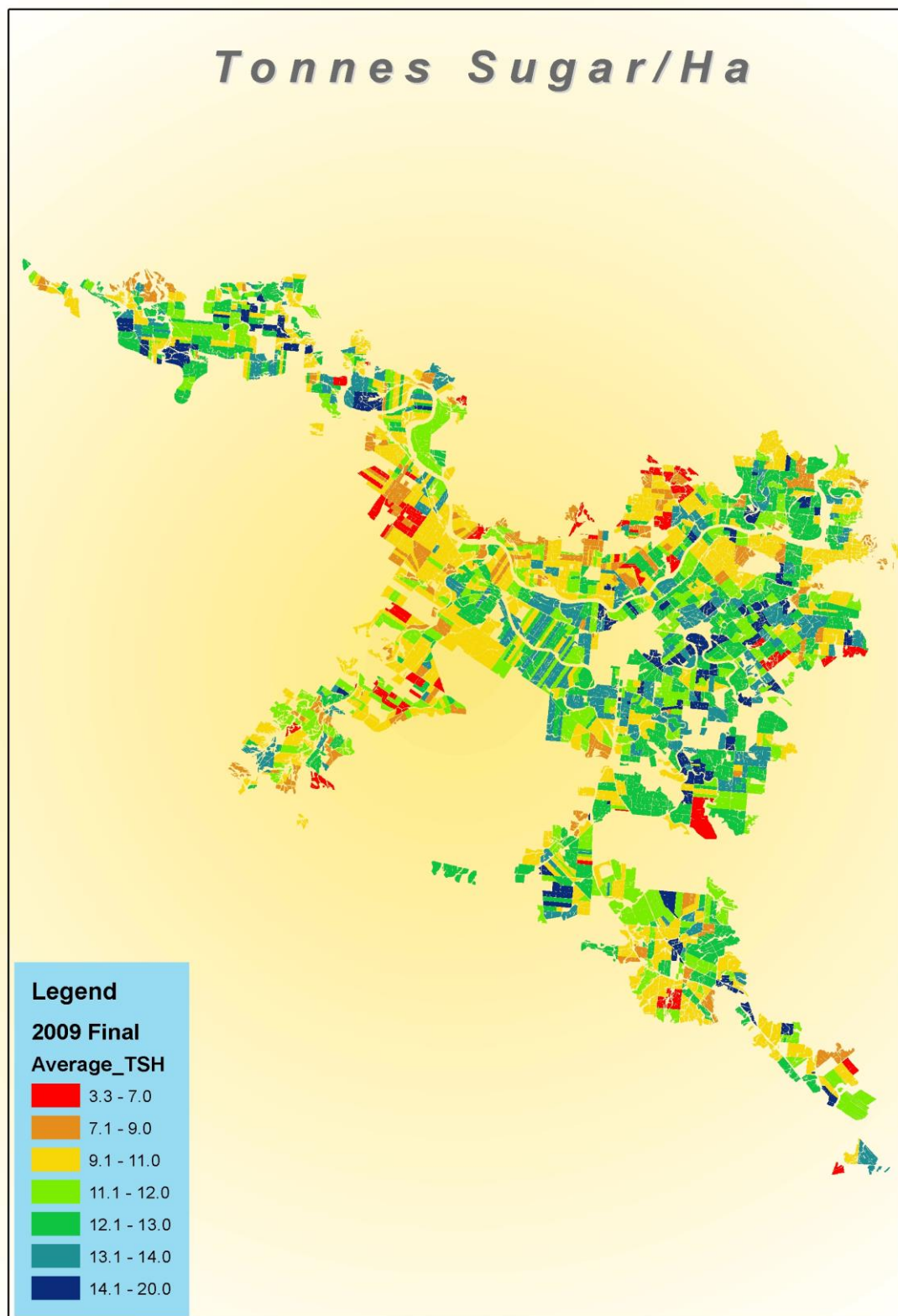


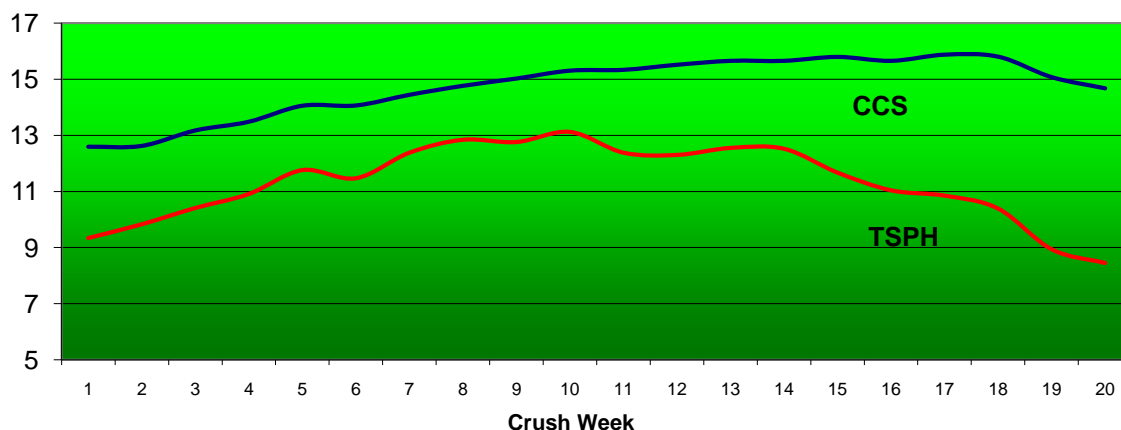


HERBERT PRODUCTIVITY REPORT 2009



CROP PERFORMANCE 2009

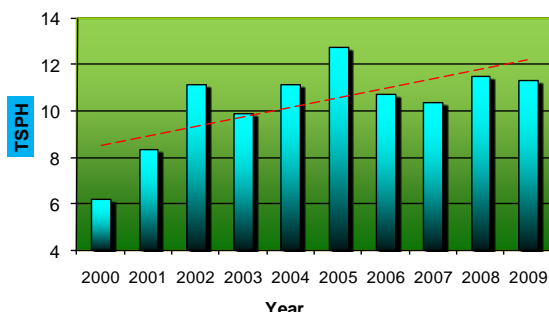
CCS & Tonnes Sugar Per Hectare 2009



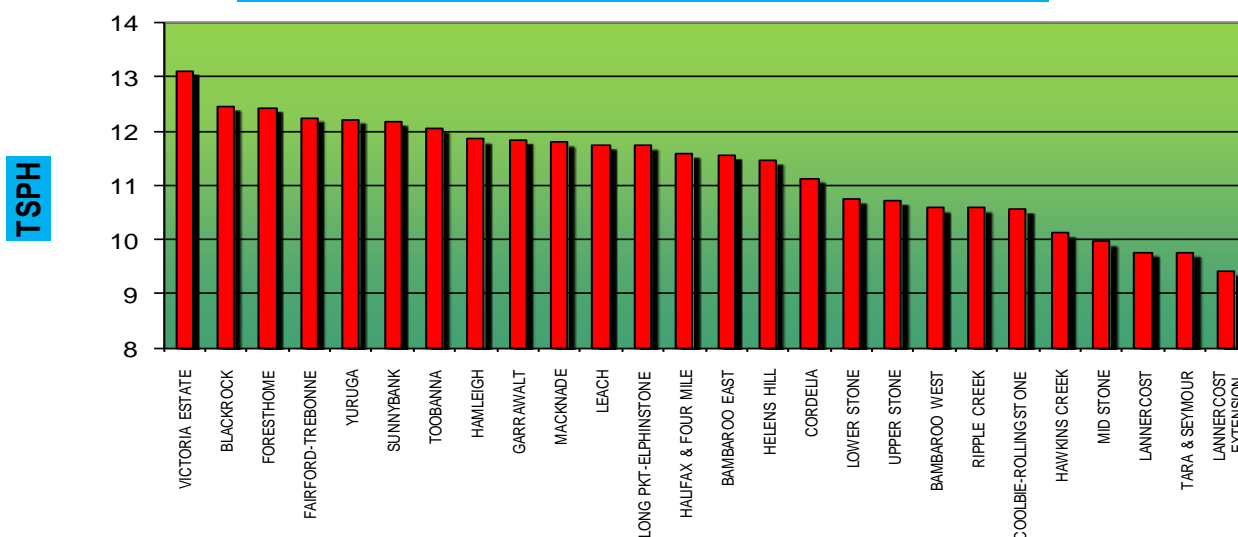
Cane yields in 2009 were disappointing, although the crop made a good recovery from the widespread flooding in early February. The dry conditions during the season caused the crop to dry out and lose weight. Sugar yields peaked early in Week 10, crop estimates were reduced but CCS was exceptionally high. The harvested area declined significantly due to land sales to MIS forestry schemes and because of smut and flood damage. The demise of Great Southern brought some hope that their land may eventually revert to cane. Sub district sugar yields clearly showed the vulnerability of the low-lying parts of the district to exceptionally wet conditions.

Year	Tonnes	Ha Harvested	CCS	Yield Cane	Yield Sugar
2000	2,802,049.39	58,379.16	13.01	48.00	6.24
2001	3,311,004.97	56,876.94	14.34	58.21	8.35
2002	4,243,591.27	54,892.20	14.40	77.31	11.13
2003	4,051,558.05	56,975.69	13.90	71.11	9.89
2004	4,641,372.86	56,410.75	13.56	82.28	11.16
2005	5,553,359.05	57,078.93	13.11	97.29	12.76
2006	4,900,084.45	57,658.50	12.62	84.98	10.72
2007	4,287,010.73	57,158.66	13.84	75.00	10.38
2008	4,688,595.64	55,061.21	13.54	85.15	11.53
2009	3,920,941.21	51,171.33	14.79	76.62	11.33

Sugar Yield Trends



2009 Sub District Tonnes Sugar Per Hectare



PESTS AND DISEASES

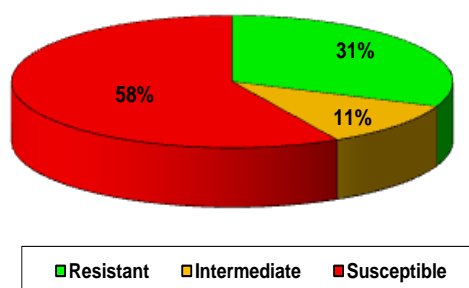
DISEASES

Sugarcane Smut

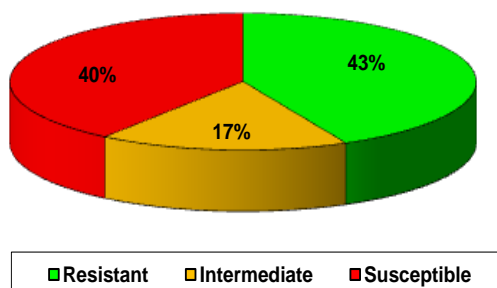
Sugarcane Smut remains the major disease across the Queensland sugar industry. The Herbert unfortunately, had the highest proportion of susceptible varieties when smut first arrived, and so we were the hardest hit.

The pie charts below indicate progress over the past two years in establishing resistance by planting the appropriate varieties.

Percentage of Smut Resistant Varieties Harvested in 2009



Percentage of Smut Resistant Varieties to be Harvested in 2010



Ratoon Stunting Disease (RSD)

RSD levels are very low. A big contributing factor is the rapid change of varieties over the past few years for smut resistance. Most of the new planting material came from hot water treated stocks from the Herbert and the Burdekin or from the approved seed plots.

Hot Water Treatment and Variety Distribution Plots

HCPSL continued to run the hot water treatment tanks at Victoria mill in 2009 with 130 tonnes of cane being treated. A fungicide dip tank has now been established on-site to assist with post-treatment smut protection of hot water treated HCPSL approved seed plot material.

Due to the increasing pressure from smut, only varieties with a smut resistance rating of 1- 4 were available in the HCPSL Approved Seed plots in 2009. From these plots, 136 tonnes of cane was supplied to growers. In addition to these plots, MQ239[®] was released from two new variety release plots located at Pinnacle Hill and the BSES Experiment Station. 67 tonnes of MQ239[®] was supplied to growers from these plots.

In 2010, BSES will be releasing Q232[®] from their new variety release plot on Townsville Road. While hot water treatment has affected the establishment of this new smut resistant variety, the plot holds approximately 1 ha of material for distribution to growers. A further 0.3 ha has also been planted to Q237[®], an intermediate-resistant variety that was released in 2009 on a very limited basis. Individual grower allocations and details of plot opening times will be made available at a later date.

The industry needs to remain vigilant, and continue to observe good farm hygiene. Not a lot is known about resistance to RSD and other diseases such as Chlorotic Streak for the new smut resistant varieties as they were fast tracked into the system.

PESTS – ANIMALS AND INSECTS

The table below indicates the losses attributable to pests. As can be seen, feral pigs top the list in terms of crop losses. Late in 2008, a feral pig management program was established, with funding from stakeholders across the district. A full time position was filled under the auspices of Hinchinbrook Shire Council. The position is to conduct baiting programs, assist growers with trapping and to co-ordinate bait supplies. As a result of the program, significant numbers of pigs have been baited, trapped or hunted.

Pest Type	Tonnes Lost	Hectares Damaged
Army Worms	70	4
Canegrub – other	630	14
Cockatoos	2549	88
Greyback Grub	8680	320
Pigs	26525	2109
Rats	8552	1094
Wallabies	1680	40

Rats

Rat damage remains low, and this is largely due to effective weed and grass control programs on-farm. Currently, a new rat baiting permit is being negotiated with DERM (the old EPA). The Herbert district has not had a permit to bait for several years.

Canegrubs

Canegrub damage is slightly on the increase. There is some anecdotal evidence that suggests an increase in grub numbers. Several greyback beetle flights were noted just prior to and after Christmas, shortly after rainfall.

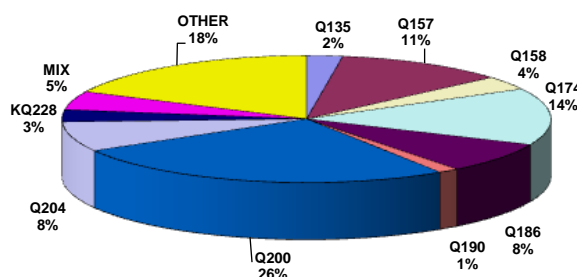
With sugar prices currently high, crops are valuable and appropriate crop protection measures should be conducted on cane blocks with a history of grub damage. As a general rule, the lighter textured soils are at the greatest risk of grub damage.

Minor Pests

Minor pests such as wallabies, cockatoos and army worms were present but caused no significant losses. The Herbert sugar industry is on a tropical flood plain and these animals will always be present.

VARIETY PERFORMANCE & RECOMMENDATIONS

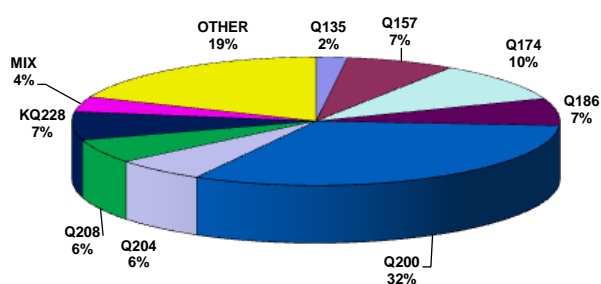
Varietal Composition of the Area Under Cane in 2009



2009 saw the year begin with back to back floods, with some varieties suffering more than others. KQ228^{db} and Q183^{db} reportedly showed the most stress or died out completely in certain subdistricts, while Q200^{db} seemed to handle the conditions relatively well. With Q200^{db} starting to reach the 50% level on some farms, growers started to plant more of KQ228^{db} and Q208^{db} as alternatives.

From field observations, KQ236^{db} has been showing mixed results. Some subdistricts are reporting disappointment with its growth, while other subdistricts have reported excellent growth. Growers should trial this variety in various soils on their farms before planting out in larger areas.

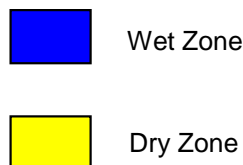
Varietal Composition of the Area Under Cane in 2010



Growers also began seeing smut symptoms intensify in blocks of Q174^{db}, particularly late in the season. It is expected that Q174^{db} will follow the path of Q158, and growers have already begun concentrating on the removal of heavily infested blocks. Q204^{db} is starting to show high levels of smut. It is predicted that the effects of smut will peak in 2010, and start to decline during 2011. This will, however, depend on ploughout regimes and weather conditions.

On a positive note, 2009 saw CCS levels peak at record highs. One variety that recorded an unusually high level of CCS was MQ239^{db}. Growers need to be aware that MQ239^{db} is not normally a high CCS producing variety. The higher than expected CCS produced by MQ239^{db} during the year was likely the result of the weather conditions.

Herbert District Climatic Zones Map



Growers need to be aware that the Herbert Quarantine zone begins just north of the Cardwell Range, and ends at Townsville. Any machinery or cane moving across these quarantine lines require permits. Growers also need to be aware that the planting of smut susceptible varieties is now illegal. Recommended and Approved varieties are listed below.

2009 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	Black Swamp
				Stone River	Herbert River			Colluvial Apron
Hill slope soils	Sandy soils	Clay soils	Terrace loamy soils		Alluvial soils	Terrace loamy soils	Clay soils	Seymour soils
Q190 ^{db}	Q190 ^{db}	Q190 ^{db}	Q172 ^{db}		Q135	Q135	Q190 ^{db}	Q190 ^{db}
Q208 ^{db}	Q200 ^{db}	Q200 ^{db}	Q183 ^{db}		Q172 ^{db}	Q172 ^{db}	Q183 ^{db}	Q200 ^{db}
Q219 ^{db}	Q208 ^{db}	Q208 ^{db}	Q200 ^{db}		Q183 ^{db}	Q183 ^{db}	Q200 ^{db}	Q208 ^{db}
Q200 ^{db}	Q219 ^{db}	Q219 ^{db}	Q208 ^{db}		Q200 ^{db}	Q200 ^{db}	Q208 ^{db}	Q219 ^{db}
Q232 ^{db*}	Q232 ^{db*}	KQ236 ^{db}	KQ228 ^{db}		Q208 ^{db}	Q208 ^{db}	KQ228 ^{db}	KQ228 ^{db}
MQ239 ^{db}	MQ239 ^{db}	Q232 ^{db*}	KQ236 ^{db}		KQ228 ^{db}	KQ228 ^{db}	Q232 ^{db*}	Q232 ^{db*}
		MQ239 ^{db}			KQ236 ^{db}	KQ236 ^{db}	MQ239 ^{db}	MQ239 ^{db}

* = Based on limited data

Approved planting list featuring smut resistance ratings

Cassius	Mida ^{db}	Q96	Q99	Q119	Q120	Q135	Q172 ^{db}	Q177 ^{db}	Q183 ^{db}	Q190 ^{db}	Q199 ^{db}	Q200 ^{db}
Q208 ^{db}	Q215 ^{db}	Q219 ^{db}	Q220 ^{db}	KQ228 ^{db}	Q230 ^{db}	Q231 ^{db}	Q232 ^{db}	Q233 ^{db}	KQ236 ^{db}	Q237 ^{db}	MQ239 ^{db}	
Resistant	Inter - Resist.	Intermediate	Inter - Susc.									

VARIETY PERFORMANCE & RECOMMENDATIONS

NEW VARIETIES

MQ239[®] (Origin – Herbert BSES/CSR)

After satisfying concerns of potential milling issues through a series of strip trials, the long awaited release of MQ239[®] took place in 2009. A high yielding, low CCS and high fibre variety, MQ239[®] is recommended for poor-average soils in either of the wet or dry zones in the Herbert. With resistance to sugarcane smut, it is expected that MQ239[®] will replace varieties such as Q157, Q158 and Q204[®], which have now fallen prey to the smut epidemic.

Disease resistance

Smut	Resistant
Pachymetra	Intermediate
Leaf scald	Resistant
Red rot	Inter-Resist.

Q232[®] (Origin – Southern region)

Q232[®] was released in all cane growing regions to help combat sugarcane smut. In its home region of Bundaberg, Q232[®] has produced high yields with average to high CCS on a variety of soil types and environments. While data in the Herbert is limited, plant cane results from 2009 indicate a moderate – high yield with low CCS. Growers will be able to collect Q232[®] from the BSES new variety release plot in 2010. Plot location, opening times and quantities will be made available to growers before opening in 2010.

Disease resistance

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

Q237[®] (Origin – northern region)

Also available from the 2010 new variety release plot, Q237[®] was planted into the 2009 series of final assessment trials in the Herbert. Several northern variety trials indicate that while Q237[®] has shown some adaptability, it is best suited to free draining fertile soils where it produces average yields and average to high CCS. Other positive traits include rapid, reliable germination and strong ratooning under normal conditions. Due to the lack of trial results in the Herbert, growers are advised to trial Q237[®] for themselves before proceeding to large-scale commercial plantings.

Disease resistance

Smut	Inter-Resist.
Pachymetra	Inter-Suscept.
Leaf scald	Intermediate



Fulvio Gori and Heidi Clements planting final assessment trial

PROMISING VARIETIES FOR THE FUTURE

Q238[®] (Parents - Q138 x Q155)

Released last year in the central region, Q238[®] has performed well in a number of plant and second ratoon trials in the Herbert, which may lead to its possible release in 2011. With moderate to high yields and moderate CCS, Q238[®] has performed well on several different soils and environments. While possessing good resistance to most diseases, some infield observations in the Mackay area show some susceptibility to Chlorotic streak disease.

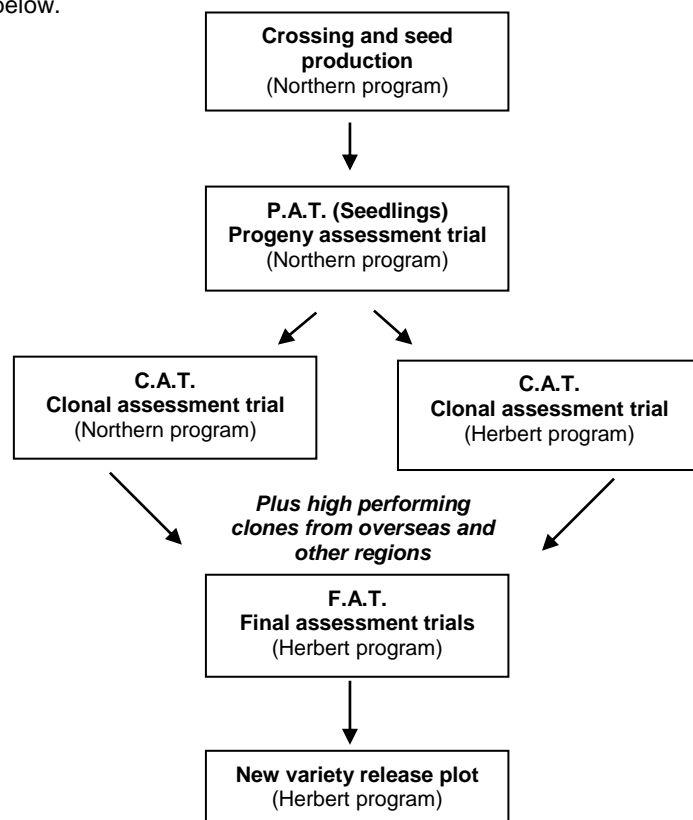
Disease resistance

Smut	Resistant
Pachymetra	Resistant
Leaf scald	Resistant
Orange rust	Resistant
Red rot	Inter-Resist.

CAT trials

A recent decision by the BSES Limited's QCanes group will see the re-introduction of a clonal assessment trial (CAT) in the Herbert. For several years, only final assessment trials (FAT) have been assessed in the Herbert with the earlier stage CAT trials being conducted further north. While still taking advantage of northern trials and any subsequent high performing varieties, the new addition to the Herbert program will screen a further 500 experimental clones. The first trial is scheduled for planting in 2011 with the initial material being propagated on the Fairford Road BSES research station in 2010.

A site in the southern part of the district has already been chosen to accommodate these annual plantings, which are expected to produce future locally adapted varieties. Joining these new experimentals will be the top twenty clones from each of the southern, central and Burdekin programs. These 60 top performing clones will be planted into a regional phenotype trial (RPT) and assessed under local conditions. From this trial, any clones displaying further promise will progress to the FAT stage, along with the top 150 clones from the Herbert and northern CAT trials. A basic flow chart detailing the new program is pictured below.



CANE PRODUCTIVITY INITIATIVE

PRODUCTIVITY FORUMS

Three rounds of productivity forums were held during the year. More than 200 growers attended the forums throughout the year.

The first round of forums were held in mid April covering the following topics:

- New variety update.
- Which varieties to choose for planting and their smut ratings.
- The BSES computer program - QCANESelect™ which assists growers select the right variety for a block.
- New varieties from HCPSL and BSES plots.
- Moddus™ (crop ripener) and its use.
- Managing flood damaged cane.
- Herbert District and Subdistrict Productivity Reports



Flood damage at Castorina's



Flood damage at Di Bartolo's

The second round of forums were held in early May covering the following topics:

- Weed management and new technologies.
- Soil chemical trends based upon soil testing data.
- Update on precision agriculture.
- Fertiliser programs in relation to mill mud use.
- The Reef Rescue program and what funding opportunities were available.
- Update on harvest management for the district.
- Smut and the rate of spread of the disease.



Stool splitter with Confidor applicator funded through Reef Rescue Round 1

The third round of forums held in mid September, focussed on a range of topics:

- The HRIC web portal and its use by industry.
- Forward pricing.
- Smut update and considering what block to ploughout.
- Harvester research to investigate cane and juice losses in field.
- Reef Regulations and their impact on growers.



Grower Field Tour

CANE PRODUCTIVITY INITIATIVE

RESEARCH AND DEVELOPMENT TEAMS

While officially the **Variety Adoption Team** met only twice in 2009, due in some way to an uninterrupted harvesting season, its workload continued as per usual. Committee members, including several new growers, discussed and worked on a number of issues and activities in 2009 including:

- reviewed and assisted with collection of flood damage for disaster response committee (cane, creek banks etc)
- a review of new smut resistant varieties and experimental clones for release in 2009 and beyond
- a review of the approved and recommended variety list for the Herbert
- a special sub-committee to review current smut issues and management strategies
- developing a new 'Herbert smut management plan'
- assisting with establishment and monitoring of variety strip trials
- helping with updates and further development and extension of QCANESelect™
- development of a new variety guide and information sheets
- assisting with field trials such as Moddus™ x variety and smut epidemiology work.

Sustainable Farming Systems

The primary focus of this group is to provide direction, and investigate and develop activities that encourage sustainable land and water practices. The group met twice during the year. The incentives and projects that the group were involved with were:

- GIVE 09
- Attracting funding for 4 new SRDC grower group projects to the region
- Analysis of regional soil testing data
- PA activities in relation to:
 - Development of variable rate fertiliser technology
 - Base station management and autosteer
 - Electronic cane consignment
- BPS001- Investigating the development of soil management zones
- CSE022- Investigating the performance of yield monitors
- Riparian management and revegetation
- Water quality monitoring on farms
- Establishment of the Demo farm site
- Establishment 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

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

Harvesting sugar losses – A new way to measure infield sugar loss

Loss of sugar during the harvesting process is still a major cost to the Australian sugar industry. The primary source of these losses is through the primary cleaning fan where significant quantities of billets are ejected along with the trash. Whilst Harvesting Best Practice (HBP) has been shown to significantly reduce infield sugar losses, adoption has been steady due to the time consuming and costly nature of harvester trials. BSES researchers have developed best practice recommendations on appropriate extractor fan speeds to minimize cane loss with earlier model harvesters, however there is limited data for the current model Case IH anti-vortex and 5 foot John Deere extractor systems.

A current BSES Limited engineering project aims to develop HBP recommendations for current harvesters using a new sugar loss measurement technique. To achieve this, a number of harvester trials were conducted in 2008/09 to collect field residue and extraneous matter (trash level) samples from new Case IH and John Deere harvesters. Data from these trials will give an understanding of the relationships between cane loss, cane cleaning and bin weights for current machines.

Unlike the inaccurate blue tarp method or the time consuming mass balance process, this new method involves sampling all the material left in the field (trash, billet fragments, etc), mulching it, blending with water to obtain a liquid extract and then analysing that extract to determine the total sugar loss per hectare. To date this method has proved reliable in accurately measuring sugar loss, unlike the traditional tarp method which significantly underestimates cane loss.

Ultimately, researcher Cam Whiteing and the engineering group hope to develop a compact, mobile system to measure harvesting losses both rapidly and accurately. Such a device would make fine-tuning harvesters to minimize sugar loss a quick and simple process. Accurate information on sugar loss in combination with sampling for extraneous matter and bin weights will enable operators to maximize industry returns.

With a number of these systems available for use by extension staff industry wide there would be a significant impact on harvesting losses state-wide with harvester trials no longer requiring large amounts of people and time.

Trial results and best practice recommendations coming out of this project will be presented at industry workshops in May 2010. This work has been possible through an SRDC funded project, which is focused solely on the loss measurement system development. In order to expand this work to develop more useful information on harvester performance BSES Limited has provided additional funds to allow more extensive trials to be conducted.

For more information on harvesting best practice contact BSES engineer Cam Whiteing on mobile 0417 607 873 or email cwhiteing@bses.org.au.

RESEARCH INITIATIVES

NEW SRDC PROJECTS

SRDC only funded 7 new grower group projects in Australia and the Herbert region was successful in obtaining funding for 4. The projects funded are:

- "Improvement of internal soil drainage and yield on heavy clay soils in the Herbert"
- "Soil Electrical Conductivity Mapping"
- "Herbert cane growers strategic grub management implementing BSES decision – making tools"
- "Herbert Electronic Data Recording Applications"

These projects will commence in early 2010.

IMPROVEMENT OF INTERNAL SOIL DRAINAGE AND YIELD ON HEAVY CLAY SOILS IN THE HERBERT

This project will investigate different farming methods to potentially increase cane yield on heavy clay soils, which experience long periods of water-logging. The project will assess the following treatments:

1. Mole draining on GPS guidance directly below the stool area
2. Deep ripping on GPS guidance directly below the stool area and not in the inter space
3. A mill ash filled slot along the cane row

All treatments will be planted at 1.83m row spacing. The following assessments will occur as a part of the trial: crop yield, CCS, net returns after expenses taken out, soil water and nutrient movement and plant available water. This trial will be established in 2010 and further results will be published once they are available. Terrain NRM staff will assist with the monitoring of this project.

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). Existing electro- magnetic mapping systems will be modified as a part of the project and will be assessed under various conditions on farms in the Upper Burdekin and Mutarnee – Coolbie areas. Currently these farms lack detailed soils 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. Once these areas have detailed soils, yield and topography maps, it is hoped that defined management zones can be established to target nutrient application and base lime and gypsum application upon. This will also be investigated to some extent in this project.



Soil Electrical Conductivity Mapping Team

HELPING SUGARCANE FARMERS INTEGRATE ELECTRONIC RECORDING SYSTEMS INTO THEIR FARMING BUSINESS

A project focusing on the use of electronic farm management records is currently being undertaken by a group of growers in the Herbert region. Contributors to the project include SRDC through the Grower Group Innovation Project funding, grower group participants and in-kind support by the project steering group committee. The use of electronic farm management records is relatively new for the sugar industry and in many cases the value of this information is yet to be successfully demonstrated to growers. Findings from this project will be directly relevant to every grower in the industry. This project endeavours to be complimentary to data collection / GIS projects currently being undertaken in the sugar industry through the promotion of farm management records and possible linkages through data sharing.

The system selected by the grower group is likely to allow record keeping in the field using a PDA computer or will be integrated with existing tractor GPS systems. The use of timely and accurate records can improve farm profitability through the evaluation of past, current and future performance of the business. Accurate farm management records are becoming increasingly important and will assist in addressing community and regulatory concerns on issues such as fertiliser and chemical use. The project will be commencing in January 2010.

DEMONSTRATION FARMS PROJECT COMES TO THE HERBERT

Herbert farmers Orazio and Anthony Marino are involved with the Department of Employment, Economic Development and Innovation's Demonstration Farms project. Using their Trebonne farm, economic analysis and water quality sampling will be conducted to compare conventional management with a farming system based Best Management Practices (BMPs) such as: controlled traffic, minimum tillage, legume fallows, optimised herbicide and nutrient application. As keeping sound farm records is an integral part of 'best management', the project will also link with an SRDC funded initiative that is helping sugarcane farmers in the Herbert integrate electronic recording systems into their farming business.

Combining environmental sustainability and profitable sugarcane farming are the key drivers tackled by the Demonstration Farms project. Using a 'whole-of-farm systems approach and employing industry BMPs, the demonstration farms project is working with 'real' farms to achieve 'real' outcomes.

The project is a collaborative effort between producers, government, research and industry bodies and is part of the Queensland and Australian Government's Reef Plan to improve the quality of water entering the Great Barrier Reef lagoon. Working closely with Terrain NRM, the project will use grassroots extension methodologies based around a total systems approach to effectively showcase BMPs for the cane industry. Currently, the project comprises eight privately owned blocks and a further experimental 'cutting edge' technologies block run in partnership with the Australian Agricultural College Corporation (AACC). From each block, economic and biophysical monitoring data are being compiled to demonstrate that improved profitability and environmental sustainability can be achieved with a systems based approach. Paddock and farm scale data collected from the project will also be used to assist catchment scale water quality modelling.

For more information please contact: Mark Whitten, Project Officer - Demonstration Farms, Agri-Science Queensland, DEEDI – Phone 07 4760 1585

RESEARCH INITIATIVES

SOIL COMPACTION STUDIES HIGHLIGHT ADVANTAGES OF NEW FARMING SYSTEM

A farming system trial at Macknade involving BSES and CSR sugar has demonstrated the advantages of controlled traffic, preformed mounds and legume fallow. The trial is one of several being conducted in various sugarcane districts in the Australian sugarcane industry to assess the nitrogen (N) requirement of plant and ratoon cane following legume fallow crops. The resulting information will be used to validate the SIX EASY STEPS nutrient management package.

At Macknade three separate trials were established (two on a clay loam soil and the other on a sandy loam soil) with different N fertiliser inputs applied after different fallow / plant establishment treatment.

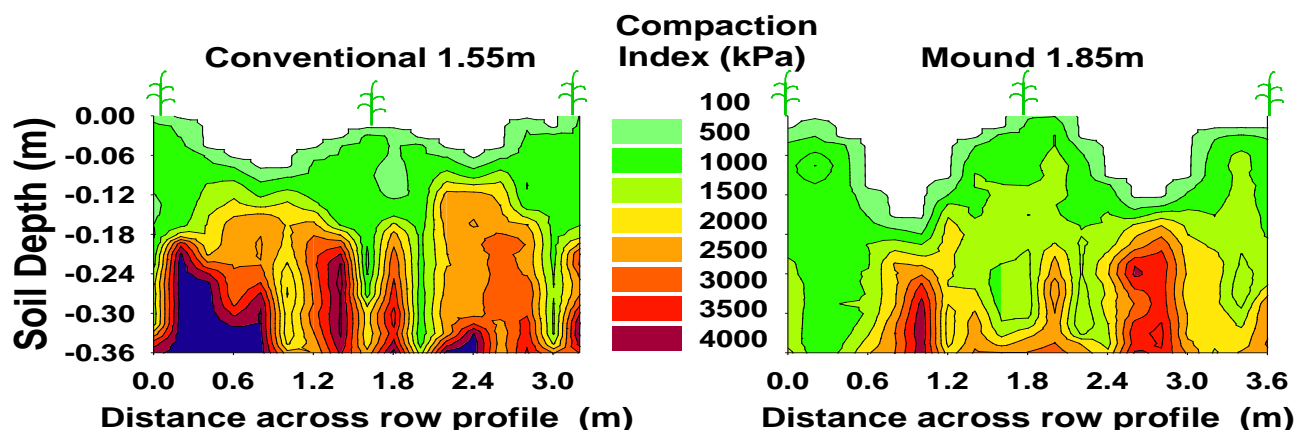
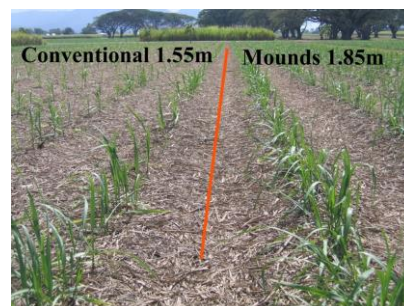
The first treatment being evaluated used conventional planting techniques and 1.55 metre centred rows. The cane was ploughed out and a soybean crop planted across the paddock with the beans being incorporated into the soil before the cane was planted in a furrow. Soil was then moved back over the germinated cane to form the cane bed.

In the other treatment the cane was also ploughed out but raised beds centred at 1.85 metres were formed prior to the wet season into which two rows of soybeans were planted. The soybeans were sprayed out five months later and the cane billets were planted through the bean stubble using a double-disc opener planter.

Other work at Ingham has shown the N supplied by the soybean crop was predominantly utilised by the plant cane. The current trials will help to further evaluate the potential carry-over of legume N into the sugarcane ratoon crops.

There was no difference in plant cane yields between 1.55m conventional and 1.85m preformed mounds on the sandy loam soil but ratoon growth has been significantly reduced in the 1.55m rows, as is apparent in the photo. This poorer ratoon growth appears to be strongly related to the soil compaction data collected from the two different treatments.

The conventional 1.55m rows have higher levels of compaction than the 1.85m rows.



WATER EFFICIENT AND DROUGHT TOLERANT CULTIVARS FOR THE SUGAR INDUSTRY

BSES commenced the 'More crop per drop' project in June 2007. The project evaluates genetic variation for water use efficiency and drought tolerance in the Australian sugarcane population. About 130 clones of diverse origin are being evaluated in field experiments in the Herbert (Crystal Creek; rain-fed) and Burdekin (Home Hill; water-limited and well-watered) conditions. The preliminary results showed significant differences among clones for growth, water relations, sugar production, and water stress recovery that potentially contribute to efficient water use and drought tolerance under rain-fed and irrigated environments.

This pioneering research will break new grounds in integrating modern technology-based research outcomes into practical breeding program in the future.



Installation of enviro-scan for monitoring soil moisture status in the drought treatment. A Chinese scientist (Dr Liao) assisting BSES researchers for field experimentation.

HARVEST MANAGEMENT AND PRECISION AGRICULTURE

ELECTRONIC CONSIGNMENT

Electronic asset and consignment tracking has long been seen as a dream and something that would add extreme value to the sugar industry. A pilot was conducted in 2009 over two weeks. This system uses much of the infrastructure already in place such as the HRIC web portal and the familiar green TechAgro On-Board Computers and blue NextG modems. These devices are already collecting and transmitting important data to the HRIC web portal and CSR's harvesting system.

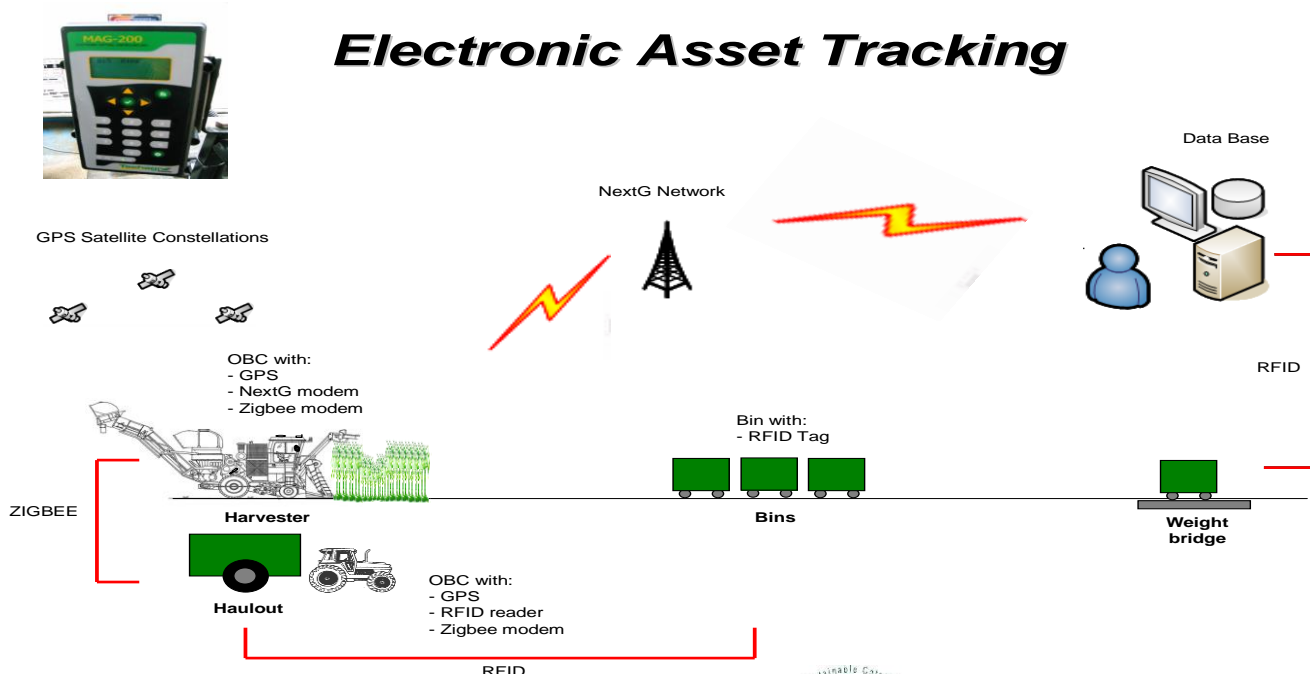
The project was designed in the Herbert and conducted in collaboration with TechAgro Pacific, CSR Sugar, Herbert Cane Productivity Services Ltd, (HCPSL), local farmers, and harvester efficiency innovators Anthony and Paul Girgenti and the HRIC (Herbert Resource Information Centre).



The fully automatic system shown below involves a number of systems such as GPS, ZigBee, On-Board Computers, Telstra's Next G network and Geographic Information systems. The pilot linked several systems and provided a proof concept for full electronic consignment. Paperless electronic consignment would allow industry the opportunity to track the millions of dollars worth of cane and assets from field to the factory, saving time, reducing errors and providing benefits to all stakeholders.

An industry commitment and partnership approach will be needed from the growing, milling and harvest sectors if this system is to be implemented at a commercial level. The potential for an improved harvest / transport interface, harvesting efficiency gains and improved mill performance will however ensure wide industry support for its further development and eventual implementation.

Electronic Asset Tracking



HRIC WEB PORTAL

The Herbert Resource Information Centre is a partnership between HCPSL, CSR, Hinchinbrook Shire Council, BSES, CANEGROWERS Herbert River and Terrain NRM. This valuable partnership has provided access to mapping information to the Herbert Sugar industry since 1996. In this period of time, the HRIC has built a computerised mapping system (GIS) containing more than 1200 layers of information, including information critical to the business of growing, harvesting, transporting and milling of sugar cane. Last year the HRIC built and implemented a world-class Enterprise GIS system to further extend the value of this information. An Enterprise GIS system promotes greater accessibility, reliability, security, accuracy, scalability, and cost efficiency for the Herbert sugar industry. What this means is that HRIC has built a system that makes it cheaper to get static and near real-time information (such as harvesting information), and can make it more widely available (access via the web) with greater security.



The solution that HRIC has implemented is incredibly flexible and has been designed to meet the business needs of this community's sugar industry. By using a web browser, you can now access valuable farming and harvesting information without the use of any specialist software. You will be seeing a lot more of the HRIC Enterprise GIS as it continues to grow to meet the Herbert sugar industry's business needs.

Have a look yourself and see your farm map on top of a high resolution satellite image amongst a host of other information. If you go to: www.hric.org.au

Click Online Mapping
Click Members Mapping Portal
In the User Name Box type: grower
In the Password Box type: sweet09
(N.B. it is → sweet Zero Nine)

HARVEST MANAGEMENT AND PRECISION AGRICULTURE

YIELD MAPPING

A SRDC research project involving HCSPL, CSIRO, NCEA and BSES staff compared 3 available yield monitors (the Techagro, AgGuide and MT Data systems). This trial work has occurred over the past 2 years, in the district. The trials to date indicate that the Techagro yield monitor is providing the most accurate and reliable yield data.

During the 2009 harvest season 40 harvesters were fitted with Techagro or AgGuide yield monitors. Based upon the recent research findings HCSPL have decided to discontinue the AgGuide system but will continue to operate the Techagro system. It is hoped that new Techagro yield monitors can be purchased and fitted to local harvesters when funds are made available.

To date, growers and local agronomists have used yield data to target problem areas and to identify yield limiting factors such as waterlogging, fertiliser application rates, soil sodicity, soil acidity, soil salinity, and varietal selection issues.

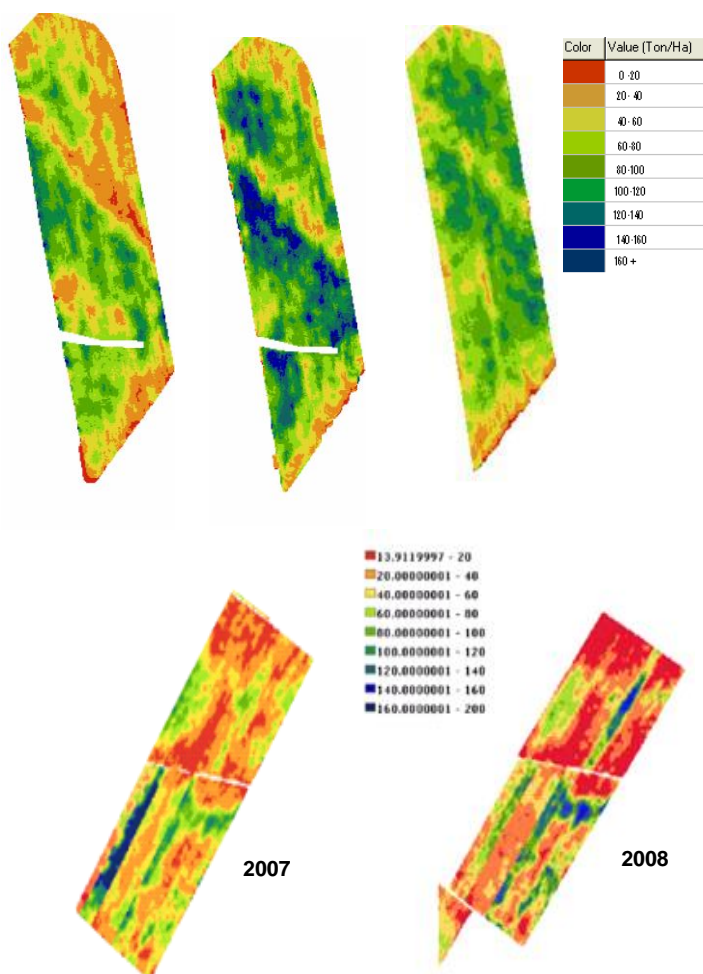
Below is an example of blocks yield mapped (with the Techagro system) over past years: Yield maps show areas of similar yields in successive years. Areas with high yield remained high over the 3 subsequent years and low yielding areas remained the same also. This is a positive result because it allows us to consider site specific land management practices to be adopted in the future.

Yield maps 2007-09 for the McKell site

(a) 2007

(b) 2008

(c) 2009



In-Field variability and yield monitor accuracy - maps printed from the web

MAPPING SOILS

During 2008-09 saw HCSPL, DEEDI, Soil Horizons, Terrain NRM, Northern Gulf NRM, and Burdekin Productivity Services staffs (involved in the SRDC project- BPS001) evaluate electromagnetic soil mapping equipment at sites at Mackay, Burdekin, Barron River Delta and the Herbert. The results to date have been promising.

Soil electrical conductivity map patterns, verified by strategic soil description and analysis, may be used as a basis for the assessment of changes in soil properties in sugarcane paddocks. Soil EC maps offer a low cost base map for the application of precision agricultural inputs where detailed soil maps are not available.

Soil management zones, related to variations in soil patterns, provide a framework for growers who wish to make site-specific decisions in applying appropriate management practices to individual areas within paddocks.

SRDC have recently funded a Grower Group project involving Mutarnee and Upper Burdekin growers to further evaluate the soil mapping systems and develop site-specific land management decisions on their own farms. This project will commence in 2010.



Veris unit at Pace Farm, Mutarnee



EM38 Mapping

BASESTATIONS AND AUTO-STEER

During the year we saw additional tractors and harvesters fitted with auto-steer. Growers and contractors are now utilising GPS technology for numerous other farm activities like: bed forming, discing, ripping, spraying and rotary hoeing. The incredibly rapid adoption of GPS technologies in the Herbert indicates a confident and innovative industry.

HCSPL continued to maintain and support the community GPS base station program in the Herbert. This program has been successful with most GPS auto-steer units utilising the HCSPL or Trimble base station network. Discussions have occurred with other GPS providers to provide access to the HCSPL network. GPS Ag and also Case IH will do some testing this year and are hopeful they can use the HCSPL CMR+ signal for auto-steer. HCSPL are also investigating opportunities to improve network coverage and reliability.

PRECISION AGRICULTURAL TOOLS AND THEIR USEFULNESS IN THE AUSTRALIAN SUGAR CANE INDUSTRY

The use of precision agricultural tools like GPS, yield monitors, remote and soil sensing equipment will allow management zones to be developed within a cane block for site specific land management practices to occur. SRDC have funded a number of projects operating within the Herbert region. The development of these tools offer significant opportunities, however funding is required for continued research and development to evolve the systems further.

FOCUSSING ON BUSINESS

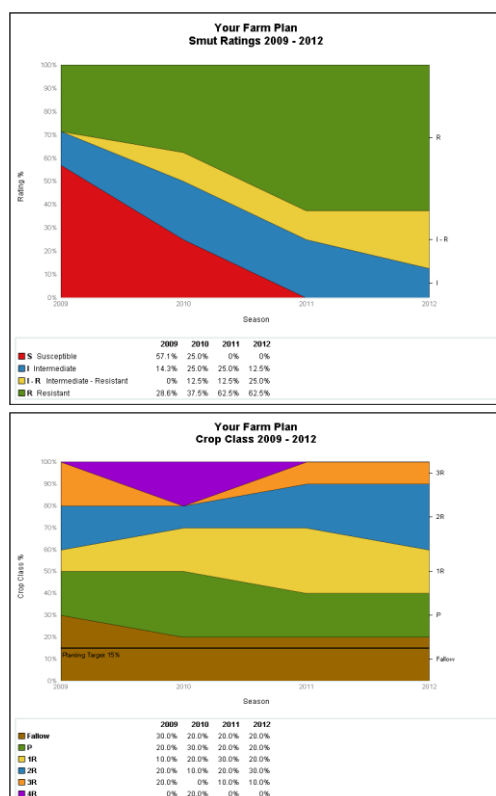
QCANESelect™ - WHOLE FARM PLANNING

While still offering a unique up to the minute variety selection service, QCANESelect™ now gives growers the ability to develop their whole farm planning for variety management.

Block by block management of fallow, plant and ratoon crops is now possible for up to several years in advance. A web based tool, QCANESelect™ whole farm planning allows growers to set their own parameters for issues such as level of disease risk allowable, percentage area under any one variety and several other key management issues. So if a grower asks himself a question such as, 'how can I best move towards more smut resistant varieties on my farm', QCANESelect™ whole farm planning can help.

In basic terms, whole-farm planning will aim to maximise a grower's productivity while managing risks associated with an over-reliance of just one or two varieties, or the risk of losses associated with one or more diseases. Several grower training courses are being planned for 2010 and will be conducted by BSES in association with the WISH group and Canegrowers. A grower information site will also be available at the BSES, Herbert River field day on the 13th April.

Below are examples of farm plans in relation to smut resistance and crop class.



REEF RESCUE ACHIEVEMENTS

- Completion of 31 Round 1 projects (from 59 applications for cane in the Herbert)
- Funding was secured for 47 projects in Round 2 (from 85 applications in the Herbert)
- Majority of funding across both Round 1 and Round 2 has gone to implementation of subsurface fertilising and new farming systems.

Other Reef Rescue Happenings

In November we had a visit from a federal government representative, Mr Kevin Gale. He spent a week in the northern region looking at projects funded through Reef Rescue from Round 1. His last day was spent touring five project sites in the Herbert. He was very impressed to see the great work being implemented by growers and appreciated hearing their views on how Reef Rescue funding was working in the Herbert and on their farms. He had a very interesting time and went away with a better understanding of farming in the wet tropics and the challenges that it presents. As a result of his trip through the wet tropics area, the federal government decided to allocate some further funding for Round 2 projects in the region.

In December we were also fortunate to have a visit from the Minister for Agriculture, Fisheries and Forestry, the Honourable Tony Burke. He came to meet with a small group of growers and to see a project that was funded in the first round as part of Reef Rescue with the use of NLP (National Landcare Program) funding. The project site that was visited was at Gino Scovazzi's and he looked at modifications that were made to an existing fertiliser box to convert it to a subsurface stool-splitting applicator. There was significant discussion on issues including Reef Rescue, Reef Regulation, the past and current efforts being made in the Herbert and what we still need to achieve. He gave a great wrap to our growers the following day in an interview on 4TO FM.

www.maff.gov.au



Laurie Spina, Leanne Carr and Tony Burke

Round 3 is the next step for most growers and there is already a long list of keen participants. The Herbert has had great success in securing funding to date and with so many interested growers this will surely keep up in future rounds. So get in early and develop your application and good luck!!

FORWARD PRICING

The uptake of Forward Pricing for the Herbert Region has been increasing with 50% of growers now participating in Forward Pricing. With the ability to price out to the 2012 season, growers can plan and budget with more certainty and there are advantages when financing their farm operations. Forward Pricing allows growers to lock in a price today for delivery in that season. The goal of Forward Pricing is long term viability and protection from extreme lows.

Prices are currently at historically high levels and there are a number of options available to growers. All growers regardless of size can forward price. For more information, please contact Tami McCarthy (Grower Pricing Officer) on 47 221 982.

REGIONAL ISSUES



The **GIVE 2009 (Grower Innovation Virtual Expo)** was jointly hosted by the Tully and Ingham grower groups and sugarcane industry service providers on the 24th – 25th March 2009 (huge effort by all). The event was a huge success with over 205 growers and industry personnel registering for the event. Growers attended from Mossman to Northern NSW.

The primary objective of the event was to encourage growers to discuss their own experiences, research and development which they were undertaking in their own businesses through 30 minute presentations.

The event also hosted guest speakers:

- Nick Hughes from Federal Government- Department of Climate Change
- Deepak Desai from the Indian Sugarcane industry
- Tom Rainey from QUT
- Allan Dale from Terrain NRM discussed the Reef Rescue Program

Special thanks to all the sponsors. Those who attended thoroughly enjoyed the event.

The next GIVE event will be hosted by the NSW industry in 2011 and it is hoped to take a delegation from the Herbert.



Discussing GPS technology at field tour -
(L-R) Matti Kangas (Abergowrie), Rod Sollitt (Tully),
John Dale (Trimble), John Markley (Mackay)



Inspecting min. tillage gear at Vince Russo's farm



The Herbert region hosted the SRDC sponsored 2009 Generation Next forum on the 26th and 27th of March, at Hinchinbrook Marine Cove. Forty-five under 45 year olds from all sectors of the industry registered for the event.

The forum allowed the youth of the industry to network, gain new leadership skills, while being challenged by the guest speakers and forum co-ordinators. Participants were also given the opportunity to develop new vision statements for the industry and express their opinions to current industry leaders through the open discussion forums.

Key note speakers at the forum were:

- Karen Baum from the Dairy industry discussing initiatives relating to young people in the Dairy industry.
- Alan Garside discussing the challenges faced by the Sugarcane Joint Venture program during its operation.
- Frikkie Botha from SRDC on his vision for the sugarcane industry.
- Dominic Nolan from ASMC discussing Dealing with Change.

Many new friendships were established and old ones rekindled over the 2 day event. A great time was held by all.



FLOOD DAMAGE AND RECOVERY

The major flood at the start of February 2009 was a one in 15 year event. Peaking at Gairloch at 12.25 metres, it was only surpassed in recent times by the 1967 flood which peaked at 12.6 metres. However a combination of its duration (two weeks), and the depth (12.25 metres at Gairloch) and strength of current, left the district with major damage to farm, road and tramline infrastructure.

A joint effort by Canegrowers, BSES, HCPSL, DPI&F, HRIC, CSR and HSC quantified the damage both on paper and spatially and several crisis meetings were held with both local Council and senior Government DPI&F officials.

Once the damage had been quantified in both paper based reports and in GIS flood modelling at the HRIC, a flood damage submission was made to the Government. Many thanks to all those who assisted in the relief and funding process. Your hard work resulted in a \$4 million dollar funding package for flood affected Herbert growers which assisted in restoring vital infrastructure in time for the crushing season.