



Sugarcane for the future

BSES Limited

Preliminary assessment of the impact of Cyclone Yasi and weather conditions from early 2010 on the 2011 sugarcane crop in North to Central Queensland



BSES Limited



**PRELIMINARY ASSESSMENT OF THE IMPACT OF CYCLONE YASI
AND WEATHER CONDITIONS FROM EARLY 2010 ON THE 2011
SUGARCANE CROP IN NORTH TO CENTRAL QUEENSLAND**

by

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SUMMARY

An assessment of the impacts of Severe Tropical Cyclone Yasi and poor weather conditions prevailing since early 2010 (including previous cyclones) on the 2011 sugarcane crop was made from 18 February 2011 to 4 March 2011 from Mossman to Sarina.

While Yasi was one of the largest cyclonic complexes to cross the Australian coast, its impact on the sugarcane crop was far outweighed by the prolonged and persistent unseasonal rainfall experienced since the middle of the 2010 harvesting season.

From Mossman to Sarina, at the time of inspection, approximately 2,000,000 tonnes of sugarcane production in 2011 will be lost as a direct result of the poor weather conditions.

Approximately 1,000,000 tonnes will be lost due to Cyclone Yasi.

Crop-loss data are based on mill crop-size forecasts that are expected to be too high in most regions. The loss figures will almost certainly rise when more accurate 2011 crop estimates are calculated by mills in the coming weeks. These estimates will account for the heavy and persisting rainfall being experienced in most regions and the impacts of Yasi.

On top of these sugarcane losses, CCS content in 2011 is expected to be reduced by approximately 1.0 to 2.5 units as a direct result of the adverse conditions.

The flow-on affects will impact on the 2012 sugarcane crop.

Approximately 5,500,000 tonnes of sugarcane in the region covered by this report could not be harvested in 2010 and was stood over for harvest in 2011. In 2010, CCS levels were well below average resulting in significantly reduced sugar production. This, combined with lost revenue due to having to standover cane, has had a major financial impact on all sectors of the Australian sugar industry.

1.0 BACKGROUND

This report assesses losses expected in the 2011 sugarcane crop in the Northern, Herbert, Burdekin and Central sugarcane growing regions due to two weather events: Cyclone Yasi on 2-3 February 2011 and excessive rainfall experienced over the previous 12 months, including the influences of Cyclones Ului (March 2010), Tasha (December 2010), Anthony (January 2011) and Yasi.

2.0 METHODOLOGY

The assessment commenced 15 days after Cyclone Yasi made landfall in the Mission Beach area. The delay allowed the true extent of cyclone damage to become evident.

Approximately one day was spent in each of the 10 canegrowing districts¹ conducting extensive on-ground inspections and in discussions with grower representatives, local productivity staff and BSES extension officers. The local BSES extension officer or productivity officer accompanied the author on the inspections. Virtually all areas of all districts were visited to provide a sound overview of the situation across the assessment area that covers 88% of the Queensland crop and 83% of the Australian crop.

Many individual cane blocks that were cyclone damaged or water damaged were closely inspected and photographed.

Crop statistical data used in this report were provided by milling companies, local industry representatives and BSES Limited. Where data were different, such as the forecast crop size at January 2011, an average of the supplied figures was used.

Because the time available to conduct the inspection and produce this report was limited, some generalisations about the impacts of the cyclone and wet weather have had to be made.

2.1 Production losses due to pre-Yasi high rainfall

Expected cane production losses due to the high rainfall experienced in all regions prior to Cyclone Yasi were calculated by comparing the forecast cane yields in each district in January 2011 to the average district yields achieved in the 10 years from 2000 to 2009.

2.2 Production losses due to Cyclone Yasi

Expected cane production losses due to the impact of Cyclone Yasi were calculated based on the extent of stalk breakage, stool tipping and lodging. Allowance was also made for the setback in growth that is believed to follow heavy buffeting of cane stools by cyclonic-force winds. Research findings that 1% stalk breakage resulted in cane loss of 0.44 tonnes/hectare by Matthews *et al.* (1987) were used in the cane-loss calculations.

Expected CCS losses were broadly estimated based on research on the effects on CCS of stalk breakage (Matthews *et al.* 1987), extraneous matter (Brotherton 1980) and lodging (Singh *et al.* 2002; Hurney *et al.* 2003).

¹ Babinda Mill closed in March 2011 and is amalgamated with South Johnstone in this report.

2.3 Observations of on-farm infrastructure damage, quantity and quality of planting material

General observations on the damage to farm buildings, headlands, waterways and crossings are noted in the appendices but are not designed to be a definitive record of total damage. Information on the availability and quality of planting material for use in 2011 was recorded.

2.4 Planned follow-up

A follow-up inspection is planned for late March-early April 2011 to verify the findings outlined in this report. This will take into account the weather conditions that prevail between the two reports.

3.0 LIMITATIONS TO THE ACCURACY OF ESTIMATED LOSSES

Ongoing heavy rainfall, local flooding, continued waterlogging of the crop and low solar radiation levels in many regions will result in losses greater than those estimated in this report.

Looking to historical rainfall data as a guide to likely crop impacts of heavy rainfall similar to that experienced in 2010-2011 is problematic. To illustrate this point, the August 2010 to February 2011 rainfall recorded at BSES Meringa near Gordonvale is, by far, the highest since records began in 1935. During this 6-month period, 2,571.5 mm of rain were recorded. The next wettest corresponding period is 1973-1974 when 2,174.8 mm of rain were recorded. Cane yield at Mulgrave dropped 14.2% from 87.4 t/ha in 1973 to 75.0 t/ha in 1974, years when crop husbandry was much different to contemporary management strategies.

The impact of every cyclone is different and conclusions drawn from the impacts of previous cyclones are not always fully applicable to the current event. The suite of varieties grown changes and each cyclone has different characteristics (duration, intensity, size of the complex, one or more wind directions that affects crop damage, time of year, localized impacts). Hence, while some research findings are used in the assessment of losses, generalizations or best estimates about the crop impacts of Yasi in each region have been made.

Several varieties exhibited a wide range of stalk breakage levels within a mill area. In one of the worst cyclone-impacted mill areas, stalk breakage in Q200[Ⓢ] ranged from almost zero in one part of the mill area to well over 50% in another section. This wide variation required some assumptions to be made in calculating the varietal losses.

The on-going impact of the cyclone and wet weather on the 2011 crop and beyond is difficult to assess, but a reduction in potential yield and profitability is expected in some mill areas due to factors associated with stool damage, increased weed growth, machinery damage to wet blocks, the disruption to planting schedules over the last two years and unavailability of some varieties for planting in 2011.

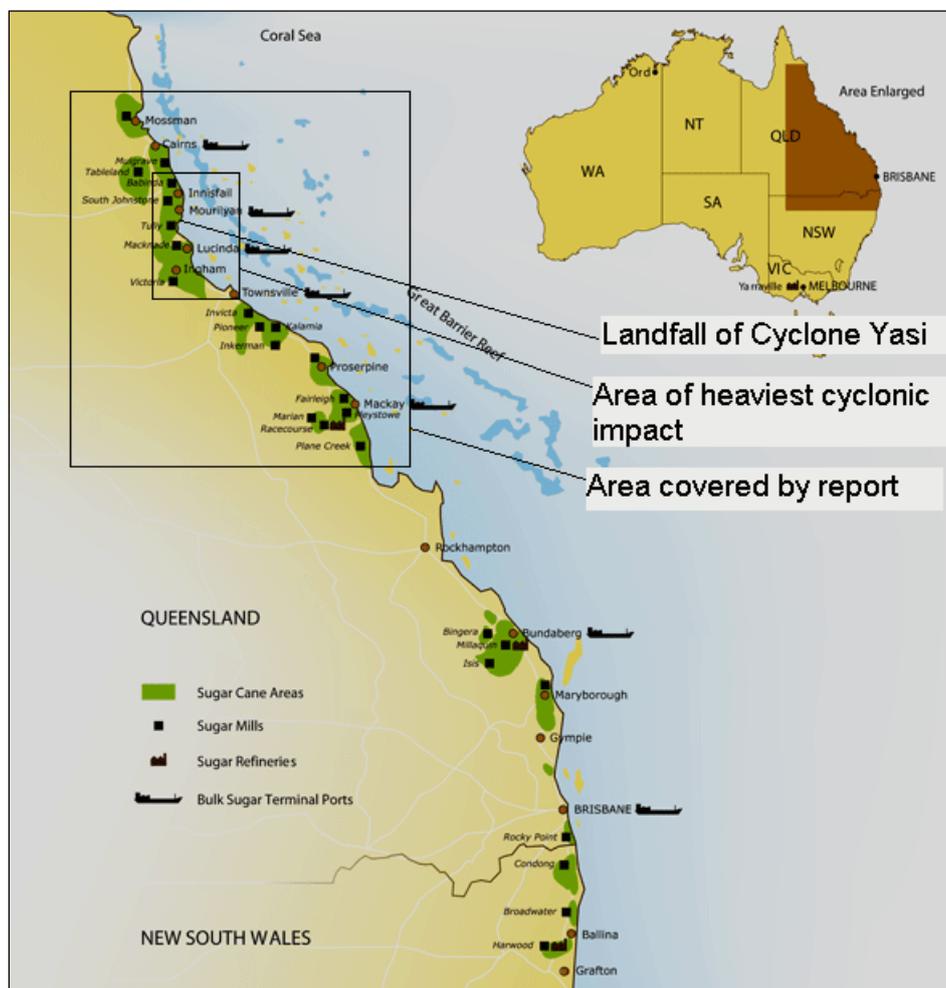
The pre-Yasi forecast crop sizes for 2011 for each region are very preliminary figures and are possibly too high in some areas. Forecasts have been used as standards against which estimated losses have been calculated. Forecasts lack the rigour involved in the determination of crop estimates which are calculated by the mills later in the year.

The total area for harvest in 2011 including standover cane is an estimation in some areas as final mill data was not always available.

4.0 IMPACT ON THE 2011 SUGARCANE CROP

4.1 Geographical location of damage from Cyclone Yasi

Winds from Cyclone Yasi had a major impact on the Babinda, Innisfail, Tully and part of the Herbert areas (Figure 1). Relatively minor impacts were experienced in the other regions covered in this report. As is the case with all cyclones, damage across each district was not uniform. Even within a particular mill area, damage to individual varieties sometimes varied greatly. Common across all areas, however, was the fact that taller crops and standover crops suffered little stalk breakage, while most snapped cane occurred in small, less advanced crops.



Map source: www.canegrowers.com.au

Figure 1 - Area covered by the report and major impact area of Cyclone Yasi

4.2 Varietal differences to cyclonic winds and impact on seed sources

Some individual varieties varied significantly in their ability to withstand cyclonic winds. An example is Q200^{db}. Even within the worst affected zone, stalk breakage for Q200^{db} varied from under 5% of a block to well over 50%. This variation is a reflection of factors such as crop size and the localised impacts of cyclonic winds. The cyclone susceptibility ratings allocated to varieties (Table 1) are an indication of varietal reactions in the worst of the wind damage.

The variety Q183^{db} suffered extremely heavy stalk breakage. A recently released and promising variety in north Queensland, Q183^{db} planting material in the Babinda to Herbert region will be at a premium in 2011. Other varieties that suffered significant breakage are Q166^{db} and Q187^{db} both of which are steadily decreasing their proportion of the cane supply due to susceptibility to smut. Several varieties released in the last two to three years including Q231^{db}, Q232^{db} and Q238^{db} suffered major stalk breakage in some regions, while other varieties, such as Q241^{db} and KQ228^{db}, performed very well.

Table 1 - Relative performance of some sugarcane varieties to damage from Cyclone Yasi in the worst affected areas

Variety	Susceptibility to cyclonic wind damage		
	Minor stalk breakage (<10% stalks broken)	Major stalk breakage (10-50% stalks broken)	Severe stalk breakage (>50% stalks broken)
Q138		✓	
Q166 ^{db}		✓	
Q186 ^{db}	✓		
Q187 ^{db}			✓
Q183 ^{db}			✓
Q200 ^{db}		✓	
Q208 ^{db}		✓	
Q217 ^{db}	✓		
Q218 ^{db}			✓
Q219 ^{db}			✓
Q220 ^{db}	✓		
Q229 ^{db}	✓		
Q231 ^{db}			✓
Q232 ^{db}			✓
Q237 ^{db}	✓		
Q238 ^{db}			✓
Q241 ^{db}	✓		
KQ228 ^{db}	✓		

Good-quality planting material for whole-stick planters could be difficult to source in some areas, although most cane is planted by billet planters that cope better with bent cane. Clean-seed plots in the worst affected mill areas have, in some cases, been severely depleted of suitable planting material or entirely lost due to the prolonged wet weather and/or cyclone damage. Appendices 2-12 include information about the quantity and quality of planting material for each region. Most broken cane is side-shooting, usually with two or three side-shoots. If this side-shot cane is used for planting material, higher than normal planting rates are advised to compensate for the likely reduced germination rate.

4.3 Extraneous matter and soil

The quantity of extraneous matter and soil delivered to mills in the cyclone-affected areas will be significantly above average. Contributing to the elevated extraneous matter levels will be the inability of harvesters to efficiently remove cane tops in very small, lodged and heavily sprawled crops, side-shoots, and soil intake resulting from harvester basecutters that are set lower than normal to gather sprawled crops. While adding to the tonnage of material processed by the mills, the negative effects on CCS, sugar quality and mill machinery will be significant.

In the area covered by this report, 5,500,000 tonnes of cane was stood over at the end of the 2010 harvest due to wet weather in late 2010. This standover cane will also reduce the quality of cane to be processed in 2011.

4.4 Other impacts

The prolonged adverse weather conditions have impacted on all aspects of farming operations:

- replacement of sugarcane smut-resistant varieties has slowed,
- weed infestations have soared,
- compaction and soil disturbance from harvesters and cane haul-outs are having an impact on the current crop,
- fertiliser for the current crop was frequently unable to be applied in 2010,
- legume plantings were greatly reduced and ruined by waterlogged soil, and
- crop maintenance and general farm work is often not possible.

The late end to the 2010 season had a very adverse impact on the 2011 crop. Along with the unharvested cane, CCS levels in 2010 were low, resulting in greatly reduced sugar production and a severe decline in expected cash flows. This issue has affected local businesses. Harvesting contractors were particularly hard hit in 2010 and will be again in 2011. Concern is mounting that insufficient contractors will operate in 2011 to harvest the crop effectively. In several regions, grower morale is low.

4.5 Sugarcane losses

Estimates of cane losses in 2011 have been calculated for the impacts of both Cyclone Yasi and wet weather between August 2010 and 4 March 2011 when the inspection concluded.

4.6 Cyclone Yasi cane losses

In most but not all areas, the cyclonic winds largely came from one general direction, sparing cane from twisting and splitting and reducing the incidence of stool tipping. Most cane that had sprawled or lodged had 'stood up' by the time the inspection was conducted, resulting in bowed but generally sound cane.

Table 2 shows estimated cane losses for the various regions taking into account a range of factors including stalk breakage, possible temporary cessation of cane growth in the post-cyclone period and possible stool damage.

Table 2 - Expected sugarcane losses due to Cyclone Yasi

Region	Forecast pre-cyclone 2011 crop (tonnes cane)	Estimated sugarcane reduction due to cyclone (tonnes cane)
Mossman	560,000	5,000 – 10,000
Tableland	675,000	5,000 – 10,000
Mulgrave	1,000,000	30,000 – 50,000
Former Babinda & South Johnstone	1,370,000	200,000 – 250,000
Tully	1,900,000	250,000 – 300,000
Herbert	3,800,000	300,000 – 350,000
Burdekin	9,000,000	0
Proserpine	1,450,000	0
Mackay	4,650,000	0
Plane Creek	1,200,000	0
Total	25,605,000	790,000 – 970,000

4.7 Wet weather cane losses

Almost unprecedented wet weather has been experienced in the last year. Table 3 highlights the well above average rainfall experienced in all areas in the 12 months since March 2010. Heavy rain continues to fall.

Table 3 - Rainfall data for north to central Queensland from 1 March 2010

Region	Location	Long-term average annual rainfall (mm)	12-month rainfall 1 March 2010 to 28 February 2011 (mm)	Rainfall 1 to 11 March 2011 (mm)
North	Port Douglas	2026.5		
	Mareeba Airport	866.1	1340.8	186.8
	Cairns Airport	2012.4	3105.6	328.0
	Innisfail	3571.5	5135.2	355.2
Herbert	Ingham Composite	2082.9	3564.8	790.7
	Hawkins Creek		4527.7	657.2
	Allingham		2945.4	603.0
	Bambaroo		2975.2	733.4
	Lucinda		3977.4	683.8
Burdekin	Ayr DPI Station	958.5	1321.4	99.4
	Home Hill		1468.8	149.0
Central	Proserpine Airport	1452.9	2348.0	189.0
	Mackay Airport	1570.6	2571.8	89.6
	Mirani		2883.3	116.8
	Plane Creek Mill		2746.1	86.4

Source: www.bom.gov.au

The waterlogged conditions are continuing to seriously compromise cane growth. Low levels of solar radiation associated with almost constant cloud cover during the peak growing period are particularly concerning.

Since rainfall recordings at BSES Meringa began in 1935, no other year has recorded in excess of 100 mm for each of the months September to December. Hence, comparisons with similar years to determine possible cane yields for 2011 are difficult. However, the heavy rainfall that has continued in most regions in 2011 (for example, Meringa recorded 512 mm in January and 869 mm in February) will undoubtedly result in a significantly reduced yield in the 2011 season. The extent of that reduction will depend on the amount of extra rainfall and associated level of solar radiation received until harvesting begins in May-June 2011.

Table 4 compares the current August to February rainfall statistics with the most comparable period recorded at BSES Meringa in 1973-74 when cane yield declined in the year following the wet harvest and growing season by 14%.

Table 4 - Rainfall for August to February at BSES Meringa and cane yields in Mulgrave Mill area for 1973-74 and 2010-2011

Rainfall (mm)	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Total	Mulgrave Mill cane yield in wet year (t/ha)	Mulgrave Mill cane yield in following year (t/ha)
1973-74	6.5	14.6	60.3	251.8	830.7	364.3	646.7	2174.8	87.4	75.0
2010-11	43.0	106.4	246.5	275.6	519.1	511.9	869.0	2571.5	88.7	-

In general, cane planted or harvested before mid-August 2010 has produced very sound crops. In contrast, cane planted and harvested after that date is extremely poor. Throughout the area covered by this report, many hundreds of hectares of cane across most mill areas are unlikely to be sufficiently advanced for harvest in 2011.

Table 5 shows the estimated losses due to the high rainfall experienced in most areas. These losses have already been factored into the forecast crop sizes for 2011 as calculated by the sugar mills.

Table 5 - Expected sugarcane losses due to high rainfall August 2010 to February 2011

Region	Forecast pre-cyclone 2011 crop (tonnes cane)	Normal expectations for 2011 crop (tonnes cane)*	Estimated sugarcane loss/gain	
			% of crop	tonnes cane
Mossman	560,000	520,000	+ 8	+ 40,000
Tableland	675,000	625,000	+ 8	+ 50,000
Mulgrave	1,000,000	1,100,000	- 9	- 100,000
Former Babinda & South Johnstone	1,370,000	1,700,000	- 19	- 330,000
Tully	1,900,000	2,200,000	- 14	- 300,000
Herbert	3,800,000	4,200,000	- 10	- 400,000
Burdekin	9,000,000	9,000,000	0	0
Proserpine	1,450,000	1,750,000	- 17	- 300,000
Mackay	4,650,000	5,350,000	- 13	- 700,000
Plane Creek	1,200,000	1,150,000	+ 4	+50,000
Total	25,605,000	27,645,000	- 7	- 1,990,000

* Based on average cane yield (t/ha) 2000-2009 times expected area for harvest in 2011

IMPORTANT NOTE: Many of the crop sizes for 2011 forecast in January 2011 will be revised significantly downward when more accurate crop estimates are conducted in the coming weeks. The expected reduction is due to heavy and persistent rainfall that is being experienced in most regions, as well as the impacts of Cyclone Yasi. Hence, the final losses due to both climatic events as contained in this report are likely to be underestimated.

4.8 CCS losses due to Cyclone Yasi

Attributing a CCS reduction to the impact of Cyclone Yasi is difficult to do with any degree of confidence. CCS will be negatively affected because of lodging resulting in cane quality deterioration and increased levels of extraneous matter in the cane supply, suckering, and side shooting of the broken stalks. Some of the late-season cane supply will comprise what is essentially six-month old ratoon cane – tillers and suckers that will grow in lodged crops after the cyclone.

CCS reduction of between 0.5 units for the less affected areas to a maximum of 2.5 units in the severely damaged sectors can be expected.

Growers will be advised to harvest badly broken cane as late as feasibly possible to allow time for new growth to occur and to assist CCS levels. Some growers may be forced to slash poor ratoons from crops late-harvested in 2010 due to poor growth from the wet conditions. This will have an adverse effect on all sectors of the industry. However, most growers should be able to salvage a crop from damaged cane.

5.0 IMPACT ON FARM INFRASTRUCTURE

General observations of the impacts of flooding and Cyclone Yasi on farm infrastructure were made during the inspection of crop damage. Some farm buildings were destroyed by Yasi in the Babinda to Herbert region. Appendices 6 and 7 contain some example photographs. Overall, structural damage was much less than occurred in Cyclone Larry in 2006, but some individual farming families face significant losses.

Flooding and strong run-off water in the last year has scoured headlands, on-farm crossings and river banks across the area covered in this report. Appendices 3, 5 and 7 contain some example photographs.

The clearance of debris from fallen trees and floods will require a major effort on some farms and along watercourses.

6.0 IMPACT ON PLANTING MATERIAL

Sound, quality planting material will be in short supply in some areas, particularly for whole-stick planters. Because of severe breakage, the new variety in north Queensland, Q183⁰, will be particularly difficult to source. Comments on the quality and quantity of planting material in each region are contained in Appendices 2-12.

7.0 CONCLUSIONS

Cyclone Yasi will have a significant impact on the 2011 crop in the Babinda to Herbert region. However, initial assessments of massive crop damage are inaccurate.

Of far greater concern is the huge impact on the crop caused by record or near-record rainfall between mid-August 2010 and the time of writing this report (early March 2011). That rainfall is continuing. A more accurate assessment of its impact on the 2011 crop will be made in a second inspection of the Mossman to Plane Creek region by mid-April.

The two weather events will contribute to the smallest sugarcane crop to be harvested in Australia since 1991.

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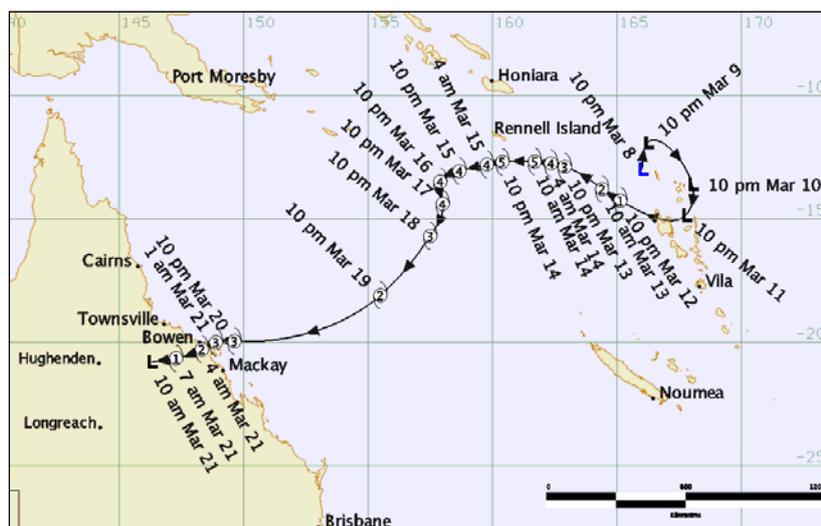
9.0 ACKNOWLEDGEMENTS

Alan Hurney, Peter Allsopp, Eoin Wallis and Greg Shannon provided suggestions and advice and reviewed this report before publication. Many industry representatives, BSES staff and productivity board staff in all regions contributed to the information gathered for the compilation of the report and accompanied the author during the regional visits. Their names are listed in Appendices 2-12.

APPENDIX 1 – Details of Cyclones Ului, Tasha, Anthony and Yasi

Severe Tropical Cyclone Ului

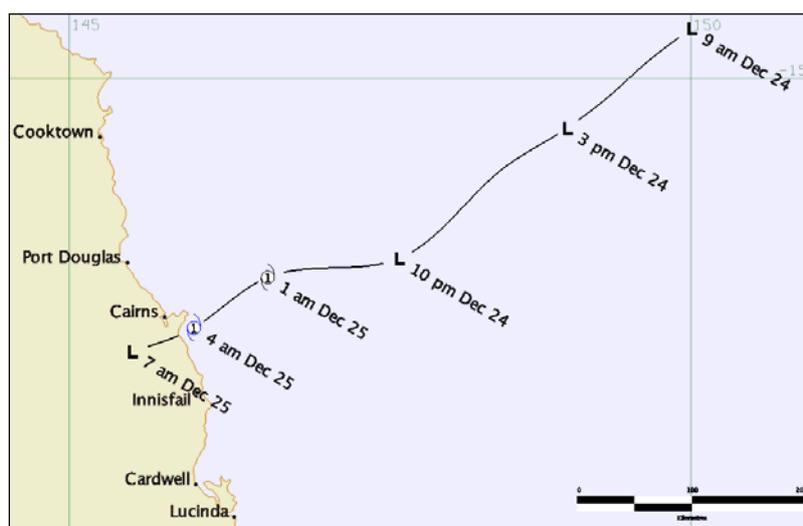
Severe Tropical Cyclone Ului made landfall near Airlie Beach on the Whitsunday Coast at approximately 1.30 am on 21 March 2010. Significant wind damage was reported around the Central Coast and Whitsundays district, mainly between Airlie Beach and Mackay.



Source: <http://www.bom.gov.au/announcements/sevwx/qld/qldtc20100312b.shtml>

Tropical Cyclone Tasha

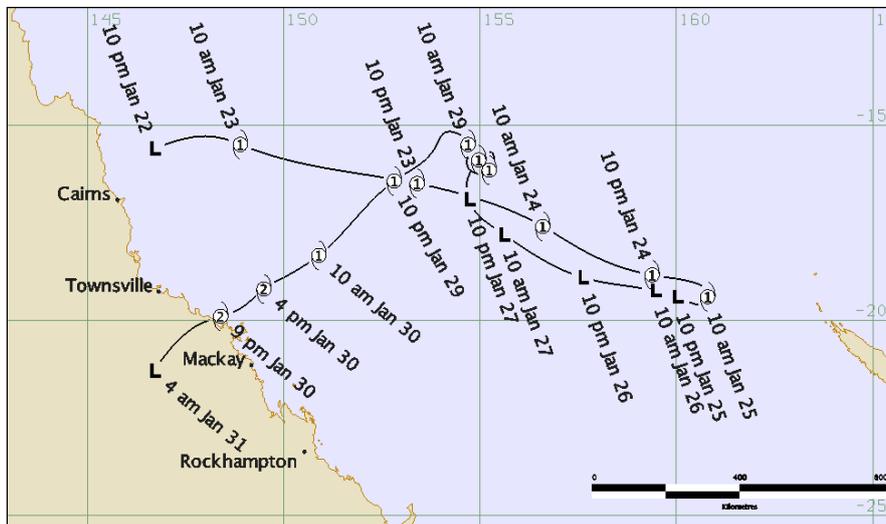
Tasha formed early on Christmas morning 2010 near Agincourt Reef to the east of Cairns and crossed the coast about 5:30 am on the same day south of Cairns between the townships of Gordonvale and Babinda. It was a weak Category 1 system, but brought significant rain to a broad area of northern Queensland.



Sources: <http://reg.bom.gov.au/climate/current/annual/qld/summary.shtml>
<http://reg.bom.gov.au/announcements/sevwx/qld/qldtc20101225.shtml>

Tropical Cyclone Anthony

Anthony crossed the coast near Bowen on 30 January 2011 as a Category 2 cyclone. A wind gust of 128 km/h was recorded at Hamilton Island Airport on the 30th. Bands of heavy rain affected the Central Coast and northern Coalfields. The heaviest rainfalls occurred about the Pioneer River catchment. Minor to moderate flooding occurred on the Pioneer River.



Source: <http://www.bom.gov.au/climate/current/month/qld/summary.shtml>

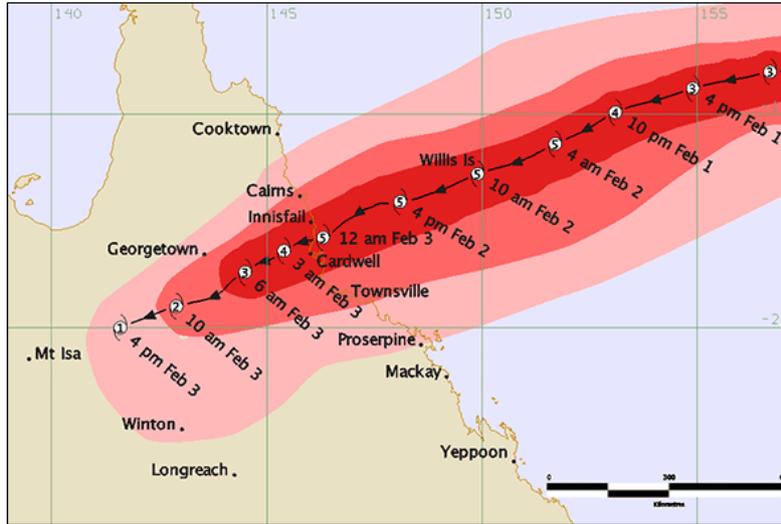
Severe Tropical Cyclone Yasi

Yasi, a marginal category 5 system, made landfall on the southern tropical coast near Mission Beach between midnight and 1.00 am on 3 February. Yasi is one of the most powerful cyclones to have affected Queensland since records commenced. A barograph at the Tully Sugar Mill recorded a minimum pressure of 929 hPa as the eye passed over, suggesting wind gusts of about 285 km/h were possible. Significant wind damage was reported between Innisfail and Townsville where the destructive core of the cyclone crossed. Tully and Cardwell suffered major damage to structures and vegetation with the eye of the cyclone passing over Dunk Island and Tully around midnight on 2 February.

The largest rainfall totals were near and to the south of the cyclone and were generally in the order of 200-300 mm in the 24 hours to 9.00 am Thursday. These rainfall totals were experienced in the area between Cairns and Ayr, causing some flooding. The highest totals were: South Mission Beach 471 mm; Hawkins Creek 464 mm; Zatta's 407 mm, Bulgun Creek 373 mm, along the Tully and Herbert River catchments.

Coastal Crossing Details:

- Crossing time: 12.00 am – 1.00 am EST, 3 Feb 2011
- Crossing location: Near Mission Beach, 138 km S of Cairns
- Category when crossing the coast: 5
- Maximum category: 5
- Maximum sustained wind speed: 205 km/hr (estimated)
- Maximum wind gust: 285 km/hr (estimated)
- Lowest central pressure: 929 hPa



Source: <http://www.bom.gov.au/cyclone/history/yasi.shtml>

APPENDIX 2 – Inspection details for Mossman Mill area

Region	MOSSMAN
Date of assessment	18 February 2011
Assessor	David Calcino
January 2011 crop forecast (t)	560,000
5 major varieties / % of 2011 crop (estimated) / degree of breakage (%) / top-mid-bottom breakage	Not applicable – little snapped cane from cyclone
Level of sprawling 1=none; 5=flat	2
Level of stool tipping 1 = 0%; 2 = 1-5%; 3 = 6-10%; 4 = >10%	1
Comments on blocked drains and damage to crossings	No problems observed or reported
Debris in cane blocks 1 = none; 2 = minor; 3 = intermediate; 4 = major*	1
Comments on debris e.g. on headlands or waterways	Large trees down at mill caused some damage with large clean-up operation post cyclone. Most debris (vegetation) was on farms along the river which the heaviest wind seemed to follow.
Amount of standover cane (t)	0
January 2010 crop forecast (t)	551,550
2010 final tonnes, yield & CCS	536,569; 75.0; 11.70
Ave yield & CCS 2000-2009	72.0; 13.21
Availability and quality of planting material	90% billet planting / 10% stick planting. Few problems envisaged. Cyclone winds were from one direction (west) so no twisting of cane. Sprawled cane now standing with bow but no problem for billet planters.
Contacts	Alec Ford (Mossman Agricultural Services Technical Field Officer – agronomy) Don Murday (Chair ACFA, Director Mossman Central Mill) Bill Phillips-Turner (Chair Mossman Central Mill Board) Gerard Puglisi (Chair Mossman Next Generation, Northern Director ACFA) Drew Watson (Chair Mossman CANEGROWERS, Director CANEGROWERS Board)
Comments from contacts and observations	All contacts agreed there was little damage from Yasi. Most damage occurred along the river but even there it was relatively light and isolated damage: very minor stool tipping, sprawling, small amount of lodging in blocks that have now mostly stood up, lot of trees and vegetation that required cleaning up. Most of the mill area but particularly the northern sectors continue to be waterlogged which is having a big impact on growth during this prime summer growing period. 668 mm of rain fell during the 2010 crushing season; one of the wettest crushes in a very long time. Considerable rain through the end of August, all September and most of October, November and December made harvesting the crop very difficult and, as a consequence, the mill lost around three weeks of harvesting. Cutting in the muddy conditions and the increased suckering had a dramatic effect on CCS with the mill struggling to reach double digits in the final weeks. The total area harvested for 2010 was 7,166 ha with an average CCS of a poor 11.7. About 1,000 ha of replant and fallow plant cane was planted for the 2011 crop. The wet weather reduced the area planted and a considerable amount of the cane that was planted has suffered due to the rain. The very wet conditions made it very difficult to maintain equity and as a result harvesters were

	<p>cutting where they could to try and keep the mill operating.</p> <p>The major impact on the 2011 crop will be a result of extremely poor weather conditions that occurred during the 2010 harvesting and current growing season. Approximately 250 ha (4% of total mill area) of the 1,350 ha that was intended for planting could not be planted because of the wet conditions. The majority of blocks planted and harvested in the second half of 2010 have or will suffer significant yield losses because of the relentless 2010 rainfall that has continued into 2011 resulting in waterlogged conditions and low levels of solar radiation. Approximately 80 ha of cane planted in 2010 is so poor it will not be harvested in 2011.</p> <p>Q138, Q166[Ⓛ] and Q231[Ⓛ] have some top breakage but these varieties comprise a very small proportion of the crop. Q217[Ⓛ] and KQ228[Ⓛ] have a very small level of breakage.</p>
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*Minor e.g. light timber; sheet of iron

Major e.g. trees; multiple sheets of iron; remains of sheds or rooves

Photographs of the Mossman Area



18 Feb 2011 - Silky Oaks Road, area of heaviest damage. Stripped rainforest and some lodged cane.



18 Feb 2011 - Silky Oaks Road. Minor stool tipping (left); flood mark and lodged cane (right)



18 Feb 2011 - Brie Brie Estate



Broken and side - shot Q166^ϕ

APPENDIX 3 – Inspection details for Tableland Mill area

Region	TABLELAND
Date of assessment	21 February 2011
Assessor	David Calcino
January 2011 crop forecast (t)	675,000
5 major varieties / % of 2011 crop (estimated) / degree of breakage (%) / top-mid-bottom	Not applicable – very little snapped cane from cyclone
Level of sprawling 1=none; 5=flat	2
Level of stool tipping 1 = 0%; 2 = 1-5%; 3 = 6-10%; 4 = >10%	1
Comments on blocked drains and damage to crossings	On-farm crossings ruined by heavy rainfall early in 2011 in the Arriga and other regions are now totally impassable.
Debris in cane blocks 1 = none; 2 = minor; 3 = intermediate; 4 = major*	1
Comments on debris e.g. on headlands or waterways	Green trash blankets were washed out of some blocks by heavy rainfall prior to Yasi.
Amount of standover cane (t)	1,000
January 2010 crop forecast (t)	630,000
2010 final tonnes, yield & CCS	651,922; 94; 13.59
Ave yield & CCS 2000-2009	90.3; 13.64
Availability and quality of planting material	All cane is billet planted. No problems envisaged.
Contacts	Drewe Burgess (BSES) Rico Cabassi (CANEGROWERS; Tableland Sugar Services Ltd) Bronwyn Francis (Manager CANEGROWERS) Tom Maisel (Chair CANEGROWERS)
Comments from contacts and observations	<p>The poor 2010 seasonal conditions on the coast were not experienced on the Tableland. However, indirect but serious consequences did result and will have continuing impacts. The poor 2010 weather resulted in the coastal mills Babinda and South Johnstone shutting for extended periods. The closures meant syrup from Tableland Mill could not be processed causing Tableland Mill to also close resulting in a significantly extended 2010 crushing season. The delay resulted in the final weeks of crushing being affected by heavy rainfall. The late 2010 season closure is having a negative impact on the 2011 crop. Bagasse stockpiles at Babinda and South Johnstone mills may have been destroyed by rainfall following Yasi. The Tableland stockpile may have to be trucked to South Johnstone at an extremely high cost - \$65/tonne of bagasse.</p> <p>Lightning struck Tableland Mill twice resulting in some infrastructure damage.</p> <p>The highest part of the mill area, Paddys Green on top of the GDR, is exhibiting no signs of cyclone impacts. Cyclone Yasi damage to the Tableland crop is very minimal.</p> <p>Lodging is due to the crop size and is a normal occurrence.</p> <p>Legume crops could not be planted in 2010 on some farms due to prolonged wet blocks.</p> <p>Erosion occurred in some blocks even where GCTB was retained on sprayed out final ratoon cane.</p> <p>A major issue: "The mill being able to get the crop off in a timely manner."</p>

*Minor e.g. light timber; sheet of iron. Major e.g. trees; multiple sheets of iron; remains of sheds or rooves

Photographs of Tableland Mill area



21 Feb 2011 - Typical crop of Q208^ϕ on the highest part of the mill area. No cyclone damage.



21 Feb 2011 - One of the road crossing washouts on a cane farm caused by heavy rain

APPENDIX 4 – Inspection details for Mulgrave Mill area

Region	MULGRAVE
Date of assessment	21 February 2011
Assessors	David Calcino
January 2011 crop forecast (t)	1,000,000
5 major varieties / % of 2011 crop / degree of breakage (%) / top-mid-bottom	Not applicable – little snapped cane from cyclone
Level of sprawling 1=none; 5=flat	2
Level of stool tipping 1 = 0%; 2 = 1-5%; 3 = 6-10%; 4 = >10%	2
Comments on blocked drains and damage to crossings	No blockages or damage seen or reported
Debris in cane blocks 1 = none; 2 = minor; 3 = intermediate; 4 = major*	2 Much more debris is lying around farm buildings and houses than in cane blocks
Comments on debris e.g. on headlands or waterways	Many farms with fallen trees and branches along waterways and headlands and around farm buildings
Amount of standover cane (t)	14,300 at time of standing over
January 2010 crop forecast (t)	1,150,000
2010 final tonnes, yield & CCS	1,086,000; 88.7; 11.79
Ave yield & CCS 2000-2009	81.5; 13.35
Availability and quality of planting material	90% billet planting / 10% whole stick planting. No major problems envisaged. Q208 [Ⓛ] dominated planting in 2010 at 56.5% of the area planted; Q200 [Ⓛ] was the second favourite variety at 18.9%. Q237 [Ⓛ] and KQ228 [Ⓛ] were also preferred as growers adopt more smut-resistant varieties. Adequate supplies of all these varieties should be available in 2011.
Contacts	Jeff Day (Chair CANEGROWERS) Robert Rossi (CANEGROWERS) David Wallis (Mulgrave Central Mill)
Comments from contacts and observations	<p>2011 crop harvested after the second round last year is seriously affected by poor weather conditions: 25-50% productivity reduction. Harvesting in 2010 was seriously compromised and the season length was extended by approximately one month which is having a serious impact on this year's crop. Many blocks were unable to be planted. Fertiliser was lost through denitrification and leaching. 6,000 tonnes of cane was condemned in 2010.</p> <p>About the last 30% of the 2010 crop to be harvested has been heavily affected by the poor weather conditions. On average, this area will produce about 50% of an average yield.</p> <p>Some farms have a lot of cleaning up of cyclone debris to do.</p> <p>Farms are too wet to allow machinery to enter blocks to control weeds which are becoming a major problem. The longer the waterlogged conditions continue, the bigger the weed issue will become. The impact of weed infestations can continue for years.</p> <p>Very little damage to the crop from Yasi. Highest point in the area, Green Hill, has a banana plantation that is unaffected by Yasi. Cyclone Tasha lodged some of the larger blocks of cane.</p> <p>Some blocks comprise sugarcane crops that are so backward it is highly unlikely they will be harvested this season. If they are harvested, the cost to do so will be high leaving little, if any, profit margin.</p>

*Minor e.g. light timber; sheet of iron. Major e.g. trees; multiple sheets of iron; remains of sheds or rooves

Photographs of Mulgrave Mill area



7 Oct 2010 - Young plant cane (left) and ratoons (right) infested with grass and vines, Barbagallo Road. Too wet to control.



10 Mar 2011



The same blocks as left, five months later



22 Oct 2010 - Young plant cane under water, Wrights Creek



10 Mar 2011



Same blocks as left, five months later



26 Nov 2010 - Block after wet harvesting, Barbagallo Road



10 March 2011 – Same block as left, five months later



16 Feb 2011 - Green Hill cane and banana plantation 13 days after cyclone.

APPENDIX 5 – Inspection details for former Babinda Mill area

Region	BABINDA			
Date of assessment	22 February 2011			
Assessor	David Calcino			
January 2011 crop forecast (t)	1,370,000 (for combined former Babinda Mill and South Johnstone Mill)			
7 major varieties / % of 2011 crop (approx) / degree of breakage (%) / top-mid-bottom	Q200 ^{db}	31	1-50	Top
	Q186 ^{db}	15	0-5	Top
	Q187 ^{db}	7	80-90	Top
	Q166 ^{db}	6	10-50	Top
	Q218 ^{db}	5	50-60	Top
	Q217 ^{db}	4	0-10	Top
	Q219 ^{db}	4	50-60	Top
	Most broken cane is side-shooting, usually with 2-3 side-shoots. Except for Q187 ^{db} , cane growth stage has major impact on stalk breakage – small crops suffered far more breakage than advanced blocks which could bend and lodge with the high winds.			
Level of sprawling 1=none; 5=flat	2			
Level of stool tipping 1 = 0%; 2 = 1-5%; 3 = 6-10%; 4 = >10%	2			
Comments on blocked drains and damage to crossings	Many farm crossings and headlands heavily damaged by flood water and runoff. Sections of Russell River bank badly eroded with fallen trees causing problems.			
Debris in cane blocks 1 = none; 2 = minor; 3 = intermediate; 4 = major*	2			
Comments on debris e.g. on headlands or waterways	Vegetation debris is a problem on some farms.			
Amount of standover cane (t)	76,000 (863 ha) at time of standing over. Standover cane handled cyclone well: no evidence or reports of broken cane.			
January 2010 crop forecast (t)	1,857,250 for combined South Johnstone and Babinda			
2010 final tonnes, yield & CCS	630,072 (combined South Johnstone and Babinda = 1,839,112); 89; 10.33			
Ave yield & CCS 2000-2009	(Data for all Bundaberg Sugar coastal mills) 74.4; 12.59			
Availability and quality of planting material	90% billet planting / 10% whole-stick planting. Quality will be satisfactory but not high. Some varieties e.g. Q183 ^{db} , Q187 ^{db} will be in short supply for whole stick planters. Clean seed plot operated by IBCPS is badly damaged by the cyclone so plants from that source will be problematic. A large planting program would normally be undertaken in 2011 because of the restricted planting possible in 2010. Some growers will have to plant second choice varieties where the preferred clone is unavailable.			
Contacts	Stephen Calcagno (CANEGROWERS) Charlie Zappala (Deputy Chair CANEGROWERS) Michael Porta (BSES) Guido Ghidella (grower) Romeo Ghidella (grower)			
Comments from contacts and observations	<p>“The bigger the cane, the better it performed in the cyclone (Yasi).” “Most losses are due to the 2010 seasonal conditions.” “We’ve lost the best growing months (January and February) because of the weather conditions.”</p> <p>Some areas are more affected than others e.g. Harvey Creek where the wind funnelled between mountains.</p> <p>Wind direction from west and then south.</p> <p>The constant wet weather has seriously affected crop husbandry. Canegrub control was often not possible in 2010, weed control has been</p>			

	<p>compromised on most farms, and filling in of plant cane was not possible in many instances.</p> <p>The cyclone opened the crop which has promoted strong weed growth. Vines in particular are a problem. Farms are too wet to allow machinery to enter blocks to control weeds.</p> <p>General observations: Q186^ϕ – little breakage Q183^ϕ – 2% of crop; mainly for plants in 2011. >50% breakage with small cane the worst affected: very small plant cane is all broken. Both Tasha and Yasi had an impact. Q187^ϕ – >80% top breakage in all growth stages Q200^ϕ – very little breakage; was lodged after Yasi, now standing with a bend but virtually no breakage Q208^ϕ – small cane with up to about 1 m of stick quite badly top broken; larger cane has little breakage Q218^ϕ – about 50% top breakage and lodged KQ228^ϕ – little breakage Q229^ϕ – very little breakage; some bent cane. Q231^ϕ – ~30% of small cane is broken; bigger crops have little breakage. Q237^ϕ – no breakage Q241^ϕ – almost no breakage</p> <p>IBCPS plot breakage information (figures for some varieties are height dependent): Q183^ϕ 60-95% Q186^ϕ 0-5% Q200^ϕ 50% Q208^ϕ 30-40% Q231^ϕ 95% Q232^ϕ 50% Q238^ϕ 60%</p> <p>Worst affected areas – Bellenden Ker, Bartle Frere, road to The Boulders.</p> <p>A very large number of blocks comprise sugarcane crops that are so backward it is highly unlikely they will be harvested this season. If they are harvested, the cost to do so will be high leaving little, if any, profit margin.</p>
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*Minor e.g. light timber; sheet of iron. Major e.g. trees; multiple sheets of iron; remains of sheds or rooves

Photographs of the former Babinda Mill area



22 Feb 2011 - Snapped Q187^ϕ,
Harvey Creek



22 Feb 2011 - Badly broken Q208^ϕ
and unaffected KQ228^ϕ



22 Feb 2011 – Q187^ϕ dead tops from snapped stalks



22 Feb 2011 – Snapped Q187^ϕ and invading vines into formerly canopy-enclosed crop



22 Feb 2011 – Metal tags driven into tree during Cyclone Yasi, Boulders 'Rd



22 Feb 2011 – Snapped and side-shot Q183^ϕ, Boulders Rd



22 Feb 2011 - Snapped cane, Boulders Road



22 Feb 2011 - Snapped crop at Garradunga



22 Feb 2011 - Total loss of Q183^ϕ plant source, Bartle Frere



22 Feb 2011 - Vines invading badly broken crop



22 Feb 2011 - Eroded headland

APPENDIX 6 – Inspection details for South Johnstone Mill area

Region	SOUTH JOHNSTONE			
Date of assessment	22 February 2011			
Assessor	David Calcino			
January 2011 crop forecast (t)	1,370,000 (combined former Babinda Mill and South Johnstone Mill)			
6 major varieties / % of 2011 crop (approx) / degree of breakage (%) / top-mid-bottom	Q200 ^{db}	30	10-50	Top
	Q186 ^{db}	20	0-10	Top
	Q166 ^{db}	9	10-50	Top
	Q220 ^{db}	9	Not observed	Top
	Q208 ^{db}	6	10-40	Top
	Q187 ^{db}	6	80-90	Top
	Most broken cane is side-shooting, usually with 2-3 side-shoots. Except for Q187 ^{db} , cane growth stage has major impact on stalk breakage – small crops suffered far more breakage than advanced blocks which could bend and lodge with the high winds.			
Level of sprawling 1=none; 5=flat	3			
Level of stool tipping 1 = 0%; 2 = 1-5%; 3 = 6-10%; 4 = >10%	2			
Comments on blocked drains and damage to crossings	Some serious washouts of crossings. Tramline bridge destroyed.			
Debris in cane blocks 1 = none; 2 = minor; 3 = intermediate; 4 = major*	2			
Comments on debris e.g. on headlands or waterways	Mainly in southern section (Liverpool Creek etc)			
Amount of standover cane (t)	120,000 (1,340 ha) at time of standover			
January 2010 crop forecast (t)	1,857,250 for combined South Johnstone and Babinda			
2010 final tonnes, yield & CCS	1,209,040 (combined South Johnstone and Babinda = 1,839,112); 89.0; 10.94			
Ave yield & CCS 2000-2009	(Data for all Bundaberg Sugar coastal mills) 74.4; 12.59			
Availability and quality of planting material	75% billet planting / 25% stick planting. Much of the cane is bowed which will provide difficulties for whole stick planters in 2011. Sources for billet planters should be adequate except for Q183 ^{db} . Will be a shortage of planting material for whole stick planters.			
Contacts	Steven Bisbal (grower) Bill Dalton (BSES) Dino Della Mattea (grower) Joseph Marano (Chair CANEGROWERS) Michael Oldano (grower) René Oldano (grower) Alf Strano (grower)			
Comments from contacts and observations	Main area damaged is the Liverpool Creek, Cowley, Kurramine Beach region to the south. Many farm building damaged or destroyed, high level of crop breakage, washouts of waterway crossings, at least one bridge servicing cane tramway destroyed. Growers we spoke with in all areas are very demoralized. Q219 ^{db} – serious breakage Q229 ^{db} – very little breakage Q241 ^{db} – no breakage except at Oldano which is the only case we know of. Q183 ^{db} – 1% of current crop; mainly for plants in 2011. Serious breakage. A very large number of blocks comprise sugarcane crops that are so backward it is highly unlikely they will be harvested this season. If they are harvested, the cost to do so will be high leaving little, if any, profit margin.			

	<p>As in Babinda, wind from south then west.</p> <p>Growth stage had major impact on breakage. Seems to be 2-3 weeks of "shock" to the crop following cyclone – no growth (no new leaves yet)</p> <p>Opened, sprawled and lodged crops – serious infestations of vines, grasses and weeds. Spraying for weeds has been almost impossible.</p>
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*Minor e.g. light timber; sheet of iron. Major e.g. trees; multiple sheets of iron; remains of sheds or rooves

Photographs of the South Johnstone mill area



22 Feb 2011 - Severe damage at Martyville clean seed



22 Feb 2011 - Snapped hot water treated Q183^φ mother plot seed plot caused by ongoing wet weather



22 Feb 2011 – Where a farm shed stood before being blown away by Cyclone Yasi, Liverpool Creek



22 Feb 2011 – Missing tram line bridge, Number 3 Branch, Liverpool Creek



22 Feb 2011 - Shed in cane field after being blown away by Cyclone Yasi, New Harbour Line

APPENDIX 7 – Inspection details for Tully Mill area

Region	TULLY			
Date of assessment	23 February 2011			
Assessor	David Calcino			
January 2011 crop forecast (t)	1,900,000 (extra 3,000 ha available in 2011)			
5 major varieties / % of 2011 crop (approx) / degree of breakage (%) / top-mid-bottom	Q200 ^{db}	44	10-20	Top
	Q186 ^{db}	16	0-10	Top
	Q208 ^{db}	12	10-50	Top
	Q220 ^{db}	5	Not observed	Top
	KQ228	4	0-5	Top
	Most broken cane is side-shooting, usually with 2-3 side-shoots. Cane growth stage has major impact on stalk breakage – small crops suffered far more breakage than advanced blocks which could bend and lodge with the high winds.			
Level of sprawling 1=none; 5=flat	2			
Level of stool tipping 1 = 0%; 2 = 1-5%; 3 = 6-10%; 4 = >10%	2 Almost no stool tipping overall.			
Comments on blocked drains and damage to crossings	All waterways are full. Soil profile has been full for a long time. Further rain this wet season will exacerbate the situation. Crossings are damaged from washouts, large trees lining rivers have collapsed, debris from fallen trees and branches block drains and lie around farm houses and other buildings.			
Debris in cane blocks 1 = none; 2 = minor; 3 = intermediate; 4 = major*	2 Much higher level of debris in the Lower Tully to Tully Heads area			
Comments on debris e.g. on headlands or waterways	Many farms have a lot of vegetation and remains of buildings that will require a major effort to remove once labour is available and blocks dry out sufficiently.			
Amount of standover cane (t)	270,000. Standover performed reasonably well in Yasi: most is sprawled with some lodging. However, in some areas significant top breakage did occur.			
January 2010 crop forecast (t)				
2010 final tonnes, yield & CCS				
Ave yield & CCS 2000-2009	81.8; 12.87			
Availability and quality of planting material	70% billet planting / 30% stick planting. Much of the cane is bowed which will provide difficulties for whole stick planters in 2011.			
Contacts	Tom Harney (Chair CANEGROWERS) Peter Lucy (Manager CANEGROWERS) Danielle Skocaj (BSES) Vince Sylvestro (grower) Jordan Villaruz (BSES)			
Comments from contacts and observations	<p>Mill suffered major damage (c. \$10M) to infrastructure. Many cane bins were blown off tram lines.</p> <p>Major building damage in Lower Tully to Tully Heads area. Significant damage in other areas. Some cane has died as a result of waterlogging in Syndicate and other areas.</p> <p>Cyclones Tasha, Anthony and Yasi all resulted in flooding in an already saturated region.</p> <p>Flood damage to crops is significant.</p> <p>Weeds are a major and increasing issue due to the poor weather, the opening up of the crop after the cyclones, and the inability to apply control measures on the waterlogged blocks.</p> <p>There will be a problem restocking clean seed plots with sound material this</p>			

	<p>year.</p> <p>A lot of replanting will take place this year if conditions allow. Sourcing reasonable quality planting material locally will be a problem. Material might have to be brought in from other regions at significantly extra cost.</p> <p>Lot of stalk breakage in Syndicate.</p> <p>Q237^{db} standover – no breakage; slight stool tipping Q200^{db} standover – 10-20% breakage at the top; some lodging in standover and one-year cane Q208^{db} – generally very little breakage except in small crops; some exceptions are Harney's standover with 50% breakage and stool tipping, 30-50% breakage of all Q208^{db} at Feluga. KQ228^{db} – about 2% breakage in advanced cane but slight stool tipping and some lodging Q229^{db} – lodged and bowed but almost no breakage Q187^{db} - >50% top breakage Q231^{db} – badly broken (smaller cane 30-70%) Q166^{db} – maybe 25-50% breakage including in standover cane Q218^{db} - >50% top breakage</p>
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*Minor e.g. light timber; sheet of iron. Major e.g. trees; multiple sheets of iron; remains of sheds or rooves

Photographs of the Tully Mill area



4 Feb 2011 – Flooding at BSES Tully following Cyclone Yasi



23 Feb 2011 – Snapped Q183^{db} at Warrami clean seed plot



23 Feb 2011 - Washed out headland, Warrami



23 Feb 2011 - Destroyed farm building between Tully & Tully Heads



23 Feb 2011 - Cyclone-damaged forest opposite cane, Bilyana



4 Feb 2011 – Cane bins blown off tram line at Tully Mill

APPENDIX 8 – Inspection details for the Herbert area

Region	HERBERT			
Date of assessment	24 February 2011			
Assessor	David Calcino			
January 2011 crop forecast (t)	3,800,000			
8 major varieties / % of 2011 crop (approx) / degree of breakage (%) / top-mid-bottom	Q200 ^(b)	40	10-20	Top
	Q208 ^(b)	17	10-20	Top
	Q186 ^(b)	7	0-10	Top
	KQ228 ^(b)	7	0-10	Top
	Q157	4	0-10	Top
	Q204 ^(b)	3	0-10	Top
	Q183 ^(b)	3	50-60	Top
	MQ239 ^(b)	3	0-10	Top
		Most broken cane is side-shooting, usually with 2-3 side-shoots. Cane growth stage has major impact on stalk breakage – small crops suffered far more breakage than advanced blocks which could bend and lodge with the high winds.		
Level of sprawling 1=none; 5=flat	3 (wind from south east then north east)			
Level of stool tipping 1 = 0%; 2 = 1-5%; 3 = 6-10%; 4 = >10%	2			
Comments on blocked drains and damage to crossings	Drains washed out and blocked with vegetation debris. Many drains still full of water so assessment can't be made.			
Debris in cane blocks 1 = none; 2 = minor; 3 = intermediate; 4 = major*	3-4 (location dependent e.g. Abergowrie high level). Still too wet to clean up in many areas.			
Comments on debris e.g. on headlands or waterways	Many farms have a lot of vegetation and remains of buildings that will require a major effort to remove once labour is available and blocks dry out sufficiently. Tram lines have trees and branches across them.			
Amount of standover cane (t)	1,100,000 at time of standing over (~25% of 2010 crop). Standover performed well in cyclone but is deteriorating in the ongoing wet conditions.			
January 2010 crop forecast (t)	4,100,000			
2010 final tonnes, yield & CCS	3,100,000; 82.2; 12.90			
Ave yield & CCS 2000-2009	75.6; 13.71			
Availability and quality of planting material	80% billet planting / 20% stick planting. BSES is organising a register of growers who have planting material available for other growers. Many growers in some areas e.g. Abergowrie, will have problems accessing seed cane. Other areas e.g. Bambaroo will have far fewer issues.			
Contacts	Peter Allen (Grower Relations Manager Herbert, Sucrogen) Ashton Benson (BSES) Jeff Cantamessa (CANEGROWERS) Jeff Low (grower) Andrew Mackee (grower) Lex Mackee (grower) Adam Royle (BSES) Joe Spina Jnr (grower) Joe Spina Snr (grower) Laurie Spina (grower)			
Comments from contacts and observations	Seems to be general agreement that loss of production due to Yasi : loss of production due to wet weather in 2010/11 = 20-25% : 75-80%. A major flood (some growers said it is the highest flood they have seen) and rain after Yasi is causing a lot of problems. Now had three floods since Christmas. Lucinda sugar terminal badly damaged – not operate 2011.			

	<p>Cyclone Tasha caused damage to several areas – some snapped cane but mostly sprawling of the cane which results in increased weed problems.</p> <p>Abergowrie is by far the worst affected area.</p> <p>Most growers cannot control weeds because of the constant waterlogging. Weeds are a major and increasing issue due to the poor weather, the opening up of the crop after the cyclones, and the inability to apply control measures on the waterlogged blocks.</p> <p>Last year, most growers had trouble fertilising their cane and filling-in to form a suitable soil profile for harvesting.</p> <p>Constant rain and cloud cover for a large proportion of the period since mid-2010. Some blocks of cane have died as a result of flooding and waterlogging. Several blocks have lily pads growing in them.</p> <p>BSES won't be able to plant FAT variety trials in 2011 for first time because of a lack of planting material due to wet weather/waterlogging.</p> <p>BSES clean seed release plot at the Experiment Station has almost no cane available to growers in 2011 despite careful management including hand fertilising (too wet for machinery) and hand spraying of weeds twice.</p> <p>Overall, there is a relatively small amount of broken cane in the region.</p> <p>A very large number of blocks comprise sugarcane crops that are so backward it is highly unlikely they will be harvested this season. If they are harvested, the cost to do so will be high leaving little, if any, profit margin.</p>
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*Minor e.g. light timber; sheet of iron. Major e.g. trees; multiple sheets of iron; remains of sheds or rooves

Photographs of the Herbert region



24 Feb 2011 - Flooded cane, Fourmile



24 Feb 2011 - Flooded cane, Cordelia



24 Feb 2011 - Flooded cane, Abergowrie



24 Feb 2011 - Debris on headland and in cane, Abergowrie



24 Feb 2011 - Q238^o breakage in Low's seed plot, Abergowrie



24 Feb 2011 - Cyclone debris across fallow cane block headland, Hawkins Creek

APPENDIX 9 – Inspection details for the Burdekin area

Region	BURDEKIN
Date of assessment	1 March 2011
Assessor	David Calcino
January 2011 crop forecast (t)	9,000,000 (80,847 ha for harvest)
5 major varieties / % of 2011 crop / degree of breakage (%) / top-mid-bottom	Not applicable – no snapped cane from cyclones
Level of sprawling 1=none; 5=flat	2 (mostly occurred before cyclone: normal Burdekin lodging and sprawling)
Level of stool tipping 1 = 0%; 2 = 1-5%; 3 = 6-10%; 4 = >10%	2
Comments on blocked drains and damage to crossings	None. Dry cyclone and the area didn't receive heavy rains and flooding the day after Cyclone Yasi as did areas to the north.
Debris in cane blocks 1 = none; 2 = minor; 3 = intermediate; 4 = major*	1
Comments on debris e.g. on headlands or waterways	Minor – a few trees down.
Amount of standover cane (t)	2,500,000; (22,379 ha). Some Q208 [Ⓛ] is rotting but it's been lodged for a long time so is not surprising.
January 2010 crop forecast (t)	
2010 final tonnes	6,460,000
Ave yield & CCS 2000-2009	111.8; 14.97
Availability and quality of planting material	About 85% billet / 15% whole stick planting. Availability and quantity no problem. Clean seed plots are fine.
Contacts	Marian Davis (BSES) Jim Collins (Manager CANEGROWERS Burdekin) Wayne Smith (Grower Services Manager CANEGROWERS Burdekin) Rod Schultz (Manager CANEGROWERS Pioneer)
Comments from contacts and observations	<p>"We got out of it (Yasi) very well."</p> <p>Very little cyclone damage.</p> <p>Virtually no broken or snapped cane.</p> <p>Wind from one direction.</p> <p>Little infrastructure damage.</p> <p>Few trees and branches down.</p> <p>Virtually all adverse impacts on the 2011 crop are due to poor weather conditions since about August 2011, almost constant overcast weather and low levels of solar radiation.</p> <p>On the day of inspection, most cane was waterlogged.</p> <p>Main problem is the very high watertable.</p> <p>Local industry has real concerns about the viability of harvesting some of the post-18 September blocks because of the damage from harvesting and the wet weather following that date. The wet weather and overcast conditions will have had a much greater impact than cyclones.</p>

*Minor e.g. light timber; sheet of iron. Major e.g. trees; multiple sheets of iron; remains of sheds or rooves

Photographs of the Burdekin region



1 Mar 2011 - Block at Clare cut at end of 2010 season. Typical of late planted and late harvested blocks in 2010



1 Mar 2011 - Waterlogged Q183^ϕ block that was cut late with green trash blanket retained, Upper Haughton



1 Mar 2011 - Block of plant Q183^ϕ. Typical crop in the Burdekin that was planted or harvested before mid-August 2010: no stalk breakage, no tipping, standing.

APPENDIX 10 – Inspection details for the Proserpine area

Region	PROSERPINE
Date of assessment	2 March 2011
Assessor	David Calcino
January 2011 crop forecast (t)	1,450,000
5 major varieties / % of 2011 crop / degree of breakage (%) / top-mid-bottom	Not applicable – no snapped cane from cyclones
Level of sprawling 1=none; 5=flat	2
Level of stool tipping 1 = 0%; 2 = 1-5%; 3 = 6-10%; 4 = >10%	2
Comments on blocked drains and damage to crossings	No damage from Yasi but some damage from earlier downpours.
Debris in cane blocks 1 = none; 2 = minor; 3 = intermediate; 4 = major*	No debris from Yasi. Much debris from Ului in March 2010.
Comments on debris e.g. on headlands or waterways	None seen during inspection.
Amount of standover cane (t)	447,000 based on 2010 crop at that time. 6,022 ha but that might be only ratoon SO-could be another 2,700 ha of plant SO.
January 2010 crop forecast (t)	1,600,000
2010 final yield	1,165,000
Ave yield & CCS 2000-2009	77.3; 14.20
Availability and quality of planting material	Billet / whole stick = 95% / 5%.
Contacts	Lindsay Altmann (CANEGROWERS) John Casey (CANEGROWERS) Glen Clarke (Chair Proserpine Productivity Committee) Tony Hitchen (Deputy Chair CANEGROWERS) Graham Peters (grower) Michael Porter (Manager CANEGROWERS) Gary Simpson (CANEGROWERS; Proserpine Productivity Committee) Peter Sutherland (BSES)
Comments from contacts and observations	<p>All contacts agree that virtually all the productivity problems are caused by wet weather, not cyclones.</p> <p>Following Ului on 21 March 2010, KQ228[Ⓢ] took about 8 weeks to die from stool damage that was not obvious after the cyclone. It slowly rotted after breaking off below ground; above ground it was just sprawled.</p> <p>Q138 (still grow about 2,000 ha) after Ului is said to have had 30-40% breakage in 15-20% of the total Q138 crop: locality issues with wind damage. It was worst broken variety. Lost a lot of harvesting time in 2010.</p> <p>Has been constant rain and waterlogging, lack of adequate levels of solar radiation especially during peak growing months.</p> <p>Cane quantity and quality in clean seed distribution plots is poor; mother plot is virtually destroyed by wet conditions.</p> <p>1,300 ha out of 3,700 ha of plant cane in 2010 was harvested – rest stood over.</p> <p>Late harvested and planted cane is very poor.</p> <p>Harvester damage to the crop and soil from cutting in extremely wet conditions is impacting on current crop.</p>

	<p>Filling in plant cane and shaping drills for best practice harvesting was frequently impossible in 2010.</p> <p>Weeds are a big problem.</p> <p>Extended 2010 season and late finish has impacted heavily on the 2011 crop.</p> <p>Ului destroyed 12 overhead irrigation systems. Anthony and Yasi destroyed another four.</p> <p>Some growers in Canon Valley cut no cane at all or very little in 2010.</p> <p>Large number of farms have many blocks whose drills are filled with water. Entire mill area at time of inspection is waterlogged with full to overflowing drains.</p> <p>Peter Sutherland – his regular stalk measurements last year showed there was no crop growth for several weeks following Ului.</p>
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*Minor e.g. light timber; sheet of iron. Major e.g. trees; multiple sheets of iron; remains of sheds or rooves

Photographs of the Proserpine region



2 Mar 2011 – Late cut block originally intended for harvest in 2011, Glen Isla



2 Mar 2011 – Failed block of plant cane plant cane harvested late in 2010, Glen Isla



2 Mar 2011 - Block planted 16 Sep 2010, then had 600mm in four hours, billets were washed out, block lost, Cannon Valley



2 Mar 2011 - Clean seed plot, Gregory Valley. Most varieties are very poor due to ongoing rain and waterlogging.



2 Mar 2011 - Waterlogged block, Koolachu



2 Mar 2011 - Full drains at a standover block, Wandarra Road



2 Mar 2011 - Waterlogged, very poor plant cane, Upriver



2 Mar 2011 - Typical well grown early plant Q208^ϕ, Koolachu. Early planted and harvested cane is very sound. By comparison, late planted cane and late harvested crops are generally very poor.

APPENDIX 11 – Inspection details for the Mackay area

Region	MACKAY
Date of assessment	3 March 2011
Assessor	David Calcino
January 2011 crop forecast (t)	4,650,000
5 major varieties / % of 2011 crop / degree of breakage (%) / top-mid-bottom	Not applicable – no snapped cane from cyclones
Level of sprawling 1=none; 5=flat	2
Level of stool tipping 1 = 0%; 2 = 1-5%; 3 = 6-10%; 4 = >10%	2
Comments on blocked drains and damage to crossings	Few problems noted at time of inspection
Debris in cane blocks 1 = none; 2 = minor; 3 = intermediate; 4 = major*	1
Comments on debris e.g. on headlands or waterways	Few problems noted at time of inspection
Amount of standover cane (t)	700,000 at time of standover (9,700 ha)
January 2010 crop forecast (t)	5,300,000
2010 final yield	4,550,000
Ave yield & CCS / PRS 2000-2009	73.7; 13.76
Availability and quality of planting material	
Contacts	Ted Bussey (Deputy Chair CANEGROWERS) Michael Deguara (CANEGROWERS) John Eden (Economist CANEGROWERS) Brad Hussey (BSES) Kerry Latter (Manager CANEGROWERS) Bill McDonald (CANEGROWERS) Francis Perna (CANEGROWERS) Jason Perna (grower)
Comments from contacts and observations	<p>COMMENTS:</p> <p>Cyclone Ului stopped cane growing. Then had wet weather constantly and those conditions continue.</p> <p>Following Ului, a lot of trees were blown down across drains that later led to water flow blockages. There has been no opportunity to clean up the mess because of ongoing wet weather and now silting up of drains is occurring.</p> <p>Springs that would normally dry up during the dry season have not stopped flowing.</p> <p>Cyclone Anthony caused problems: not stalk breakage but the “shock” factor of wind buffeting that slows or stops normal cane growth for weeks.</p> <p>Harvesting in wet conditions caused problems.</p> <p>Legumes couldn’t be planted: in 2010 there were 3,000 ha; in 2011 only 200 ha.</p> <p>Very large number of poor blocks that will not be harvested in 2011.</p> <p>Very few windows of opportunity to do farm work.</p> <p>A lot of plant cane was lost. Many blocks planted in 2010 were later slashed because of extremely poor growth due to waterlogging. Some blocks that have failed were planted twice and at least one block three</p>

	<p>times. Many other blocks could not be planted.</p> <p>Fertiliser, herbicides, other pest control products and all the costs associated with planting were lost on many farms.</p> <p>Lot of washouts on farms.</p> <p>Some major soil erosion in cane blocks and headlands. Some headlands will require digging up and packing with rock base. These on-farm repairs are going to be costly and often outside the scope of growers to pay.</p> <p>The constant wet weather has slowed down the rate of replacement of smut-infested blocks.</p> <p>Has been impossible to control vines, grasses and broadleaf weeds in and around cane blocks.</p> <p>Some harvesting contractors are pulling out of the industry because of the very poor crop. Finding enough harvesting contractors is an ongoing and increasingly worrying issue for the industry. There have been no safeguards for contractors in the past but those safeguards are desperately needed now.</p> <p>Adequate sources of clean seed from productivity board plots and on farms is a major issue.</p> <p>Machinery dealers and other companies associated with the sugar industry are really feeling the poor economic conditions confronting the local region.</p> <p>A lack of disposable income is one of the most serious confronting the Mackay and Plane Creek regions. The biggest issue is the loss of cash flow.</p> <p>Productivity will be affected beyond 2011.</p> <p>Morale in the industry is poor.</p> <p>The advanced age of growers is a problem. Some older growers might give up and walk away from the industry. Even growers in their 40s might think the effort to get back to a sustainable production level over several years might not be worth the effort and look elsewhere (e.g. mines) to build up their retirement funds.</p> <p>The industry is at the crossroads.</p> <p>Growers need assistance especially for fallow planting and replanting this year. Financial assistance (not handouts) is needed to get production back up to acceptable levels much faster than will be the case otherwise: assistance is required to advance the planting program, to support rejuvenation of the industry, to improve productivity which is something the Governments want. Without assistance, there will be a domino effect across the coming years, the industry will stagnate, job losses will follow, industry infrastructure will decline and the flow up impacts will affect RD&E, harvesting contractors, local agribusinesses, milling companies and towns.</p> <p>Have to focus on the industry from the ground up.</p> <p>The loss from the 2011, 2012 and 2013 crops in Mackay-Plane Creek has been calculated by CANEGROWERS at \$161M (2010 \$80m; 2011 \$65M; 2013 \$16M). The ongoing impacts are due to damage to stools, poor ratooning etc.</p> <p>OBSERVATIONS: Time of planting and harvest in 2010 has made a huge difference to crop productivity.</p>
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	<p>Many very low yielding blocks.</p> <p>Lot of yellow cane: leaf disease in the overcast, wet conditions; lack of fertiliser; waterlogging affecting crop health.</p> <p>No wind damage from Yasi – all due to wet.</p> <p>Many failed plant blocks.</p> <p>Standover could be a saviour.</p> <p>Hard to estimate productivity losses due to ongoing wet but will be very significant.</p> <p>Some excellent cane along river and higher, well drained, early cut or planted blocks.</p> <p>72,500 ha for harvest in 12011.</p>
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*Minor e.g. light timber; sheet of iron. Major e.g. trees; multiple sheets of iron; remains of sheds or rooves

Photographs of the Mackay region



**3 Mar 2011 – Failed plant cane block,
Te Kowai**



**3 Mar 2011 – Failed plant block,
McEwans Beach Road**



3 Mar 2011 - Failed late planted cane block, McEwans Beach Road



3 Mar 2011 - Very poor late planted cane block, Homebush



3 Mar 2011 - Example of good early planted block, Pleystowe. In general, early planted and early harvested crops are sound; late planted and late harvested blocks are poor due to excessive rainfall and low sunlight levels.

APPENDIX 12 – Inspection details for the Plane Creek area

Region	PLANE CREEK
Date of assessment	4 March 2011
Assessor	David Calcino
January 2011 crop forecast (t)	1,200,000 (based on standover potential)
5 major varieties / % of 2011 crop / degree of breakage (%) / top-mid-bottom	Not applicable – no snapped cane from cyclones
Level of sprawling 1=none; 5=flat	1
Level of stool tipping 1 = 0%; 2 = 1-5%; 3 = 6-10%; 4 = >10%	1
Comments on blocked drains and damage to crossings	Some damage from heavy rain in 2010
Debris in cane blocks 1 = none; 2 = minor; 3 = intermediate; 4 = major*	1
Comments on debris e.g. on headlands or waterways	None at time of inspection
Amount of standover cane (t)	253,000 at time of standover: will increase by harvest (4,021 ha)
January 2010 crop forecast (t)	1,220,000 (CANEGROWERS estimate; by 3 rd week was cutting 82% estimate)
2010 final yield	814,950
Ave yield & CCS 2000-2009	69.4; 14.34
Availability and quality of planting material	85% billet / 15% whole stick. Will be some problems with quality material.
Contacts	Sergio Berardi (CANEGROWERS) Ben Deguara (Plane Creek Productivity Services) Marian Rutherford (Plane Creek Productivity Services) Kevin Borg (Chair CANEGROWERS; Chair Plane Creek Productivity Services)
Comments from contacts and observations	<p>Plane Creek has fared better than Proserpine and Mackay: it is a drier region especially in the southern part of the mill area. Generally the crop is quite sound although the late harvested and planted cane is far poorer than the rest of the crop and a significant proportion of these late blocks will produce low yields with some not being harvested at all.</p> <p>Pigs becoming a problem: numbers at highest levels for many years.</p> <p>Many blocks couldn't be planted in 2010, couldn't be filled in, couldn't be sprayed for weeds. Even application of herbicides from helicopter could not be done when blocks were full of water. Example: one grower planted 40 ha twice and both plantings failed because of heavy rainfall and waterlogging.</p> <p>Cyclone Anthony had more impact than Cyclone Yasi.</p> <p>Excessively cloudy conditions and low solar radiation for many months particularly during the peak growing months is seriously damaging the crop.</p> <p>A lot of cane destined for plough-out in 2010 had to be left in the field because of waterlogged conditions.</p> <p>Some washouts and river bank erosion. Of particular note is a massive road washout on farms at Carmila West.</p> <p>Clean seed distribution plots managed by Plane Creek Productivity Services could not be planted in 2010 because of waterlogged soil and ongoing rainfall.</p>

	<p>“Plane Creek got out of the cyclones pretty well; wet weather is the problem”.</p> <p>The local industry is hoping the standover cane productivity will partially make up for the poor yield that will be produced by the late cut ratoons.</p> <p>CCS is going to be compromised because of the large quantity of standover, poor growth of late planted and harvested cane and excessive cloud cover.</p> <p>Area for harvest 2011 = 16,600 ha incl. standover.</p>
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*Minor e.g. light timber; sheet of iron. Major e.g. trees; multiple sheets of iron; remains of sheds or rooves

Photographs of the Plane Creek region



4 Mar 2011 - Poor waterlogged block with weed infestation, Alligator Creek



4 Mar 2011 – Failed late planted block, West Plane Creek



4 Mar 2011 – Plant cane block badly affected by wet conditions with a lot of side-shooting, West Hill



4 Mar 2011 – Major washout of farm road, Carmila West



4 Mar 2011 – Poor, wet ratoons with weed infestation, Ilbilbie



4 Mar 2011 – Failed Q200^ϕ ratoons cut Oct 2010; rest of block (right) stood over, Koumala



4 Mar 2011 - Failed late cut ratoons in middle, Koumala



4 Mar 2011 - Excellent early plant crop of KQ228^ϕ, Carmila West. Early plant and harvested cane is very sound; late planted and late harvested cane is generally poor.