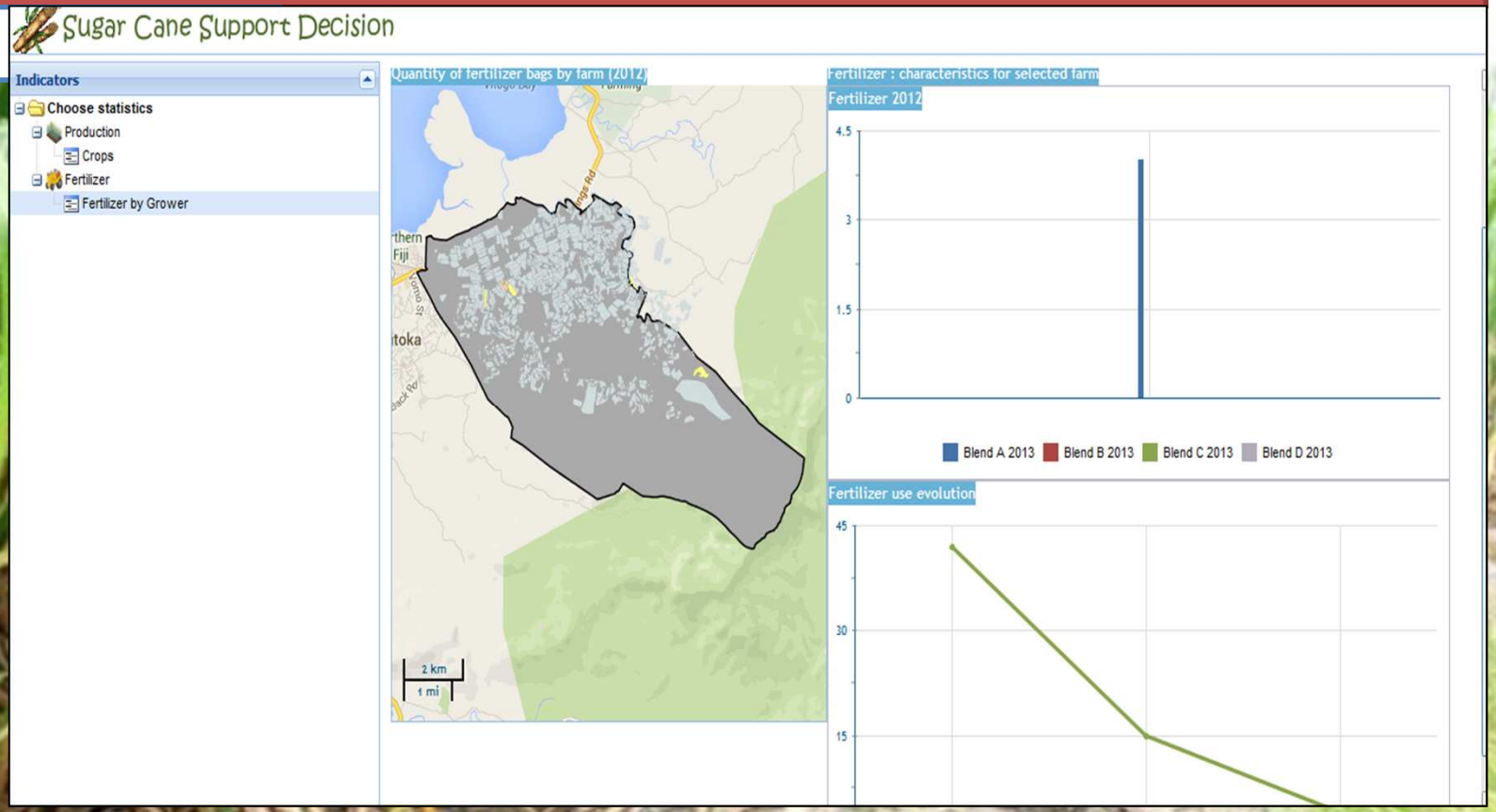


Statistic

1. Production
2. Fertilizers

Statistic

Fertilizers



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Phase 3: Remote Sensing

The Sugar Industry and its stakeholders are investigating ways to use RS:

1. Use satellite imagery to develop a real time monitoring of the sugar cane production and harvest process.

2. To have information on the sugar cane growth throughout the season and to estimate crop development ad forecast yields

3. Others – Still investigating

Challengers

1. Limited with finance
2. Technical Know how – Lack specialist internally
3. Access to up to date technology
4. Man power
5. Data – SOIL/DEM/Backdrops etc

Acknowledgement

1. I – Mage Consultants
2. Samuela Railoa – FSC extension Manager and the extension officers
3. SPC / SOPAC Secretariat – providing the satellite imagery
4. Fairtrade Coordination Unit

Vinaka

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