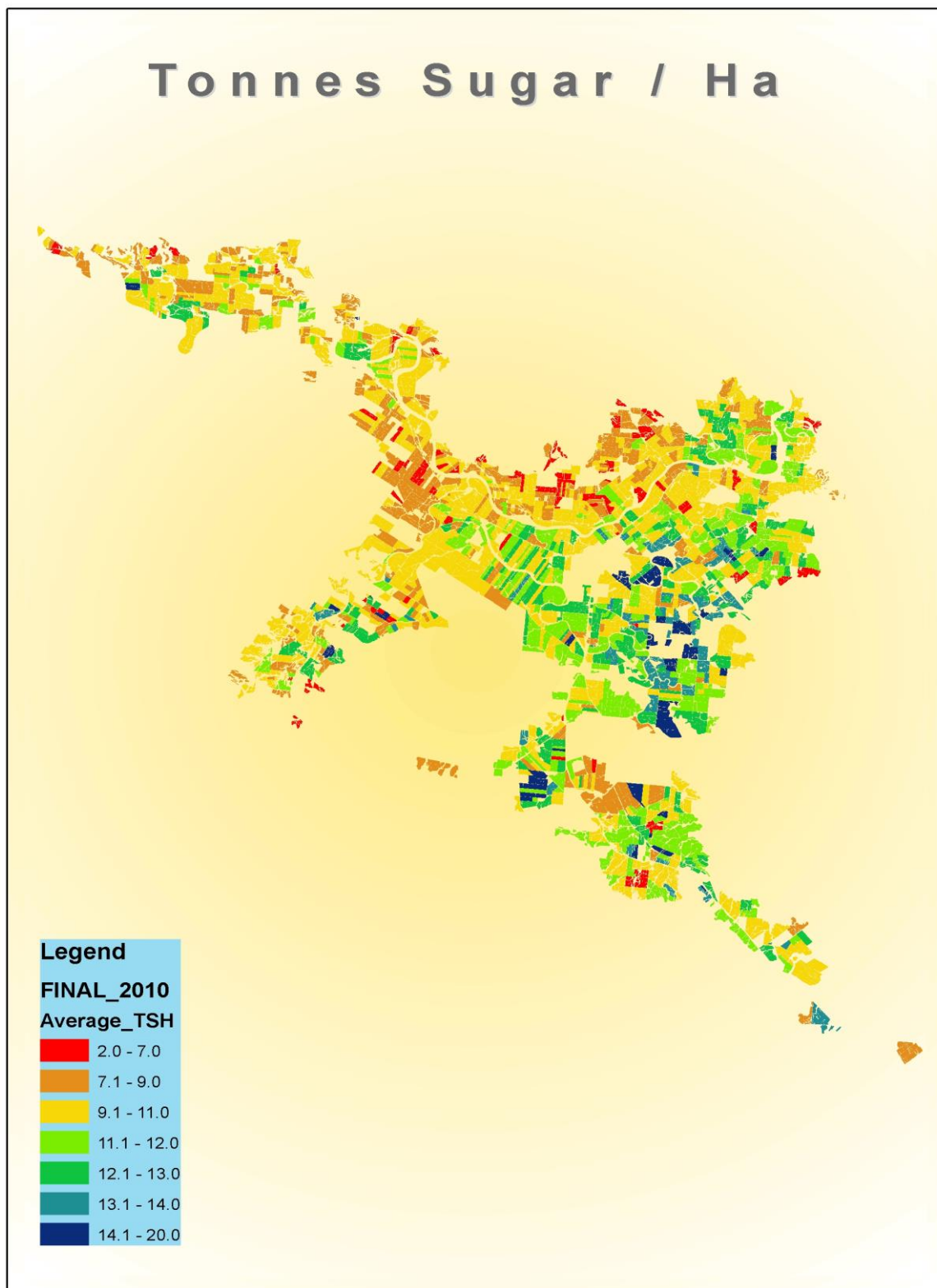
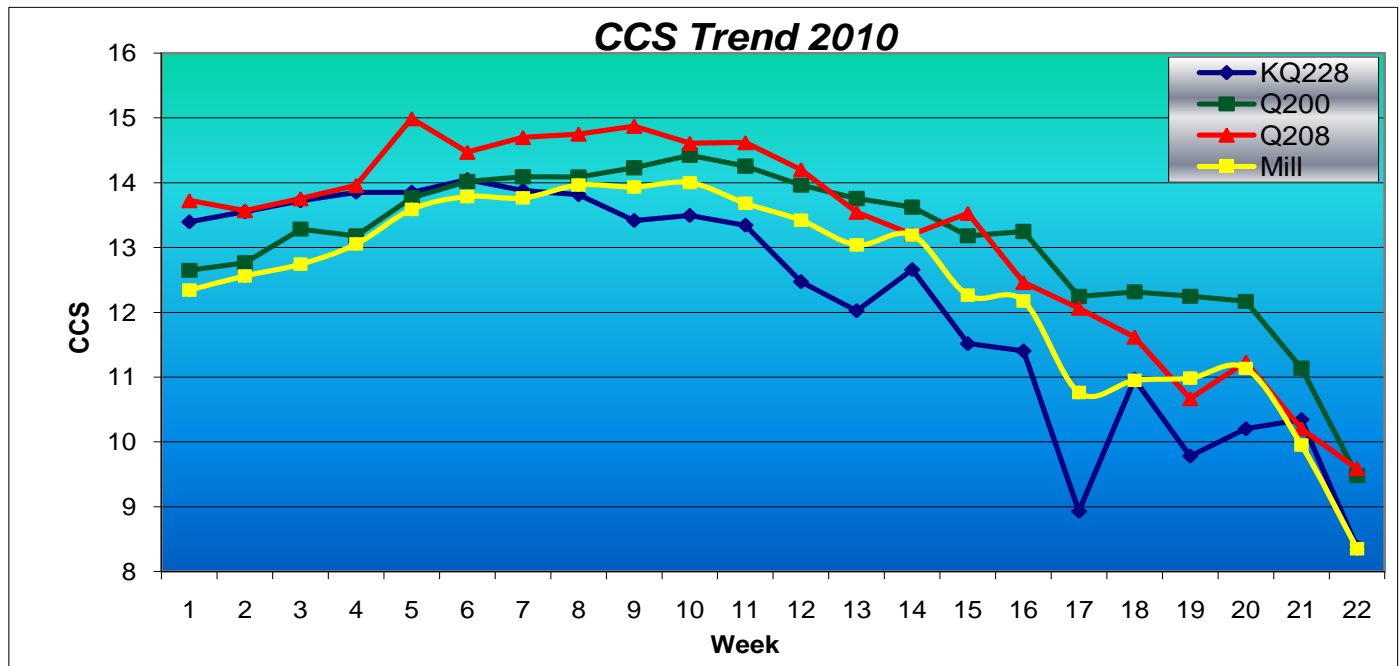




# HERBERT SUGAR INDUSTRY REPORT 2010



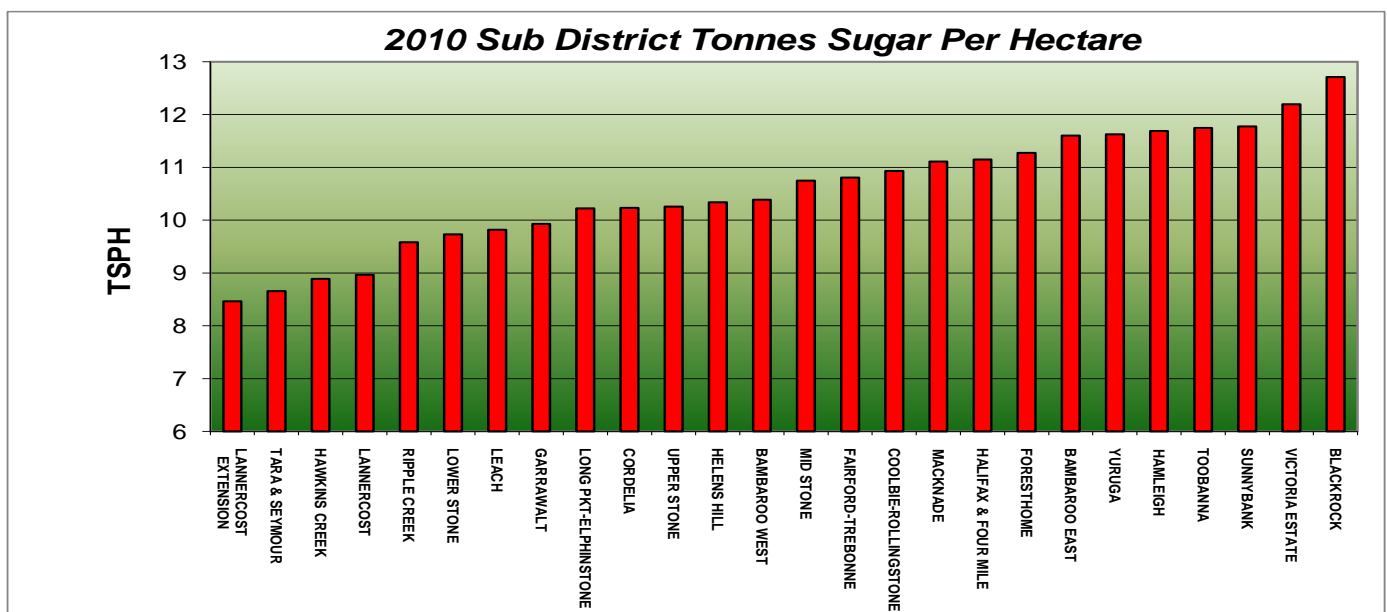
## CROP PERFORMANCE 2010



The 2010 season was extreme in a number of respects. Firstly the weather resulted in record amounts of rainfall and a record number of wet days during the season. Secondly a record number of harvesting hours were lost due to wet weather and wet field conditions. This resulted in over 1200 hectares of cane being left unharvested and stood over to 2011. Consequently 2010 had the lowest area harvested in the last 20 years. Many farms in the western parts of the district were only able to harvest a small proportion of their cane and were unable to plant due to the continual wet conditions. CCS was disappointing as it peaked in about week 8 and declined thereafter. The figure above shows CCS profiles for the 3 main varieties harvested: Q200<sup>h</sup>, Q208<sup>h</sup> and KQ228<sup>h</sup>. Sub district sugar yields were highest in the eastern parts of the district and lowest in the Wet Belt and Abergowrie.

### HISTORICAL DATA

Year	Tonnes	Ha Harvested	CCS	Yield Cane	Yield Sugar	Year	Tonnes	Ha Harvested	CCS	Yield Cane	Yield Sugar
1991	2328911.56	41309.36	14.74	56.38	8.31	2001	3311004.97	56876.94	14.34	58.21	8.35
1992	3398465.82	42926.40	14.23	79.17	11.26	2002	4243591.27	54892.20	14.40	77.31	11.13
1993	3873973.78	44650.81	13.37	86.76	11.60	2003	4051558.05	56975.69	13.90	71.11	9.89
1994	3888137.31	46730.02	14.74	83.20	12.27	2004	4641372.86	56410.75	13.56	82.28	11.16
1995	4908214.85	50051.86	13.05	98.06	12.80	2005	5553359.05	57078.93	13.11	97.29	12.76
1996	5251285.67	53513.30	13.21	98.13	12.96	2006	4900084.45	57658.50	12.62	84.98	10.72
1997	5272421.61	57328.33	13.37	91.97	12.29	2007	4287010.73	57158.66	13.84	75.00	10.38
1998	4191272.31	48669.90	11.46	86.12	9.87	2008	4688595.64	55061.21	13.54	85.15	11.53
1999	4151741.51	59955.95	12.73	69.25	8.81	2009	3920941.21	51171.33	14.79	76.62	11.33
2000	2802049.39	58379.16	13.01	48.00	6.24	2010	3274402.07	39567.98	12.85	82.75	10.64



## PESTS AND DISEASES

### DISEASES

#### Sugarcane Smut

Following on from 2009, Q174<sup>Ⓛ</sup> and Q157 were the main varieties displaying intense symptoms of smut in 2010, and were the main focus for plough out. Unfortunately for some growers, wet weather conditions prevented some infected blocks from being ploughed out, and as a result, these blocks have now become standover. It is unknown how these blocks will perform in 2011.

#### Pachymetra Root Rot

Pachymetra Root Rot has always been an issue in the Herbert, and as the name implies, affects the root systems of sugarcane. Caused by a fungus (*Pachymetra chaunorhiza*), the disease can either stop root growth or completely destroy roots. Continual planting of varieties susceptible to Pachymetra allows for the build up of the disease in the soil, with a classic example being blocks continually planted with Q99.

The only effective control of Pachymetra is the rotational planting of resistant varieties (fungicides are not effective). However, as a majority of the current varieties on the Recommended Varieties List have an intermediate rating for Pachymetra, growers now need to be careful to continually rotate varieties in their blocks where possible.

#### Pachymetra Root Rot Ratings for Recommended Varieties in the Herbert

Resistant	Q219 <sup>Ⓛ</sup> , Q190 <sup>Ⓛ</sup> , Q183 <sup>Ⓛ</sup>
Resistant – Intermediate	KQ236 <sup>Ⓛ</sup> , Q172 <sup>Ⓛ</sup>
Intermediate	MQ239 <sup>Ⓛ</sup> , Q232 <sup>Ⓛ</sup> , KQ228 <sup>Ⓛ</sup> , Q208 <sup>Ⓛ</sup> , Q200 <sup>Ⓛ</sup> , Q135
Intermediate – Susceptible	Q237 <sup>Ⓛ</sup>

### RSD

RSD levels were low again in 2010, due to growers obtaining their planting sources from BSES and HCPSL plots, and hot water treating cane for planting. With plant source material now being limited due to the interrupted planting and standover in 2010, growers will need to be careful with selecting material suitable for planting in 2011 and ensure it is all checked for RSD.

#### Hot Water Treatment and Variety Distribution Plots

Hot water treating of planting material continued in 2010, with 137 tonnes of cane being treated at the tanks. Q208<sup>Ⓛ</sup> was the dominant variety treated in 2010, followed by Q200<sup>Ⓛ</sup> and KQ228<sup>Ⓛ</sup>. The treatment tanks received some maintenance upgrades prior to the commencement of the 2010 harvest season, with the only stoppages during the season being due to wet weather and steam supply. 150 tonnes of clean seed cane was supplied to growers from HCPSL Approved Seed Plots, while approximately 100 tonnes of Q232<sup>Ⓛ</sup> and Q237<sup>Ⓛ</sup> was supplied from the BSES New Varieties Release Plot. Q232<sup>Ⓛ</sup> and Q237<sup>Ⓛ</sup> will be available from HCPSL Plots in 2011.

### WEEDS

Wet weather interfered with weed control during the 2010 season, with several growers opting for aerial spraying pre and post season. As a result of the wet weather, increased populations of several weeds were observed in the field, including Navua Sedge and Para Grass.

It is important for growers to remember that any machinery coming into and going out of the Herbert district must be cleaned, sterilised and inspected by Plant Protection Inspectors beforehand (call local BSES). This is a key step in preventing the introduction of new weeds from other districts into the Herbert.

### PESTS – ANIMALS AND INSECTS

Pigs have been the dominant cause of lost tonnage by pests to the 2010 crop, as seen in the below table. However, there were also significant losses of tonnage caused by rats and cane grubs.

Pest	Tonnes Lost	Hectares Damaged
Pigs	15992	1201
Rats	10545	1400
Greyback Cane Grub	7566	300
Other	289	12

#### Pigs

The Feral Pig Management Program is now in full operation, and growers interested in baiting or trapping feral pigs should contact David Bacchiella on 0458 76 4660.

#### Canegrubs

Cane grub field inspections early in 2010 showed most of the crop damage being caused by Greyback cane grub. However, inspections also found isolated cases of French's cane grub activity. A three year GGIP Canegrub Management Project commenced in 2010, focussing on the monitoring of cane grub activity, with the aim of being able to predict damage in areas as well as

#### Rats

Rat damage has also been on the rise in 2010, and the Herbert now has a rat baiting permit negotiated with DERM for the application of RATTOFF and Racumin only. Growers applying these baits need to advise HCPSL of what baits they are using in which blocks and when. Rat monitoring is being conducted by HCPSL over a nine month period. Rats will become an issue for growers early in 2011, with standover cane and wet conditions preventing the slashing of headlands and the reduction of harbourage areas.

Minor pests such as wallabies, cockatoos and army worms were present, but caused no significant losses on a district level.



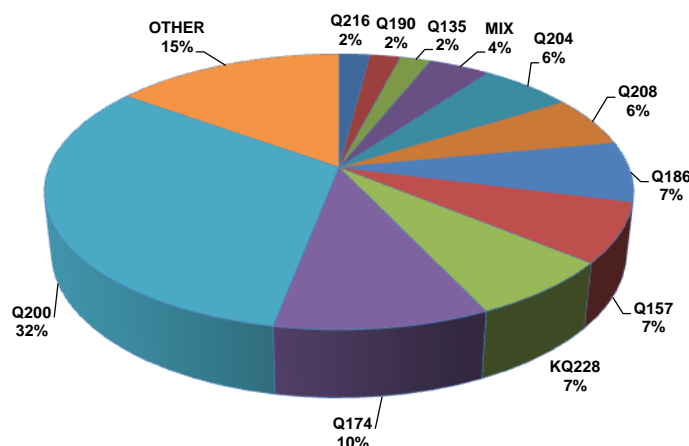
## VARIETY PERFORMANCE & RECOMMENDATIONS

Weather again became the challenge in 2010, with the year beginning with consistent rain (which continued through to October in some subdistricts). As a result, some subdistricts were not able to plant all (in some cases any) of their blocks. Harvesting was also affected, with CCS levels dropping well below mill average. This, along with inaccessible blocks, finished the season with approximately 1 million tonnes left in the paddocks as standover. As there was not any of the main current varieties in the field back in 1999, (the last time cane was left in the field as standover), it is unknown how these varieties will perform in 2011 as standover cane.

Low CCS levels were also seen with some rakes of KQ228<sup>Ⓛ</sup> (early season variety). This was mainly due to KQ228<sup>Ⓛ</sup> being harvested later in the season to allow for smut infected blocks to be removed earlier. This may become an issue again in 2011, with growers delaying the harvest of KQ228<sup>Ⓛ</sup> to remove standover blocks.

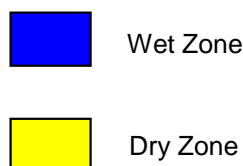
KQ236<sup>Ⓛ</sup> showed mixed performance again in 2010, and proved to be a lazy cane, with some growers observing lodging. Growers also noted yellowing of leaves in Q208<sup>Ⓛ</sup>. This was linked to an iron deficiency occurring with Q208<sup>Ⓛ</sup> in some areas, and this symptom was also seen in other milling districts along the eastern coast.

### District Variety Composition 2010



Iron deficiency symptoms in sugar cane

### Herbert District Climatic Zones Map



### 2010 Herbert Recommended Variety List (Soil type x Environment)

Dry Climatic Zone					Wet Climatic Zone			
Granite Hills	Colluvial Apron	Broad Ridge	Depression	Terrace	River Levee	Floodplain	Terrace	Cardwell Range
				Stone River	Herbert River		Back Swamp	Colluvial Apron
<b>Hill slope soils</b>	<b>Sandy soils</b>	<b>Clay soils</b>	<b>Terrace loamy soils</b>		<b>Alluvial soils</b>	<b>Terrace loamy soils</b>	<b>Clay soils</b>	<b>Seymour soils</b>
Q190 <sup>Ⓛ</sup>	Q190 <sup>Ⓛ</sup>	Q190 <sup>Ⓛ</sup>	Q172 <sup>Ⓛ</sup>		Q135	Q135	Q190 <sup>Ⓛ</sup>	Q190 <sup>Ⓛ</sup>
Q208 <sup>Ⓛ</sup>	Q200 <sup>Ⓛ</sup>	Q200 <sup>Ⓛ</sup>	Q183 <sup>Ⓛ</sup>		Q172 <sup>Ⓛ</sup>	Q172 <sup>Ⓛ</sup>	Q183 <sup>Ⓛ</sup>	Q200 <sup>Ⓛ</sup>
Q219 <sup>Ⓛ</sup>	Q208 <sup>Ⓛ</sup>	Q219 <sup>Ⓛ</sup>	Q200 <sup>Ⓛ</sup>		Q183 <sup>Ⓛ</sup>	Q183 <sup>Ⓛ</sup>	Q200 <sup>Ⓛ</sup>	Q208 <sup>Ⓛ</sup>
Q200 <sup>Ⓛ</sup>	Q219 <sup>Ⓛ</sup>	KQ236 <sup>Ⓛ</sup>	Q208 <sup>Ⓛ</sup>		Q200 <sup>Ⓛ</sup>	Q200 <sup>Ⓛ</sup>	Q208 <sup>Ⓛ</sup>	Q219 <sup>Ⓛ</sup>
Q232 <sup>Ⓛ</sup> *	Q232 <sup>Ⓛ</sup> *	Q232 <sup>Ⓛ</sup> *	KQ228 <sup>Ⓛ</sup>		Q208 <sup>Ⓛ</sup>	Q208 <sup>Ⓛ</sup>	KQ228 <sup>Ⓛ</sup>	KQ228 <sup>Ⓛ</sup>
MQ239 <sup>Ⓛ</sup>	MQ239 <sup>Ⓛ</sup>	MQ239 <sup>Ⓛ</sup>	KQ236 <sup>Ⓛ</sup>		KQ228 <sup>Ⓛ</sup>	KQ228 <sup>Ⓛ</sup>	Q232 <sup>Ⓛ</sup> *	Q232 <sup>Ⓛ</sup> *
			Q237 <sup>Ⓛ</sup>		KQ236 <sup>Ⓛ</sup>	KQ236 <sup>Ⓛ</sup>	MQ239 <sup>Ⓛ</sup>	MQ239 <sup>Ⓛ</sup>
					Q237 <sup>Ⓛ</sup>	Q237 <sup>Ⓛ</sup>		

\* = Based on limited data

### 2010 Herbert Recommended Variety list featuring smut resistance ratings

Q135	Q172 <sup>Ⓛ</sup>	Q183 <sup>Ⓛ</sup>	Q190 <sup>Ⓛ</sup>	Q200 <sup>Ⓛ</sup>	Q208 <sup>Ⓛ</sup>
Q219 <sup>Ⓛ</sup>	KQ228 <sup>Ⓛ</sup>	Q232 <sup>Ⓛ</sup>	KQ236 <sup>Ⓛ</sup>	Q237 <sup>Ⓛ</sup>	MQ239 <sup>Ⓛ</sup>
Resistant	Intermediate - Resistant				Intermediate

## VARIETY PERFORMANCE & RECOMMENDATIONS

### NEW VARIETIES

#### Q232<sup>Φ</sup> (Origin – Southern region)

Smut resistant variety Q232<sup>Φ</sup> was released from the BSES new variety release plot in 2010. First released in Bundaberg, Q232<sup>Φ</sup> has produced moderate - high yields with average - poor CCS on a range of soil types and environments in the Herbert. The best time to harvest Q232<sup>Φ</sup> is mid – late season, depending on flowering intensity. Growers who may have missed out on collecting their quota of Q232<sup>Φ</sup> in 2010, due to the wet weather, may be able to collect it in 2011 from the HCPSL approved seed plots, pending crop condition post cyclone Yasi.

#### Disease resistance

Smut	Resistant
Pachymetra	Intermediate
Leaf scald	Resistant
Orange rust	Resistant
Red rot	Intermediate - resistant



BSES Extension Officer Adam Royle talks to a group of growers about Q237<sup>Φ</sup> during a field tour of the Macknade research farm



BSES Extension Officer Adam Royle and Variety Officer Heidi Clements inspect a crop of Q232<sup>Φ</sup> before releasing to growers in 2010

#### Q237<sup>Φ</sup> (Origin – northern region)

Released at the same time as Q232<sup>Φ</sup>, Q237<sup>Φ</sup> is a northern variety performing well on fertile free draining soils in the Herbert. While trial information is still limited, it indicates that Q237<sup>Φ</sup> is best harvested mid – late season and has moderate yields with moderate – high CCS. Q237<sup>Φ</sup> also appears to be a very reliable germinator and strong ratooner.

#### Disease resistance

Smut	Intermediate
Pachymetra	Intermediate - susceptible
Leaf scald	Intermediate
Brown rust	Resistant
Red rot	Intermediate

### PROMISING VARIETIES FOR THE FUTURE

#### Q238<sup>Φ</sup> (Parents - Q138 x Q155)

Released in the central region in 2009, Q238<sup>Φ</sup> has performed well in a number of plant and ratoon trials here in the Herbert. With moderate - high yields and moderate CCS, Q238<sup>Φ</sup> has shown adaptability across a range of soil types and environments. Another positive for Q238<sup>Φ</sup> is its excellent resistance to most disease, except Chlorotic streak. Pending final industry approval and seed cane quality post cyclone Yasi, Q238<sup>Φ</sup> will be released to Herbert growers in 2011.

#### Disease resistance

Smut	Resistant
Pachymetra	Resistant
Leaf scald	Resistant
Orange rust	Resistant
Brown rust	Resistant
Red rot	Intermediate
Chlorotic streak	Susceptible

### NEW PLANT BREEDER FOR THE NORTH

After the retirement of BSES northern Plant breeder Nils Berding in 2010, new Plant breeder Felicity Atkin has been officially appointed to lead up the northern plant improvement team. Felicity has been working closely with BSES Biometrician, Jo Stringer, and other BSES Plant breeders while completing her PhD.

Felicity now has the role of northern Plant breeder and will oversee all northern plant improvement operations, including variety trials in the Herbert in conjunction with local Variety Officer Heidi Clements.



## **CANE PRODUCTIVITY INITIATIVE**

### **PRODUCTIVITY FORUMS**

A record number of over 150 growers attended the first round of Productivity Forums held at BSES in late February 2010. The following topics were discussed with the speakers given in brackets:

- Reef Rescue priority areas and funding applications (Leanne Carr)
- Feral Pig Management program (Ron Kerkwyk and David Bacchiella)
- Soil sampling requirements to meet Reef Protection regulations (Andrew Wood)
- Terrain NRM roles and responsibilities (Lawrence Di Bella)
- Identifying soil management zones within cane fields (Ross Coventry)
- Farming systems and water quality (Bronwyn Masters).

The attendance and the amount of discussion at each of the forums were most encouraging.

The second forum consisted of a highly successful guided tour around the research farm at Macknade Experiment Station. The day began with a barbecue breakfast sponsored by Rabobank followed by welcoming addresses from Andrew Wood (Sucrogen) and from Phil Kite (Rabobank). More than 150 people attended the field tour and were divided into six groups. Each group had a guide and the groups moved around the experiment station from speaker to speaker. The speakers were:

- Adam Royle (BSES) on management of new varieties and variety strip trial results
- Phil Jackson (CSIRO/BSES) on breeding cane for sugar and energy
- Rob Magarey (BSES) on assessing the impact of smut on varieties in the Herbert
- Andrew Wood (Sucrogen) and Bernard Schroeder (BSES) on trials to investigate nutrient management guidelines for the new farming system
- Glen Park (BSES) on soil compaction measurements in conventional and controlled traffic farming systems
- Michael Waring (HCPSSL) on obtaining the best results from soil sampling.

Another round of forums was planned to be held during the season but with the severe disruptions caused by the weather and growers focused on trying to remove their crop, it was decided that more forums were not warranted during 2010.



**Glen Park talking to growers about soil compaction at the Macknade Field Day**



**Phil Jackson discussing breeding cane for sugar and energy at the Macknade Field Day**

### **2010 HERBERT RIVER FIELD DAY**

The Bi-annual Herbert River field day, hosted by BSES, took place on April 13 and was once again hailed a success by growers, exhibitors and BSES. This field day is one of the last of its kind in the sugar industry, with Mackay the only other BSES centre to host such an event. The success of this event depends on local service club co-operators, (the Ingham Junior Chamber were in fact co-hosts for many years) as well as agri-business support and of course BSES, HCPSSL, Sucrogen and CANEGROWERS. Emphasis for the day is placed on showcasing RD&E with static displays and guided tours of RD&E sites plus the many agribusiness displays. The guided tours took place after the official launch by BSES CEO Eoin Wallis. These tours included sites covering new Varieties, Plant pathology, Entomology, Rat management and Farming systems work.

In addition, the 2010 field day was also the venue for the announcement of the Herbert Productivity Awards, with this taking place as part of the lunchtime activities. Awards were given in categories ranging from consistent high regional productivity, innovation, harvesting efficiency, lifetime achievement, improved farm layout, co-operation with RD&E providers, and Herbert farmer of the year plus the "Mangrove Jack" Environmental Award. Maintaining this field day is something the Herbert can be proud of and highlights the level of co-operation that exists between all sectors of the industry.



**Productivity Award winners at the Herbert River Field Day**

## CPI RESEARCH AND DEVELOPMENT TEAMS

### SUSTAINABLE FARMING SYSTEMS

Leadership for this group is provided by BSES and Terrain, with HCPSL also involved. The primary focus of this group is to provide direction, investigate and develop activities that encourage sustainable land and water practices in agriculture. The group met twice during the year.

The incentives and projects that the group were involved with were:

- The success in attracting funding for 4 new SRDC grower group projects to the region
- Gain commitment from DERM, DEEDI, SRDC and other industry groups to fund the Herbert Water Quality project for a period of 3 years
- Analysis of regional soil testing data
- Water quality monitoring
- Establishment of the Herbert Demo farm project
- PA activities in relation to:
  - Development of variable rate fertiliser technology
  - Base station management and auto-steer
  - Electronic cane consignment
- BPS001- Investigating the development of soil management zones
- Commencement of Project Catalyst to investigate innovative farming methods
- Riparian management and revegetation
- Continuation of the BSES variety x row spacing trials
- Continuation of the BSES farming systems trials
- Commence the development of the Herbert Water Quality Improvement Plan
- Encourage the use of minimum tillage cane and legume planting
- Reef Rescue funding program
- Co-ordinate the second round of productivity forums, with a focus on farming systems, environmental issues, pest management and government regulation.

All growers and industry support staff are welcome to become involved with the group.



**Demonstration Farm Project**

### VARIETY ADOPTION COMMITTEE

The full Variety Adoption Committee convened twice in 2010, while sub-groups charged with reporting on issues such as the smut management plan also met on several occasions. Committee members, including several new growers, discussed and worked on a number of issues and activities in 2010 including the following -

- a review and update of Herbert smut management plan
- a review of the current approved and recommended variety lists for the Herbert
- assist with establishment and monitoring of variety strip trials and observation plots
- assist with the management of the new variety release plot
- assist with updates and further development of QCANESelect™
- assist with organisation of the Macknade research station grower field tour
- welcome and discuss plant breeding issues with Felicity Atkin, the new BSES plant breeder for the north.

### BSES ENGINEERING & HARVESTING WORK IN 2010

Despite a rain interrupted harvest in 2010, the BSES Engineering team was able to do some harvester testing in both Tully and Mackay. The new Brix method was used to determine sucrose loss levels across a range of fan speeds. The results were similar to those seen in the Herbert region in the 2008/09 harvester trials with maximum losses approaching the \$1000/ha mark at higher fan speeds.



The trash/juice removed by the extractor and measuring the sugar content of the sample to determine total losses. This coming season the engineering team will be demonstrating the use of this new sugar loss measurement system throughout the industry. Information meetings open to all sectors of the industry will provide an update of current harvester performance and the outcomes of the project.

Fan Speed rpm	Harvest Yield t/Ha	Trash %	Mill Lab CCS	Loss Increase from 665rpm t.sug/Ha	Income loss above 665rpm \$/Ha
1140	107	4.8	14.8	2.1	\$945
985	112	7.1	14.7	1.3	\$585
665	127	13.6	13.7	0	\$0



## GROWER GROUP INNOVATION PROJECTS

In 2010 SRDC funded 4 Grower Group Projects for the Herbert.

The projects funded are:

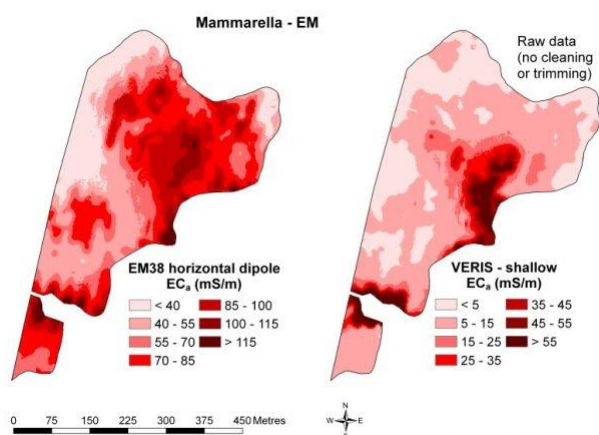
- "Soil Electrical Conductivity Mapping"
  - "Herbert cane growers strategic grub management implementing BSES decision – making tools"
  - "Herbert Electronic Data Recording Applications"
  - "Improvement of internal soil drainage and yield on heavy clay soils, in the Herbert"
- This project is yet to commence because field trials could not be commenced in 2010 due to wet conditions and standing over of the trial block.

### SOIL ELECTRICAL CONDUCTIVITY MAPPING

This project proposes to develop a system to map soil through a trash blanket or other high residue crops (like legume fallows). During the past 12 months, existing electro-magnetic mapping systems were modified and assessed in a number of fields in the Upper Burdekin and Ingham Line (Herbert) areas. Currently these farms lack detailed soil maps and it is hoped that this project will be able to establish a system that will be quick and cost effective to map large areas of land. Two electro-magnetic systems were assessed: a Veris 3100 unit and an EM38 unit. Both units could map soils electronically. To date the two systems have been able to identify soil differences, saline and sodic soils which need be verified by a soil test and ground truthing. Once areas have detailed soils, yield and topography maps, it is hoped that defined management zones can be established to target nutrient applications and base lime and gypsum applications upon. In the next 12 months the project will further validate the modified Veris 3100 system in a range of conditions in both districts and with new sensors to measure organic matter and phosphorus.



Modified Veris 3100 Secmapper unit



EM38 and Veris 3100 Soils Maps for Mammarella Farm

### HERBERT GROWERS TAKE ON ELECTRONIC RECORDING

Herbert sugarcane growers are taking part in an innovative project that demonstrates the importance of record keeping to help a farming business' efficiency. The SRDC funded project is centred on the integration of electronic record keeping into existing business.

The project, which includes 15 growers from across the Herbert, is helping farmers move away from onerous and often repetitive paper based recording systems and moving into a much more efficient and effective electronic recording systems. Assistance is also provided to the grower group through a project steering committee comprising of DEEDI, HCPSSL, BSES, Sucrogen, Canegrowers, HRIC and Terrain representatives.

The grower group project delivers a strong focus on people development through improved knowledge and experience in using electronic records for farm management purposes. Group members are continuing to make progress on using the electronic record keeping program, with varying levels of use within the group. Many of the grower group members are learning new computer skills and developing their knowledge in using electronic records to improve farm business management.

Meetings have been well attended and networking between growers on farm management issues is a beneficial component of the project. The project steering group has also been actively involved in organising activities with the group members and administering the project budget and reporting requirements. Some of the activities undertaken in 2010 include a Townsville/Burdekin Field Tour, review and selection of electronic record keeping program, training sessions, collection of farm paddock information and development of farm management reports. Several group members are also looking at using the FarmWorks program for yield mapping and variable rate fertiliser application.



The project is due for completion late in 2011. More information can be found by contacting Mark Poggio on (07)47763907 or Mark Whitten (07) 47601585

Left: Richard Gherardi at an electronic recording workshop

### HERBERT CANE GROWERS STRATEGIC GRUB MANAGEMENT IMPLEMENTING BSES DECISION-MAKING TOOLS

Despite a wet start to 2010, the GGIP Herbert Cane Growers Strategic Grub Management project commenced in March. Around 40 blocks were inspected for grub damage early in the year, with some blocks showing high levels of grub activity. The data from these inspections has been entered into a BSES model to predict grub activity in the following year, and has been passed on to participating growers. The project will continue into 2012.



## RESEARCH INITIATIVES

### HERBERT DEMONSTRATION FARM PROJECT

In December 2009, the Herbert Demonstration farm site was established in the Trebonne area on Orazio and Anthony Marino's farm. The project is supported by DEEDI, Terrain NRM, BSES, HCPSL and JCU staff. The project combines environmental sustainability and profitable farming as the key drivers. The project is a collaborative effort between growers, government, research and industry bodies. There are Demonstration farm sites also located in the Burdekin and Tully areas.

The Herbert Demonstration farm site has been divided into two sections comparing conventional farming practices and "new" farming practices.

Farming practices being assessed by the project are:

- Mound planting versus conventional planting
- Legume management in a fallow period
- Electromagnetic mapping
- Zonal tillage versus conventional tillage
- Use of new residual herbicides
- Controlled traffic versus non controlled traffic
- Surface versus sub-surface fertiliser application (in ratoons)

The cost effectiveness of the various "new" farming practices will be assessed against the conventional practices as a part of the project. Water sampling for nitrogen, phosphorus and pesticides have occurred on the site since September 2010 and will continue through the project's life.

Through rigorous monitoring, the Herbert demonstration farm project will assist industry gain a better understanding of the environmental, economic and social benefits of implementing new farming practices. The site will continue to be monitored over the next 3 years. Trial results will be made available to industry as they become available.

For more information please contact: Mark Whitten, DEEDI Project Officer – Demonstration Farms - phone 07 47601585 or Lawrence Di Bella, Terrain NRM Officer - phone 0438 175 948.



Orazio Marino (grower), Mark Whitten (DEEDI) and Lawrence Di Bella (Terrain NRM) inspecting the water sampling equipment at the Herbert Demo farm

### RIPARIAN REPAIR - WHY DO IT?

Terrain NRM secured funds through the Australian Government's Reef Rescue program to undertake riparian revegetation and associated earth works of waterways adjacent to cane lands in the Herbert River District. Terrain NRM with assistance from delivery partners, the Herbert River Catchment Group and Hinchinbrook Shire Council (HSC) have delivered riparian restoration works in the Palm and Cattle Creek systems over the past two years.

Why invest in riparian repair?

- To establish and maintain vegetated areas to act as filter strips to reduce or trap nutrients and sediment leaving the farm.
- Helps reduce aquatic weed pressure in streams (from weeds like *Salvinia*, Water Hyacinth and *Hymenachne*) as well as weeds along the banks (like Paragrass and Guinea grass). Revegetation is considered an integral part of an integrated weed management strategy.
- Reduces rat habitat and harborage areas adjacent to cane crops.
- Increases bio-diversity of plant, bird, fish and other aquatic species in and along the creek systems.

During the past 12 months Terrain NRM and the Herbert River Catchment Group has also established a native plant nursery to provide local native plants for the revegetation programs operating in the Herbert district.

If you would like to become involved and need assistance with developing a revegetation site, securing Reef Rescue funding to undertake these activities, would like to volunteer with the planting and maintenance of a site or seek more information, please contact: Tanya Sheahan - 0407 961 958 or Michael Nash - 0419 771 629



Lawrence Di Bella (Terrain NRM) and Megan Zamhel (HSC) inspecting Cattle Creek revegetation works

### PROJECT CATALYST



Project Catalyst is a program that works with innovative sugarcane farmers to assess innovative farming practices that may become adopted more widely across the industry. These practices will be assessed to see if they are financially sound, sustainable environmentally and maintain or increase productivity. The project is funded by the Coca Cola Foundation, WWF and Reef Catchments NRM, and supported by Reef Catchments NRM, NQ Dry Tropics NRM, Terrain NRM, DEEDI, IAR, ADS and PROSE PR.

Ten innovative sugarcane growers are participating in Project Catalyst; 5 in the Herbert Valley and 5 in the Tully area. With continued funding Project Catalyst grower numbers will be increased throughout the region. It is proposed that the next wave of innovative growers selected for Project Catalyst will come from the northern end of the Terrain NRM area (Innisfail to Mossman, including the Tablelands). Each farming enterprise with their own unique project aimed at improving farming techniques, leading to improvements in water quality leaving the farm. If you are interested in potentially joining Project Catalyst or would like more information please contact: Michael Waring - 0428771361 or Lawrence Di Bella - 0438175948 from Terrain NRM.

**FARMING SYSTEMS TRIALS****NITROGEN TRIALS AT MACKNADE**

Farming system trials at Macknade involving BSES and Sucrogen have demonstrated the advantages of controlled traffic, preformed mounds (beds) and legume fallows. These are part of a series of trials being conducted across the Australian sugar industry to assess the nitrogen (N) requirements of plant and ratoon cane crops following legume fallows. The trials were established with two main treatments (preformed beds at 1.8m versus conventional 1.5m rows) which were split into five different N fertiliser treatments. The resulting information will be used to make sure that the guidelines in the SIX EASY STEPS nutrient management package are appropriate for the new farming system.



**Preparing preformed beds**

The first trial was established on a sandy loam soil. A good soybean fallow crop was established on both the preformed beds and the conventional treatment prior to planting Q200<sup>®</sup>. There were no differences between treatments in the plant crop indicating that adequate nitrogen had been supplied by the legume crop. Significant yield responses to applied N were recorded in the ratoon crop indicating that there was little carry-over of N from the soybean crop to the first ratoon crop.

The second trial was established on a clay loam soil with good drainage. A good soybean fallow crop was established on both the preformed beds and the conventional treatment prior to planting KQ228<sup>®</sup>. As was the case with the first trial, there were no differences between treatments in the plant crop indicating that adequate nitrogen had been supplied by the soybean fallow, but significant yield responses to applied N occurred in the ratoon crop again indicating that there was little carry-over of N from the soybean crop to the first ratoon crop.

The third trial was established adjacent to the second trial on a clay loam soil with poor drainage. A good soybean fallow crop was established only on the 1.85m preformed beds. The poor drainage of this site resulted in a failed legume crop on the conventional treatment. Both treatments were planted to KQ228<sup>®</sup>. There was a significant yield advantage in favour of the 1.85 m beds for plant crop. This trend continued in the ratoon crop with the 1.85m beds out-yielding the 1.5m conventional rows. The trials are continuing.



**Good legumes vs poor legumes**

**TILLAGE TRIAL AT VICTORIA ESTATE**

A second crop cycle experiment involving permanent 1.8 m beds, different tillage treatments and dual cane rows planted with a double disc opener planter fitted with twin opposed press wheels was established on heavy cracking clay soil to evaluate the effect of varying amounts of tillage on cane growth and yield. Four main tillage treatments were included: zero-tillage, zonal tillage (only tilling the crop growth zone and not the inter-rows) after the wet season (TA), zonal tillage before the wet season (TB), and zonal tillage both before and after the wet season (TBA). These tillage treatments were split between two sugarcane varieties, Q208<sup>®</sup> and KQ228<sup>®</sup>. Zonal tillage treatments were performed with a rotary hoe. Plant and first ratoon crops have been harvested.

There were significant differences between tillage treatments for cane yield, and gross margin and significant differences between varieties for cane yield and CCS. Zero-tillage had significantly higher cane yield and gross margin than TBA and there was a non-significant trend for zero-tillage to out-yield TB and TA. Q208<sup>®</sup> had significantly higher cane yield than KQ228<sup>®</sup> but significantly lower CCS.

The poor result for double zonal tillage was most likely due to damage caused to soil structure by tillage with a rotary hoe on the heavy clay soil, and the consequent adverse effect this had on plant-available soil water. The results from this experiment are in contrast to similar experiments which were established on lighter textured soils where tillage significantly increased cane and sugar yields in the plant crop by removing compaction caused by heavy machinery.



**An aerial view of the Macknade Experiment Station**



## HARVEST MANAGEMENT AND INFORMATION PORTAL

### HARVEST MANAGEMENT SYSTEM

The harvest management system is regarded as a critical system by Herbert growers. It all starts with the much undervalued and critical task of cane block mapping which forms the basis of almost every other process. The system is comprised of technical components, people, maps, GIS and organisational arrangements. The system (with the exception of Tully) is quite unique in the Australian sugar industry although the technology is widely used in Brazil.

The technical side of the system performed well with less than 1% failure rate of the on-board computers, GPS and Next G modems. The other technical component to make it all work is the HRIC server and associated GIS software.

Over half the harvest contractors visited the office at HCPSL after the season and compared their "How to Kit" marked areas with the areas recorded by the harvester's GPS. As a result of this exercise and the increased reliability of the system, there is now a high degree of support from the district. This support is just as important as the technical reliability. An example of support from farmers and contractors can be seen when the occasional operator deliberately tampers with the equipment. When this happens, the response from growers and other contractors is usually swift and well publicised. We thank them for their support.

Interestingly, this year around 25 harvest groups invested in another complimentary harvesting system called navigation, to assist them with areas and consignment. Not to be confused with expensive auto guidance which steers the harvester within 2 centimetre accuracy, these devices are only around 5 metre accuracy and consist of a small screen GPS and electronic farm map and do not have a steering component. They operate similar to the TomTom and Navman devices and show the harvester within the block, block details and "on the go" harvested areas. They have distance and area tools, as well as hazard logging. The product is offered by TechAgro.



We would like to thank Enrique and Santiago, our engineering team, for their hard work in maintaining all the GPS equipment and for their continuous innovation and improvement of our system. These boys are almost locals now and we appreciate their efforts. We also extend our thanks to the harvest crews who have supported our Cuban friends; we understand it is difficult to stop the machine sometimes, and when troubleshooting needs to be done, it is often frustrating.

Real time harvest and yield monitoring systems in the Herbert have been the subject of much interest and are real examples of best practice and what can be achieved with collaboration, support, vision and hard work. As a result, we would like to think that the stakeholders have both ownership and are openly proud of the current system.

### GPS BASE STATIONS

On the 2<sup>nd</sup>. February 2011 Cyclone Yasi caused significant damage to our Base Station network. The main damage occurred to the infrastructure on sheds such as masts, antennas and GPS receivers which were exposed to the full force of the wind. Most bases and repeaters had some degree of damage with four masts being irreparable (see photo).

HCPSL surveyed the damage shortly after the cyclone and has submitted an insurance claim. Trimble has been contracted for the restoration work.



Damaged 50 foot Mast from Cyclone Yasi at the Abergowrie Base Station

After repairs and planned upgrades such as high gain antennas to improve signal strength, we are confident that the community signal will be stronger than last year. We are hopeful that by using stronger stay wires in the rebuilding process that our post Yasi infrastructure will be better able to withstand the forces of nature. The rapid adoption of GPS auto-steer systems in the last five years has resulted in around 100 tractors equipped with guidance systems. Precision Ag is alive and well in the Herbert.



### HERBERT INFORMATION PORTAL

The Herbert Information Portal (HIP) had wide take up and use by cane growers and harvesters in the 2010 cane season. It is believed that 20% of growers and harvesters have utilised the HIP in 2010. In one day, 65 growers logged in. Grower and harvester use of the HIP has accounted for 40% of its use. Sucrogen have also been heavy users of the system, in particular staff within the mill itself.

Use of the web portal is measured as 'requests.' A request is any transaction that a user has with the HIP. In 2010 we were getting 60,000 requests per month, mainly on the Harvest Management System. For the 2011 cane season, we are expecting around 150,000 requests per month.

It is clear that the Herbert Resource Information Centre HIP is unique and world-class. The HRIC received many accolades in 2010 for the HIP. The HRIC was the winner of the 2010 Regional Collaborations National Local Government Award. The HIP was the winner of the 2010 Queensland Spatial Excellence Awards in the People and Community category. Also, the HIP was the runner-up and Highly Commended at the 2010 Asia-Pacific Spatial Excellence Awards. See <http://www.hric.org.au/home/SuccessStory.aspx>

The commendations have not just been limited to Australia, with HRIC staff specially invited to the USA to present to the largest computerized mapping conference in the world, with 16,000 delegates from more than 120 countries. In the near future, expect to see changes aimed at improving your experience with using the HIP. The ability for users to download selected data (such as yield maps for example) to put into other systems is also under development.

The HIP would not be possible without the collaboration of the HRIC partners, Herbert Cane Productivity Services Ltd; Sucrogen Herbert River Mills; CANEGROWERS Herbert River; BSES Limited; Terrain NRM; and Hinchinbrook Shire Council. The HRIC partnership continues to deliver value for money to the HRIC partners and the wider Herbert River community.

## FOCUSSING ON BUSINESS

### THE REEF RESCUE PROGRAM

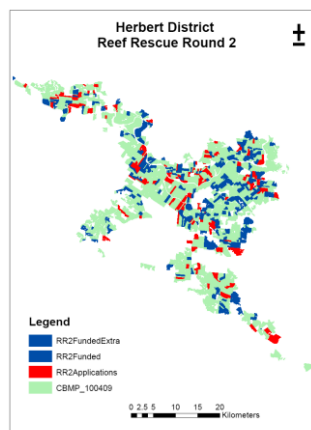
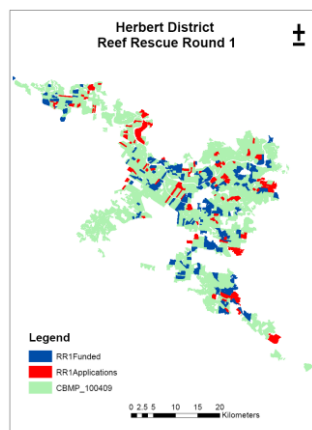
Terrain NRM rolled out the 3<sup>rd</sup> round of the Reef Rescue program in 2010. Once again the program was oversubscribed in the Wet Tropic region. At this stage it is proposed that the program will operate for a further 2 years. The program funded on-farm activities, industry training (like the BSES Six Easy Steps and Integrated Weed Management courses) and support personnel like Sam Sellick (BSES Reef Rescue Extension Officer), in the Herbert region to date.

During 2010, the region had numerous visits from the Federal government to review the progress and success of the program in the region to date. The major highlight of the year was the Reef Rescue Showcase, which was held in Cairns on the 8-9 June, 2010. This event was attended by industry, NRM personnel, governmental representatives and the Hon. Peter Garrett MP, Minister for Environmental Protection, Heritage and the Arts. The event showcased positive practice change stories and allowed regions and industry to share data and research results from the program.

Within the Wet tropics region 180 cane applications were made with 137 being funded. The Herbert, submitted 76 Applications with 54 approved.

- Round 3 approx 70% Success Rate
- Round 2 approx 55% Success Rate
- Round 1 approx 50% Success Rate

Round 1 resulted in a wide range of different farming practice improvement projects approved. Round 2 saw a high percentage of sub-surface applicators being approved as they were a priority 1 practice change. Round 3 had the highest percentage of applications for improved spray applications (priority 2 practice change). Round 4 is set to commence some time around April/May 2011 with a large number of growers already interested. If you need more information on the Reef Rescue program in the Herbert please contact Sam Sellick on 47768200 at the BSES Herbert office.



A soy planter funded through the Reef Rescue Program

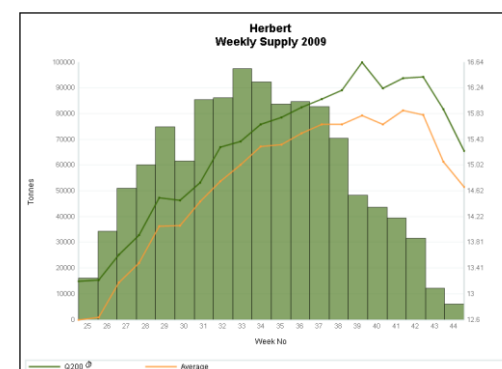
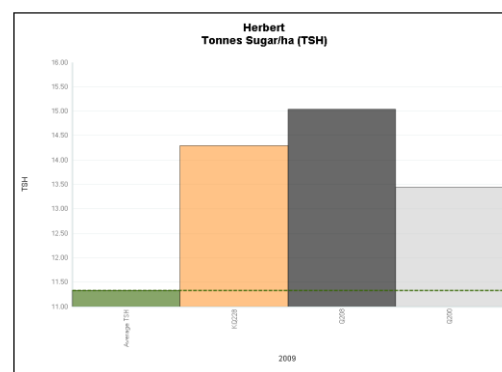
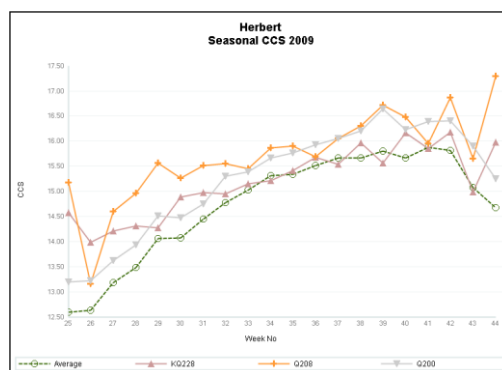
### QCANESelect™

QCANESelect™ remains the premier site for sugarcane variety and disease resistance information. It offers the latest up to date information on all newly released QCANE varieties in the Australian sugarcane industry.

A simple and easy to use management tool, many Herbert growers had the opportunity to see it in action at the QCANESelect™ stand during the 2010 Herbert River Field Day. Many of whom took the opportunity to walk away with the popular variety information sheets printed directly from the QCANESelect™ website.

Leading up to the field day, two QCANESelect™ information meetings were held at the Herbert River Canegrowers office. The meetings were well attended with a hands-on demonstration of the Whole Farm Planning function being conducted by Dave Millard from the BSES. Growers keen to learn more about the new regional reporting functions of QCANESelect™ should keep an eye out for more information sessions currently being planned for 2011.

Some examples of regional reporting are pictured below. Anyone requiring further information should contact the BSES on 4776 8200.





## REGIONAL ISSUES

### ACHIEVEMENTS WITH THE REEF PROTECTION REGULATIONS

Significant progress has been achieved in modifying the Reef Protection Regulations that were introduced on 1 January 2010. Canegrowers, Australian Sugar Milling Council, Australian Cane Farmers Association, Sucrogen and other industry groups have all worked with DERM, through the Technical Task Group, and succeeded in reducing the impact of some of the regulations on farm operations and in reducing the complexity and amount of paperwork for growers.

The consultation process with DERM has been successful in delivering the following practical outcomes:

#### Chemical regulations

- 5m effective vegetated treatment areas (wide grassed headlands) instead of a 20m in-crop no-spray zone
- Inclusion of rainfall risk assessment before applying chemicals
- Water-body definition modified to exclude shallow grassed drains.

#### Nutrient regulations

- Growers allowed to apply above calculated rates if they complete a nutrient ERMP or register for a trial program
- Growers allowed to apply sufficient P for a crop cycle onto plant crops
- Change to deduction for high nitrate levels in irrigation water
- Change to amount of N that can be applied after a legume crop

#### Record keeping

- Applies to all chemicals but now with a focus on atrazine, ametryn, diuron and hexazinone (the lower regulated herbicides).



Whilst the regulations are still too rigid and complex and do not recognise variability across farms, DERM are continuing to modify the regulations to take account of exceptions caused by variable soils, climatic conditions and crop management. For example DERM have funded trial programs to assess crop nutrient requirements and nutrient losses in areas where there is widespread concern that calculated nitrogen rates are inadequate to maximise crop yields. They have recognised that growers who sample their soils just prior to planting will get a different nitrogen recommendation from those who sample the previous year in the old ratoon crop. They have also recognised that exceptional rainfall events occurring soon after fertiliser application can result in significant nutrient losses and now allow partial replacement of these lost nutrients.

At a local level DERM provided funding to Canegrowers to employ two Reef Care Support Officers to assist growers with the interpretation and understanding of the regulations. Canegrowers' staff, together with local staff from BSES, HCPSL, Terrain and DEEDI, has assisted growers mainly through small group workshops to explain the requirements for record keeping and the completion of Environmental Risk Management Plans (ERMPs). Initial feedback from DERM is that they are happy with the progress industry has made over the first 12 months of reef regulation and this will be reflected in the accreditation granted to individual ERMPs.

### MANAGEMENT OF STAND OVER CANE

In October 2010 it became apparent that stand-over cane could be a possibility for the northern regions. After consulting with Industry leaders, BSES extension staff from the Burdekin to Cairns began compiling relevant information for growers on what to do in the event of stand over cane, based on previous experiences, the most recent being 1998. This information was sent out during October. The following is the type of information sent out to Herbert growers.

Normally, standing over cane is a more profitable and easier option than attempting to harvest the cane under wet field conditions particularly late in the season and hoping for an acceptable ratoon crop. Whilst the wet field conditions experienced during harvest of the 2010 crop did not give growers much opportunity to choose which varieties or cane blocks they were going to stand-over, we have included some guidelines for the selection and management of stand-over below.

Because the industry has had almost no stand-over since the 1999 crop, the performance of the currently approved varieties as stand-over is not known. Generally varieties that arrow heavily are less successful as stand-over because the stalks that have flowered can die back and the stand-over crop is reliant on suckering to produce a crop for harvest. Varieties that produce prolific side shoots or suckers will produce a better stand-over crop as the suckers become new cane for harvest the following year.

When selecting which blocks to stand over, choose healthy, erect crops, preferably over about 70 t/ha, rather than poor, lodged crops. Lodged crops tend to deteriorate over the wet season and lose both tonnage and quality. Heavy crops should be avoided where possible as they may lodge and deteriorate over the wet season. Where possible avoid standing-over cane in low lying blocks as waterlogged conditions will have a detrimental impact on cane stalks while new suckers will have difficulty growing to produce next year's crop. Also try and keep away from areas near rat breeding sites as stand-over cane is an ideal harbourage for rat populations. To reduce the impact of rat damage, try to control weeds along boundaries, headlands, drains and neighbouring land.

Experience has shown that there is little benefit in applying fertiliser to stand-over. Extra nitrogen may make the crop look greener but is unlikely to have a yield benefit. CCS of stand-over cane tends to be below mill average. Consequently growers have aimed to harvest stand-over blocks early in the season. This is the time when CCS is likely to be closest to mill average. An alternative strategy has been to mix stand-over with one-year cane to improve the CCS and send a higher quality product to the mill. Some success has also been achieved in increasing CCS in trials by using chemical ripeners such as MODDUS. However chemical ripeners are only likely to be successful when applied to actively growing cane. It is suggested that you contact BSES or HCPSL for advice before proceeding with this strategy.