

KENYA SUGAR BOARD



Cane Census 2013/14 – 14/15 Report



AGRICULTURE DEPARTMENT

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ACRONYMS AND ABBREVIATIONS

| | |
|---------|---------------------------------|
| CSC | Chemelil Sugar Company |
| EMVs | Early Maturing Varieties |
| Ha | Hectares |
| KESREF | Kenya Sugar Research Foundation |
| KSB | Kenya Sugar Board |
| MSC | Mumias Sugar Company |
| MUSCO | Muhoroni Sugar Company |
| NE | Nucleus Estate |
| NSB | Nyando Sugar Belt |
| NSC | Nzoia Sugar Company |
| OG | Outgrowers Companies |
| PC | Plant Crop |
| R1 | Ratoon One |
| R2 | Ratoon Two |
| R3+ | Ratoon Three & Above |
| RC | Ratoon Crop |
| SONY | South Nyanza Sugar Company |
| TC | Tonnes Cane |
| TC/HA | Tonnes Cane Per Hectare |
| TCD | Tonnes Cane Crushed Per Day |
| WEKSCOL | West Kenya Sugar Company |

1.0 EXECUTIVE SUMMARY

1.1 Introduction

The industry cane census survey was conducted from 13th January –7th March, 2014. The exercise was carried out by staff from the various milling companies, Kenya Sugar Research Foundation and Kenya Sugar Board. The main objective of the exercise was to assess the state of sugarcane in the industry and determine its production estimates for the periods between March -June 2014 and July 2014- June 2015.

1.2 Summary of census Exercise

1.2.1 Area under cane and Yields

Table 1: Area under cane and Yields

| Zone | Area Under Cane (Ha) | | | Yields (TCH) | | |
|-------------------|-----------------------------|------------------|-------------------|---------------------|------------------|-------------------|
| | Feb. 2014 | Oct. 2012 | % variance | Feb. 2014 | Oct. 2012 | % variance |
| Chemelil | 16,256 | 17,628 | (8) | 61.38 | 56.57 | 8.9 |
| Soin | 1,603 | 1,208 | 33 | 60.57 | 62.50 | 3 |
| Miwani | 5,424 | 4,612 | 18 | 58.07 | 65.30 | (11) |
| Muhoroni | 18,419 | 15,312 | 20 | 58.23 | 62.50 | (6) |
| Kibos | 5,041 | 4,892 | 3 | 60.72 | 65.30 | (7) |
| Butali | 18,538 | 26,611 | (24.7) | 62.16 | 58.63 | 6 |
| West Kenya | 24,871 | 24,611 | 1 | 61.24 | 68.19 | (10) |
| Nzoia | 28,428 | 26,751 | 6.3 | 57.83 | 67.66 | (9.83) |
| Mumias | 43,752 | 51,624 | (15) | 57.09 | 54.29 | 5 |
| Sonysugar | 18,356 | 17,488 | 4.96 | 66.20 | 70.27 | (5.79) |
| Transmara | 12,106 | 8,120 | 49 | 71.26 | 84.17 | (15) |
| Sukari | 9,511 | 9,067 | 5 | 62.85 | 71.14 | (12) |
| Total | 202,304 | 207,483 | (2.5) | 60.54 | 65.5 | (7.6) |

Table 1 above indicates that, the industry area under cane reduced by 2.5% in February 2014, when compared to the area under cane in October, 2012. Despite enhanced cane development by some millers, there is an overall decrease in area under cane attributed to:

- Farmers' disillusionment especially in Mumias zone resulting to withdrawal from cane farming,

- Variation in estimates for area under cane in Butali zone through use of GIS and physical estimates

The survey indicated a decline in estimated cane yields. The industry average yields dropped from 65.5TCH recorded in the previous cane census to 60.54TCH as at the end of February 2014. This decline could be due to:

- Inadequate and untimely application of fertilizers
- Harvesting of young pre mature cane
- Low cane management standards

1.2.2 Area under cane by crop classes

Table 2: Area under Cane by Crop Cycle (Ha)

| Crop cycle | Out growers (HA) | Nucleus (HA) | Total (HA) | % Coverage |
|-------------------|-------------------------|---------------------|-------------------|-------------------|
| PC | 48,414 | 4,371 | 52,785 | 26 |
| R1 | 62,613 | 2,745 | 65,358 | 32 |
| R2 | 42,733 | 2,293 | 45,026 | 22 |
| R3+ | 34,207 | 4,928 | 39,135 | 20 |
| Total | 187,967 | 14,337 | 202,304 | 100 |

The ratio of PC: R1:R2:R3+ was recorded as 26:32:22:20 at the end of February, 2014. This is a deviation from the recommended ratio of 30:30:30:10 for stable cane supply. The previous survey reported a ratio of 27:23:26:24, which reflects a percent reduction in the area under plant crop.

1.2.3 Area under cane by varieties

Table 3 Area under Cane by Varieties

| Variety | Out growers (HA) | Nucleus Estate (HA) | Total (HA) | % Coverage |
|----------------|-------------------------|----------------------------|-------------------|-------------------|
| CO 421 | 76,215 | 1,285 | 77,500 | 38.31 |
| CO 945 | 44,358 | 2,509 | 46,867 | 23.17 |
| Co 617 | 32,430 | 2,606 | 35,036 | 17.32 |
| N 14 | 17,763 | 1,255 | 19,018 | 9.40 |
| KEN 83 -737 | 10,327 | 2,880 | 13,207 | 6.53 |
| CB 38 - 22 | 730 | 1,472 | 2,202 | 1.09 |
| EAK 73-335 | 1,592 | 435 | 2,027 | 1.00 |
| Others | 4,552 | 1,895 | 6,447 | 3.18 |
| Total | 187,967 | 14,337 | 202,304 | 100 |

The most dominant varieties in the industry were observed to be CO421 (38.31%), CO 945 (23.17%), and CO 617 (17.32%). There is a significant increase in the area under KEN 83-737 in the industry. This could be associated with its adaptability to various agro ecological zones.

1.2.4 Cane Availability Projection

Table 4: Cane availability

| FACTORY | MAR - JUN 2014 | | | JUL 2014 - JUN 2015 | | |
|-------------------|---------------------------|----------------|-------------|---------------------------|----------------|-------------|
| | MILL REQUIREMENT (TONNES) | AVAILABLE CANE | SURPLUS (T) | MILL REQUIREMENT (TONNES) | AVAILABLE CANE | SURPLUS (T) |
| CHEMELIL | 235,000 | 535,172 | 300,172 | 700,000 | 651,204.44 | (48,796) |
| MUHORONI | 206,800 | 493,347 | 286,547 | 616,000 | 805,116 | 189,116 |
| MUMIAS | 789,600 | 238,922 | (550,678) | 2,352,000 | 1,161,794 | (1,190,206) |
| NZOIA | 282,000 | 261,392 | (20,608) | 840,000 | 1,049,767 | 209,767 |
| SOUTH NYANZA | 235,000 | 382,305 | 147,305 | 700,000 | 810,364 | 110,364 |
| WEST KENYA | 350,000 | 386,976 | 36,976 | 1,050,000 | 984,909.52 | (65,090) |
| SOIN | 28,200 | 19,201 | (8,999) | 84,000 | 47,271 | (36,729) |
| KIBOS | 188,000 | 129,544 | (58,456) | 560,000 | 255,534 | (304,466) |
| BUTALI | 141,000 | 169,759 | 28,759 | 420,000 | 702,138 | 282,138 |
| SUKARI INDUSTRIES | 141,000 | 191,064 | 50,064 | 420,000 | 399,761.40 | (20,239) |
| TRANSMAR A | 188,000 | 196,749 | 8,749 | 560,000 | 530,300.80 | (29,699) |
| MIWANI | - | 29,254 | - | - | 43,645 | - |
| | - | 55,527 | - | - | 133,045 | - |
| TOTAL | 2,784,600 | 3,089,211 | 219,830 | 8,302,000 | 7,574,850 | (903,840) |

The table above indicates that cane available for crushing between March and June, 2014 is 3,089,211 tons. Considering a mill requirement of 2,784,600 tons during the same period, then the industry is projected to have a surplus cane supply of 219,830 tons.

If the surplus cane is carried over to the next financial year, the cane available for crushing in the financial year will be 7,574,850 tons. With a mill requirement of 8,302,000 tons, the industry is projected to have a deficit cane supply of 903,840 tons in 2014/15.

Mumias and Kibos sugar mill are projected to have a deficit cane supply in both 2013/14 and 2014/15 financial years, with Mumias Sugar facing an acute cane shortage.

1.3 Recommendations

1. Millers should adopt yield improvement strategies in order to maximize on their cane yields.
2. Mumias, Kibos and Soin sugar mills need to pursue a sustainable cane development plan commensurate to their crushing capacities
3. Millers should develop an agreeable cane sharing formula to minimize illegal transfer of cane from one zone to the other and this be legislated
4. A deliberate policy to commence a phased adoption of early maturing cane varieties is critical to sustainable cane supply.

2.0 THE CANE CENSUS BACKGROUND AND APPROACH

2.1 Introduction

The Kenya Sugar industry cane validation exercise is conducted once every year through a collaborative effort of the Board, Millers, Outgrowers and KESREF. This crop season, the exercise commenced 13th January, 2014 to 7th March, 2014. The survey findings form a basis for addressing challenges facing sugarcane production in line with the Sugar industry strategic plan and Kenya's Vision 2030. The exercise combined the use of GIS Methodology in survey specific to Butali and West Kenya mills and the physical assessment of cane done in various sugar zones

2.1 Terms of reference

- To establish the overall cane availability in the industry and in each individual mill zone for the year 2013/14 year and make projections for the 2014/15.
- To establish the crop distribution per crop cycle, age and variety in all catchment zones and advice the industry appropriately.
- To determine the constraints to cane production and develop mitigating strategies.

2.2 Methodology

Approximately 18% of the area under cane was randomly sampled (See Appendix 1) and simple visual assessment of the crop and Infrastructure done. The crop was assessed and scored based on crop vigour, Crop colour, Crop density, Weed Pests and Diseases status

2.3 Personnel

The exercise was undertaken by staff of specific milling zones, and the following KSB staff: Lilian Lihasi (Team Leader), Laban Mulehi, Jason Mugo, Stanley Koech, Beatrice Odiwa, Joshua Omollo, Barry Mutekhele, and Elisha Mtogo. The KESREF staff included Betty Mulianga, George Otieno, and Rahid Katama

3.1 CHEMELIL SUGAR ZONE

3.1 Area under Cane and Yields

Table 5: Area under cane and Yields

| | <i>Area under cane (Ha)</i> | | <i>Yields (TCH)</i> |
|----------------------|-----------------------------|------------------|---------------------|
| | Feb. 2014 | Oct. 2012 | Feb 2014 |
| Outgrowers | 14,730 | 15,966 | 62.83 |
| Nucleus | 1,526 | 1,662 | 49.32 |
| Total/Average | 16,256 | 17,628 | 61.38 |

The area under cane during the census 2013/14 was 16,256 Ha, Out-growers accounting for 14,730Ha while Nucleus Estate was 1,526 Ha. This is a decrease of 8% compared to 17,628 Ha that was recorded during 2012/13 cane census. The decrease could be attributed to:

- inadequate funding for cane development
- Delayed cane payment
- Unpredictable changes in cane prices.

The cane yields were estimated as 61.38TCH, with nucleus estate recording yields of 49.32 and Outgrowers 62.83. This is an increase of 8.9% when compared to yields of 56.37TCH recorded in the previous cane census survey. This increase could be attributed to:

- The replanting program, thus replacing the old low high yielding ratoon crops by new crop especially among the out grower farmers.

However, Chemelil should enhance adoption of yield improvement strategies especially in the Nucleus estate.

3.2 Area under cane by Crop Classes

Table 6: Area under cane by Crop classes

| Crop cycle | Out growers (HA) | Nucleus (HA) | Total (HA) | % Coverage |
|-------------------|-------------------------|---------------------|-------------------|-------------------|
| PC | 3,348 | 176 | 3,524 | 22 |
| R1 | 3,290 | 325 | 3,615 | 22 |
| R2 | 2,886 | 203 | 3,089 | 19 |
| R3+ | 5,206 | 822 | 6,028 | 37 |
| Total | 14,730 | 1,526 | 16,256 | 100 |

The table above shows that the ratio of PC:R1:R2:R3+ in Chemelil zone in February 2014 was 22:22:19:37. This is a deviation from the ratio of 30:30:30:10 recommended for stable cane supply. Despite an improvement in the area under Plant Crop when compared to the ratio of 18:20:18:44 recorded in with 2012 cane census, there is need for Chemelil to enhance its cane development by replacing the low yielding ratoon crops.

3.3 Variety Distribution

Table 7: Area under cane by varieties

| Variety | Out growers (HA) | Nucleus Estate (HA) | Total (HA) | % Coverage |
|----------------|-------------------------|----------------------------|-------------------|-------------------|
| CO617 | 9,720 | 298 | 10,018 | 61.62 |
| CO 421 | 4011 | 76 | 4,087 | 25.14 |
| CB38-22 | 405 | 687 | 1,092 | 6.72 |
| KEN 83-737 | 27 | 141 | 168 | 1.03 |
| CO1148 | 0 | 110 | 110 | 0.68 |
| N14 | 0 | 74 | 74 | 0.46 |
| CO945 | 26 | 21 | 47 | 0.29 |
| EAK 70-97 | 26 | 6 | 32 | 0.20 |
| CO 5820 | - | 11 | 11 | 0.07 |
| KEN 82 – 472 | - | 8 | 8 | 0.05 |
| OTHERS | 515 | 94 | 609 | 3.74 |
| TOTAL | 14,730 | 1,526 | 16,256 | 100 |

CO617 is the dominant variety in the zone accounting for 61.62% of the total cane area followed by CO421 at 25.14% as shown in the Table above. Chemelil needs to embrace a variety diversification program in order to spread risks in case of any disease outbreak affecting a particular variety.

3.4 Cane distribution by Crop ages

Table 8: Area under cane by crop ages

| Age(Mon) | Outgrowers(Ha) | Nucleus Estate(Ha) | Total(Ha) | % coverage |
|-----------------|-----------------------|---------------------------|------------------|-------------------|
| 0 - 3 | 1,343 | 475 | 1,818 | 11 |
| 4-15 | 5,004 | 715 | 5,719 | 35 |
| 16+ | 8,383 | 336 | 8,719 | 54 |
| Total | 14,730 | 1,526 | 16,256 | 100 |

The table indicates that a higher percentage (54%) of cane in Chemelil is due for harvest in this financial year, with minimal area under cane available for the next financial year. Strategic planning of cane development programs is encouraged.

3.5 Cane Projections

3.5.1 Cane projection for March to June 2014

Cane of 16 months and above (8,719ha) will be available for crushing as shown in the table above. Considering the estimated yield of 61.38TCH in the zone, it follows that $8,719 \text{ ha} \times 61.38 \text{ tch} = 535,172$ tons of cane will be available between March and June, 2014. The mill requirement during the same period will be $2500 \text{ TCD} \times 94 \text{ days} = 235,000$ tons; reflecting a cane surplus of $(535,172 - 235,000)$ tons = 300,172 tons.

3.5.2 Cane projection for 2014/2015

Cane of age 4 -15 months covering 5,719ha will be available for crushing in 2014/15. Cane available is estimated as $5,719 \text{ ha} \times 61.38 \text{ tch} = 351,032$ tons. Noting the competition for cane among millers it is not certain that the surplus cane available at end of 2013/14 will all be carried over to the financial year 2014/15. If the surplus cane is not consumed by other millers, the total cane available to Chemelil will be 651,204tons $(351,032+300,172)$. The Mill requirement is $2500 \text{ TCD} \times 280 \text{ days} = 700,000$ tons; reflecting a cane deficit of $(700,000 - 651,204)$ tons = 48,796 tons.

3.6 Challenges

- Impassable feeder roads.
- Shortage of labour due to competition
- Delayed cane payment
- Unpredictable weather patterns
- Inadequate access to clean seed cane
- High percentage of over mature cane in the lowlands
- Low yields in the Nucleus Estate due to high percentage of ratoon crops and inadequate input
- Competition for cane by neighbouring millers
- Inadequate funds for cane development

4.0 SOIN SUGAR ZONE

4.1 Area under Cane and Yields

Table 9: Area under Cane and Yields

| | <i>Area under cane (Ha)</i> | | <i>Yields (TCH)</i> |
|----------------------|-----------------------------|------------------|---------------------|
| | Feb. 2014 | Oct. 2012 | Feb 2014 |
| Outgrowers | 1,603 | 1,208 | 60.57 |
| Nucleus | - | - | - |
| Total/Average | 1,603 | 1,208 | 60.57 |

Soin sugar recorded an area under cane of 1,603ha by end of February, 2014. This is an increase of 33% in comparison to an area under cane of 1,208ha in 2012/13 census survey. This could be attributed to increased cane development by:

- the miller due to SDF funding,
- out-growers due to increased market demand for raw material

The cane yields estimated during the survey was 60.57TCH. This is a decrease of 3% in comparison to the yields of 62.5TCH recorded in the previous cane census. This decrease in yields could be attributed to:

- inadequate use of farm inputs
- High percentage of CO 421 cane variety which is highly susceptible to smut

4.2 Area under cane by Crop Classes

Table 10: Area under by Crop Classes

| Crop cycle | Out growers (HA) | Nucleus (HA) | Total (HA) | % Coverage |
|-------------------|-------------------------|---------------------|-------------------|-------------------|
| PC | 821 | - | 821 | 51 |
| R1 | 599 | - | 599 | 37 |
| R2 | 123 | - | 123 | 8 |
| R3+ | 60 | - | 60 | 4 |
| Total | 1,603 | - | 1,603 | 100 |

The ratio of PC: R1:R2:R3+ in Soin zone is 51:37:8:4 as shown in the table above. This is a deviation from the recommended ratio of 30:30:30:10 for stable cane supply. Soin has a higher percentage of area under plant crop in comparison to

ratoon crop, which positively correlates to the increased cane development during the year.

4.3 Variety Distribution

Table 11: Area under cane by varieties

| Variety | Out growers (HA) | Nucleus Estate (HA) | Total (HA) | % Coverage |
|----------------|-------------------------|----------------------------|-------------------|-------------------|
| CO421 | 1,262 | - | 1,262 | 78.7 |
| CO 945 | 116 | - | 116 | 7.24 |
| CO 617 | 99 | - | 99 | 6.2 |
| KEN 83-737 | 53 | - | 53 | 3.3 |
| CB 38-22 | 22 | - | 22 | 1.4 |
| OTHERS | 51 | - | 51 | 3.16 |
| TOTAL | 1,603 | | 1,603 | 100 |

The dominant variety is CO 421 accounting for 78.7% of the total cane area. Noting the susceptibility of CO 421 to smut, there is an urgent need for Soin to embrace variety diversification.

4.4 Area under cane by crop ages

Table 12: Area under cane by crop ages

| Age(Mon) | Outgrowers(Ha) | Nucleus Estate(Ha) | Total(Ha) | % coverage |
|-----------------|-----------------------|---------------------------|------------------|-------------------|
| 0 - 3 | 357 | - | 357 | 22 |
| 4 -15 | 929 | - | 929 | 58 |
| 16+ | 317 | - | 317 | 20 |
| Total | 1,603 | | 1,603 | 100 |

From the Table it is evident that a higher percentage (58%) of area under cane in Soin zone will be available for crushing in the next financial year.

4.5 Cane projections

4.5.1 Cane projection for March to June 2014

Cane of 16months and above occupying an area of 317ha will be available for crushing between March and June, 2014. Cane available will thus be 317ha x 60.57TCH= 19,201tons. If the mill will crush at 300TCD for 94days, the Mill

requirement will be 28,200tons. Soin is projected to have Cane deficit of 8,999tons of cane.

4.5.2 Cane projection for 2014/2015

From the survey it was noted that cane of age 4-15 months amounting to 56,270 tons (929hax60.57tch) will be available for crushing in 2014/15. There is a possibility that 8,999 tons cane will be consumed in 2013/14, thus implying that only 47,271 tons (56,270 – 8,999) will be available for crushing. With a Mill requirement of (300 TCD x 280 days) 84,000 tons; Soin is expected to have a cane deficit of 36,729 tons in 2014/15.

Noting the high percentage of cane in Plant crop, Soin should develop and adopt strategies for yield improvement besides the enhanced cane development to ensure sustainable cane supply.

4.6 Challenges

- Poor roads network.
- High cost of input
- High competition from neighboring mills
- Inadequate funding for mill expansion
- Unsustainable access to quality seed cane material

5.0 MIWANI ZONE

5.1 Area under cane and yields

Table 13: Area under cane and yields

| | <i>Area under cane (Ha)</i> | | <i>Yields (TCH)</i> |
|----------------------|-----------------------------|------------------|---------------------|
| | Feb. 2014 | Oct. 2012 | Feb 2014 |
| Outgrowers | 3,916 | 3,526 | 57.72 |
| Nucleus | 1,508 | 1,086 | 58.98 |
| Total/Average | 5,424 | 4,612 | 58.07 |

Miwani recorded an increase of 18% in area under cane i.e. from an area of 4,612 ha in October, 2012 to 5,424 ha in February, 2014. This increase was observed in both the outgrowers and Nucleus Estate, and could be attributed to prompt payments of outgrower farmers and increased cane demand resulting from competing millers.

The estimated yields in Miwani zone were estimated as 58.07 in February, 2014. This is a reduction of 11% in comparison to yields of 65.3 recorded in October, 2012. The decrease in yield could be attributed to cane husbandry practices and inadequate use of farm inputs.

5.2 Area under cane by crop classes

Table 14: Area under cane by crop classes

| <i>Crop cycle</i> | <i>Out growers (HA)</i> | <i>Nucleus Estate (HA)</i> | <i>Total (HA)</i> | <i>% Coverage</i> |
|-------------------|-------------------------|----------------------------|-------------------|-------------------|
| PC | 1,121 | 650 | 1,771 | 33 |
| R1 | 1,036 | 171 | 1,207 | 22 |
| R2 | 880 | 48 | 928 | 17 |
| R3+ | 879 | 639 | 1,518 | 28 |
| Total | 3,916 | 1,508 | 5,424 | 100 |

The ratio of PC: R1:R2:R3+ in Miwani zone in February 2014 was 32:22:17:29, indicating an insignificant variation with ratio of 28:22:18:32 recorded in the previous census. Miwani Sugar Company needs to re-plough some of their low yielding ratoon crops and strive to attain the recommended ratio of 30:30:30:10 for sustainable cane development.

5.3 Variety distribution

Table 15: Area under cane by varieties

| Variety | Out growers (HA) | Nucleus (HA) | Total (HA) | % Coverage |
|----------------|-------------------------|---------------------|-------------------|-------------------|
| CO 617 | 3,268 | 465 | 3,733 | 68.82 |
| CO421 | 328 | - | 328 | 6.05 |
| N14 | 155 | - | 155 | 2.86 |
| CB 38-22 | 108 | 407 | 515 | 9.49 |
| EAK 70-97 | - | 320 | 320 | 5.90 |
| CO 945 | - | 168 | 168 | 3.10 |
| KEN 82-808 | 14 | - | 14 | 0.26 |
| KEN 82-472 | - | 11 | 11 | 0.20 |
| KEN 83-737 | - | 6 | 6 | 0.11 |
| EAK 73-335 | 3 | - | 3 | 0.06 |
| OTHERS | 40 | 131 | 171 | 3.15 |
| TOTAL | 3,916 | 1,508 | 5,424 | 100 |

The most dominant variety in Miwani zone is CO 617 occupying 68.82% of the area under cane in the zone. Adaptability of the variety in the zone could be associated with the levels of adoption. Increasing the area under other cane varieties is the way forward in this zone.

5.4 Area under cane by crop ages

Table 16: Area under cane by ages

| Age (Months) | Out growers(HA) | Nucleus Estate(HA) | Total (HA) | % coverage |
|---------------------|------------------------|---------------------------|-------------------|-------------------|
| 0-3 | 649 | 272 | 921 | 17 |
| 4- 15 | 2,305 | 740 | 3,045 | 56 |
| 16+ | 962 | 496 | 1,458 | 27 |
| Total | 3,916 | 1,508 | 5,424 | 100 |

The Table indicates that 83% of the cane in Miwani zone will be available for harvest during the remaining part of this financial year and next year.

5.5 Cane Projections

5.5.1 Miwani's Cane available to Muhoroni in March – June, 2014

Cane from Miwani Nucleus estate of ages 16months and above will be available for crushing in Muhoroni between March and June, 2014. This is a total of 496ha x 58.98tch = 29,254 tons

5.5.2 Miwani's Cane available to Muhoroni in 2014/15

Cane of 4 -15months from the Miwani Nucleus estate will be available for crushing in Muhoroni sugar mills. This amount to 740ha x 58.98tch= 45,645tons.

5.5.3 Miwani's Cane available to Kibos in March – June, 2014

Cane of 16 months and above from the Outgrowers will be available to Kibos for milling between March and June, 2014. The amount of cane available is projected to be 962ha x 57.72tch = 55,527 tons.

5.5.4 Miwani's Cane available to Kibos in 2014/15

Available cane to Kibos from Miwani Out-growers in 2014/15 is projected to be 2,305ha x 57.72 tch = 133,045tons

5.6 Challenges

- Inadequate funding for cane development
- Un functional mill thus rely on other millers
- Poor road infrastructure
- Unpredictable weather patterns
- Poor drainage especially in the Kano plains

6.0 MUHORONI SUGAR ZONE

6.1 Area under cane and Yields

Table 17: Area under cane and Yields

| | <i>Area under cane (Ha)</i> | | <i>Yields (TCH)</i> |
|----------------------|-----------------------------|------------------|---------------------|
| | Feb. 2014 | Oct. 2012 | Feb 2014 |
| Outgrowers | 16,538 | 13,730 | 57.91 |
| Nucleus | 1,881 | 1,582 | 58.40 |
| Total/Average | 18,419 | 15,312 | 58.23 |

The area under cane in Muhoroni was recorded as 18,419ha at end of February, 2014. This is an increment of 20% in comparison to the area under cane of 15,312ha recorded in the previous cane census survey. This is attributed to:

- The improved performance of the mill that increased demand for cane.
- Competition from other millers for cane

The average yield of Muhoroni was estimated as 58.23TCH. This is a decrease of 6% when compared to a yield of 62.5TCH recorded in the previous cane census survey. The reduction in yield is attributed to inadequate access to farm inputs.

6.2 Area under cane by crop classes

Table 18: Area under cane by crop classes

| Crop cycle | Out growers (HA) | Nucleus (HA) | Total (HA) | % Coverage |
|-------------------|-------------------------|---------------------|-------------------|-------------------|
| PC | 5,212 | 577 | 5,789 | 32 |
| R1 | 4,307 | 494 | 4,801 | 26 |
| R2 | 2,931 | 238 | 3,169 | 17 |
| R3+ | 4,088 | 571 | 4,659 | 25 |
| Total | 16,538 | 1,881 | 18,419 | 100 |

It is evident from the above table that, the ratio of PC:R1:R2:R3+ in Muhoroni sugar zone is 32:26:17:25. This is an insignificant deviation to the ratio of 30:30:30:10 recommended for sustainable cane supply. However, it is necessary that Muhoroni re-ploughs some of its low yielding ratoon crops especially in the Nucleus Estate and plant high yielding cane crop.

6.3 Variety Distribution

Table19: Area under cane by varieties

| Variety | Out growers (HA) | Nucleus Estate (HA) | Total (HA) | % Coverage |
|----------------|-------------------------|----------------------------|-------------------|-------------------|
| CO617 | 12,047 | 1,070 | 13,117 | 71.21 |
| CO 421 | 3,053 | 8 | 3,061 | 16.61 |
| KEN 83-737 | 726 | 389 | 1,115 | 6.05 |
| CO 945 | 515 | 95 | 610 | 3.31 |
| CB38-22 | 124 | 107 | 231 | 1.25 |
| EAK 70-97 | 14 | 89 | 103 | 0.56 |
| KEN 82-216 | 7 | 34 | 41 | 0.22 |
| N14 | 35 | 3 | 38 | 0.21 |
| D 84-84 | 1 | 13 | 14 | 0.08 |
| CO 331 | 9 | 0 | 9 | 0.05 |
| EAK 73-335 | 4 | 3 | 7 | 0.04 |
| KEN 82-472 | 2 | 3 | 5 | 0.03 |
| OTHERS | 1 | 67 | 68 | 0.38 |
| TOTAL | 16,538 | 1,853 | 18,419 | 100 |

The predominant cane variety in Muhoroni zone is CO 617 occupying 71.21% of the area under cane in the zone. The high adoption of CO 617 has been attributed to its adaptability in the zone. It is important to note the increased (6.05%) adoption of the early maturing KEN 83-737 cane variety. However Muhoroni needs to enhance adoption of other cane varieties too.

6.4 Area under cane by crop ages

Table 20: Area under cane by crop ages

| Age(Mon) | Outgrowers(Ha) | Nucleus Estate(Ha) | Total(Ha) | % coverage |
|-----------------|-----------------------|---------------------------|------------------|-------------------|
| 0 - 3 | 1,976 | 317 | 2,293 | 13 |
| 4 -15 | 7,279 | 877 | 8,156 | 44 |
| 16+ | 7,283 | 687 | 7,970 | 43 |
| Total | 16,538 | 1,881 | 18,419 | 100 |

The Table above shows that only 43% of cane in Muhoroni zone will be available for crushing in 2014/15 financial year. This indicates a possible risk to sustainable cane supply in 2014/15.

6.5 Cane projections

6.5.1 Cane projection for March to June 2014

During the period March – June 7,970ha (43%) of cane will be available for crushing as indicated in the above table. The cane available for this period is 7,970 ha x 58.23 tch = 464,093tons. An additional 496ha x 58.98tch = 29,254 tons is projected to come from Miwani Nucleus Estate, reflecting total of 493,347 (464,093 + 29,254) tons. The mill requirement is 2200 TCD x 94 days = 206,800 tons; reflecting a cane surplus of (493,347 - 206,800) tons = 286,547 tons.

Noting the competition between millers the probability of carrying over the surplus cane to the next financial year is not certain.

6.5.2 Cane projection for 2014/2015

Cane of age 4-15 months (8,156ha) will be available for crushing in 2014/15. Cane available during the year will be 8,156 x 58.23= 474,924 tons. An additional (740ha x 58.98tch) 43,645tons is projected to come from Miwani Nucleus Estate. Thus a total of 518,569 tons (474,924+43,645) will be available for crushing. If the surplus cane in 2013/14 is not consumed by other millers, then 805,116 tons (518,569 + 286,547) will be available to Muhoroni for crushing. At a Mill requirement of 2,200 TCD x 280 days = 616,000 tons; Muhoroni is projected to have a surplus cane supply of 189,116tons.

6.6 Challenges

- Poor road network
- Delayed cane payment
- Unpredictable weather patterns
- Competition for cane by neighbouring millers
- Declining cane yields

7.0 KIBOS SUGAR ZONE

7.1 Area under cane and Yields

Table 21: Area under cane and Yields

| | <i>Area under cane (Ha)</i> | | <i>Yields (TCH)</i> |
|----------------------|-----------------------------|------------------|---------------------|
| | Feb. 2014 | Oct. 2012 | Feb 2014 |
| Outgrowers | 4,394 | 4,309 | 93.38 |
| Nucleus | 647 | 583 | 57.72 |
| Total/Average | 5,041 | 4,892 | 60.72 |

Kibos recorded an area under cane of 5,041ha as at end of February 2014. This is 3% increase in comparison to the area under cane of 4,892 ha recorded in the previous cane census survey. Increased cane demand besides timely harvesting and cane payment could be associated with the expansion of the area under cane.

The estimated cane yield for Kibos zone is 60.72TCH. This is a 7% reduction in yield when compared to the average yield of to 65.3 tch in October 2012. The low yields in the outgrowers could be attributed to inadequate use of farm inputs. High yields in the Nucleus estate could be associated with good cane management and adoption of irrigation technologies.

7.2 Area under cane by crop classes

Table 22: Area under cane by crop classes

| Crop cycle | Out growers (HA) | Nucleus (HA) | Total (HA) | % Coverage |
|-------------------|-------------------------|---------------------|-------------------|-------------------|
| PC | 960 | 245 | 1,205 | 24 |
| R1 | 1,154 | 171 | 1,325 | 26 |
| R2 | 1,182 | 136 | 1,318 | 26 |
| R3+ | 1,098 | 94 | 1,192 | 24 |
| Total | 4,394 | 647 | 5,041 | 100 |

The ratio of PC: R1:R2:R3+ in the zone was observed to be 24:26:26:24, indicating a marginal variation from the ratio of 25:28:25:22 obtained in the previous survey and also minimal variation from the recommended ratio of 30:30:30:10 required

for stable cane supply. There need to enhance cane development in the zone to ensure sustainability

7.3 Variety Distribution

Table 23: Area under cane by varieties

| Variety | Out growers (HA) | Nucleus Estates (HA) | Total (HA) | % Coverage |
|----------------|-------------------------|-----------------------------|-------------------|-------------------|
| CO617 | 4,054 | 258 | 4,312 | 85.54 |
| N14 | 94 | 136 | 230 | 4.56 |
| KEN 83-737 | 100 | 118 | 218 | 4.32 |
| CB 38-22 | 21 | 64 | 85 | 1.69 |
| CO 945 | 32 | 36 | 68 | 1.35 |
| KEN82-808 | 40 | - | 40 | 0.79 |
| CO 421 | 4 | 2 | 6 | 0.12 |
| OTHERS | 49 | 33 | 82 | 1.63 |
| TOTAL | 4,394 | 647 | 5,041 | 100 |

CO 617 is the predominant cane variety in Kibos sugar zone covering 85.54% of the area under cane. It adaptability to the area could be attributed to the high adoption. However, this may pose a risk in cases of pest or disease infestation on CO 617. There is urgent need for increased adoption of other cane varieties. This survey noted an increase (21%) in the area under KEN 83-737 and a decrease (8%) in area under variety N14 when compared to the previous survey.

7.4 Area under cane by crop ages

Table 24: Area under cane by ages

| Age (Months) | Out growers (HA) | Nucleus Estate(HA) | Total (HA) | % coverage |
|---------------------|-------------------------|---------------------------|-------------------|-------------------|
| 0-3 | 677 | 164 | 841 | 17 |
| 4- 15 | 2,645 | 335 | 2,980 | 59 |
| 16+ | 1,072 | 148 | 1,219 | 24 |
| Total | 4,394 | 647 | 5,041 | 100 |

7.5 Cane projections

7.5.1 Cane projection for March- June, 2014

Cane of 16+ months covering an area of 1,219ha will be available for milling during March - June period. Thus Cane available from Kibos is 1,219 ha x 60.72tch = 74,017tons. Miwani out growers is expected to supply 962ha x 57.72tch = 55,527 tons of cane to Kibos for milling. This gives a total of 129,544 tons of cane available to Kibos for crushing.

Considering a Mill requirement of 2,000 TCD x 94 days = 188,000 tons between March – June, Kibos is projected to have a cane deficit of (188,000 – 129,544) 58,456 tons between March and June, 2014.

7.5.2 Cane projection for 2014/15

Cane of age 4 -15 months estimated at 2,980ha x 60.72tch = 180,946tons is projected to be available for milling in 2014/15 from Kibos zone. However, 58,456 tons of cane could be consumed in 2013/14, thus leaving 122,490 tons for 2014/15 in Kibos zone. Miwani outgrowers will supply 2,305ha x 57.72 tch = 133,044 tons during the same period. Thus a total of 255,534 (122,490 + 133,044) tons of cane will be available for milling in 2014/15. With a Mill requirement of 2,000 TCD x 280 days = 560,000 tons, Kibos is projected to have a cane deficit of (560,000 – 255,534) tons = 304,466 tons in 2014/15 financial year.

7.6 Challenges

- Poor road network
- High percentage of CO 617
- High cost of inputs
- Erratic weather patterns
- Competition for cane with other millers

8.0 BUTALI SUGAR ZONE

8.1 Area under cane and Yields

Table 25: Area under cane and Yields

| | <i>Area under cane (Ha)</i> | | <i>Yields (TCH)</i> |
|----------------------|-----------------------------|------------------|---------------------|
| | Feb. 2014 | Oct. 2012 | Feb 2014 |
| Outgrowers | 18,538 | 26,611 | 62.16 |
| Nucleus | - | - | - |
| Total/Average | 18,538 | 26,611 | 62.16 |

The area under cane in Butali zone as at February 2014 was 18,538 hectares with estimated yields of 62.16 per hectare as compared to 24,611 hectares in 2012 with estimated yields of 58.63 tch. This represents a decrease of 6,073 hectares which is 24.7%.

The significant variation in area under cane could be attributed to differences in physical estimates and estimates using the GIS. The reported area under cane for Butali using the GIS was 18,538 hectares, whereas Butali Sugar Company's physical estimates gave an area of 29,508ha.

8.2 Area under cane by crop classes

Table 26: Area under cane by crop classes

| Crop cycle | Out growers (HA) | Nucleus (HA) | Total (HA) | % Coverage |
|-------------------|-------------------------|---------------------|-------------------|-------------------|
| PC | 1853 | - | 1853 | 10 |
| R1 | 12,310 | - | 12,310 | 60 |
| R2 | 4,055 | - | 4,055 | 22 |
| R3+ | 320 | - | 320 | 2 |
| Total | 18,538 | - | 18,538 | 100 |

The ratio of PC:R1:R2:R3 is 10:66:22:2. This is a deviation of the acceptable ratio of 30:30:30:10 for stable cane supply. As it is observed from the table above, the PC:RC is 10:90, implying that a need for Butali to enhance its cane development to ensure sustainable cane supply.

8.3 Area under cane by crop ages

Table 27: Area under cane by crop ages

| Age (Months) | Out growers (HA) | Nucleus Estate(HA) | Total (HA) | % coverage |
|---------------------|-------------------------|---------------------------|-------------------|-------------------|
| 0-3 | 4,974 | - | 4,974 | 27 |
| 4-15 | 10,833 | - | 10,833 | 58 |
| 16+ | 2,731 | - | 2,731 | 15 |
| Total | 18,538 | - | 18,538 | 100 |

The table above indicates that a high proportion of cane in Butali zone is between the ages of 4 - 15 months which is 58%. Twenty seven percent of the cane will be available for crushing between March and June this financial year.

8.4 Cane Projections

8.4.1 Cane Projection for March - June 2014

The crushing capacity for Butali is 1250 TCD. From March 2014 - June 2014, the mill requirement will be 141,000 tonnes (1,500 x 94 days). Cane available for crushing is estimated to be 169,759 tonnes (2731 ha x 62.16 tch) giving a surplus of 28,759 tonnes. Noting the cane deficit within the neighbouring mills, it is unlikely that this surplus will be carried forward to the financial year 2014 – 2015.

8.4.2 Cane Projection for 2014 - 2015

In the financial year 2014 – 2015, the mill requirement for Butali will be 420,000 tonnes (1500 x 280 days), considering a crushing capacity of 1500 TCD. Cane available for crushing is estimated at 673,379 tonnes (10,833ha x 62.16 tch). If the 2013/14 cane surplus (28,759tons) is carried over to 2014/15 then Butali is projected to have a cane surplus of 282,138 tons in the financial year 2014 – 2015.

8.5 Challenges

- CO 421 is the most dominant and highly susceptible to smut
- Poor seed cane quality used by farmers
- Competition for cane with neighbouring mills
- High percentage of ratoon crops
- Advanced cane ages resulting to poor implementation of cane harvesting program
- Unclear estimates for area under cane

9.0 WEST KENYA SUGAR ZONE

9.1 Area under cane and yields

Table 28: Area under cane and yields

| | Area under cane (Ha) | | Yields (TCH) |
|----------------------|-----------------------------|------------------|---------------------|
| | Feb. 2014 | Oct. 2012 | Feb 2014 |
| Outgrowers | 24,871 | 24,611 | 61.24 |
| Nucleus | - | - | - |
| Total/Average | 24,871 | 24,611 | 61.24 |

The area under cane in West Kenya zone as at February 2014 was reported as 24,871 hectares by West Kenya Sugar Company. Out of which 20,935 Ha are scheduled for crushing at West Kenya mill and 3,936 Ha under plant crop was developed for the proposed new project. However, the cane will be delivered to West Kenya since the project is still pending. The estimated area under cane for West Kenya using the GIS was reported 26,297 hectares. The GIS gave a yield estimate of 61TCH. There was an insignificant variation in yields when using GIS (61TCH) and physical assessment (61.24TCH). The previous cane census survey reported an area of 24,611 hectares with estimated yields of 68.19 tonnes per hectare.

The field survey indicated a yield reduction of 10% when compared to the results of the 2012 cane census survey.

The increase in the area under cane can be attributed to increased cane demand resulting from competition for cane. Consequently West Kenya has done expansive Cane development in new areas such as Misikhu region in Bungoma County, Trans Nzoia County and parts of Shinyalu and Lugari.

9.2 Area under cane by crop classes

Table 29: Area under cane by crop classes

| Crop cycle | Out growers (HA) | Nucleus (HA) | Total (HA) | % Coverage |
|-------------------|-------------------------|---------------------|-------------------|-------------------|
| PC | 7,215 | - | 7,215 | 29 |
| R1 | 10,497 | - | 10,497 | 42 |
| R2 | 5,818 | - | 5,818 | 24 |
| R3+ | 1,207 | - | 1,207 | 5 |
| Total | 24,871 | - | 24,871 | 100 |

The ratio of PC:R1:R2:R3 is 29:42:24:5 reflecting an insignificant deviation from the recommended ratio of 30:30:30:10 for sustainable cane supply. As it is observed from the table above the PC:RC is 29:71. This implies that minimal opening up of new land and focus on improving productivity per unit area will ensure sustainable cane supply in West Kenya zone.

9.3 Area under cane by varieties

Table 30: Area under cane by varieties

| Variety | Out growers (HA) | Nucleus Estates (HA) | Total (HA) | % Coverage |
|----------------|-------------------------|-----------------------------|-------------------|-------------------|
| CO 421 | 22,881 | - | 22,881 | 91 |
| CO 945 | 1,244 | - | 1,244 | 5 |
| D 84-84 | 497 | - | 497 | 2 |
| Others | 249 | - | 249 | 1 |
| Total | 24,871 | - | 24,871 | 100 |

CO 421 is the dominant cane variety in West Kenya zone occupying 91% of the area under cane. This is a high risk noting that CO 421 is susceptible to smut. Increased adoption of other cane varieties is a prerequisite in the zone.

9.4 Area under cane by crop ages

Table 31: Area under cane by ages

| Age (Months) | Out growers (HA) | Nucleus Estate (HA) | Total (HA) | % coverage |
|---------------------|-------------------------|----------------------------|-------------------|-------------------|
| 0-3 | 3,073 | - | 3,073 | 12 |
| 4- 15 | 15,479 | - | 15,479 | 62 |
| 16+ | 6,319 | - | 6,319 | 26 |
| Total | 24,871 | - | 24,871 | 100 |

Table 31 indicates that 88% of the area under cane in West Kenya zone will be available from March 2014 to June 2015.

9.5 Cane Projections

9.5.1 Cane Projection 2013 - 2014

The crushing capacity for West Kenya is 3500 TCD. From March 2014 – June 2014, the mill requirement will be 350,000 tonnes (3500 x 100 days). Cane available for

crushing is projected to be 386,976 tonnes (6,319ha x 61.24 tch), reflecting a cane surplus of 36,976 tonnes.

9.5.2 Cane Projection for 2014 - 2015

Considering a crushing capacity of 3500 TCD, West Kenya is projected to crush 1050,000 tonnes cane (3500 x 300 days) in the financial year 2014 – 2015. Cane available for crushing is estimated to be 947,934 tonnes (15,479 ha x 61.24 tch) in 2014/15, with an additional 36,976 tons from 2013/14 financial year. This implies that West Kenya shall have a cane deficit of 65,090 (1,050,000 – 947,934 - 36,976) tons.

9.6 Challenges

- Competition for cane with neighbouring millers
- Poor management of ratoon crops
- Inadequate fertilizer use
- A number of farmers can not access certified seed cane material
- Area is dominated by CO 421 susceptible to smut disease

10.0 NZOIA SUGAR ZONE

10.1 Area under cane and yields

Table 32: Area under cane and yields

| | Area under cane (Ha) | | Yields (TCH) |
|----------------------|-----------------------------|------------------|---------------------|
| | Feb. 2014 | Oct. 2012 | Feb 2014 |
| Outgrowers | 25,124 | 23,488 | 66.30 |
| Nucleus | 3,304 | 3,263 | 55.42 |
| Total/Average | 28,428 | 26,751 | 57.83 |

The area under cane in Nzoia zone as at February 2014 was 28,429 hectares with estimated yields of 57.83 per hectare as compared to 26,751 hectares in 2012 with estimated yields of 67.66 tonnes per hectare. This represents an increase of 1,671 hectares (6.3%) in the area under cane. The yields have reduced from 67.66 tch to 57.83 tch representing 9.83 % reduction in yields.

The decrease in yields could be as a result of:

- Maintenance of more ratoon crops, especially R3+ with minimal percentage of plant crop
- Inadequate use of farm inputs in particular fertilizer.
- Poor crop maintenance especially among outgrowers
- Higher incidences of smut disease especially in ratoon crops

10.2 Area under cane by crop cycle

Table 33: Area under cane by crop cycle

| Crop Cycle | Outgrowers | Nucleus | Total | % |
|-------------------|-------------------|----------------|---------------|------------|
| PC | 3,399 | 1,221 | 4,620 | 16 |
| R1 | 6,793 | 557 | 7,350 | 26 |
| R2 | 6,558 | 547 | 7,105 | 25 |
| R3+ | 8,374 | 979 | 9,353 | 33 |
| Total | 25,124 | 3,304 | 28,428 | 100 |

The ratio of PC:R1:R2:R3+ is 16:26:25:33. This is a deviation from the acceptable ratio of 30:30:30:10 for sustainable cane supply. As observed from the table above the PC: RC is 16:84, implying a need to expand the area under plant crop.

10.3 Variety Distribution

Table 34: Area under cane by Variety

| Variety | Outgrowers | Nucleus | Total | % coverage |
|----------------|-------------------|----------------|---------------|-------------------|
| CO 421 | 18,345 | 1,126 | 19,471 | 68.5 |
| N-14 | 3,467 | 660 | 4,127 | 14.5 |
| CO 945 | 2,206 | 394 | 2,600 | 9.1 |
| KEN 83- 737 | 722 | 844 | 1,566 | 5.5 |
| Ken 82 - 472 | 153 | 70 | 223 | 0.8 |
| D84 84 | 52 | 119 | 171 | 0.6 |
| EAK 70-97 | 72 | - | 72 | 0.3 |
| CO 1148 | - | 21 | 21 | 0.1 |
| EAK 71-402 | - | 6 | 6 | 0.0 |
| Mixed | 107 | 64 | 171 | 0.6 |
| Total | 25,124 | 3,304 | 28,428 | 100 |

The total area under cane in Nzoia sugar zone is dominated by two major varieties: CO 421 which occupies about 68.5% (19,471 Ha) and N14 occupying about 14.5% (4,127 Ha). The two varieties occupy 83% of the total area under cane with the rest occupying 17%. This scenario may be dangerous especially in case of an outbreak of pests and diseases.

10.4 Area under cane by ages

Table 35: Area under cane by ages

| Age group | Outgrowers | Nucleus | Total | % coverage |
|------------------|-------------------|----------------|--------------|-------------------|
| 0 - 3 | 4,734 | 665 | 5399 | 19 |
| 4 - 15 | 16,643 | 1,866 | 18,509 | 65 |
| 16 and above | 3,747 | 773 | 4520 | 16 |
| Total | 25,124 | 3,304 | 28428 | 100 |

The table above indicates that a high percentage (65%) of the total cane in Nzoia zone is between the ages of 4 – 15 months. Thus only 16% of the total cane will be available for crushing in the remaining months of this financial year 2013 – 2014.

10.5 Cane Projections

10.5.1 Cane Projections for March - June 2014

The crushing capacity for Nzoia is 3000 TCD. From March 2014 – June 2014, the mill requirement will be 282,000 tonnes (3000 x 94 days). Cane available for crushing is estimated at 261,392 tonnes (4,520 ha x 57.83 tch) reflecting a cane deficit of 20,608 tonnes during the said period.

10.5.2 Cane Projections for 2014 - 2015

In the financial year 2014 – 2015, the mill requirement will be 840,000 tonnes (3000 x 280 days) when considering a crushing capacity of 3000 TCD. Cane available for crushing will be 1,070,375 tonnes (18,509ha x 57.83 tch) indicating a surplus cane supply of 230,375 tonnes. However with the cane deficit of 20,608 tonnes projected for financial year 2013 – 2014, there is likelihood that Nzoia may consume some of the cane projected for 2014/15. If this is so, then Nzoia will have a surplus of 209,767 tonnes in 2013/14.

10.6 Challenges

- CO 421 which is susceptible to smut is the dominant cane variety in the region
- The bulk of the area under cane in the zone is in ratoon crop
- High levels of fertilizer diversion
- Delayed cane payment

11.0 MUMIAS SUGAR ZONE

11.1 Area under cane and yields

Table 36: Area under cane and yields

| | Area under cane (Ha) | | Yields (TCH) |
|----------------------|-----------------------------|---------------|---------------------|
| | Feb. 2014 | Oct. 2012 | Feb 2014 |
| Outgrowers | 40,608 | 48,146 | 56.89 |
| Nucleus | 3,144 | 3,478 | 58.25 |
| Total/Average | 43,752 | 51,624 | 57.09 |

The area under cane in Mumias zone as at February 2014 was 43,752 hectares; with estimated yields of 57.09 per hectare as compared to 51,624 hectares in 2012 with estimated yields of 54.29 tonnes per hectare. There is an observed decrease of 7,872 hectares in area under cane representing 15%. The decrease in the area under cane is associated with:

- Farmers pulling out of cane farming due to unpleasant business with majority of farmers receiving debit revenue
- Some farmers have uprooted sugarcane for other alternative crops.
- Some farmers have opted to grow cane privately and on maturity sell to millers of their choice.

The yields increased by 5% attributed to:

- An improvement in the cane harvesting age.
- Change in the fertilizer regime
- Supervision of fertilizer application thus minimal diversion

However, enhanced adoption of yield improvement strategies is a prerequisite to curb the low yields in Mumias.

11.2 Area under cane by crop cycle

Table 37: Area under cane by crop cycle

| Crop Cycle | Outgrowers | Nucleus | Total | % |
|-------------------|-------------------|----------------|---------------|------------|
| PC | 9,183 | 800 | 9,983 | 23 |
| R1 | 9,902 | 653 | 10,555 | 24 |
| R2 | 10,952 | 800 | 11,752 | 27 |
| R3+ | 10,571 | 891 | 11,462 | 26 |
| Total | 40,608 | 3,144 | 43,752 | 100 |

The ratio of PC: R1:R2:R3 is 23:24:27:26. This is a deviation from the acceptable ratio of 30:30:30:10 for sustainable cane supply. There is need for enhanced cane development to attain the expected ratio for sustainability of raw material supply.

11.3 Variety Distribution

Table 38: Area under cane by Variety

| Variety | Outgrowers | Nucleus | Total | % coverage |
|----------------|-------------------|----------------|---------------|-------------------|
| CO 945 | 27,884 | 784 | 28,668 | 65.5 |
| Ken 83-737 | 8,691 | 1,208 | 9,899 | 22.6 |
| EAK 73-335 | 1,588 | 432 | 2020 | 4.6 |
| CO 617 | 674 | 395 | 1,069 | 2.4 |
| D84 84 | 874 | - | 874 | 2.0 |
| CO421 | 508 | - | 508 | 1.2 |
| N14 | 199 | - | 199 | 0.5 |
| CB 38-22 | 50 | 84 | 134 | 0.3 |
| CO 1148 | 80 | - | 80 | 0.2 |
| Mixed | 41 | - | 41 | 0.1 |
| B 41227 | 2 | - | 2 | 0.0 |
| B 60163 | 2 | - | 2 | 0.0 |
| OTHERS | 15 | 241 | 256 | 0.6 |
| Total | 40,608 | 3,144 | 43,752 | 100 |

Mumias sugar zone is dominated by two major varieties: CO 945 which occupies about 65.5% (28,668 Ha) and early maturing variety KEN 83 – 737 which occupies

about 22.6% (9,899 Ha). The two varieties occupy 88.1% of the area under cane. The adoption of KEN 83-737 in Mumias has been quite impressive, with progressive increase in area over the years. Despite CO 945 occupying the highest percentage in area under cane, Mumias is striving to reduce its area due to poor ratooning, associated with Ratoon stunting disease. Increased adoption other varieties should be a priority for Mumias.

11.4 Area under cane by ages

Table 39: Area under cane by ages

| Age group | Outgrowers | Nucleus | Total | % coverage |
|------------------|-------------------|----------------|---------------|-------------------|
| 0 - 3 | 8,683 | 888 | 9,571 | 22 |
| 4 - 15 | 27,879 | 2,117 | 29,996 | 69 |
| 16 and above | 4,046 | 139 | 4,185 | 10 |
| Total | 40,608 | 3,144 | 43,752 | 100 |

The table above indicates the high proportion of cane in Mumias zone (90%) is less than 16 months. This poses a risk to sustainable cane supply. Only 10% of the total cane is projected to be available for crushing during the current financial year 2013 – 2014.

11.5 Cane Projection

11.5.1 Cane Projections for March - June 2014

The current crushing capacity for Mumias is 8400 TCD, indicating that the mill requirement from March 2014 – June 2014 will be 789,600 tonnes (8,400 x 94 days). Cane available for crushing is projected as 238,922 tonnes (4,185 ha x 57.09 tch) reflecting a deficit cane supply of 550,678 tonnes.

11.5.2 Cane Projections for 2014 - 2015

The crushing capacity for Mumias is 8400 TCD. In the financial year 2014 - 2015, Mumias is projected to mill 2,352,000 tonnes (8400 x 280 days). Cane of 4-15 months projected to be available for crushing in 2014/15 is 1,712,472 tonnes (29,996 ha x 57.09 tch). It is possible some of the cane will be consumed before the beginning of the financial year. If so, then cane available for crushing will be (1,712,472 – 550,678) = 1,161,794 tons. Mumias is projected to have a cane deficit of 1,190,206 tonnes.

This means Mumias needs to enhance its cane development besides implementing strategies for yield improvement to ensure sustainable cane supply. Mumias should consider negotiating with other millers on a proper cane sharing agreement.

11.6 Challenges

- Delayed farmers' payment for cane delivered
- Farmer withdrawing from cane farming due failure to break even
- Poor crop husbandry practices
- Unsustainable cane supply to the mill
- Competition for the raw material from neighboring millers

12.0 SOUTH NYANZA SUGAR ZONE

12.1 Area under Cane and Yields

Table 40: Area under cane and yields

| | <i>Area under cane (Ha)</i> | | <i>Yields (TCH)</i> |
|----------------------|-----------------------------|---------------|---------------------|
| | Feb. 2014 | Oct. 2012 | Feb 2014 |
| Outgrowers | 16,123 | 15,287 | 66.40 |
| Nucleus | 2,233 | 2,201 | 66.15 |
| Total/Average | 18,356 | 17,488 | 66.20 |

The area under cane in Sony was 18,356 ha. This is a 4.96% increase in area under cane in comparison to December, 2012. This increase is attributed to cane development both in the out growers and nucleus plantations. The average yield in the zone was estimated at 66.2 TCH which is a 5.79% decline in cane yield in comparison with 70.27 TCH in October 2012. The decline in cane yield could be due to:

- Lack of proper cane husbandry practices,
- Inadequate use of farm inputs in particular fertilizer use.
- Reduced land holdings in the out growers
- Effects of ratoon stunting disease (RSD) in the nucleus estates.

12.2 Area under cane by crop classes

Table 41 Area under cane by crop classes

| <i>Crop cycle</i> | <i>Out growers (HA)</i> | <i>Nucleus (HA)</i> | <i>Total (HA)</i> | <i>% Coverage</i> |
|-------------------|-------------------------|---------------------|-------------------|-------------------|
| PC | 6593 | 681 | 7274 | 40 |
| R1 | 4996 | 344 | 5340 | 29 |
| R2 | 4373 | 278 | 4651 | 25 |
| R3+ | 161 | 930 | 1091 | 6 |
| Total | 16,123 | 2233 | 18,356 | 100.00 |

From the table above the crop ratio for PC: R1:R2:R3+ is 40:29:25:6. This portrays a variation from the recommended ratio of 30:30:30:10 that is recommended for stable future cane supply. 40% of the area under cane in the zone is under plant crop positively correlating with the increased cane development.

12.3 Variety Distribution

Table 42: Area under cane by varieties

| Variety | Out growers (A) | Nucleus (HA) | Total (HA) | % Coverage |
|----------------|------------------------|---------------------|-------------------|-------------------|
| CO 945 | 7,920 | 1012 | 8932 | 48.66 |
| N14 | 7,276 | 347 | 7623 | 41.53 |
| CO 421 | 560 | 39 | 599 | 3.26 |
| KEN 83737 | - | 174 | 174 | 0.94 |
| EAK70-97 | 5 | 137 | 142 | 0.77 |
| CB38-22 | - | 123 | 123 | 0.67 |
| CO617 | - | 120 | 120 | 0.65 |
| CO1148 | - | 38 | 38 | 0.20 |
| OTHERS | 362 | 243 | 605 | 3.30 |
| Total | 16,123 | 2,233 | 18,356 | 100.00 |

Table shows that the major varieties in the zone are: CO945 (48.7%) and N14 (41.53 %). The rest occupy 9.8 % of the total area under cane. Sony needs to enhance adoption of other varieties

12.4 Area under cane by ages

Table 43 Area under cane by ages

| Age (months) | Out growers (HA) | Nucleus (HA) | Estate | Total (HA) | % coverage |
|---------------------|-------------------------|---------------------|---------------|-------------------|-------------------|
| 0-3 | 2,229 | 336 | | 2,565 | 14 |
| 4-15 | 8,713. | 1,303 | | 10,016 | 55 |
| 16+ | 5,181 | 594 | | 5,775 | 31 |
| Total | 16,123 | 2,233 | | 18,356 | 100.00 |

Table 43 indicates that 86% of the area under cane in the zone will be available for crushing in this and next financial year, out of which 55% will be harvested next year.

12.5 Cane Projection

12.5.1 Cane projection for March to June 2014

Cane of 16 months and above will be available for crushing in March to June 2014 this is 5,775 ha x 66.2TCH = 382,305tons. The Mill requirement is 2500 TCD x 94

days = 235,000 tons. Sony sugar will have a surplus cane of (382,305-235,000) tons = 147,305 tons in this financial year.

12.5.2 Cane projection for 2014/2015

Cane of 4-15months will be available for crushing in the year 2014/2015, representing 10,016 ha x 66.2tch = 663,059 tons. If surplus cane of 147,305tons is carried over to the new financial year, the SONY sugar is projected to have 810,364 tons of cane in 2014/15. Considering a Mill requirement of 2,500TCD x 280days = 700,000 tons, SONY will have a cane surplus of (810,364 - 700,000) tons = 110,364tons.

12.6 Challenges

- Limited manual labour force for the nucleus estate due low pay
- Poor state of the roads to fields in swampy areas resulting to delays in harvesting
- Declining zonal cane yields
- Inadequate machines for land development
- Competition for cane from neighbouring millers and jaggeries
- Inadequate cane transport units

13.0 TRANSMARA SUGAR ZONE

13.1 Area under Cane and Yields

Table 44: Area under cane and Yields

| | <i>Area under cane (Ha)</i> | | <i>Yields (TCH)</i> |
|----------------------|-----------------------------|------------------|---------------------|
| | Feb. 2014 | Oct. 2012 | Feb 2014 |
| Outgrowers | 12,012 | 7,796 | - |
| Nucleus | 94 | 324 | 71.26 |
| Total/Average | 12,106 | 8,120 | 71.26 |

The area under cane in Transmara was reported as 12,106ha with an estimated yield of 71.26 TCH. The area under cane has increased by 49%, attributed to the massive cane development in both the Nucleus estate and outgrower farms.

There is an observed reduction in the estimated yields, with yields of 71.26 TCH in 2014 compared to the yields of 84.17 in 2012. This could be associated with inadequate use of fertilizers and poor husbandry practices especially in the Kisii area.

13.2 Area under Cane and Yields

Table 45: Area under cane by crop classes

| Crop cycle | Out growers (HA) | Nucleus Estate (HA) | Total (HA) | % Coverage |
|-------------------|-------------------------|----------------------------|-------------------|-------------------|
| PC | 6331 | 21 | 6352 | 52 |
| R1 | 2307 | 30 | 2337 | 19 |
| R2 | 1644 | 43 | 1688 | 14 |
| R3+ | 1729 | - | 1729 | 14 |
| Total | 12012 | 94 | 12106 | 100 |

Table 45 demonstrates that the crop ratio for PC: R1:R2:R3+ is 52:19:14:14. This is a significant variation from the recommended ratio of 30:30:30:10 ensuring a stable future cane supply. The high percentage of plant crop could be related to the massive cane development during the season.

13.3 Variety Distribution

Table 46: Area under cane by varieties

| Variety | Out growers (HA) | Nucleus (HA) | Total (HA) | % Coverage |
|----------------|-----------------------------|-------------------------|-----------------------|-----------------------|
| CO 945 | 2,634 | 20 | 5,717 | 47 |
| CO 421 | 3,001 | 34 | 3,035 | 25 |
| N14 | 5,681 | 35 | 2,654 | 22 |
| D8484 | 120 | 4 | 124 | 1.1 |
| KEN 83 737 | 8 | | 8 | 0.1 |
| KEN 82472 | 13 | | 13 | 0.2 |
| OTHERS | 555 | - | 555 | 4.6 |
| Total | 12,012 | 94 | 12,106 | 100 |

Table 46 shows that the major varieties in the zone are: CO945 (47%); CO421 (25%), N14 (22%), and KEN 83 737(1%).

The rest of the varieties occupy 0.37% of the total area under cane production. Increasing adoption of other varieties would be appropriate in the zone.

13.4 Area under cane by ages

Table 47: Area under cane by ages

| Age (months) | Out growers (HA) | Nucleus Estate (HA) | Total (HA) | % coverage |
|-------------------------|-----------------------------|--------------------------------|-----------------------|-----------------------|
| 0-3 | 2009 | 17 | 2026 | 17 |
| 4-15 | 7277 | 42 | 7319 | 60 |
| 16+ | 2726 | 35 | 2761 | 23 |
| Total | 12,012 | 94 | 12,106 | 100.00 |

Distribution of cane by age (table 47) in this zone shows that 77% of the cane in Transmara zone is less than 16months of age. This implies that only 23% of the cane will be available for crushing between March and June, 2014.

13.5 Cane Projections

13.5.1 Cane projection for March to June 2014

Cane of 16 months and above will be available for crushing in March to June 2014 covers an area of 2,761 ha. Cane availability in the zone is 2,761ha x

71.26TCH = 196,749 tons. The miller requires 2000 TCD x 94 days = 188,000 tons, indicating a surplus cane supply of (196,749-188,000) 8,749 tons.

13.5.2 Cane projection for 2014/2015

Cane of 4-15 months will be available for crushing in the year 2014/2015. This covers an area of 7,319 ha. Cane available is 7,319 ha x 71.26 TCH = 521,552 tons. If the surplus cane of 8,749 tons is not consumed by other millers in 2013/14, then a total of 530,301 tons of cane will be available for crushing by Transmara. With a Mill requirement of 2000 TCD x 280 days = 560,000, Transmara sugar mill is projected to have a cane deficit of 29,699 (560,000-530,301) tons.

13.6 Challenges

- Poor roads and lack of enough maintenance machines
- Cane loses due to poor harvesting, loading , transportation and spillage
- Poor harvesting technique
- Poor variety distribution/ choice by farmers
- High cost of transport
- Unstable sugarcane prices
- Unhealthy competition from other millers
- Lack of knowledge on sugarcane husbandry
- Poor extension services
- Poor land preparation by farmers

14.0 SUKARI SUGAR ZONE

14.1 Area under Cane and Yields

Table 48 Area under Cane and Yields

| | <i>Area under cane (Ha)</i> | | <i>Yields (TCH)</i> |
|----------------------|-----------------------------|------------------|---------------------|
| | Feb. 2014 | Oct. 2012 | Feb 2014 |
| Outgrowers | 9,511 | 9,067 | 62.85 |
| Nucleus | - | - | - |
| Total/Average | 9,511 | 9,067 | 62.85 |

The area under cane in Sukari sugar zone is 9,511 ha. The average yield in the zone was estimated at 62.85 TCH. There is a 5% increase in the area under cane attributed to the cane development done during the period. Cane Yields have reduced by 12% from 71.14TCH recorded in October, 2012 to 62.85TCH estimated in the current survey. The decrease in cane yields could be associated to inadequate use of fertilizers.

14.2 Area under cane by Crop classes

Table 49 Area under cane by crop classes

| Crop cycle | Out growers (HA) | Nucleus Estate | % Coverage |
|-------------------|-------------------------|-----------------------|-------------------|
| PC | 2,378 | - | 25 |
| R1 | 5,422 | - | 57 |
| R2 | 1,331 | - | 14 |
| R3+ | 380 | - | 4 |
| Total | 9,511 | - | 100 |

Table 49 demonstrates that the crop ratio for PC: R1:R2:R3+ is 25:57:14:4. This is a significant variation from the recommended ratio of 30:30:30:10 ensuring a stable future cane supply. There is need for more cane development in the zone to ensure a sustainable cane supply.

14.3 Variety Distribution

Table 50: Area under cane by varieties

| Variety | Out growers (HA) | Nucleus (HA) | Total (HA) | % Coverage |
|----------------|-----------------------------|-------------------------|-----------------------|-----------------------|
| CO 421 | 4,280 | - | 4,280 | 45 |
| CO 617 | 2,568 | - | 2,568 | 27 |
| CO 945 | 1,807 | - | 1,807 | 19 |
| N14 | 856 | - | 856 | 9 |
| TOTAL | 9,511 | - | 9,511 | 100 |

The most dominant cane varieties in Sukari zone are CO 421 (45%) and CO 945 (27%). Sukari industries has not planted any of the latest early maturing cane varieties.

14.4 Area under cane by ages

Table 51: Area under cane by ages

| Age (months) | Out growers (HA) | Nucleus (HA) | Estate | % coverage |
|-------------------------|-----------------------------|-------------------------|---------------|-------------------|
| 0-3 | 907 | - | | 9 |
| 4- 15 | 5,564 | - | | 59 |
| 16+ | 3,040 | - | | 32 |
| Total | 9,511 | - | | 100 |

14.5 Cane projections

14.5.1 Cane projection for March to June 2014

Cane of 16 months and above will be available for crushing in March to June 2014. This covers an area of 3,040 ha having a yield of 62.85TCH. This implies cane available for milling is 3,040 ha x 62.85 TCH = 191,064 tons. The Mill requirement is 1500 TCD x 94 days = 141,000 tons. This means that Sukari industries will have surplus cane supply of 50,064tonnes (191,064 - 141,000).

14.5.2 Cane projection for 2014/2015

Cane of 4-15 months will be available for crushing in the year 2014/2015 and this covers an area of 5,564 ha. Cane available is 5,564 ha x 62.85 TCH = 349,697 tons. Carrying over the current year's cane surplus of 50,064tons, then the total

cane available in the zone will be 399,761 tons. The Mill requirement = 1500 TCD x 280 days = 420,000, thus reflecting a mill deficit of 20,239 (420,000 – 399,761) tons.

14.6 Challenges

- Pathetic road network, especially the feeder roads
- Un surveyed land/ plots
- Poor crop husbandry
- High incidences of smut
- Inadequate supply of quality seed cane
- Limited technical knowhow on cane husbandry by farmers

List of Participants

| | |
|---------------------|-------------------|
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| Andrew Ochola | BUTALI SUGAR |
| Francis Oduol Odero | CHEMELIL SUGAR |
| Jacob Ongoro | CHEMELIL SUGAR |
| Joel Kiplagat | CHEMELIL SUGAR |
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| Betty Mulianga | KESREF |
| Ambrose Abungu | KIBOS SUGAR |
| Vitalis A Ogola | KIBOS SUGAR |
| Joel Wangendo | Transmara Sugar |
| Obare | Transmara Sugar |
| Leonard Opiyo | MUHORONI |
| Jack Jura | MUHORONI |
| Boniface Makhandia | MUMIAS SUGAR |
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