

# The Impact of Crime on Sustainability in the Sugarcane Growth Industry in South Africa

Takalani. Nemarumane<sup>1</sup>, and Charles. Mbohwa<sup>2</sup>

**Abstract**— there are approximately 38,200 registered sugarcane growers in South Africa, covering three provinces, namely Kwazulu-Natal, Mpumalanga and the Eastern Cape. While this has contributed to social and economic sustainability of local communities, that also created a favorable environment for criminals. A relationship was discovered between the rate of crime and the growth of the sugarcane stalks. The methods used to gather the data included; interviews, questionnaires, crime related websites, and the South African Sugar Association database and other relevant achieve information. It was then recommended that the South African Police Service, South African sugarcane growers and the affected communities should put means in place to decrease the opportunities for criminal activities to occur hence support the grower's economic and social status.

**Keywords**—Community development, Crime, Sugarcane growers

## I. INTRODUCTION

THE South African sugar industry is one of the most competitive producers of high quality sugar and makes an important contribution to employment and sustainable socioeconomic development, particularly in rural areas, and also to the national economy [1]. South Africa produces its sugar from sugarcane. Sugarcane is defined as a tall tropical grass (*saccharum officinarum*) having thick -solid tough stems that are a chief commercial source of [2]. Table 1 shows the sugar cane production figures and the resulting sugar after the cane is crushed in South Africa for the past 14 seasons.

The South African Sugar Association is an autonomous organisation and operates free of government control. In terms of the Sugar Act and Sugar Industry Agreement, statutory powers of self-governance are granted to the sugar industry. The South African Sugar Association's administrative and industrial activities and organisations are financed from the proceeds of the sale of local and export sugars. Its affairs are administered by the Council of the SA Sugar Association [1].

There are approximately 38,200 registered sugarcane growers in South Africa, covering three provinces, namely Kwazulu-Natal, Mpumalanga and the Eastern Cape. Of the 38,200 sugarcane growers, more than 36,500 are small-scale

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growers producing 9 percent of the total crop. The industry is a big contributor to employment and social development hence promoting social and economic sustainability in the Kwa-Zulu Natal and Mpumalanga provinces. Large-scale growers (approximately 1,626) produce 82.6 percent of the total sugarcane crop, while milling companies with their own sugar estates produce 8.4 percent of the crop [3]. Sugarcane is well grown in the sub-tropical climate of KwaZulu-Natal because it is warm and wet from the high rainfall. It is also grown in drier regions like Mpumalanga; however farmers in such regions have to irrigate their cane [4].

TABLE I  
TOTAL CANE/SUGAR PRODUCTION: 1994/1995 To 2010/2011 [1]

SEASON	CANE CRUSHED	SUGAR PRODUCED	
		National market	International market
1994/1995	15 683 277	1 310 328	347 507
1995/1996	16 713 649	1 283 282	375 653
1996/1997	20 950 894	1 264 066	995 630
1997/1998	22 154 775	1 310 352	1 093 278
1998/1999	22 930 324	1 285 001	1 353 155
1999/2000	21 223 098	1 194 763	1 329 897
2000/2001	23 876 162	1 231 442	1 490 120
2001/2002	23 876 162	1 239 651	1 163 592
2002/2003	23 012 554	1 278 720	1 475 899
2003/2004	20 418 933	1 356 400	1 055 631
2004/2005	19 094 760	1 210 416	1 016 453
2005/2006	21 052 266	1 261 808	1 238 696
2006/2007	20 278 603	1 340 524	886 329
2007/2008	19 723 916	1 399 657	873 842
2008/2009	19 255 404	1 438 587	821 657
2009/2010	18 655 089	1 414 273	766 177
2010/2011	16 015 649	1 583 457	325 779

Sugarcane is grown from stalk pieces known as setts. These are laid in prepared furrows and covered with soil, this phase is called a low season. Sugarcane needs about 1000mm of water (rain-fed or irrigated) a year and must be constantly weeded [4]. Figure 1 shows the layout of the ground and the streamlining of the cane pieces under-ground.

The plant grows in clumps of cylindrical stalks measuring from 1.25 to 7.25 cm in diameter and reaching 6 to 7 metres in height [3]. Figure 2 shows how the sugar cane looks like during the mild season. During this season, the sugar cane stalks have grown between 3 to 5 metres in height.



Fig. 1 Low season, after cane pieces are placed on the ground [3].



Fig. 2 Mild season, sugar cane stalks have grown to between 3 and 5 metres [3].

The cane stalks grow straight upward until the stalk becomes too heavy to hold itself up, this is then referred to as the high season. It then lies on its side and continues to grow upward, this is shown in figure 3. This results in a mature cane field lying on top of itself in a mesh pattern [3].



Fig. 3 High season, fully grown sugarcane stalks [3].

Sugar cane is harvested by chopping down the stems but leaving the roots so that it re-grows in time for the next crop. Harvest times tend to be during the dry season and the length of the harvest ranges from as little as 2 ½ months up to 11 months [5]. Cutting of sugarcane takes place from April to

December when the cane is 12 to 24 months old and the stalks contain sweet juice known as sap. Most cane is cut manually by agricultural workers, but mechanical harvesters can also be used on level fields, [6]. On average one hectare planted yields between 50 to 60 tons of cane, and 9 tons of cane is needed to make one ton of sugar. To ensure the maximum sugar content of 1 to 17% of total weight, the cane must be harvested immediately after it reaches its final growth period. The cane fields are burned prior to harvest, to eliminate weeds (without destroying the crop) and to destroy snakes, dangerous insects and other pests that live in the dense growth of the cane fields. The cane is transported to the factory, often by truck or rail wagon [5].

## II. METHODOLOGY

The most important thing about the data collection process is data quality and sources [7]. Primary data were obtained directly from individual sugar production plants and companies. In this study the data were obtained from the sugar plantations and the sugar mills in South Africa. Field trips were organised to KwaZulu-Natal (The main Sugar cane growing areas in South Africa) to collect primary data from the case study companies and organisations that were used for the research.

### A. Data Collection

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#### a. Primary Data

Primary data were collected using a combination of quantitative and qualitative techniques depending on the type of data needed. Three sugar cane growers in KwaZulu-Natal were used to get data on the grower's performance, including statistics on sugar cane grown, and at what level it is grown. The problem with this approach was to check whether the selected growers were representative of the population of sugar cane growers to allow for generalisation of findings to the whole sugar industry [8]. In order to overcome this challenge the information obtained was used together with performances from other sugar cane growers. A questionnaire was designed for purposes of obtaining data at the sugar cane growers. Personal delivery was used as opposed to postal delivery of the questionnaire because the personal involvement of the researcher allowed for complicated issues to be dealt with using the questionnaire and for odd and incomplete answers to be checked and dealt with accordingly [8]. The drawback on using personal delivery was that it was time consuming and more costly as the researcher had to go physically to the mills to allow for the questionnaires to be answered [9]. Interviews were also conducted to get

information starting with informal conversational interviews and later on interview guide approach was used. The interview guide approach involves specifying topics and issues to be covered in advance in an outline form and this allows for comprehensiveness of data obtained and also makes data collection systematic [8]. The disadvantage of this interview approach is that important topics may be omitted.

b. Secondary Data

Secondary data such as published sources, databases, industry or government publications, journals, books were also utilised where necessary [8]. Another kind of secondary data included educated assumptions; most of the data on agriculture were obtained from literature because of different farming practices applied by the farmers and lack of records especially on the part of small scale farmers. Data on crime rates of South Africa, specifically South Africa were also obtained from secondary sources. The challenge with secondary data is its reliability and completeness that is verifying the accuracy of the data and checking how representative the data is of the situation under study. To overcome this challenge data from reliable literature sources and records was used were practical. Published journal articles and reliable official records were used to obtain the data. In general, the goals for data collection, quality, and utilization were to use the most recent data available that were representative of the sugar industry in South Africa.

III. RESULTS

Crime is defined as an action or an instance of negligence that is deemed injurious to the public welfare or morals or to the interests of the state and that is legally prohibited [10]. The areas of crime covered in the study are, Murder, Rape, Kidnapping, Assault and Hijacking.in disk drive.”

A. Murder

South Africa pronounced a 6.5 decrease in the murder ratio between 2009/2010 and 2010/2011 [10]. Murder has been classified into three main categories namely, resident murders, road murders and murder that occurs on the cane field or less than 10 kilometers from the cane field. In the Kwa-Zulu Natal province 25% of the 834 murders that were recorded, were on the sugar cane field and surrounding areas. Figure 4 depicts the murder figures for Kwa-Zulu Natal in 2011 as related to the sugar cane fields.

The murders that occur on the sugar cane plants are varied based on seasons. The 25% (209) of murders that occur on the sugar cane field is for both the high and the low season. The low season starts from when the cane is planted up to when the cane starts to sprout. The mild season is when the cane stalks starts to grow up to when it is developed. The high season begins when the cane stalks are fully developed and ready for harvesting. Figure 5 displays the different murder rates based on the sugar cane growing seasons. Approximately 119 murders were reported during the high season, 73 during

the mild season and 17 murders were reported during the low season.

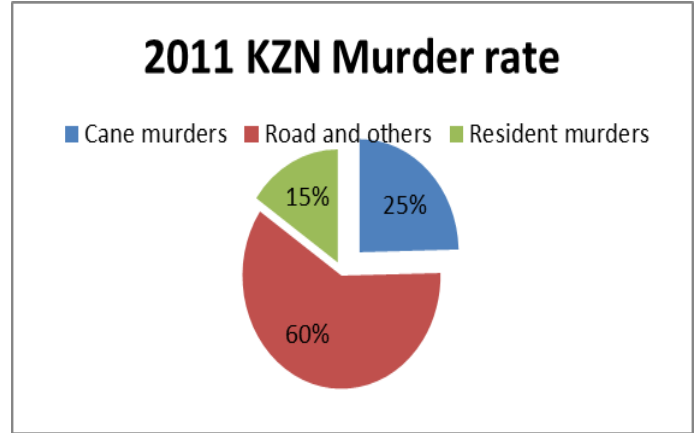


Fig. 4 Murder rate for KZN 2011 [10].

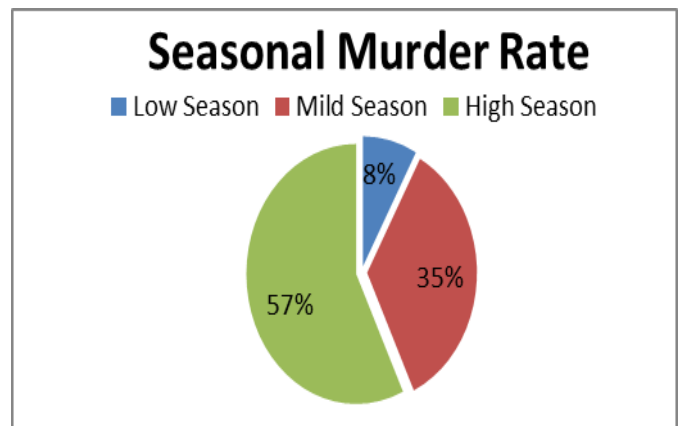


Fig. 5 Murder rate based on the sugar cane growth season [10]

B. Sexual Offenses

132 per 100 000 of the South African population have been sexually offended, in South Africa in 2011; this is stated by [10]. In Kwa-Zulu Natal 9425 people who includes men, women and children, have reported sexual assault cases. Although there has been a recorded decrease of 4.4% in sexual assault cases, in 2011, 55 cases that were reported occurred on sugar cane plants and in the surrounding areas.

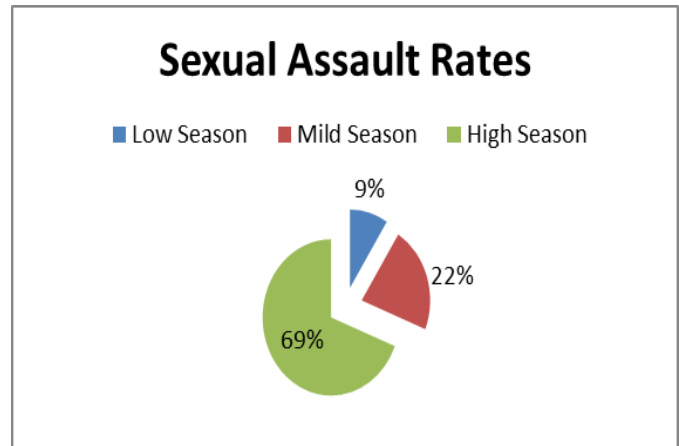


Fig. 6 Sexual assault cases reported in from KZN sugar cane plants [10].



Five cases of sexual assault were reported during the low season, twelve cases were reported during the mild season, and 38 cases were reported during the high season, these are represented in percentages on figure 6. All these cases were from the KZN sugar cane plants and the surrounding areas. There is a major increase in reported cases in the high season; this is due to the tall lengths of the sugar cane stalks, which provide coverage for criminals to perform their criminal activities.

### C. Social Contact Crime

Social contact crimes, which comprise all contact crime except aggravated robbery and common robbery, are mainly crimes occurring between people knowing one another (relatives, friends, acquaintances, colleagues, and neighbors). Public or Street robbery has the highest rate at 57.10%, which equals 16806 reported cases. 29% of the 16806 reported robberies are prevalent in communities that are closely surrounded by sugar cane plants, [10]. Most of these robberies occur during the sugar cane high and mild season, this is displayed in figure 7.

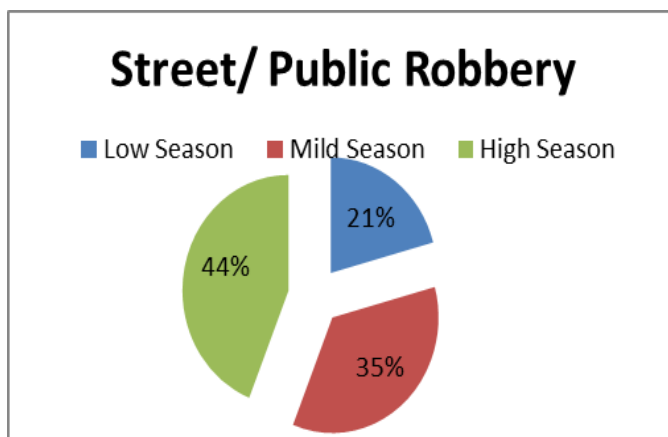


Fig. 7 Street or Public robbery in Cane planting communities in KZN by sugar growth season [10].

The figure 7 suggests that 44% of the public robbery cases were reported in the communities that are closely located to sugar cane plants. These cases were reported during the high sugar-cane growth season; this is when the sugar cane stalks are fully developed and ready for harvesting. 35% of cases related to public robbery were recorded in mild season and 21% were reported during the low season in 2011.

The production of sugarcane leads to the presence of crime in South Africa. The South African sugar industry provides employment for the people it serves, however the growth of sugarcane stalks has negative impacts on the same communities that it serves. Crime has a number negative effect which can result in company layoffs and downsizing. Crime also in-turn hurts the society as a whole. The costs of arresting a criminal, who will pay no taxes and only drain from society while in prison, plus the costs of the actual crime are staggering. The hiring of security guards and purchase bullet-proofed cars is taxed on the members of the nation. It is then concluded that, crime can slowly strangle an economy in

the same way excessive taxation can, and for this reason, economic growth is closely tied to high-quality government institutions that can limit the rate of crime.

## IV. RECOMMENDATIONS

### A. Police Visibility

The patrolling of police vans would be required to decrease the level of crimes within the relevant areas. According to [10], the increase level of police visibility lead to a 7.2% decrease in crime in South Africa. Police visibility was intensified due to the World Cup that occurred in 2010. The level of safety was increased thus reducing the opportunity for criminal activities to occur. The perception of safety also has a major impact on the safety of communities. It is recommended that the South African Police Service focus intensely on communities that are located closer to the sugarcane fields. The focus should be mainly for the mild and high seasons; this is because more crimes are committed during that time. These high levels of visibility have had noticeable effect on social contact crime, it and have also have reduced the number of robberies (and thus also murders and attempted murders committed by robbers and deaths and injuries inflicted by their victims acting in self-defense), as well as murders committed during intergroup violence [10].

### B. All Day Protection Guards

The sugar cane growers are recommended to provide qualified protection guards at the sugarcane fields. The presence of these guards would also decrease the opportunities for criminal activities to occur at the sugarcane fields. These guards would indirectly serve as protection for the community members that are located close to the sugarcane fields. The provision of guards would enable the sugarcane growers to have full control over the activities that occur on the cane fields, thus limiting criminal activities from occurring within the cane fields.

### C. Community Police Forums

Community policing forums provide the community with the ability to provide a sense of safety and protection within the community. These forums enable the specific members of the forum to target hot-spots in the community where criminal activities are bound to happen. Community Policing Forums can be very useful for the Kwa-Zulu Natal cane growing communities as they are mostly aware of the peak season where criminal activities are bound to occur. These types of forums also lead to the development of community unity, which is essential to keeping the community safety.

## V. CONCLUSION

Crime in South Africa has been an issue of great concern. The South African sugarcane growers have had their premises' used for criminal activities. The high season during sugarcane growth has resulted in an increase in criminal activities occurring on the cane field as compared to the low and mild seasons. The reason for this increase has been that

the lengths of the fully developed sugarcane stalks provide sufficient coverage for different types of criminal activities to occur, these include, Murder, rape and contact crimes amongst many others. It was then recommended that the South African Police Services increase police visibility within the identified areas. It was also recommended that the South African cane growers assign trained guards on the cane fields to increase the security on the cane fields. It was lastly recommended that the community develop a Community Policing Forum that will target hotspots that are potential locations for criminal activities to occur. There is a need to discuss how the sugar growing affects social sustainability discussing the social damages and harm that results from the crimes and how these affect the overall economic and social sustainabilities of the communities in the sugar growing areas. Suggest discussion in one or more paragraphs in the last section of the findings and a summary conclusion on the good and bad effects of the sugar growing industry.

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