National Crops Resources Research Institute

Spread of Cassava Brown Streak Disease in Uganda



EAAPP | Eastern Africa Agricultural Productivity Project

Cassava Regional Centre of Excellence

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Facts About Cassava

Cassava (*Manihot esculenta,* Crantz) is a major staple crop, providing carbohydrates for about 80% of the Ugandan population. It is grown in many parts of Uganda, with the Eastern and Northern regions as the largest producers. The ability of cassava to better survive under low rainfall and poorer soils than other crops, partly contributes to expansion of areas growing cassava in Uganda. In 2011, Uganda produced 4,753,430 tonnes of cassava, of which 63-72% was consumed as food, 22-27% was processed as feed and about 2-7% used for other purposes such as raw material for starch, brewing alcohol and local construction. 22.2% of the total cassava produced was sold at farm level. At farm level, cassava yields at only 12.5 t/ha, far below the average yield of 25 t/ha achieved on research stations. The actual genetic potential of cassava is 80 – 90t/ha.

Pests and diseases are the main reason for low yields of cassava in Uganda. Cassava pests in the Uganda include cassava mealybug (*Phenacoccus manihoti* Mat-Ferr), cassava green mite (*Monychellus tanajoa* Bondar) and whitefly (*Bemisia tabaci* Genn.).The major diseases of cassava in Uganda are cassava mosaic disease (CMD), cassava brown streak disease (CBSD) and cassava bacterial blight (CBB). CBSD has been recognised as one of the seven most dangerous plant diseases globally for their impact on food and economic security. Yields in individual farmers' fields can drop up to 100% as a result of CBSD. By 2003 just at the beginning of the current epidemic, economic losses of cassava due to CBSD already totalled more than $100 million per year (CGIAR, News 2003). From this, it is reasonable to estimate much higher losses under current conditions of higher CBSD prevalence. Significantly, the disease has become an extremely serious constraint to cassava production in Eastern Africa and has been linked to Africa's biggest threat to food security. Concerted efforts are therefore needed to manage it. Here we present the trends in the spread of CBSD from our annual pest and disease surveys of 2008 to 2011 in Uganda.

Symptoms of CBSD on Cassava



CBSD affected cassava plant





CBSD affected cassava leaves



CBSD affected cassava roots



CBSD affected cassava stems

Cassava not affected by CBSD



Healthy Cassava Plant



Healthy Cassava Leaves

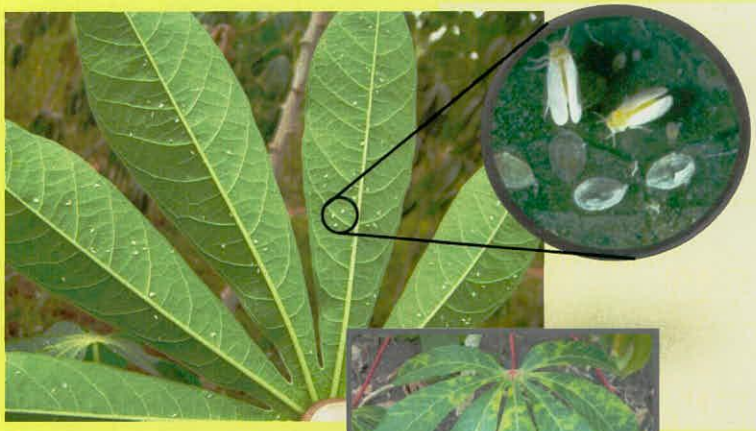


Healthy Cassava Stems



Healthy Cassava Roots

How Cassava Brown Streak Disease is spread



White flies that transmit CBSD



Cassava plant affected by CBSD



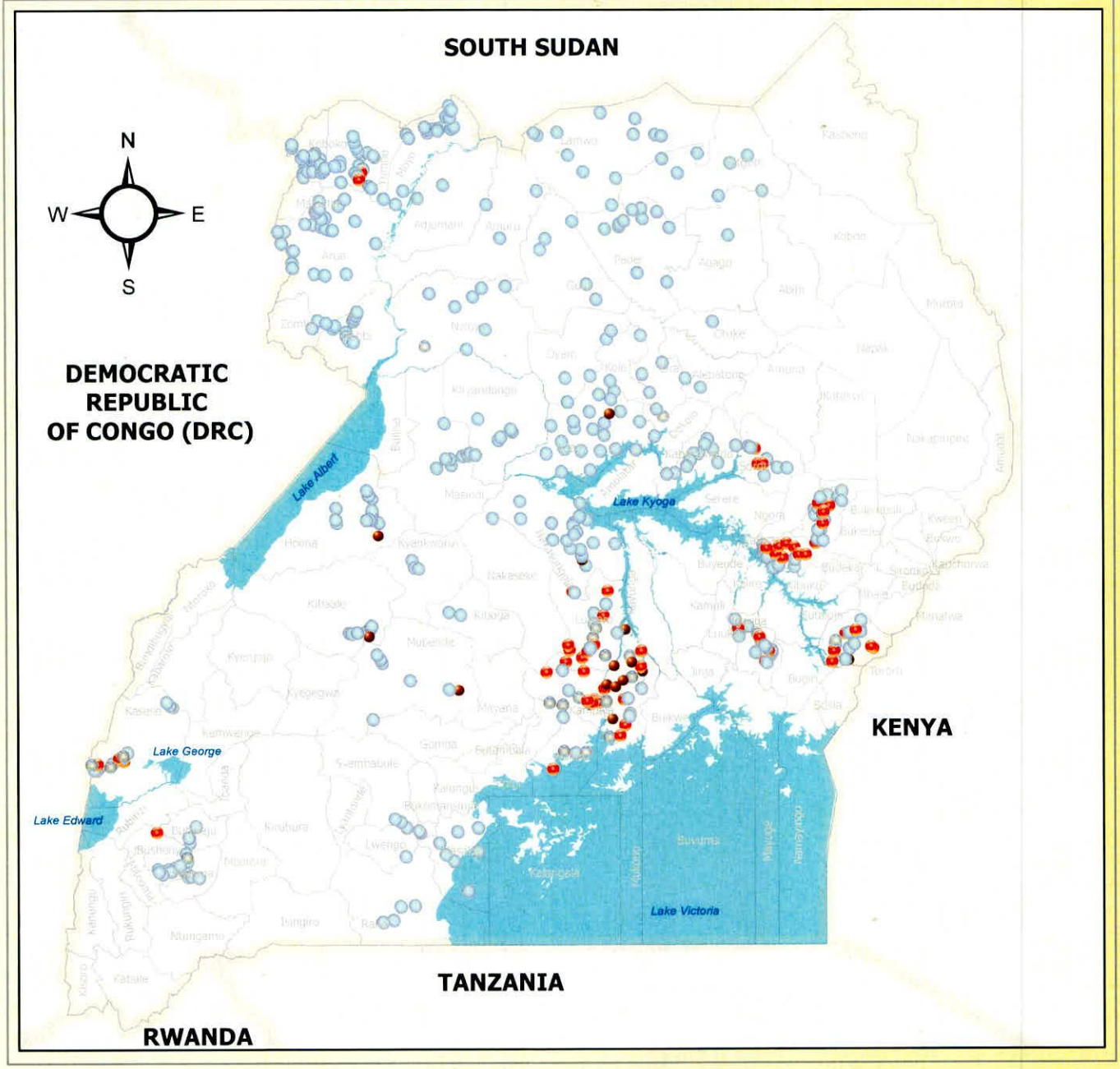
Cassava plant not affected by CBSD

CBSD is spread when whiteflies feed on sick plants and carry th disease to healthy plants.



CBSD is also spread by carrying stems of sick plants from one place to another

CBSD INCIDENCE MAP 2008



LEGEND

CBSD Incidence (%)

0%	No Disease
0.1-10%	Low Incidence
10.1 - 30%	Moderate Incidence
30.1 - 50%	High Incidence
>50%	Very High Incidence

International Boundary

Districts Boundaries

Lakes

DISTRICTS WHERE CBSD SURVEY WAS UNDERTAKEN

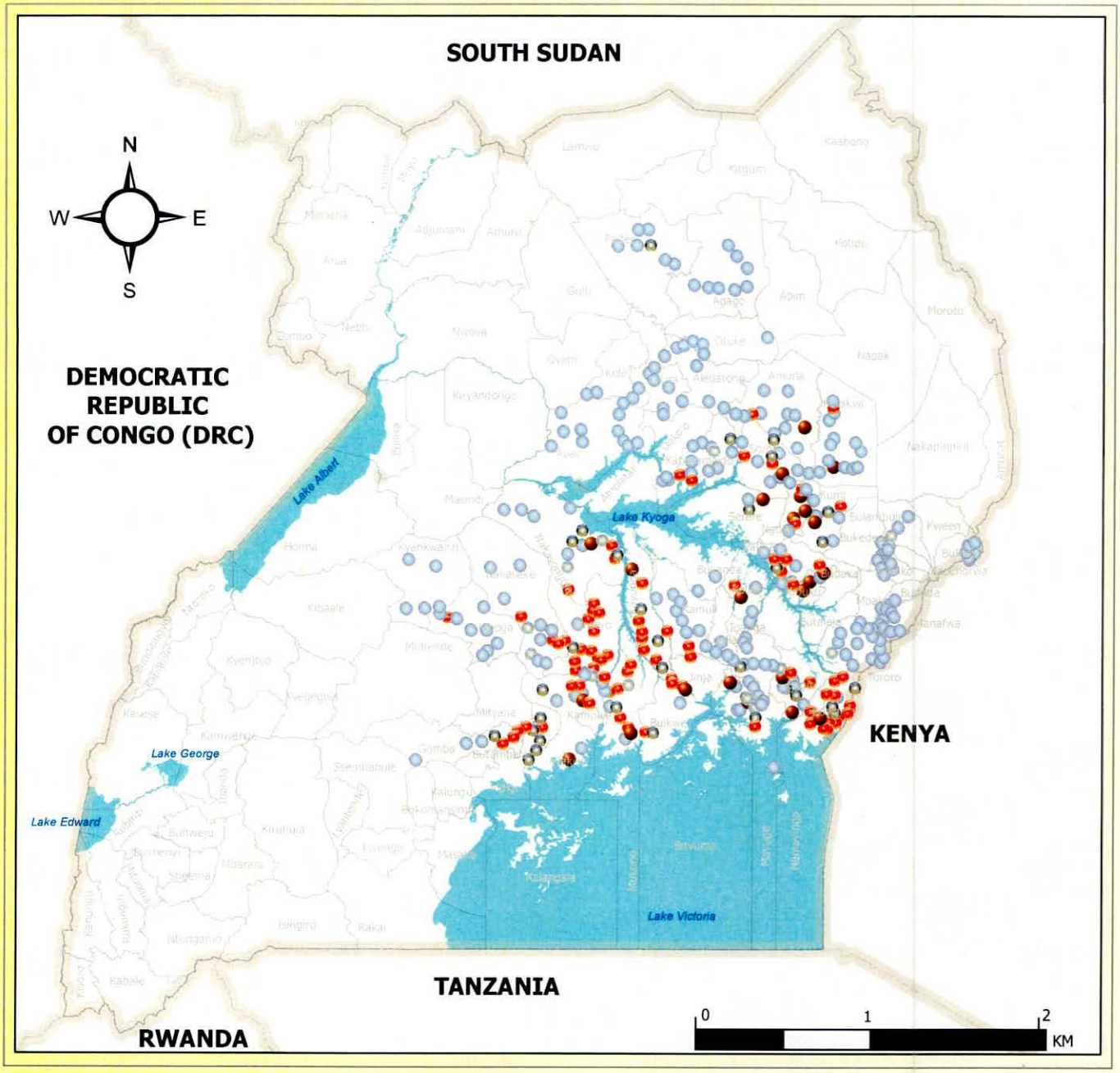
Apac
Arua
Bushenyi
Gulu
Hoima
Iganga
Kasese
Kibaale
Kiboga
Kitgum
Koboko
Kumi
Lira
Luwero
Masaka
Masindi
Moyo
Mubende
Mukono
Nakasongola
Nebbi
Pader
Pallisa
Soroti
Tororo
Wakiso
Yumbe

DISTRICTS WITH HIGH CBSD INCIDENCE (%) IN 2008

1. Luwero 50.3
2. Mukono 42.3
3. Tororo 40.5
4. Pallisa 39.3
5. Wakiso 38.0

0 1 2 KM

CBSD INCIDENCE MAP 2009



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	International Boundary	
	Districts Boundaries	
	Lakes	

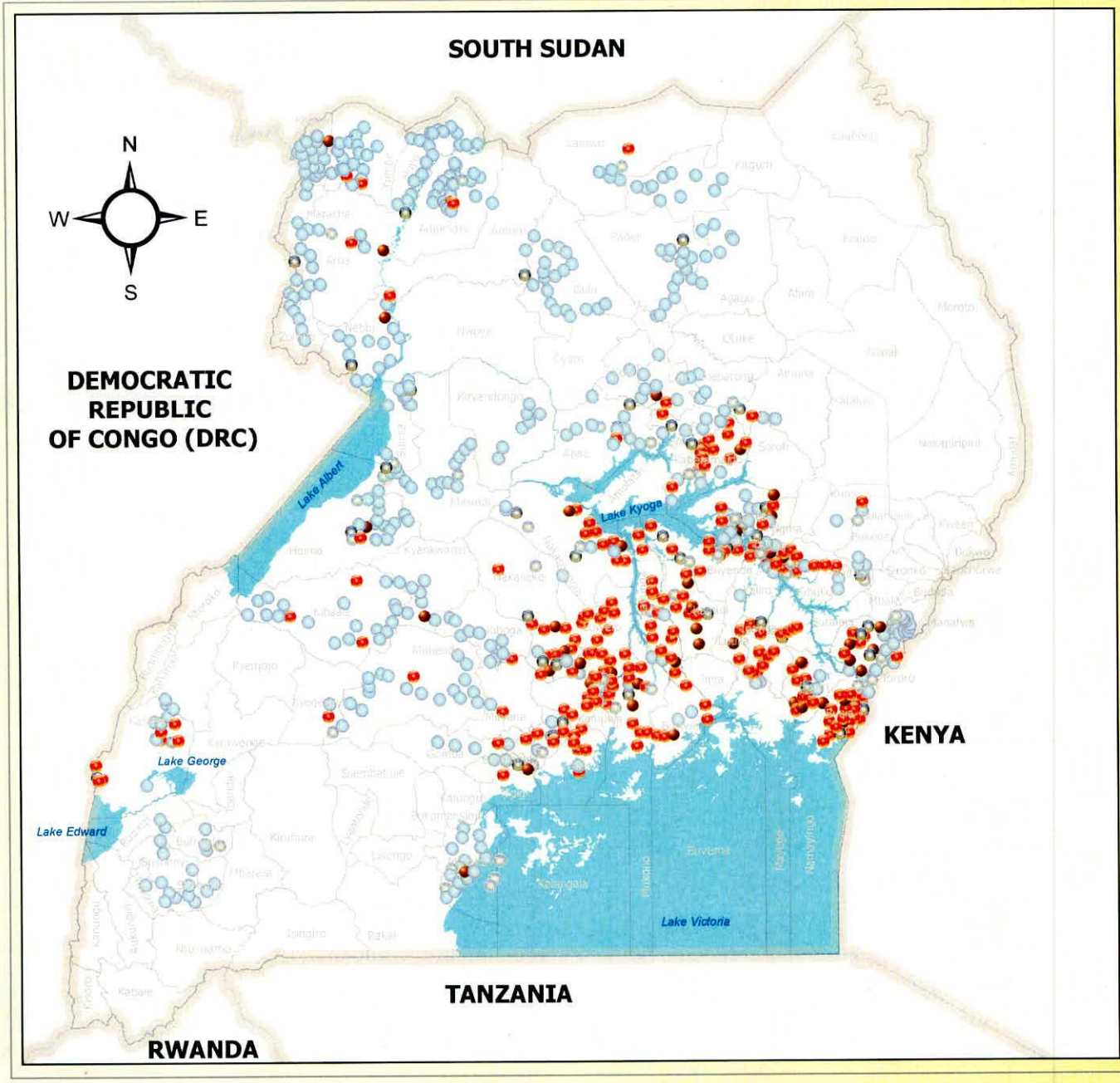
DISTRICTS WHERE CBSD SURVEY WAS UNDERTAKEN

Agago
Amuria
Apac
Budaka
Bugiri
Bukedea
Buikwe
Busia
Butaleja
Buyende
Iganga
Kaberamaido
Kaliro
Kamuli
Katakwi
Kiboga
Kibuku
Kumi
Lira
Luwero
Manafwa
Mpigi
Mukono
Nakaseke
Nakasongola
Mayuge
Namayingo
Ngora
Pader
Pallisa
Serere
Soroti
Tororo
Wakiso

DISTRICTS WITH HIGH CBSD INCIDENCE (%) IN 2009

1. Luwero 71.6
2. Busia 69.1
3. Kayunga 64.0
4. Mukono 50.7
5. Bugiri 39.6
6. Pallisa 38.7
7. Mpigi 34.1
8. Wakiso 30.7
9. Kumi 30.4

CBSD INCIDENCE MAP 2010



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0 0.5 1Km

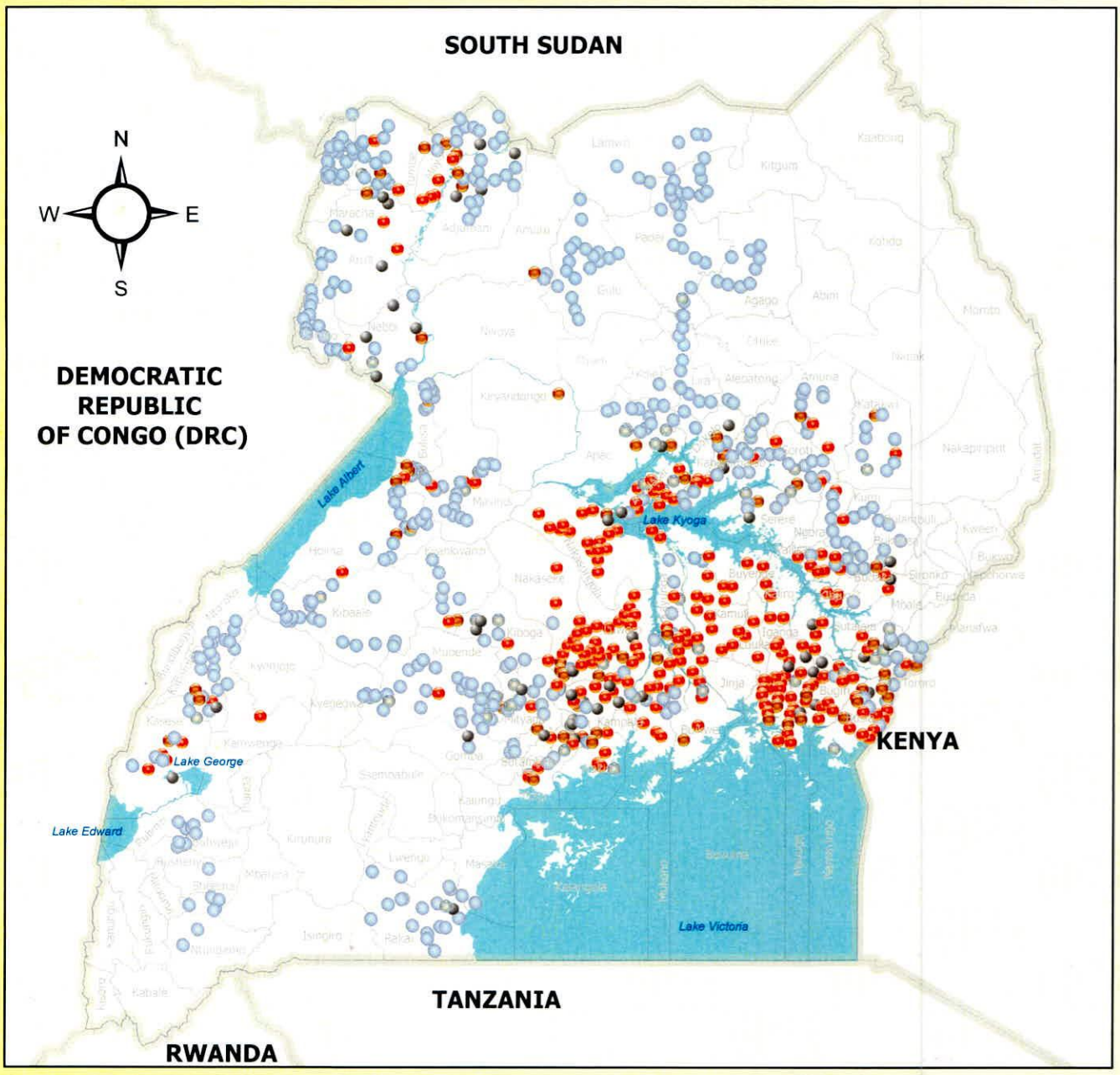
DISTRICTS WHERE THE SURVEY WAS UNDERTAKEN

Adjumani, Agago, Amolatar, Amuria, Apac, Arua, Buliisa, Bushenyi, Gulu, Hoima, Kaliro, Katakwi, Kibaale, Kiboga, Kitgum, Koboko, Kumi, Lira, Lamwo, Manafwa, Masaka, Masindi, Moyo, Mpigi, Mubende, Nebbi, Ntungamo, Pader, Rakai, Rubirizi, Seema, Serere, Yumbe, Dokolo, Ngora, Bukedea, Buikwe, Kibuku, Buyende, Budaka, Mayuge, Butaleja, Namayingo

DISTRICTS WITH HIGH CBSD INCIDENCE (%) IN 2010

1. Luwero 86.2
2. Iganga 72.8
3. Kayunga 69.7
4. Wakiso 62.8
5. Mukuno 60.7
6. Kamuli 58.8
7. Pallisa 58.7
8. Busia 57.5
9. Kaberamaido 56.7
10. Bugiri 56.5
11. Nakaseke 55.0
12. Nakasongola 48.3
13. Kasese 39.3
14. Soroti 37.0
15. Tororo 31.8

CBSD INCIDENCE MAP 2011



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Kibuku
Kitgum
Koboko
Kumi
Lira
Lamwo
Manafwa
Masaka
Masindi
Moyo
Mubende
Namayingo
Nebbi
Ngora
Ntungamo
Pader
Rakai
Rubirizi
Seema
Serere
Soroti
Tororo
Yumbe

DISTRICTS WITH HIGH CBSD INCIDENCE (%) IN 2011

1. Kamuli 93
2. Nakasongola 80.3
3. Iganga 77.3
4. Luwero 75.8
5. Nakaseke 73.5
6. Mayuge 68
7. Bugiri 59.3
8. Kayunga 58
9. Pallisa 57.8
10. Mukuno 52.7
11. Wakiso 52.5
12. Amolatar 48.5
13. Busia 44
14. Mpigi 37.2
15. Kasese 36.7

How to Control Cassava Brown Streak Disease



Awareness campaigns and sensitization about CBSD by extension staff



Agriculture students of St. Francis Borgia High school, Mukono acknowledged recognising CBSD as a disease during their visit to NaCRRI, though they have observed it in their family cassava fields. Stakeholders should take such opportunities for awareness



Remove all CBSD affected plants as soon as you observe disease symptoms



Uproot and burn all CBSD affected cassava



Multiply CBSD tolerant cassava varieties.



Scientists following up every step to ensure that only materials from verified fields loaded.

Table 1: Some of the newly released cassava varieties tolerant to CBSD

Variety Release Name	Variety Code	Maturity (Months)	Taste	Mealyness	Yield (t/ha)	Special Attributes	Availability
Nase 3	TMS 30572	12	Variable depending on soil type	Mealy	20 -35.5	CMD and CBSD tolerant; good leaf retention	Widely available in Teso sub-region
Nase 14	MM96/4271	12	Sweet	Mealy	23.3 - 33.0	CMD resistance; CBSD tolerance; recommended for cultivation in CBSD hot spot areas	Widely multiplied by farmer groups and individual farmers throughout Uganda
Nase 15	28-TME14	12	Sweet	Mealy	21.7 - 38.8	CMD resistance; CBSD tolerance & farmer desirable culinary qualities; recommended for cultivation in CBSD hot spot areas	With some few farmer groups in Pallisa, Budaka, Kamuli, Mukono, Nakasongola, Luwero, Kiboga and Nakaseke
Nase 18	109-TME14	12	Sweet	Mealy	26.7 - 31.7	CMD resistance; CBSD tolerance & farmer desirable culinary qualities; recommended for cultivation in CBSD hot spot areas	With some few farmer groups in Pallisa, Budaka, Kamuli, Mukono, Nakasongola, Luwero, Kiboga and Nakaseke
Nase 19	72-TME14	12	Sweet	Mealy	18.3 - 28.7	CMD resistance ; CBSD tolerance & farmer desirable culinary qualities; recommended for cultivation in CBSD hot spot areas	With some few farmer groups in Pallisa, Budaka, Kamuli, Mukono, Nakasongola, Luwero, Kiboga and Nakaseke

