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Growers' Perspectives on the Viability of Sugarcane Farming Systems in Central Queensland

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Abstract

Growers in the sugar cane industry have been struggling under financial pressure for several years. Sugar prices have been low while costs of production continue to rise. In addition, adverse weather conditions and pest damage have exacerbated the situation. The future viability of the sugar industry has been questioned in several major reports and it is generally agreed that the industry will have to undergo some changes. This paper reports the findings of a recent survey of growers in three regions of central Queensland designed to assess how growers view profitability and restructuring prospects, and to identify the extent to which growers are attempting to achieve productivity gains.

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The sugar industry is a major regional industry in Queensland, but until recently has been highly protected. The Queensland Sugar Industry Act has been regulating the industry with some amendments since the 1920s. In 1997, tariffs on imported sugar were removed, and domestic price supports were dismantled by the Queensland Government. In subsequent years there have been major falls in world market prices that have left growers financially exposed. In addition, many sugar growing areas have experienced adverse weather conditions in successive years and in some areas pest problems have also reduced productivity. As a result, growers in the industry have been experiencing considerable financial hardship.

The difficulties in the sugar industry have generated substantial debate about the need for, and potential levels of government support, and also the need for further restructuring of the industry. To assess those arguments, three important reviews have been conducted. An independent review (Hildebrand 2002) was commissioned by the Federal Government. While current conditions are particularly difficult, Hildebrand (2002) suggested that pressure from low sugar prices, increasing costs of production and debt levels would remain and continue to impact adversely on the viability of many farms.

The Queensland Department of State Development commissioned the Centre for International Economics (CIE) to determine if the *Sugar Industry Act 1999* is preventing the industry achieving greater efficiencies or hindering its ability to cope with the difficult trading environment in which it now finds itself. The findings of the report suggest that if sugar prices stay low and productivity does not increase, the industry (apart form the Herbert and Burdekin regions) could collapse by 2006-07 (CIE 2002: vi). As the price of sugar is determined on the world market, and future price rises are very uncertain, productivity growth is the only factor directly under the control of the industry that could restore profitability. A 37% increase in productivity would be required to restore profitability to 1996-97 levels (CIE 2002: vii).

The industry body, CANEGROWERS, commissioned the Boston Consulting Group (BCG) to review the constraints on industry competitiveness and innovation. In that review, it is reported that to return to reasonable profitability, the industry must increase returns by an average of $1000/ha (BCG 2003:3). It is also suggested that the industry's ability to respond to this challenge is indirectly constrained by three factors:

- A misaligned risk/reward profile for growers in their relationship with millers,
- Lack of competitive pressure within layers of the value chain because of both geographic and legislative factors, and
- Low pressure for change and high barriers to change given both legislative restrictions and industry history.

(BCG 2003: 3)

At the grower level, Hildebrand (2002) considered many farms to be economically unviable. He quoted Hanlon *et al.* (2000) to indicate that there are large differences in costs of production between cane farms, indicating that rationalization may lead to some reductions in production costs. In particular,

Hildebrand (2002) advocated the need to increase farm size to achieve better economies of scale and increase productivity. It has been suggested that the cane assignment system has restricted farm expansion. ABARE (1990) calculated that land area under sugar would have been 30% larger without assignment.

To understand how growers view the viability of their farming systems, and how they might increase their profitability, a recent survey of sugarcane growers was conducted in central Queensland. Some of the findings are reported in this paper which has four objectives. The first is to examine growers' perceptions about their current situation and expectations about future profitability in order to determine whether they view the current downturn to be cyclical (short term) or more structural (long term) in nature. The other three objectives relate to growers' perception about how they might improve their prospects. The second is to assess what growers are planning to do to improve profitability, the third is to identify whether growers see major scale economies associated with larger farm sizes, and the fourth is to assess how different rationalization options might be expected to impact on farm profitability.

Survey details

The study reported in this paper involved surveys of sugarcane growers in three regions of central Queensland - Sarina and Mackay (henceforth referred to as Mackay) Proserpine, and Bundaberg and Childers (henceforth referred to as Bundaberg). Proserpine is only 130 km north of Mackay and the two regions share many similar characteristics. Bio-physical conditions are similar and sugarcane is the main crop grown, with little crop diversification occurring in the two regions. On the other hand, the situation in Bundaberg, 700km south of Mackay, is quite different and considerable crop diversification has taken place.

Sugarcane growers in Mackay were surveyed in late 2002 and growers in Proserpine and Bundaberg were surveyed in early 2003. The same collection technique was applied in all regions. First, attempts were made to contact all growers by telephone and establish whether or not they were willing to complete a questionnaire survey. Several attempts were made to contact growers at a various appropriate times. Surveys were then delivered to the homes of those willing to participate and later collected from them – a drop-off/ pick-up collection technique. [1]

A very high response rate of over 66% (of those contacted) was obtained (Table 1).

Table 1. Survey response rates in Mackay, Proserpine and Bundaberg regions

	Mackay	Proserpine	Bundaberg
Callable listings	990	218	735
Contact made	588	145	458
Agreed to participate	458	118	358
Surveys collected	391	99	302
Response rate	67%	68%	66%

The surveys were developed and tested in focus groups held in the Mackay region, and contained three

main sections of interest. One section gathered information about the characteristics of the respondents, their farming system, and their attitudes to farm profitability. [2]

Another section focused on structural change in the industry and how growers thought they might be impacted by some of the rationalisation methods being discussed. This information, when compared with details gathered in other sections would be used to predict whether certain groups of growers are more or less able to adjust to changing circumstances.

There was another important section in the survey on crop diversification, and the extent to which growers viewed the potential for farm diversification as a means to reduce the impact of poor returns from sugarcane. It also explored the importance of different attributes of diversification in the different regions. The results suggest that diversification alternatives need to have very attractive return and risk attributes to become preferred alternatives and that diversification away from sugar cane is unlikely to be substantial in the short term, despite the low market prices currently facing the sugar cane industry. However, detailed results have been presented elsewhere (Windle and Rolfe 2005) and will not be discussed further in this paper.

Socio-economic characteristics of sugarcane growers

Survey results indicate that sugarcane growers in all three regions fit a similar profile in terms of age, education and whether or not they have dependent children (Table 2). However, in terms of their farming systems there is more variation between the regions. Growers in Bundaberg have more experience with different crops and farm enterprises are much more diversified, both in terms of crops currently grown and of crops tried in the past (Table 2).

Table 2. Socio-economic characteristics of sugarcane farming systems

Variable	Explanation	Mackay	Proserpine	Bundaberg	Statistical difference between regions [1]
Age	Average	53 years	52 years	53 years	C - not sig
Education	Not completed Secondary	72.20%	66.00%	65.70%	NC - not sig
Children	Have dependent children	40.8%	46.4%	37.2%	NC - not sig
Debt	Have farm debt	60.6%	66.3%	68.2%	NC - not sig
Experience	Average	30 years	30 years	27 years	C - **
Off-farm income	Have off farm income	40.5%	49.0%	48.3%	NC - *
Family workers	More than 2 family members working farm	26.5%	29.8%	21.5%	NC - **
Labour	Employed labour	46.3%	34.4%	44.0%	NC - not sig
Farm size	Median area	128 ha	150 ha	96 ha	C - ***
Sugar size	Median area	97 ha	114 ha	66 ha	C - ***

Other crops grown	Other crops /cattle currently grown	29.7%	27.6%	52.5%	NC - ***
Tried other crops	Have tried other crops/ cattle	22.9%	21.4%	66.6%	NC - ***

[1] Anovas were conducted on continuous data (C) and chi-squared tests were conducted on non-continuous data (NC): *** significant at 1% level; ** significant at 5% level; * significant at 10% level

In Mackay and Proserpine 29% of respondents have a farm enterprise activity apart from sugar, the majority of whom (86%), raised cattle (Windle 2003a). In Bundaberg, over half (52%) of respondents have a farm enterprise other than sugarcane, but of these, only 29% raise beef. The majority (75%) of respondents in Bundaberg have some experience, either current or prior, with growing crops/cattle other than sugarcane (Windle 2003b).

Farms are smaller in Bundaberg and a significantly lower proportion than in the other regions, have more than two family members working on the farm. There is a greater reliance on farm income in Mackay, where farms are larger and there is a lower proportion with off-farm income. A lower percentage of growers in Proserpine employ farm labour, although there is no significant difference between regions.

The ability to access off-farm employment is a risk management strategy (Mishra and Goodwin 1997) and in times of low returns from agriculture, the contribution of income from off-farm sources may well be crucial. Nearly half the respondents in Proserpine and Bundaberg have some income from off-farm sources, but a lower proportion (40%) have such a buffer in Mackay (Table 2). In addition, the average contribution of off-farm sources to total income is lower in Mackay (46%) compared with Proserpine and Bundaberg (58%) (Windle 2003a,b). In Proserpine and Bundaberg, 19% and 22% of respondents stated that 100% of their income comes from off-farm sources and 29% and 30% respectively, reported a percentage of 90% or more. In Mackay, 14% stated all their income comes from off-farm sources and 20% had 90% or more of their income from off-farm sources. These percentages are relatively high and reflect the level of hardship caused by the current downturn in the industry and that many farms are not currently profitable (discussed in more detail below).

There is a high occurrence of farm debt in all regions. The topic was discussed in focus groups and several growers mentioned how those who had followed the advice to “get bigger or get out” now have higher levels of debt and more financial insecurity. A similar observation is reported in Hildebrand (2002).

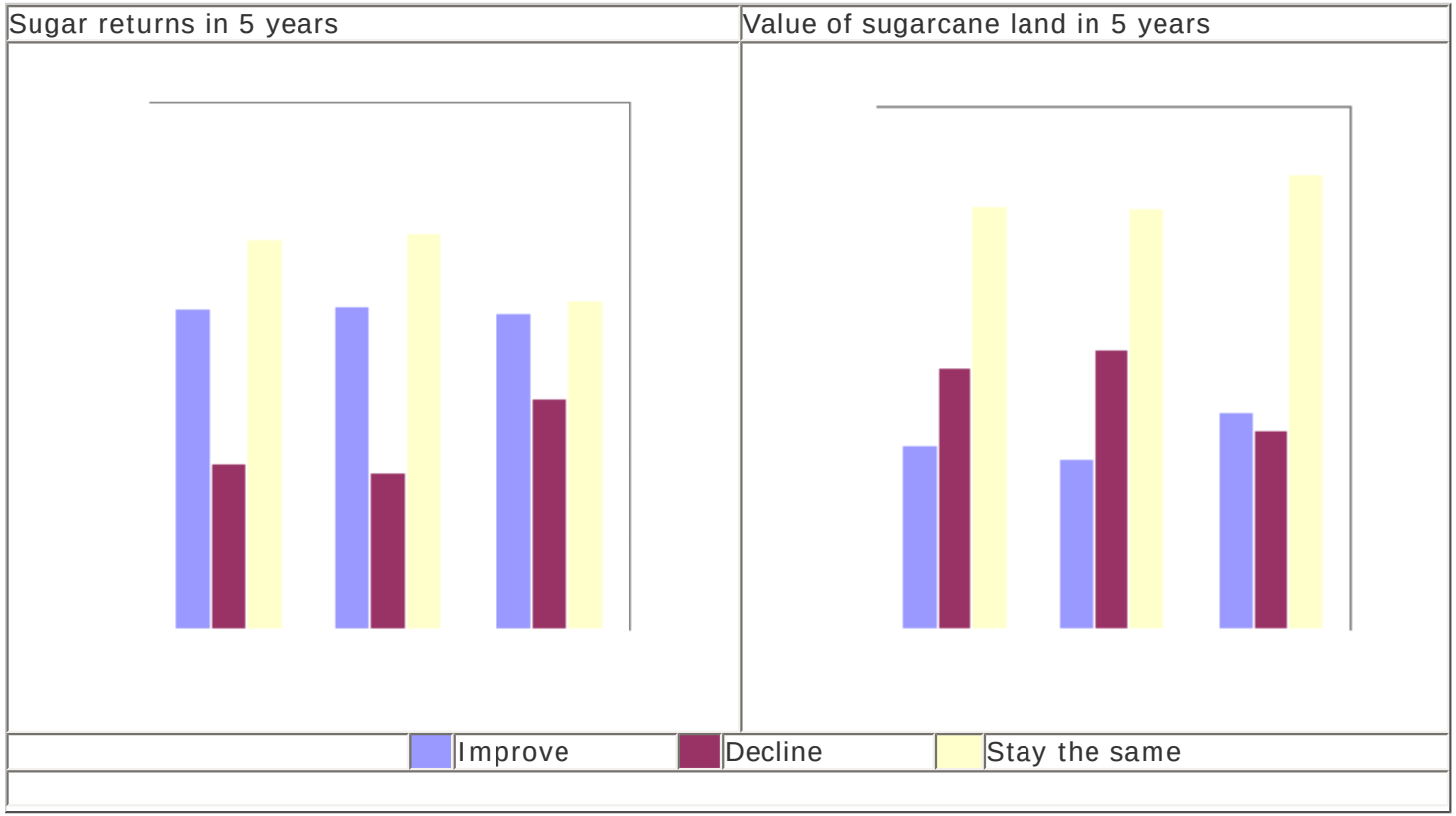
In summary, there some important regional differences in the socio-economic characteristics of sugarcane farmers that may influence growers’ perspectives on their farm enterprise viability. On the one hand farm sizes in Mackay and Proserpine are larger than Bundaberg, which should provide Mackay and Proserpine growers with more opportunities to achieve better economies of scale. On the other hand, growers in Bundaberg have more diversified farming enterprises which means they have a broader range of management skills and experience.

Farm profitability and future viability

There are several factors that have contributed to the current downturn in the industry. Some factors are likely to continue, eg., low sugar prices and rising costs of production. However, it would not be unrealistic to expect some other factors such as weather conditions to improve. In this section, growers' perceptions of their profitability are explored, and whether growers think the downturn in the sugar industry is cyclical (i.e. short term) or structural (i.e. long term).

First, growers were asked for their opinions about how they see the future both in terms of their returns from sugarcane production and in terms of the value of sugarcane land. The responses were similar in all three regions, with no statistical difference between them. The majority of respondents in all three regions think that returns from sugarcane production in the next five years will stay much the same, but a higher proportion think that returns will increase than think they will decrease (Figure 1). This implies that there is a significant proportion of growers who think the current downturn is cyclical rather than structural. The majority of respondents in all regions think that the value of sugarcane land will stay the same, but more growers in Mackay and Proserpine think that land values will decline rather than increase (Figure 1), suggesting that growers recognize some structural changes are occurring. However, these two findings are somewhat inconsistent and suggest that some growers in Mackay and Proserpine believe that factors other than returns from sugarcane will influence land values.

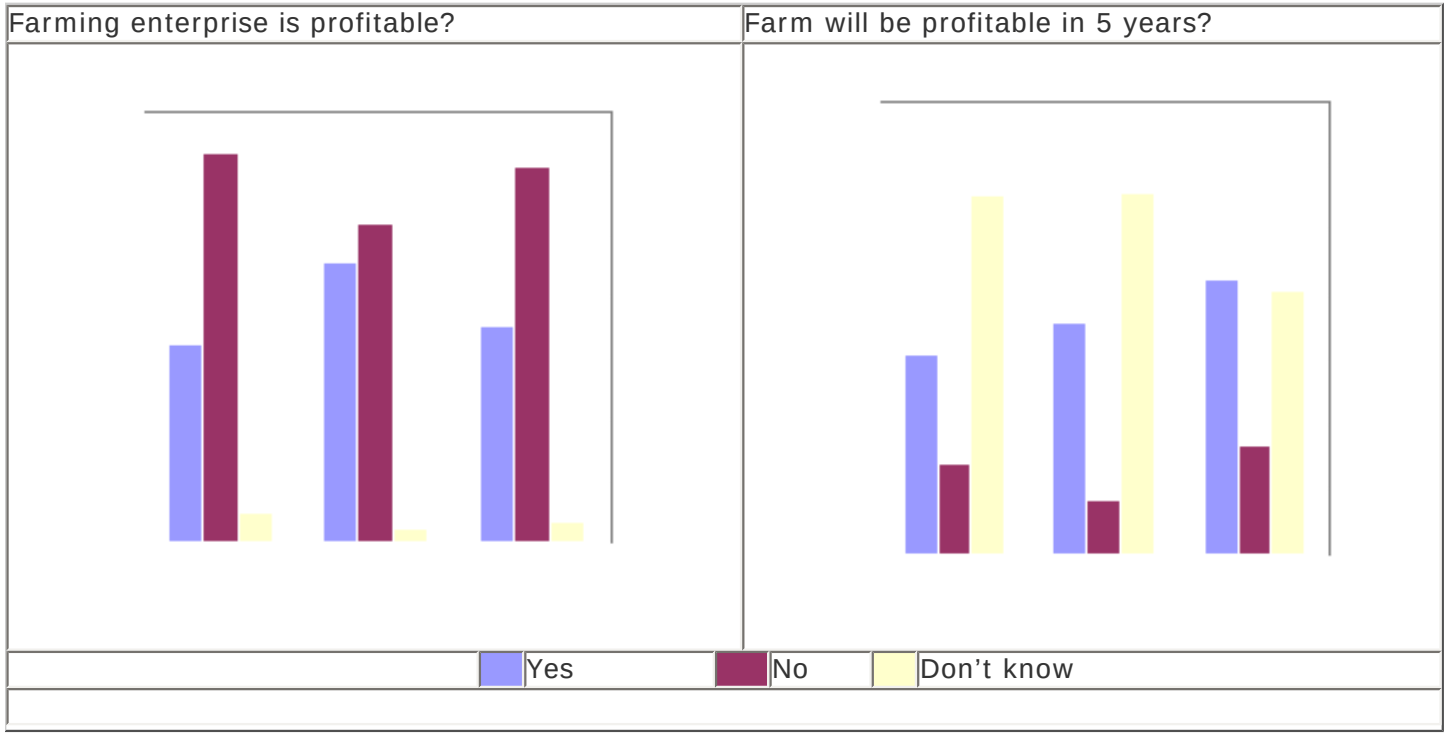
Figure 1. Respondents' opinions on the profitability of growing sugarcane



Respondents were then asked about their farm profitability. Not surprisingly, the majority of growers in

all three areas think their current farming enterprises are not profitable and only about a third could answer "yes" to this question (Figure 2). A high percentage of growers in all regions do not know if their farms will be profitable in the near future, but in the Bundaberg region a significantly higher percentage of respondents think they will be, compared with the other two regions (Figure 2). Opinions are more optimistic in Proserpine which has the highest percentage of growers who think they are currently profitable, and the lowest proportion of growers who think they will not be profitable in five years. Overall, in all regions a much higher percentage of respondents think they are currently unprofitable than think they will be unprofitable in the near future.

Figure 2. Respondents' opinions on farm profitability

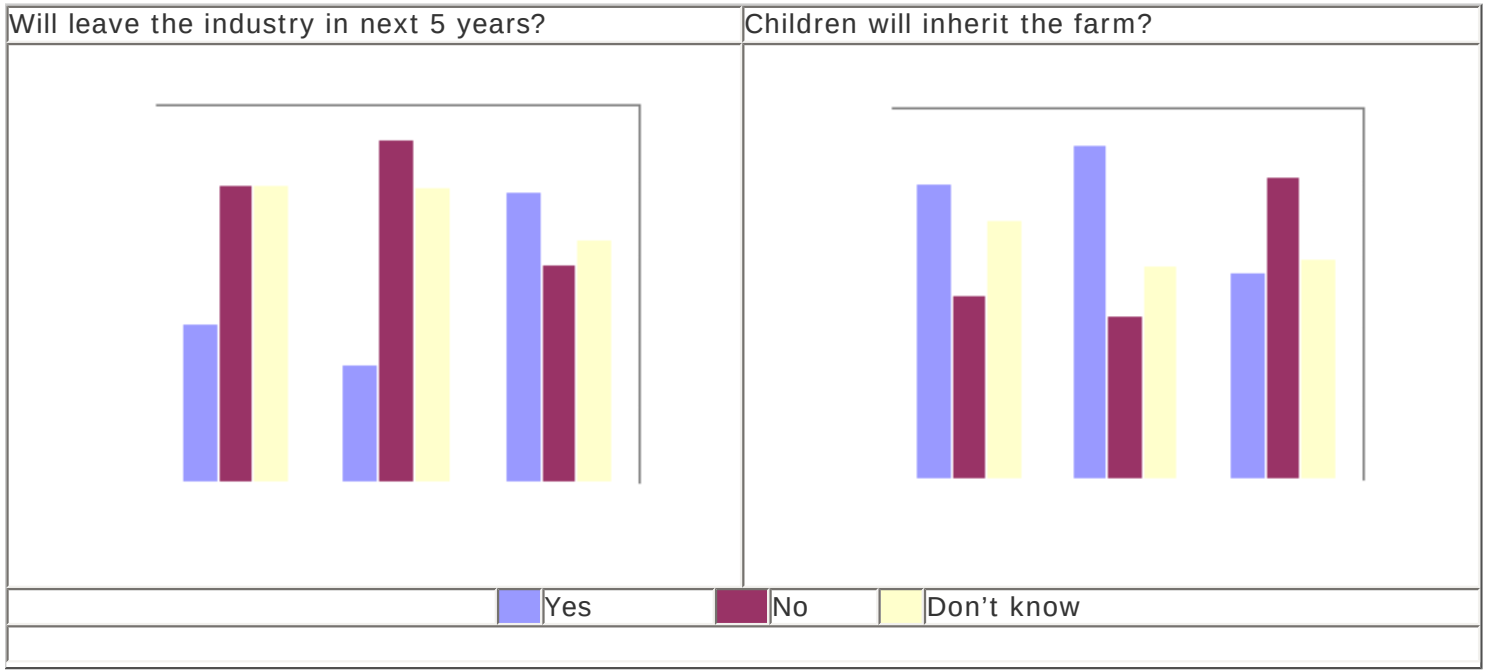


These results suggest that growers consider the present difficulties as part of a cyclical downturn (which they have experienced in the past) and that conditions will improve. The majority of respondents do not seem to think they are unviable. From comments made in the surveys it would appear that much of the optimism about the future is based on improved weather conditions rather than improved sugar prices. This may also be why the majority of respondents are not confident that the value of sugarcane land will improve (Figure 1), i.e. they believe that land values are more closely linked to the price of sugar than actual farm productivity.

If growers consider the current downturn in the industry as only temporary, it is likely that some might continue growing cane and wait for conditions to improve. However, results displayed in Figure 3 indicate that this is not the case in Bundaberg and again there is a significant difference between the regions. In Bundaberg, a larger proportion of growers think they will leave the sugar industry in the next five years, compared with the other two regions. A significantly higher proportion also believe they will

not pass their farms onto their children (Figure 3). In contrast, there is more confidence about the future of farming in Mackay and Proserpine.

Figure 3. Respondents' opinions on leaving the industry and inheritance



Farming systems in Bundaberg are more diversified than in the other two regions, which means that growers can be more responsive to market conditions. For example, if returns from sugarcane do not look good, a grower can put more effort into producing other crops. Their ability to respond to current market trends may well account for their optimism about future farm profitability (Figure 2) and for many, the future is unlikely to include sugarcane production (Figure 3).

Another factor that might influence growers' attitudes to farm profitability is the extent to which their enterprise income is supplemented by off-farm income. Earlier in the section it was noted that a higher proportion of income coming from off-farm sources in Bundaberg and Proserpine, compared with Mackay. However, it is not known if higher levels are associated with greater availability of employment opportunities, differences in attitudes to off-farm employment, or differences in the need for additional income. [3]

To determine if there was a relationship between of-farm income and attitudes to profitability, chi squared tests were conducted. There is a significant relationship (at a 5% level of significance) between sources of farm income and attitudes to both current and future profitability in Mackay. Growers with no income from off-farm sources, and those with a 90% or more contribution are more likely to think their farm enterprise is currently unprofitable. Those with less than a 50% contribution fall into two distinct and contrasting categories. Some are more likely to think they are currently unprofitable and others are more likely to think they are profitable. The remaining group with a substantial contribution from off-

farm income (50-89%) are more likely to think their farms are currently profitable.

There is also a significant relationship with perceptions of future profitability, but again no clear trends emerge. Mackay growers with no income from off-farm sources are more likely to think they will be profitable in five years time. In contrast, growers with off-farm income comprising less than 50% of their total income are less likely to think they will be profitable in five years time.

In Proserpine there is no relationship between the contribution of off-farm income and perceptions of profitability.

In Bundaberg, there is a strong (1% level of significance) relationship between off-farm income and both current and future profitability. Growers who have no income from off-farm sources are less likely to think that they are currently profitable. Growers with an off-farm income contribution of 90% or more are more likely to think they will be profitable in five years time. In contrast to Mackay, those in Bundaberg with a high proportion of off-farm income believe they can survive the current downturn.

There appears to be a complex interaction between perceptions of profitability and employment. However, there is no clear indication of why households are seeking off-farm employment, whether because they need the immediate cash income (short term solution) and/or they are more realistic about their current situation and are taking a more long term perspective. It might be that those who do work off-farm are influenced by a wider range of community opinions and this in turn leads them to be more realistic about their current situation. It is also unclear the extent to which the demand for off-farm employment is constrained by availability.

Overall, the results in this section would suggest that growers in Mackay and Proserpine think that the current downturn in the industry is cyclical and their situation will improve. On the other hand, while many growers in Bundaberg think their profitability will improve in the short term, nearly 40% of growers did not have confidence in the future of their farms, suggesting they view the current downturn as a more long turn structural problem.

Coping with the current downturn

Endogenous rationalisation

To assess how growers might be coping with the current difficulties, respondents were presented with a list of eight options to increase farm enterprise income and asked to rank them in order of importance. In Mackay and Proserpine, the highest ranked options are those focused on growing sugarcane, and little consideration is given to crop diversification. In contrast, in Bundaberg a variety of options are considered, particularly crop diversification (Table 3).

Table 3. Preferences for options to increase farm enterprise income

	Mackay	Proserpine	Bundaberg
	Percentage ranked 1st +2nd (%)		

Grow more cane	62	65	40
Reduce sugarcane production costs	52	67	37
Crop diversification	19	18	45
Other off-farm income opportunities	36	33	35
Buy/ lease more land	21	13	10
Other farm enterprise development - e.g farm stay	7	8	6
Sell land	10	6	11
Lease land to another person	4	1	10

Respondents were then probed in the questionnaire about these three most highly ranked options. Further details about crop diversification options and factors influencing the choice of particular crops have been discussed in Windle and Rolfe (2005).

Hildebrand (2002) reported large differences in production costs between cane farms, and suggested there is potential for reductions to be made. The majority of survey respondents disagree, with 58% in Mackay and Bundaberg, and 47% in Proserpine, indicating that their costs of production are at a minimum and cannot be further reduced. Other respondents provided a variety of suggestions for reducing costs, some for which respondents took responsibility (better agronomic practices) and others for which they had no responsibility (improved cane varieties). Full details are presented in Windle (2003a,b). Many growers in all regions expressed their frustration at trying to reduce the costs of production when the price of inputs keep rising.

> "No, we have reduced costs as far as possible without reducing production. Reducing fertiliser, irrigation, and weed control will reduce production. Our fixed costs like rates, insurance, electricity, water charges keep increasing out of our control."

In all areas, more respondents provided suggestions about how they might increase the amount of cane grown from the same area, with the majority of suggestions related to improved and more secure water access. A lower proportion of growers in Proserpine (8%) compared with Mackay (19%) and Bundaberg (21%) feel there is nothing they can do.

These results suggest that growers in Proserpine believe they have more control over their farming enterprises in terms of increasing production and reducing costs than growers in the other two regions. This is further evidenced by the responses to a question asking respondents what they, themselves, thought they could do to increase their farm productivity. A substantial group (21%, 11% and 27% in Mackay, Proserpine and Bundaberg respectively) think there is nothing they can do, or that they are already doing all they can.

Many respondents presented suggestions that were not about what they could do (as the question required), but what others could do. This is very indicative of an industry that has a history of tight regulation and high levels of government support. Many growers are used to looking to outsiders for solutions to their problems, although there is some evidence to suggest this is less likely to be the case in the Proserpine region.

Farm size

One of the recommendations of the Hildebrand report (Hildebrand 2002) is the need to increase farm size to improve efficiency and increase economies of scale. Although the report quotes two studies (ABARE 1996; Tessema and Topp 1997) which indicate there is no evidence to suggest economies of scale do exist on sugarcane farms, Hildebrand (2002: 17) believes there is sufficient unpublished evidence to suggest they do.

The relatively low levels of interest in buying or leasing more land (Table 3) suggest that many growers do not view major increases in scale as profitable. To understand what growers think about farm size and economies of scale, information was collected about growers' perceptions about the ideal size to grow cane profitably. This information could then be related to actual farm size and an assessment made of the extent to which growers in the different regions think farm size is limiting their profitability.

There is a significant difference between the regions in both the mean sugar farm size and the mean overall farm size. Farms sizes are significantly larger in Proserpine compared with Mackay, which in turn are significantly larger than Bundaberg (Table 2). The Proserpine area has 42% of sugar farms with 100 ha or less compared with 53% in Mackay and a much higher 70% in Bundaberg.

When growers were asked what they thought was the optimal size to grow sugarcane profitably, some respondents qualified their answers, stating that it depended on many factors such as weather and prices. As one respondent put it:

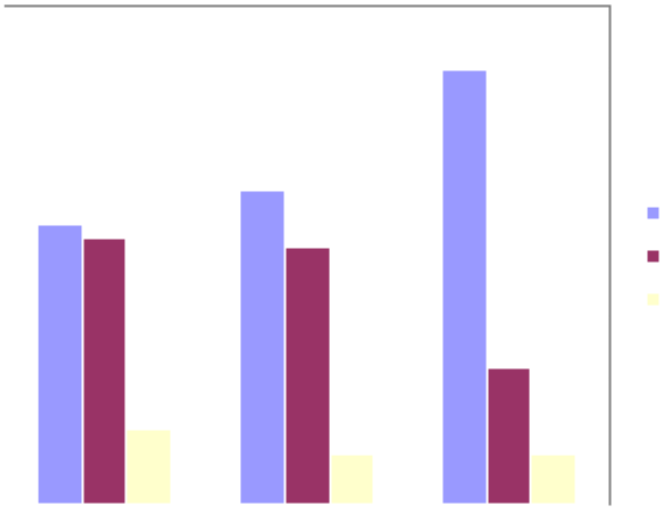
> "Farm size has very little to do with profitability or productivity. Farm husbandry, sugar price, weather, cane varieties, and debt compared to equity do"

or as another put it:

> "While production costs are higher than returns, the bigger you are the harder you fall"

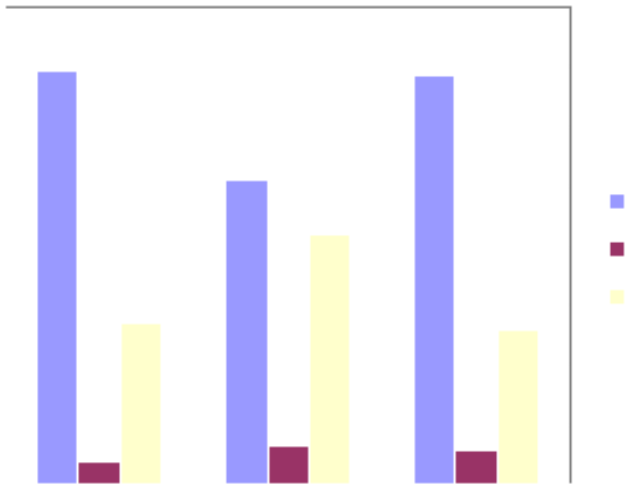
The results show a significant difference in opinion between the regions, with the large majority of growers in Bundaberg thinking the ideal size is 100 hectares or less (Figure 4).

Figure 4. Growers' opinions on ideal size for a sugarcane farm



The perceived ideal farm size was then compared with the existing farm size. The majority of respondents in all regions actually have smaller farm sizes than their stated ideal size, but a significantly larger proportion in Proserpine have more than their stated ideal, compared with the other two regions (Figure 5). The situation in Mackay and Bundaberg is very similar.

Figure 5. Difference between actual farm size and stated ideal size



To assess whether there is a relationship between the size of farms and growers' opinions about current and future farm profitability (discussed above), chi squared cross-tabulations were calculated. No significant relationships are found in either the Mackay or Proserpine regions. In Bundaberg, there is a strong relationship (1% level of significance) between the size of sugar farms and growers' opinions about their current profitability. Growers with cane farms of less than 50 hectares are more likely to think they are currently unprofitable. The same result is found with attitudes to future profitability, although the relationship is weaker (at a 10% level of significance).

In summary, these results indicate that there are regional differences in growers' opinions about the ideal size needed to grow sugarcane profitably. In Bundaberg, where farm sizes are smaller, more growers (compared with the other regions), think cane can be grown profitably on 100 hectares or less (Figure 4). However, even though the majority of growers in all regions thought that they had less than the ideal farm size (Figure 5), only in Bundaberg did small farm size does appear to be negatively related to growers' attitudes to current profitability. In Mackay and Proserpine farm size does not seem to influence attitudes to profitability. Comments provided by growers suggest that they do not view increasing farm size as having much impact on productivity/efficiency issues. It would appear that only growers in Bundaberg believe that some economies of scale can be achieved.

Exogenous rationalisation

In the two sections above, growers' perceptions about improving farm profitability have been discussed in relation to endogenous factors in their farming systems. Thus, insights have been gained into growers' views about internal restructuring that growers have more control over. In this section, attitudes to exogenous factors are explored.

A variety of restructuring measures have been advocated for the industry to better signal cost, production and marketing efficiencies. Under the current regulations, the most efficient growers do not gain as much as they might under a system with more market incentives. In contrast, the less efficient growers are benefited by the current regulations and may not perform as well in a more open market economy. To assess growers' opinions, respondents were presented with five potential restructuring measures and asked if they thought their income would increase or decrease as a result. The results are presented in Table 4.

Table 4. Considered Effect of Different Rationalisation Options on Cane Income

Potential rationalization measure	Mackay	Proserpine	Bundaberg
Paid bonus for clean cane		% of responses	
Increase	32	24	30
Decrease	7	2	6
Stay same/ don't know	52	67	61
Did not answer	9	6	3
Harvesting costs negotiated on individual basis			
Increase	27	35	37
Decrease	9	10	7
Stay same/ don't know	54	46	52
Did not answer	9	8	4
Form farming cooperative			
Increase	17	16	21
Decrease	23	16	24
Stay same/ don't know	49	54	48
Did not answer	11	13	7
Compulsory 10% ethanol mix in petrol			
Increase	38	31	32
Decrease	3	2	4
Stay same/ don't know	51	60	61
Did not answer	8	6	3
Abolish single desk selling			
Increase	5	0	8
Decrease	53	62	61
Stay same/ don't know	31	31	27
Did not answer	10	6	4

There are several sugar quality factors that affect the price of sugar, but growers are currently only paid for sugar content or Commercial Cane Sugar (CCS). Respondents were asked about the effect of being

paid a bonus for clean cane, even though it might cost more to harvest. While the majority think their income will stay the same or they do not know, a much larger proportion think this will increase their income than those who think their income will decrease. At the time of the survey, growers in Proserpine were already being paid a bonus for clean cane and this may account for the lower proportion of respondents believing this measure will increase their income.

Harvesting costs are currently paid on the amount of cane harvested, but some farms are more difficult to harvest than others because of topography and short runs. The current system of payment effectively averages harvesting costs across farms, and provides little incentive to make harvesting easier. Respondents were asked about how they might be affected if harvesting costs were negotiated on an individual farm basis. Many growers think their income will stay the same or they don't know, but more growers think their income will increase rather than decrease (Table 4).

There has been some discussion about forming cooperatives in the industry and it is one of the recommendations of the Hildebrand report. Such institutional arrangements are not new to the industry, with cooperatively owned mills, harvesting groups and other cooperative arrangements. Some farms are run cooperatively within a family group. In the survey, respondents were asked about cooperative arrangements to increase farm size. This would provide opportunities to reduce production costs, but management decisions would need to be agreed by all members. Responses to this proposition were much more mixed with similar proportions indicating that it would increase their income as those indicating that it would decrease income (Table 4). Note that this may also be because growers do not think there are scale economies in increasing farm size (see earlier section).

There is a clear indication that many more respondents think a compulsory 10% ethanol mix in petrol will improve their income and very few think it will decrease their income. An equally strong, but totally opposite reaction is displayed in relation to abolishing single desk selling (Table 4). No respondents in Proserpine think that abolishing single desk selling will increase their income.

Respondents were then asked to provide any comments they had about this rationalisation section and many opinions were presented. There is a strong feeling that deregulation will not help, as the proposed changes do not address the cause of the problem which has been bad weather, disease, low prices and unfair competition from subsidized overseas producers.

> "Every time we have problems the Government spends millions on enquiries made by people who don't understand the land - we always seem to end up worse off. A year of disease and dry conditions is our problem - we don't need to be told how to grow cane."

> "Cane farmers will lose out as others have already in other industries due to Government rationalisation. When is the Government going to rationalise itself?"

> "...Diversification and value adding opportunities exist in cane and sugar by-products – it is not necessary to change the regulations in order to encourage investment and innovation."

However, there are some aspects of deregulation that appear to be more acceptable than others. Hildebrand (2002:22) reported the high loss of sugar between standing cane and cane into the mill and suggested that recovery of any substantial loss of sugar in the field during harvest as being the most obvious and potentially least costly economic gain available. A high percentage of growers also appear to believe that economic incentives to provide clean cane and more individually negotiated harvesting contracts will improve their returns from sugar.

Statistical tests were conducted to determine if there is a relationship between the growers who think they will do better out of rationalisation and the ones who are the better farmers now (still profitable) or who think they are going to be profitable. There are three results to note. First, there are no significant relationships between attitudes to specific rationalisation measures and current profitability.

Second, in Mackay, there is a significant relationship (at the 1% level of significance) between growers' expectations about future profitability (those that thought they would be profitable in five years) and their attitudes to the clean cane, harvesting, and cooperative rationalisation options (believing these measure would increase their income). This suggests that there are some opportunities to introduce those changes to the Mackay region. Third, the only option in the Bundaberg region with a significant relationship with future profitability is the clean cane option. There are no significant relationships in Proserpine.

The results appear to indicate that while many Mackay growers do not feel there is much they can do to improve their situation, and many are against deregulation generally, there is a significant group that think some of these measures will affect their profitability favourably.

Discussion

The objective of this paper is to investigate the resilience of sugarcane farming systems in central Queensland and report how cane growers view their profitability and how they might cope with the current downturn and financial hardship. The most notable finding is the regional variability that occurs, even between close neighbours such as Mackay and Proserpine sugar districts.

Sugarcane farming systems in Bundaberg might be considered the most resilient as they have more diversified on-farm income sources, and a higher contribution from off-farm income sources. In Mackay and Proserpine there is little financial buffering from alternative crop enterprises. However, farming systems in Prosperine might be considered more robust than Mackay as they are more likely to have a greater portion of their income coming from off-farm sources.

In Mackay, relatively little enterprise diversification occurs and most growers do not think crop diversification is a profitable alternative (Table 3). Growers are focused on growing sugarcane, and although many appear to believe the current problems are part of a cyclical downturn, they are not very positive about what they can do to improve their profitability. The majority do not think they can reduce their costs of production, and most growers who think they can improve sugar productivity are relying on external factors such as better access to water and better cane varieties. The majority of growers have less than their stated ideal size to grow cane profitably (Figure 5), but there is no relationship between

perceptions of farm size and perceptions of profitability, indicating that they do not believe there are potential scale economies in increasing farm size.

Similarly, in Proserpine growers are also focused on growing sugarcane, and do not think crop diversification is a practical alternative (Table 3). However, they differ from their Mackay neighbours as they appear to have a more optimistic outlook. Compared with the other two areas, Proserpine has the lowest proportion of growers who:

- do not think they will be profitable in five years
- think they will leave the industry
- think they will not pass their farms onto their children

Growers in Proserpine appear to be less constrained by circumstances outside of their control, than growers in the other areas. They are more likely to think they have sufficient land to grow cane profitably (Figure 5) and appear to think there is more they can do to reduce their costs of production and to increase their cane productivity.

A higher proportion of growers in Bundaberg, compared to other regions, think that their farming enterprise will be profitable in five years time. However, nearly 40% of growers in the region think they will leave the industry in the next five years, and over 40% think they will not pass their farms onto their children. This suggests that many growers believe there are more long term, structural problems in the industry, and is in marked contrast with growers' perceptions in Mackay and Proserpine.

Bundaberg growers have similar perceptions to Proserpine growers about measures to improve cane productivity, but access to water is a bigger constraint [4]. The majority of growers do not think they have the optimal farm size to grow cane profitably and appear to believe that economies of scale can be gained.

Deregulation is not a popular concept in any of the regions but in Mackay several of the rationalisation measures are correlated with opinions on future profitability. In contrast, in Proserpine, there is no relationship between expectations about future profitability and rationalisation measures, and in Bundaberg, the clean cane option is the only measure that is correlated with profitability.

In summary, Bundaberg growers appear to have advantages in terms of greater diversification and more off-farm income, but many growers do not see a long term future in the industry. Farming systems in Mackay and Proserpine are similar, but growers in Proserpine are more likely to think they can improve their situation, whereas growers in Mackay are more likely to think their profitability will be affected by external changes, such as rationalisation measures.

Conclusion

In this paper, the results of a survey of sugar cane growers in central Queensland have been reported.

The industry has been experiencing a major economic downturn, and three major reports on the sugar industry released in 2002 suggest major productivity gains are required if the industry is to remain viable. The survey was designed to assess how growers view profitability and restructuring prospects, and to identify the extent to which growers are attempting to achieve productivity gains. The results presented above have highlighted the regional differences in both the structure of sugarcane farming systems and in growers' perceptions of profitability. The findings should be considered carefully by industry and government organisations that are looking at providing assistance and support for growers. If a single policy is applied uniformly to all regions, it is likely that there will be differential impacts.

Growers in Mackay and Proserpine appear to believe the current downturn is a short-term problem and cyclical in nature. One consequence is that structural changes are unlikely to be embraced. Instead, growers will focus on increasing production and cutting costs to survive the downturn. There is little interest in either exiting the industry or purchasing more land to increase scale economies. In contrast, many growers in Bundaberg think the problems are more long-term and structural in nature. There is a larger pool of growers who are considering exit in the next five years, indicating that more potential for restructuring does exist in that region. Growers in Mackay and Proserpine do not appear to believe that they can capture economies of scale, but growers in Bundaberg do think they can. Farm size is more of a limiting factor in Bundaberg than Mackay and Proserpine.

Of particular importance are some key findings related to some of the more commonly discussed and proposed rationalization measures. Growers in all areas believe there is a clear benefit for them if more market incentives are provided to increase the quality of their product, particularly in terms of being paid a bonus for clean cane but also for individual harvesting contracts. In contrast, there is a strong feeling amongst growers in all areas that abolishing single desk selling will have a negative impact on their income.

These results indicate that if structural reform is necessary in the sugar industry, growers in the central Queensland region are not well prepared for the reform process. Many growers do not appear to believe that substantial advantages can be gained through increasing the scale of operations or rationalisation measures. At the same time, there is very limited interest in exiting the industry or diversifying into other cropping opportunities. The expectations of many growers that the downturn is only cyclical is likely to exacerbate the difficulties in achieving structural reform. The difficulty that governments face is that most assistance packages will only reinforce the cyclical expectations, and may create even greater impediments to true reform processes.

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[1] Contact information for growers was supplied by the CANEGROWERS organization and related to Cane Production Areas, rather than individual growers. Information was edited for multiple entries and current telephone numbers.

[2] A copy of the questionnaire can be obtained from the lead author upon request.

[3] Growing sugarcane is a male dominated industry. There is potential for women to access off-farm employment but cultural barriers can still be a limiting factor.

[4] Just before the survey was conducted, growers were receiving 10% of their water allocation, but heavy rain fell during the collection period and allocations were increased to 100%.

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