An illustration of a woman in a purple top and green headwrap feeding a baby with a spoon. They are surrounded by sweetpotatoes and green leaves. The background is yellow with colorful geometric patterns. A large orange circle is positioned to the left of the title text.

# Effect of Natural Virus Infection on Sweetpotato Cultivar Decline in Uganda

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# Background

- SPVD remains a threat to sweet potato production in Uganda
- Effects of single infection of virus e.g. SPFMV are contradictory both no loss and reduced yield reported
- Lack of proper seed systems in sweetpotato leads to viral accumulation



Beauregard with SPVD

- Some cultivar decline over the years after release
- land races & some station bred varieties may/ may not decline, while others may revert to health when infected

thus contradictory evidence for and against viral degeneration being important in Uganda



VT sweetpotato maintained in-vitro

# background

- Use of root sprouts in drought prone areas is being promoted but virus epidemiology in the root tubers of Ugandan Cvs. is not yet understood
- This work seeks to:
  - establish the effect of sweetpotato virus (SPFMV) on yield loss, rate of vine degeneration,
  - epidemiology of the virus in root system
  - developing a method for rapid propagation of virus-free planting material for high value sweetpotato varieties.



Field selection of SP vine

# Research progress: Generation of virus tested planting materials from field sweetpotato vines



- Symptomless cuttings of Cvs.Kabode, Dimbuka, Naspot1 and Ejumula, from Namulonge field, were grafted on *I. setosa*
- Healthy scions were further multiplied in screen house
- Others were initiated in tissue culture in kabanyolo

**Table1: summary of symptomless sweetpotato cuttings obtained from fields at Namulonge and grafted on *I. setosa* to detect the presence of virus**

cultivar	Number of cuttings grafted	percentage of symptom cuttings	percentage of symptomless cuttings
Kabode	94	78	22
Dimbuka	79	68	32
NASPOT1	81	23	77
Ejumula	31	93	7

# Re-infection and degeneration of sweetpotato cultivars in Central and Eastern Uganda.

- Healthy cvs. Naspot1, Beuregard, Ejumula and Dimbuka were planted at MUARIK and NASARRI in CRBD
- Data collection including incidence severity whitefly number and aphid number is on going
- Data on yield will be taken at the end of



Ejumula- kab



Ejumula- serere



Naspot1- kab



Naspot1 -serere



Dimbuka - kab



Dimbuka-serere

# Effects of SPFMV on the yield of sweetpotato in Uganda

Cvs. Naspot1, Beauregard, Enjumula, Dimbuka and Kabode were used

Healthy cuttings of these cvs. were graft inoculated with SPFMV and multiplied in screen house at Namulonge

SPFMV infected + healthy cuttings were planted at MUARIK and NASARRI

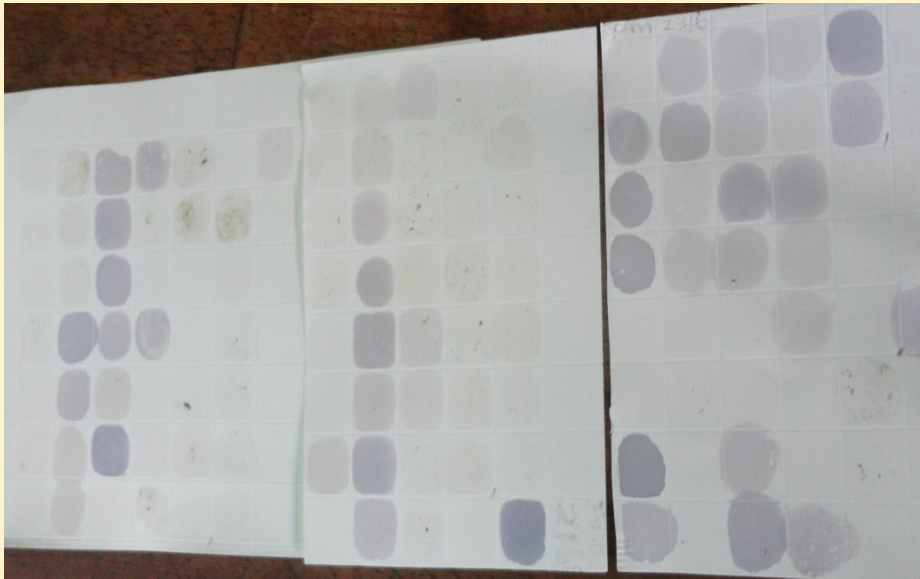
Data collected on incidence and severity of SPVD

Yield data will be taken at the end of the trial



Field planted with SPFMV + healthy control at kabanyolo

# NCM ELISA TEST



SPFMV infected samples



SPCSV infected samples

# Other activities to be achieved



1. To evaluate the potential of using root sprouts to generate virus free planting materials. As part of this, to:
  - compare the rate of viral reinfection and symptom development on cuttings obtained from root tubers and those obtained from mature crops
  - evaluate the efficiency of sweet potato virus transmission from infected foliage to tubers and from infected tubers to progeny plants
2. To evaluate the potential of using hydroponics and optimize the protocol for rapid multiplication of virus free sweetpotato clean planting material in Uganda