

SWAZILAND SUGAR ASSOCIATION TECHNICAL SERVICES

ANNUAL REPORT ON SMUT INCIDENCE – 2014/2015

EXECUTIVE SUMMARY

The Pests and Diseases Team of the Swaziland Sugar Association Technical Services conducted the annual smut inspection on commercial fields between September 2014 and March 2015. The crop age of the inspected fields is 3 – 5 months. A total of 44 386, 57 ha was inspected which is 77,3% of the total area under cane against a target of 65%. The average smut industry smut level for the 2014/15 season is 0,30% which indicates an increase of 11,80% to the 2013/14 industry average of 0,27%. The infection level has been steadily declining over the past five seasons and the decrease between the 2010 and 2015 is 40, 84%. NCo376 remained the most susceptible variety with the highest (0,53%) infection level compared to the other variety. N19 and N25 were the second and third highest with infection levels of 0,52% and 0,38%, respectively. Generally, infection level were high in October and November and regional variations in all the months of inspection were observed with the highest level (1,01%) recorded in Sidvokodvo in February. All varieties except NCo376 had infection levels below 1,00% from plant crop to the 16th ratoon and beyond. There were no compulsory plough out orders issued to growers as no field was found with infection level beyond the threshold values.

1. INTRODUCTION

Annual smut surveys are carried out by Technical Services (TS) to monitor the status of the disease, the effectiveness of roguing programmes in the industry and to encourage growers to intensify the smut roguing pressure on all varieties. Roguing is the most effective method of controlling smut after germination. Roguing open smut whips is costly and ineffective and therefore discouraged. Other effective methods include the use of disease free planting material and relatively resistant varieties. If all efforts are not successful then fields with excessive smut infection levels are ploughed out. The aim is to prevent the spread of the disease from spores released by open smut whips as well as carried in seedcane. The retention of the highly productive but smut susceptible variety NCo376, and the fact that there is no absolute resistance to the disease lends emphasis to the importance of intensified roguing effort. Even relatively smut resistant varieties can become susceptible if exposed to high smut pressure. It must be noted that planting NCo376 by smallholder growers is discouraged due to the associated cost burden of roguing and early ploughing out of fields with high smut levels.

Inspection of commercial fields is done between September and February at 3-5 months of crop age, depending on the time of harvest. This should allow growers sufficient time to rogue each field at least twice before inspection. The target for the season under review was to survey at least 65% of the industry area under sugarcane.

Technical Services continuously highlight problem areas and advise growers on the appropriate control strategy through Extension Officers and the Pest and Disease Teams. High smut notices are issued to fields with smut levels greater than 5% in the Lowveld or greater than 1% in the Malkerns area, and these are sent to growers as well as Extension Officers during the season. Appendix E of the Industry P&D Rules 2014 deals with the inspection and plough out procedures. **“Growers must plough out all fields that exceed the maximum smut infection level up to a maximum of 25% of the total area of their land under cane. The exception is for whole fields that need to be ploughed out.”** The exception refers to mainly one-farm estates (Appendix E of the P&D Rules 2014).

2 SELECTION OF FIELDS

Selection of fields for the smut survey is based on varietal susceptibility, crop dispositions (% area planted), location and smut infection levels during the previous season. All fields of variety NCo376 and any field with smut levels between 5% and 10% in the Lowveld and 1% and 3% in Malkerns in the previous year are surveyed at least once. In addition all fields in the Malkerns area are surveyed due to their proximity to the primary seed cane scheme. Fields of other varieties are selected at random according to crop disposition on each estate. Fields that had smut levels above the maximum allowed during the previous season are inspected more than once. The inspecting team may not inspect any field, for the purpose of the annual survey, at a grower’s request. **‘Under no circumstances will a field be re-inspected immediately after roguing, at the request of a grower’** (Appendix E of the P&D Rules 2014). Randomly selected fields may be re-surveyed in all areas even if they recorded smut levels below the maximum allowable.

3 METHOD OF INSPECTION

An inspection site comprises 50 meters of cane row with an assumption of 100 stools of cane (2 stools per meter). The number of sites inspected depends on field size as shown below (Table 1):

Table 1: Area and Number of Samples

Field size (ha)	Number of sample sites
0 to 4,9	10
5,0 to 9,9	20
10,0 to 19,9	30
20,0 to 29,9	40
30,0 to 39,9	50
40,0 to 49,9	60
Over 50	70

Sites are determined randomly in a prescribed manner.

4. SURVEY RESULTS

A total area of 44 386,57 ha which is 77,3% of the total area under sugarcane (**Table 2**) in the industry was inspected during the 2014/15 season. The area inspected represents a 4,6% increase compared to last year's figure of 42 424,3 ha.

Table 2: *Inspected Area in each Region*

Region	Area Inspected (ha)	Area Under Cane (ha)	Percentage inspected
Big Bend	16 609,40	20 467,17	81,2%
Malkerns	946,49	1 423,50	66,5%
Mhlume	13 519,66	16 476,51	82,1%
Nsoko	2 528,92	3 569,70	70,8%
Sidvokodvo	297,42	361,15	82,4%
Simunye	10 484,68	15 115,12	69,4%
Grand Total	44 386,57	57 413,15	77,3%

4.1 Smut Levels by Region

The average industry smut level for the 2014/15 season is 0,30% which indicates an industry increase of 11,80% from last season's smut level of 0,27%. This overall industry infection hike can be attributed to the 48,13%, 37,47% and 12,82% increases in Sidvokodvo, Simunye and Big-Bend regions, respectively. Mhlume and Nsoko recorded decreases of 13,64% and 25,43%, respectively and Malkerns continued to be free from the disease. (**Figure 1, Appendix 1**). The increase in the Big Bend, Sidvokodvo and Simunye areas may be an indication of growers relaxing their roquing pressure in their estates with the assumption that the newer resistant varieties do not require as much attention as the susceptible NCo376 and N19 which were widely grown until 2010. Since 2010/11, the area under the most susceptible NCo376 has been exceeded by the area under N23 and N25 which are more resistant to the smut disease.

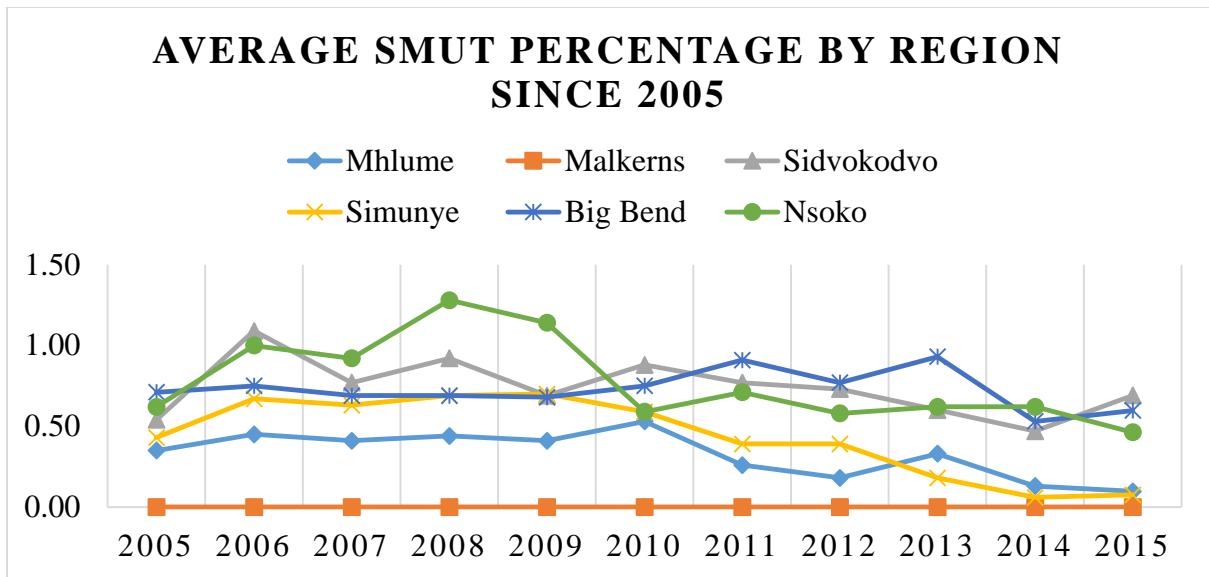


Figure 1: Average Smut Percentage by Region Since 2005

The trend for the past five years has been steadily declining until the 2014/15 season in which the 11,80% increase was observed. Even with this slight increase, the trend shows that the industry infection level has decreased by 40,84% since 2010/11 season. The industry five year trend is shown in **Figure 2** below.

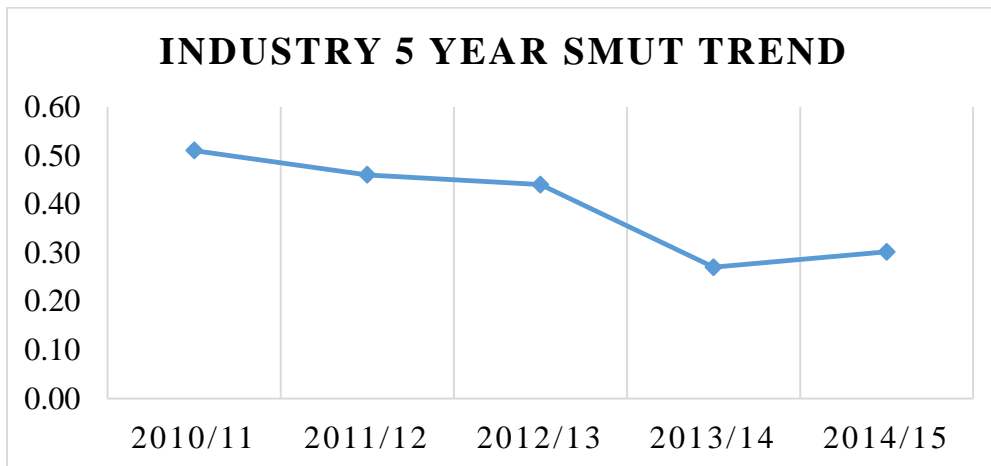


Figure 2: Industry Five-Year Trend

Variety N25 is still the variety of choice for most growers as it covered 38,00% of the total area inspected. It is followed by N23 at 23,96% of the total area. The gradual decline since 2009/10 can be attributed to some extent to the change in varietal disposition with both NCo376 and N19 covering area that is less 10,00% each (**Figure 3**). This does not neglect the fact that growers do inspect and rogue their fields according to the standard in the Pest and Disease control regulations.

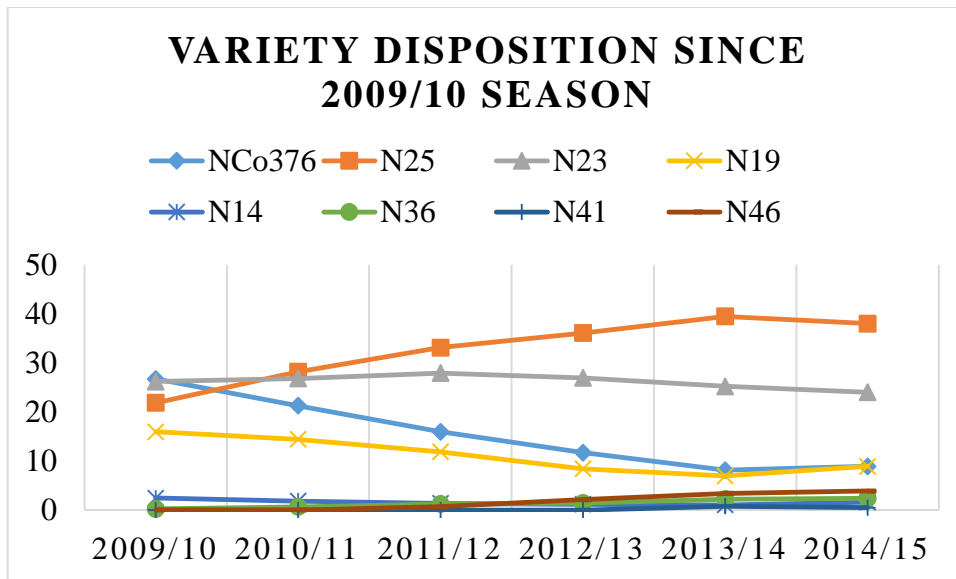


Figure 3: Percentage Variety Disposition over the Last 5 Years

4.2 Smut Levels by Month

High smut levels were recorded in Sidvokodvo region in September (0,90%); October (0,91%); and February (1,01%). In the other regions, except Malkerns, the infection levels were highest in October and November then declined from December to February/March. Otherwise regional variations in all the months of inspection were observed. (**Figure 4, Appendix 2**).

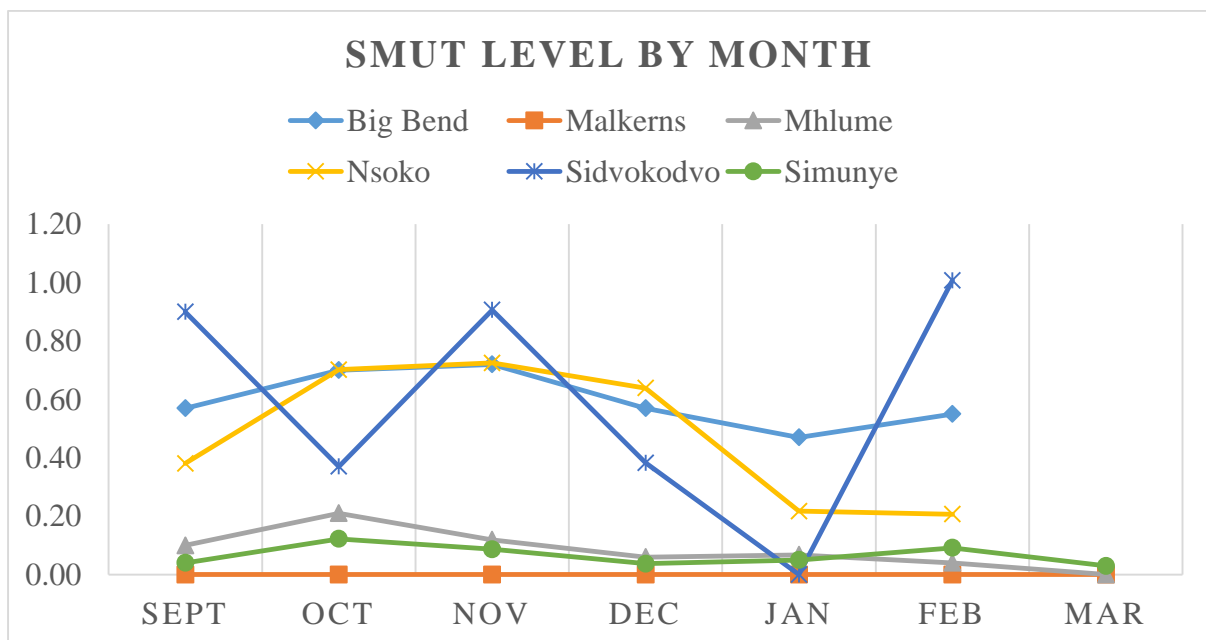


Figure 4: Average Smut Percentage in each Month of Inspection

4.3 Smut Levels in Major Varieties

Variety NCo376 remains the most susceptible variety to smut as it had the highest (0,53 %) infection level compared to the other major varieties. The N19 and N25 varieties were the second and third highest in terms of the infection level at 0,52% and 0,38%, respectively. The smut levels recorded in the rest of the N varieties are lower and the Mauritian varieties were the least susceptible. (**Figure 5, Appendix 3**). The results are consistent with the recommendation that smallholder growers who may lack resources and experience to deal with the disease are not encouraged to grow NCo376.

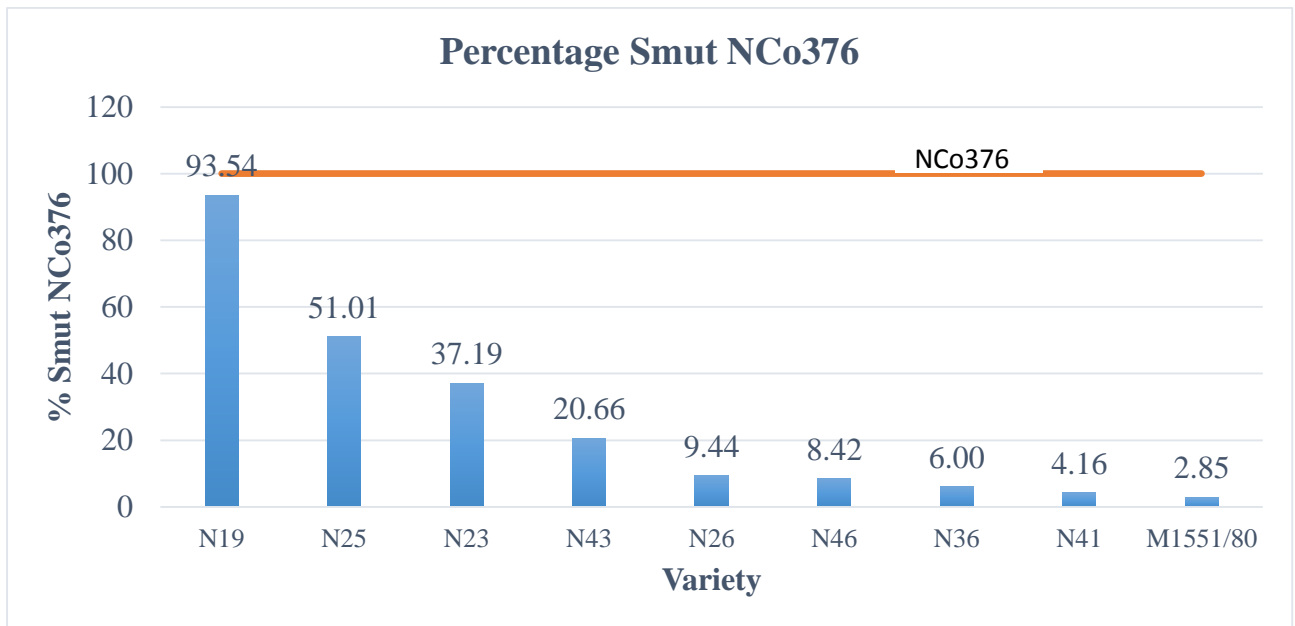


Figure 5: Average Smut Percentages in Major Varieties Relative to NCo376 in 2014/15

4.4 Smut Levels by Variety and Ratoon Stage

The smut levels in all the varieties generally remain the same from crop establishment through to the end of the crop (16 ratoons and beyond) as shown in **Figure 6** and **Appendix 4**. Lowest smut levels were recorded in all the varieties in the plant and first ratoon crops (below 0,6%). On the overall all varieties except NCo376 were below 1,0% infection level from plant cane to the 16th ratoon and beyond. This is consistent with last year's findings and confirms the benefits of intensive smut roguing by growers throughout the life of each variety.

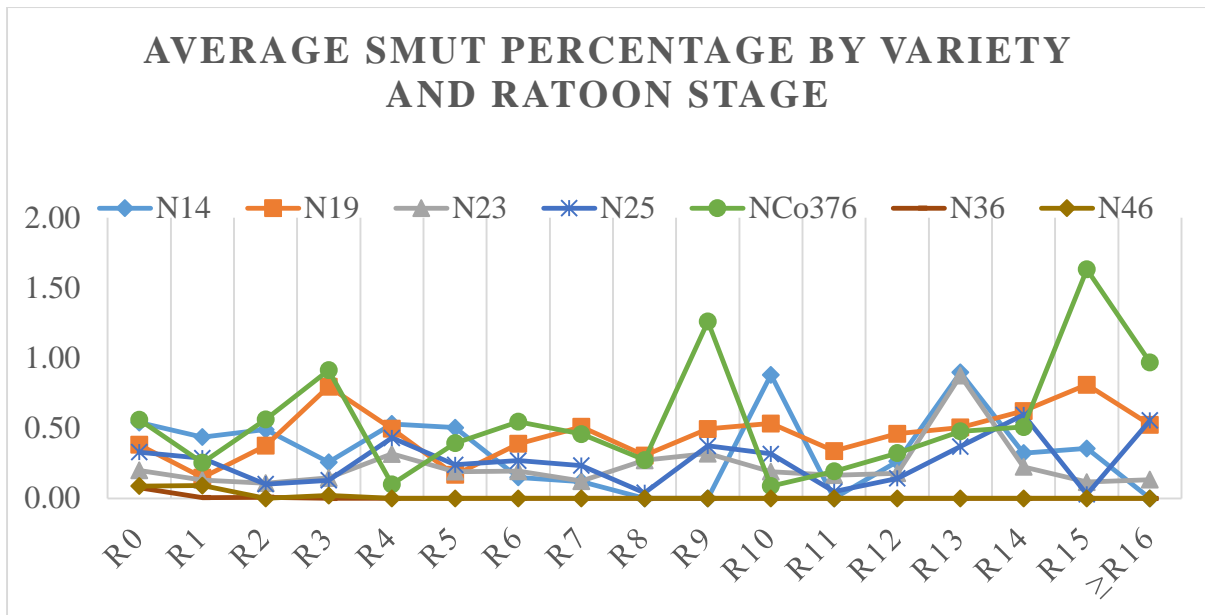


Figure 6: Average Smut Percentage by Variety and Ratoon Stage

4.5. Compulsory Plough-Out Fields

There were no fields listed for compulsory plough out this season which is the same as in 2013/14 season. Even though high smut notices were issued to some growers during the course of the inspections, these growers corrected the situation through roguing to keep the smut level below threshold values. Extension services efforts in advising growers on the need to rogue as well as avoiding to grow the NCo376 variety are now evident.

Table 3: Comparison of Plough out Fields in 2013/14 and 2014/15

Estate/ Farm	Total number of plough out fields		Total area (ha) of plough out fields		Total plough out area as % of whole estate	
	2013/14	2014/15	2013/14	2014/15	2013/14	2014/15
	0	0	0	0	0	0
Totals	0	0	0	0	0	0

4.6 Smut Levels on Estates

Estates that recorded average smut percentages above their mill area averages are listed in **Table 4** below. Some of these estates have been listed for the second (*Italics*), third (*Italics, Bold*) and fourth or more (*Italics, Bold & Underlined*) consecutive time. There are thirteen estates that are listed for the second year running, three have been listed for the third time whilst fifteen have been listed for at least four consecutive years. All these growers and others appearing in this table are encouraged to intensify their roguing efforts to keep the disease pressure as low as possible.

Table 4: Estates with above Mill Area Average Smut Infection in each Region

North			
Mhlume		Simunye	
Estate	Smut %	Estate	Smut %
10R	1,27	Section 1	0,17
<i>Section N</i>	0,27	Section 3	0,09
Mavalela	1,26	<i>Section 4</i>	0,10
<i>Volindi</i>	0,82	<i>Section 5</i>	0,33
<i>Nyakatfo</i>	0,59	<i>Section 14</i>	0,20
Vukasidvashini	0,18	<i>Kwasa Farmers</i>	0,11
<i>C. Qwabe</i>	3,10	Inhlanyelo	0,13
<i>V.I.F</i>	0,36	<i>Umbuluzi 3</i>	0,12
<i>V.F.A</i>	0,93		
Tambankulu 2	0,35		
<i>Tambankulu 3</i>	0,11		
Umbuluzi 2	0,15		
Ekuvinjelweni	0,13		

South

Big Bend		Sidvokodvo		Nsoko	
Estate	Smut %	Estate	Smut %	Estate	Smut %
<i>Shonalanga</i>	0,80	Etibusisweni	1,32	Valley	0,63
Usuthu	0,79	<i>San Roy Ranch</i>	1,47		
<i>Elukhalweni</i>	0,72				
Logo Pools	0,89				
<i>Sivunga</i>	0,81				
Asibebahle Mbabala	0,65				
<i>Crooks Plantation</i>	0,84				
<i>Bar J</i>	0,63				
<i>Hlandeni</i>	0,96				
<i>Usutumutwe</i>	1,28				
S. Simelane	0,68				
Mdalantombi	0,83				
Mhlushwa	1,25				
Mtfweni	0,82				
Vulamehlo	0,81				
Bamoyamunye	2,09				
Embusweni	0,73				
<i>Magomba</i>	1,84				
Tikane	0,66				
Lofana Vilakati	0,79				
<i>Riverview</i>	0,62				
Kuhle Kubonela	0,63				
Lomaghuzu	1,02				
<i>Maplotini</i>	1,11				
Mbulane	0,87				
Msuthu	0,80				
<i>Simms Trust</i>	0,63				
<i>Bambanani Magagasi</i>	1,02				
<i>Nkambule Sugar</i>	0,82				
<i>Dlamini Ngudumane</i>	0,61				
<i>Tsabedze Mciniseli</i>	0,63				
Sukumani bomake	0,97				
Thring Duncan	0,62				
Chubekani	0,92				
Lokuhle Kusetandleni	1,81				
<i>Manyovu</i>	0,78				
<i>Maphobeni</i>	0,68				
<i>Qedindlala</i>	0,71				
Madvwambane	0,78				
Lobovu	0,72				
Ngcamphalala Ben	1,23				
Matimavu	0,87				
Jokovu	0,88				

5. SUMMARY

A total area of 44 386,57ha which is 77,3% of the total area under sugarcane in the industry was inspected against a target of 65% (**Table 2**). The area inspected increased by 4,60% over the previous year's area of 42 424,3ha. Even though the inspection target was reduced from 70% to 65%, the overall physical area inspected increased which confirms the forecast made last year that area under cane is increasing due to expansion mainly in the small-scale grower category.

The average industry smut level for 2014/15 was 0,30% which represents an increase of 11,80% when compared to last season's average of 0,27%. This increase is as a result of rise in infection levels in Sidvokodvo, Simunye and Big-Bend regions. Mhlume and Nsoko recorded decreases and Malkerns remained free from the disease. The overall increase is a setback to the industry's objective of reducing infection levels from year to year. But it is worth noting that the trend has been progressively declining over the years and the decrease between 2010 and 2015 is 40,84%.

No compulsory plough out orders were issued for the second year running. This indicates the fact that growers have indeed intensified the roguing of their fields.

The general decline in smut level is a sign that growers are adhering to Pest and Disease control regulations. The final message is to encourage all growers to continue using certified seedcane for planting, intensify roguing of all fields paying more attention to fields that were listed with higher smut levels than average and to constantly work with their extension officers.

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24-04-2015

Appendix 1: Smut Infection Percentage by Region (1183/84 – 2014/15)

Season	Mhlume	Malkerns	Sidvokodvo	Simunye	Big Bend	Nsoko	Industry
1983/84	1,91			0,89	7,30	2,64	3,19
1984/85	1,20			0,18	11,68	5,09	4,54
1985/86*	1,22			0,13	9,75	5,56	4,17
1986/87	1,93			0,65	7,22	4,62	3,61
1987/88	1,68			0,58	5,91	5,18	3,34
1988/89	0,93			0,49	4,02	4,46	2,48
1989/90	0,49			0,31	2,69	1,00	1,12
1990/91	0,22			0,17	1,14	0,89	0,61
1991/92	0,14			0,11	1,03	0,29	0,39
1992/93	0,16			0,13	1,13	0,36	0,45
1993/94	0,14			0,16	1,01	1,10	0,60
1994/95	0,15			0,14	0,48	0,31	0,27
1995/96	0,16			0,19	0,61	0,57	0,38
1996/97	0,16			0,16	0,5	0,34	0,29
1997/98	0,39			0,36	0,78	0,54	0,52
1998/99	0,94	0,00	0,43	0,89	1,20	1,48	0,82
1999/00	0,29	0,00	0,18	0,38	1,43	5,07	1,23
2000/01	0,41	0,00	0,24	0,54	0,49	0,66	0,39
2001/02	0,35	0,00	0,33	0,51	0,49	0,55	0,37
2002/03	0,37	0,00	0,35	0,56	0,56	0,41	0,38
2003/04	0,41	0,00	0,47	0,72	0,5	0,46	0,43
2004/05	0,35	0,00	0,54	0,43	0,71	0,62	0,44
2005/06	0,45	0,00	1,09	0,67	0,75	1,00	0,66
2006/07	0,41	0,00	0,77	0,63	0,69	0,92	0,57
2007/08	0,44	0,00	0,92	0,69	0,69	1,28	0,67
2008/09	0,41	0,00	0,69	0,70	0,68	1,14	0,60
2009/10	0,53	0,00	0,88	0,59	0,75	0,59	0,56
2010/11	0,26	0,00	0,77	0,39	0,91	0,71	0,51
2011/12	0,18	0,00	0,73	0,39	0,77	0,58	0,46
2012/13	0,20	0,00	0,63	0,19	0,78	0,59	0,44
2013/14	0,11	0,00	0,47	0,05	0,53	0,62	0,27
2014/15	0,10	0,00	0,69	0,08	0,60	0,46	0,30
% variance bet. last 2 years.	-13,64	0,00	48,13	37,47	12,82	-25,43	11,80

*Survey procedure changed to include re-inspections of heavily infected fields.

Appendix 2: Smut Percentage by Month of Inspection

Region	Sept	Oct	Nov	Dec	Jan	Feb	Mar
Big Bend	0,57	0,70	0,72	0,57	0,47	0,55	
Malkerns	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Mhlume	0,10	0,21	0,12	0,06	0,07	0,04	0,00
Nsoko	0,38	0,70	0,73	0,64	0,22	0,21	
Sidvokodvo	0,90	0,37	0,91	0,38	-	1,01	
Simunye	0,04	0,12	0,09	0,04	0,05	0,09	0,03

Appendix 3: Percentage Smut Infection in the Main Commercial Varieties

Variety	Season	% Area							
		Inspected	Sidvokodvo	Malkerns	Mhlume	Simunye	Big Bend	Nsoko	Industry
NCo376	2003/04	53,40	0,91	-	0,67	1,20	0,76	0,94	0,88
	2004/05	41,10	1,43	-	0,62	0,71	1,26	1,00	0,83
	2005/06	35,10	2,22	-	0,80	1,16	1,40	2,02	1,18
	2006/07	33,60	1,70	-	0,06	0,10	1,52	1,52	1,19
	2007/08	33,60	1,84	-	0,94	1,20	1,58	1,11	1,21
	2008/09	29,70	1,38	-	1,14	1,64	1,26	1,61	1,34
	2009/10	25,10	1,48	-	1,73	1,47	1,64	1,79	1,65
	2010/11	20,00	1,03	-	1,28	1,25	2,27	2,31	1,56
	2011/12	20,40	0,88	-	0,98	0,58	1,75	2,06	1,12
	2012/13	14,20	0,96	-	1,18	0,70	1,38	1,59	1,13
	2013/14	9,30	0,49	-	0,50	0,10	1,05	0,53	0,56
2014/15	8,90	8,00	-	0,29	0,36	1,11	0,48	0,61	
N14	2003/04	5,60	-	0,00	0,20	0,16	0,31	0,24	0,19
	2004/05	3,50	-	0,00	0,17	0,14	0,27	0,49	0,20
	2005/06	3,30	-	0,00	0,26	0,15	0,30	0,79	0,24
	2006/07	2,80	-	0,00	0,40	0,21	0,48	1,00	0,43
	2007/08	2,80	-	0,00	0,39	0,24	0,31	0,74	0,38
	2008/09	2,60	-	0,00	0,40	0,26	0,59	1,03	0,44
	2009/10	2,10	-	0,00	0,47	0,26	0,45	0,27	0,36
	2010/11	2,00	-	0,00	0,39	0,10	0,83	0,48	0,41
	2011/12	2,10	-	0,00	0,23	0,08	0,45	0,42	0,27
	2012/13	2,40	-	0,00	0,22	0,23	0,56	0,57	0,36
	2013/14	1,40	-	0,00	0,06	0,26	0,58	0,39	0,29
2014/15	1,60	-	-	0,20	0,00	0,48	0,47	0,23	
N19	2003/04	16,00	0,37	-	0,03	0,04	0,14	0,08	0,09
	2004/05	14,70	0,14	-	0,04	0,02	0,31	0,31	0,10
	2005/06	14,50	0,40	-	0,04	0,03	0,35	0,62	0,13
	2006/07	14,70	0,14	-	0,03	0,06	0,22	0,67	0,11
	2007/08	14,70	0,22	-	0,39	0,10	0,31	0,99	0,17
	2008/09	15,70	0,28	-	0,04	0,19	0,47	0,61	0,18
	2009/10	14,30	0,43	-	0,11	0,07	0,52	0,36	0,22
	2010/11	14,50	0,44	-	0,10	0,05	1,03	0,48	0,33
	2011/12	13,00	0,61	-	0,10	0,01	0,74	0,42	0,30
	2012/13	9,50	0,00	-	0,15	0,08	1,22	0,45	0,48
	2013/14	10,00	0,23	-	0,04	0,02	0,55	0,74	0,37
2014/15	8,90	1,32	-	0,08	0,04	0,62	0,54	0,52	

Appendix 3: continued

Variety	Season	% Area Inspected	Sidvokodvo	Malkerns	Mhlume	Simunye	Big-Bend	Nsoko	Industry
N23	2003/04	15,70	0,01	0,00	0,00	0,00	0,16	0,10	0,08
	2004/05	20,50	0,08	0,00	0,01	0,01	0,23	0,49	0,15
	2005/06	19,60	0,44	0,00	0,01	0,04	0,23	0,27	0,16
	2006/07	21,40	0,20	0,00	0,02	0,04	0,19	0,19	0,11
	2007/08	21,40	0,23	0,00	0,06	0,07	0,28	0,15	0,16
	2008/09	28,60	0,28	0,00	0,01	0,03	0,34	0,41	0,16
	2009/10	29,20	0,30	0,00	0,02	0,05	0,37	0,27	0,16
	2010/11	29,00	0,53	0,00	0,02	0,06	0,59	0,35	0,24
	2011/12	29,10	0,34	0,00	0,01	0,02	0,52	0,42	0,22
	2012/13	28,40		0,00	0,02	0,03	0,52	0,47	0,19
	2013/14	23,80	0,13	0,00	0,01	0,02	0,40	0,39	0,17
	2014/15	23,96	0,28	0,00	0,02	0,02	0,46	0,32	0,18
N25	2003/04	4,70	0,21	0,00	0,35	0,09	0,30	0,02	0,40
	2004/05	11,00	0,30	0,00	0,10	0,03	0,90	0,36	0,55
	2005/06	10,30	0,60	0,00	0,05	0,04	0,56	0,41	0,40
	2006/07	10,00	0,69	0,00	0,04	0,15	0,54	4,78	0,40
	2007/08	10,00	0,99	0,00	0,18	0,27	0,68	1,11	0,51
	2008/09	18,50	0,44	0,00	0,08	0,11	0,72	1,53	0,39
	2009/10	23,20	0,68	0,00	0,10	0,27	0,71	1,19	0,34
	2010/11	27,50	0,82	0,00	0,06	0,26	1,05	0,76	0,41
	2011/12	29,00	0,71	0,00	0,07	0,14	0,90	0,57	0,33
	2012/13	32,60	0,68	0,00	0,07	0,13	1,18	1,10	0,29
	2013/14	38,50	0,77	0,00	0,02	0,07	0,48	0,56	0,20
	2014/15	38,00	0,93	0,00	0,05	0,08	0,62	0,56	0,38
N36	2003/04	-	-	-	-	-	-	-	-
	2004/05	-	-	-	-	-	-	-	-
	2005/06	-	-	-	-	-	-	-	-
	2006/07	-	-	-	-	-	-	-	-
	2007/08	-	-	-	-	-	-	-	-
	2008/09	-	-	-	-	-	-	-	-
	2009/10	-	-	-	-	-	-	-	-
	2010/11	-	-	-	-	-	-	-	-
	2011/12	-	-	-	-	-	-	-	-
	2012/13	-	-	-	-	-	-	-	-
	2013/14	-	-	-	-	-	-	-	-
	2014/15	2,40	-	-	0,00	0,00	0,15	-	0,05

Appendix 3: continued

Variety	Season	% Area Inspected	Sidvokodvo	Malkerns	Mhlume	Simunye	Big Bend	Nsoko	Industry
N46	2004/05	-	-	-	-	-	-	-	-
	2005/06	-	-	-	-	-	-	-	-
	2006/07	-	-	-	-	-	-	-	-
	2007/08	-	-	-	-	-	-	-	-
	2008/09	-	-	-	-	-	-	-	-
	2009/10	-	-	-	-	-	-	-	-
	2010/11	-	-	-	-	-	-	-	-
	2011/12	-	-	-	-	-	-	-	-
	2012/13	-	-	-	-	-	-	-	-
	2013/14	-	-	-	-	-	-	-	-
	2014/15	3,95	-	0,00	0,00	0,01	0,30	0,44	0,15

Appendix 4: Smut Infection by Variety and Ratoon Stage

Variety	Ratoon																
	R0	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15	≥R16
N14	0,54	0,44	0,49	0,26	0,53	0,50	0,15	0,12	0,00	0,00	0,88	0,00	0,26	0,90	0,32	0,36	0,00
N19	0,38	0,15	0,37	0,80	0,50	0,17	0,39	0,51	0,31	0,49	0,53	0,34	0,46	0,50	0,62	0,81	0,52
N23	0,20	0,13	0,11	0,15	0,32	0,19	0,19	0,12	0,27	0,32	0,19	0,17	0,18	0,87	0,22	0,12	0,13
N24	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,84	0,00	0,00	0,00	0,00
N25	0,33	0,29	0,10	0,13	0,43	0,24	0,27	0,23	0,04	0,37	0,32	0,05	0,14	0,37	0,59	0,03	0,56
NC0376	0,56	0,25	0,56	0,91	0,10	0,39	0,55	0,46	0,27	1,26	0,09	0,19	0,32	0,48	0,51	1,63	0,97
N32	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
N36	0,08	0,01	0,01	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
N26	0,00	0,08	0,00	0,00	0,25	0,00	0,00	0,00	0,13	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
N46	0,09	0,09	0,00	0,02	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
N53	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
N43	0,19	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
M1400/86	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
M1551/80	0,00	0,02	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
N41	0,03	0,02	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
N49	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00

Appendix 5: Percentage Smut Infection by Estate

Estate / Region	% Smut Infection		Estate / Region	% Smut Infection	
Mhlume Mill			Mhlume Mill continued		
Mhlume Estate	2013/14	2014/15		2013/14	2014/15
Ricelands 1	0,01	0,01	Phakama Mafucula	0,00	0,00
Ricelands 2	0,01	0,01	Phinduvele	0,00	0,00
Ricelands 3	0,00	0,01*	Madlangempisi	0,00	0,00
Ricelands 4	0,00	0,00	Ingcayizivela	0,00	0,00
Ricelands 5	0,02	0,05*	Umtfombo	0,00	0,00
Ricelands10	0,07	0,06	Sinqobanjalo	0,00	0,00
Vuvulane 1	0,26	0,00	Vukasidwashini	0,00	0,18*
Vuvulane 2	0,02	0,00	Sivukile	0,00	0,00
Vuvulane 3	0,00	0,09*	B. L. Simelane	0,00	0,00
Vuvulane 4	0,01	0,03*	C. Qwabe	0,40	3,10*
Cane	0,00	0,08*	D.N. Nxumalo	0,12	0,00
10R	0,00	1,27*	Lokuhle	0,00	0,00
Section A	0,00	0,01*	V.I.F.	1,76	0,36
Section B	0,00	0,01	V.F.A.	1,26	0,93
Section C	0,03	0,01	Magweni	0,00	0,00
Section D	0,01	0,03*	Lubisana	0,00	0,00
Section E	0,02	0,01	Nhlanguyavuka	0,00	0,00
Section F	0,01	0,03*	Mankontshane	1,17	0,00
Section H	0,00	0,00	Mabhudvu	0,00	0,00
Section M	0,15	0,08	Hhohho Cotton	0,00	0,00
Section N	1,00	0,27	Ekuvinjelweni	0,00	0,13*
Mhlume Estate	0,06	0,04	Kayalami		0,00
			Ndinda		0,00
Mhlume Outgrowers			Calamuva		0,00
Mavalela		1,26	Mpofu		0,00
Volindi	1,09	0,82	Myeni Israel		0,00
Hurlingham	0,94	0,08	Myeni Norah T.		0,00
Makhabeni	0,88	0,00	Nhlambane		0,00
Nyakatfo	0,44	0,59	Tambankulu		
Ntishela	1,42	0,00	Tambankulu 1	0,08	0,09*
Kusile		0,00	Tambankulu 2	0,08	0,35*
Buhle besive	0,00	0,00	Umbuluzi 3	0,23	0,12
Bambanani Maliba	0,00	0,00	Mhlume Planters	0,23	0,15
Intamakuphila	0,00	0,00	Mhlume area	0,11	0,10

*Smut levels higher than in 2013/14

Appendix 5: Continued

Estate / Region	% Smut Infection	
	2013/14	2014/15
Simunye Mill		
Section 1	0,00	0,17*
Section 2	0,01	0,07*
Section 3	0,03	0,09*
Section 4	0,07	0,1*
Section 5	0,31	0,33*
Section 6	0,04	0,05*
Section 7	0,01	0,07*
Section 8	0,00	0,01*
Section 9	0,00	0,05*
Section 10	0,05	0,00
Section 11	0,01	0,02*
Section 12	0,02	0,05*
Section 13	0,08	0,02
Section 14	0,32	0,20
Section 15	0,01	0,03*
Section 16	0,07	0,05
Section 17	0,04	0,07*
Simunye Outgrowers		
Umbuluzi 1	0,08	0,04
Umbuluzi 2	0,03	0,15*
Tambankulu 3	0,09	0,11*
Section G	0,14	0,07
Cathula	0,00	0,00
Ekukhlaneni	0,03	0,00
Luzaluzile	0,03	0,02
Hlofu	0,02	0,03*
Emaphikweni	0,00	0,00
Ayandza	0,00	0,00
Bambanani Balimi	0,00	0,06*
Kwasa Farmers	0,60	0,11
Lilanda	0,00	0,00
Takhamiti	0,00	0,00
Inhlanyelo	0,01	0,13*
Manzana		0,00
SIMUNYE	0,05	0,08

Estate / Region	% Smut Infection	
	2013/14	2014/15
Simunye Mill Continued		
Malkerns Area		
Emerald Hill	0,00	0,00
Makhomba Jewel	0,00	0,00
Pine Apple Growers	0,00	0,00
LA Hulley	0,00	0,00
Agriland	0,00	0,00
Mbetseni	0,00	0,00
Echibini	0,00	0,00
Tinkhukhu	0,00	0,00
Dalcrue	0,00	0,00
Malandelas	0,00	0,00
Mdimba Estate	0,00	0,00
Umbane PTY Ltd	0,00	0,00
Avolitch		0,00
Hlekamanzi		0,00
Packard & Wright		0,00
Malkerns Area	0,00	0,00
Big Bend Mill		
Ubombo Sugar		
Majombe	0,59	0,20
Mapipyene	0,50	0,31
Nyetane	0,30	0,56*
Sangwaluma	0,64	0,57
Shonalanga	0,60	0,80*
Usutu	0,46	0,79*
Elukhalweni	0,68	0,72*
BBSE	0,69	0,54
UBOMBO Sugar	0,54	0,60
T.T.N.F.		
Logo Pools	0,40	0,89*
Qokwane	0,37	0,45*
Sivunga	0,67	0,81*
Tjelane	0,32	0,53*
T.T.N.F	0,46	0,70

*Smut levels higher than in 2013/14

Appendix 5: Continued

Estate / Region	% Smut Infection		Estate / Region	% Smut Infection	
	2013/14	2014/15		2013/14	2014/15
Big Bend Mill continued			Big Bend continued		
Ubombo Outgrowers			Sesibonile	0,47	0,46
Crookes Plant.	0,57	0,84*	Sibayesincane	0,33	0,54*
Bar J	0,58	0,63*	Simms Trust	1,02	0,63
Hlandeni	0,97	0,96	Bambanani Magagasi	0,67	1,02*
Jabusisa	0,55	0,21	Maweni	0,30	0,05
United Plantations	0,58	0,53	Ziyahle	0,15	0,31*
Umtintegwa		0,47	Mzimbili Investments	0,13	0,33*
Usutu Mutwe	0,99	1,28*	Mhlabudumako	0,07	0,17*
S. Simelane	0,25	0,68*	Nkambule Sugar	0,96	0,82
Vuka Sive saMaja		0,13	Dlamini Daniel S		0,33
Magomba	0,69	1,84*	Mngometulu Thepa		0,55
Gomondvo	1,48	0,57	Lobovu		0,72
Batch Farm		0,19	Libhumane		0,58
Tikane	0,19	0,66*	Asibebahle Mbabala		0,19
Imbali yaMadlenya	0,44	0,30	Mbabala		
Lofana Vilakati	0,46	0,79*	Mngongomaneni		0,26
Phendukani		0,35	Mdalantombi	0,67	0,83*
Riverbend	0,27	0,32*	Matimavu		0,87
Riverview	0,87	0,62	Mngomentulu Roy		0,55
Tsabedze Johannes	0,30	0,35*	Mhlushwa	0,83	1,25*
Maphiko	0,26	0,27*	Kuhle Kutentela	0,31	0,59*
Henwood Gavin	0,08	0,24*	Mtfweni	0,30	0,82*
Tikhumbule		0,00	Maziya Sarah	0,43	0,08
Sukumani Ngonini	0,51	0,08	Matsenjwa Farmers	0,48	0,58*
Kuhle Kubonela	0,46	0,63*	Vulamehlo	0,98	0,81
Lomaqhuzu	0,45	1,02*	Ngcamphalala Ben		1,23
Lunyangu	1,46	0,18	Bomoyamunye	0,26	2,09*
Maplotini	1,10	1,11*	Mnguni		0,45
Mbulane	0,40	0,87*	Embusweni	0,22	0,73*
Mkhonta Daniel	0,28	0,25	Mpondweni	0,22	0,42*
Mphilimbi	0,23	0,25*	Phaphamani	0,36	0,08
Msuthu	0,46	0,80*	Siyobi	0,56	0,21
Mthomanzi	0,17	0,23*	Sukumani Bomake	0,75	0,97*
Murton Nigel	0,33	0,13	Thring Duncan	0,13	0,62*
Nconconco	0,32	0,04	Chubekani	0,44	0,92*
Nyoni Khalakahle	0,24	0,52*	M & S	0,18	0,5*
			Lokuhle Kusetandleni	0,24	1,81*

*Smut levels higher than in 2013/14

Appendix 5: Continued

Estate / Region	% Smut Infection		Estate / Region	% Smut Infection	
	2013/14	2014/15		2013/14	2014/15
Big Bend continued			Big Bend continued		
Sitamimphilo	0,28	0,28	Siphuwe		0,07
Gcekeni	0,33	0,14	Mahlobo S.		0,48
Kranzicht	0,54	0,28	Kwenta Akufani		0,09
Sibhotela	0,49	0,59*	Sekuyakhona Ngoni		0,25
Mganyaneni	0,36	0,49*	Nxutsamlo		0,36
Gumedze Johannes	0,31	0,04	Simelane Maggie		0,00
Ingugwane	0,18	0,05	Jokovu		0,00
Ngcwaleni	0,08	0,28	Big Bend Outgrowers	0,55	0,57
Sinceni Sugar	0,42	0,40	Big Bend Mill Area	0,53	0,60
Tsabedze Mciniseli	0,65	0,63	Nsoko		
Dlamini Ngudumane	0,60	0,61*	Canterbury	0,41	0,30
J. Shabangu	1,06	0,39	Ingwavuma	0,57	0,59
Madlenya IS	0,31	0,36*	Richmond	0,50	0,37
Mndobandoba	0,91	0,36	SD Citrus	0,32	0,24
M. Ndzimandze	0,24	0,26*	Valley	0,50	0,63*
Madvwaleni	0,47	0,48*	Nisela Farms	0,60	0,47
Manyovu	0,89	0,78	Jozilind	1,25	0,60
Makhulusihlenga	0,38	0,28	Nsoko	0,62	0,47
Maphobeni	1,23	0,68	Sidvokodvo		
Qedindlala	1,16	0,71	E. I. Ranch	0,55	0,51
Mavalela	0,46	0,58*	Etibusisweni	0,35	1,32*
Madvwambane		0,78	San Roy Ranch	0,66	1,47*
Mantentsaba		0,22	Tisuka TakaNgwane		0,32
Nzama		0,36	Sidvokodvo	0,47	0,70
Nunes		0,00			

*Smut levels higher than in 2013/14