# Speeding up virus detection and removal

SASHA

Sweetpotato Action for Security and Health in Africa

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# Sweetpotato: viral diagnosis

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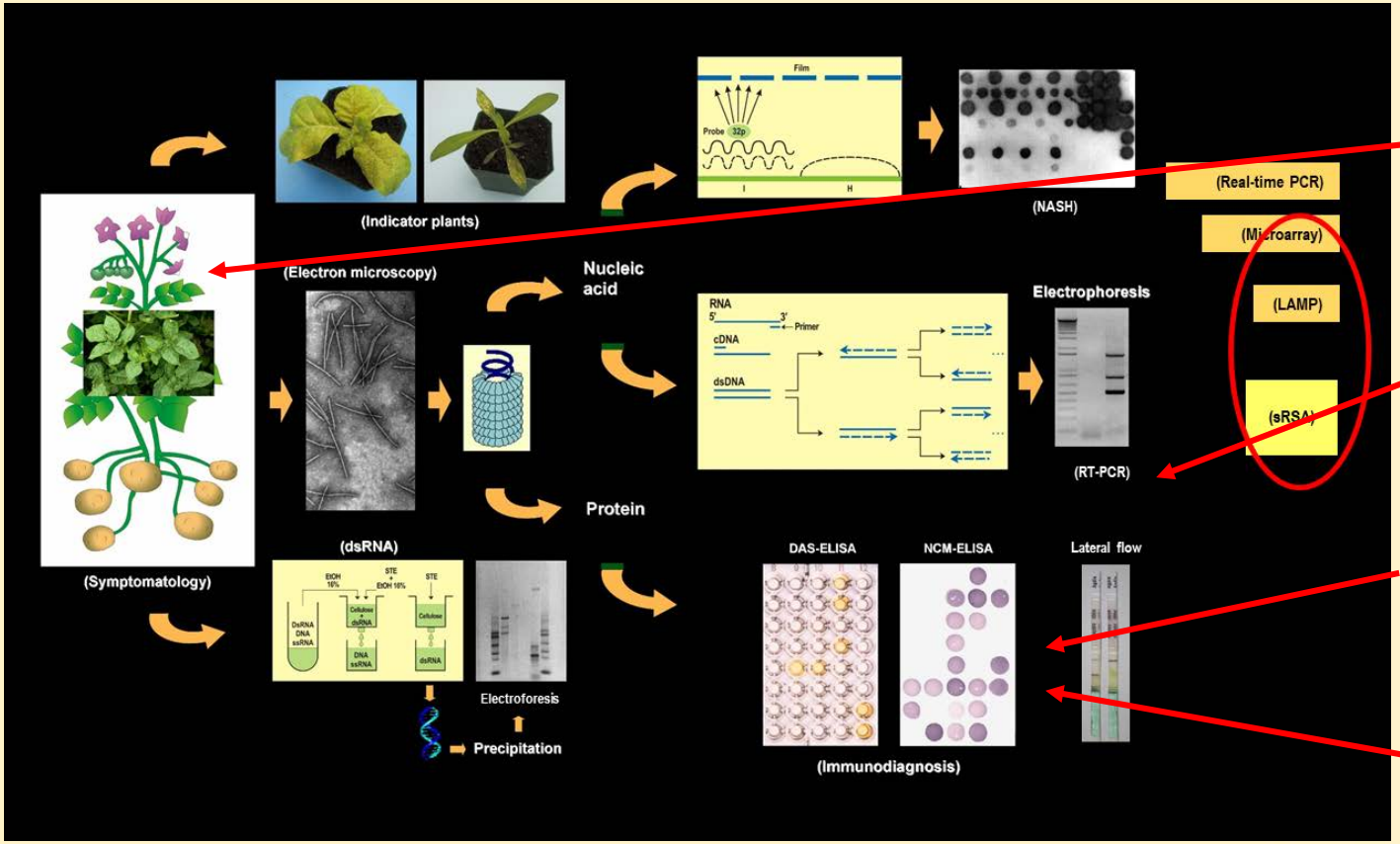


## Facing with:

**Symptomless infection**

- Difficult to recognize visually infected plants

**Inhibitors**

- Affect molecular detection (e.g. PCR)

**Antibodies**

- No available for all viruses
- Cross reaction

**Low virus concentration**

- Affect **accurate** detection

# Virus detection and removal

## Dealing with: time, accuracy

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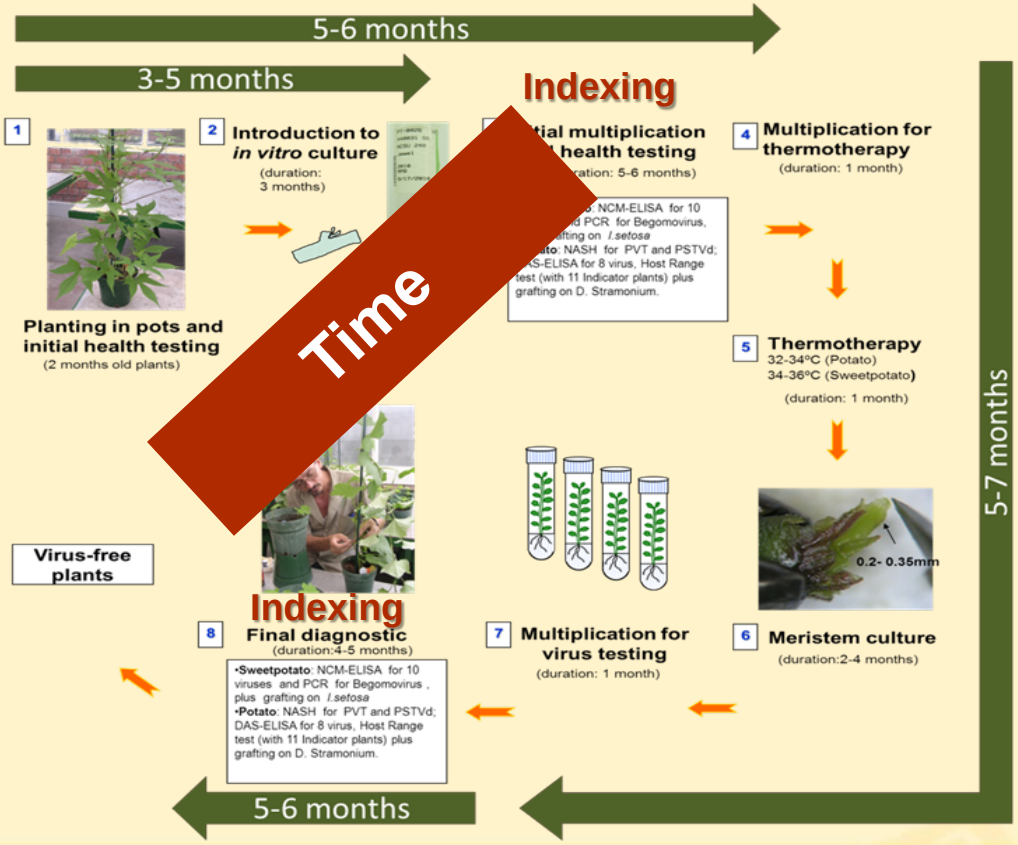
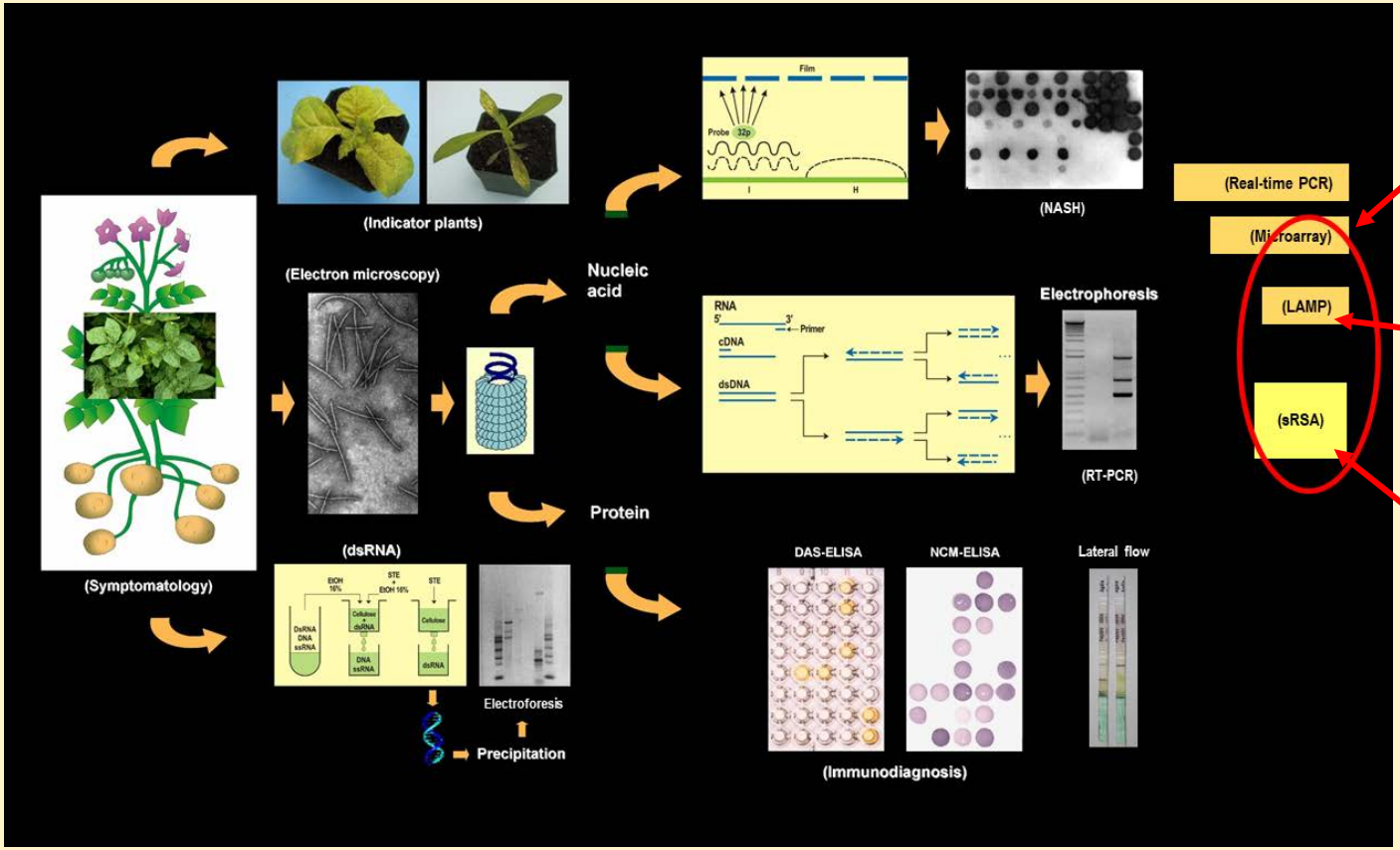
### Virus removal (cleaning)




### Vine multiplication (quality)


**ELISA?** on field diagnosis

# Improving and validating diagnostic methods




## Process on SASHA

**ClonDiag (tube array)**

To replace ELISA test
(more **sensitive** & **multiplex**)

**LAMP**

For **field** virus detection
(more **sensitive,**
tolerate **inhibitors**)

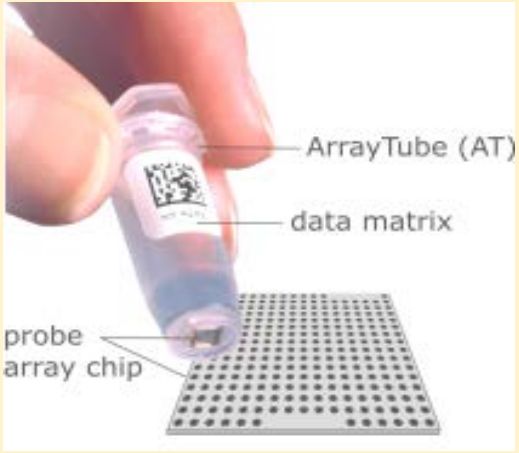
**sRSA**

Alternative for
**ClonDiag** & **indexing**

**Complementary project (BMGF):**
**Next generation phytosanitation**

# Improving and validating diagnostic methods

## ClonDiag

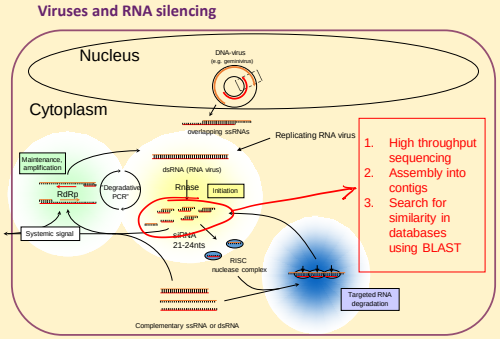



**Result:** 2-3 days
**Detection:** many (20 viruses)
**Performed in:** Lab.

## LAMP

**Result:** 30 min
**Detection:** single virus (Bego, SPFMV, SPCSV)
**Performed in:** Field

## sRSA




**Result:** 1-2 months
**Detection:** all viruses
**Performed in:** Lab.

# Comparing diagnostic methods and costs

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**Speeding up**

| Diagnostic method | Target virus | Sensitivity | Facilities required | Sample type | Time result (per sample) | Cost (US$) |
|---|---|---|---|---|---|---|
| **Indexing** | many, know & unknown | high | yes | leaves, plant scions | 5-6 months | 154 |
| **ELISA** | single, known | low | no | leaves | 2 days (>1.5 months) | 2.4 (>40) |
| **LAMP** | single, known | high | no | leaves, roots | 30 min | **6.38** |
| **ClonDiag** | many, known | high | yes | leaves | 2-3 days | **70** |
| **sRSA** | many, known & unknown | high | yes | any plant tissue | 1 - 2 months | **138.71** |

# Speeding up virus detection and removal

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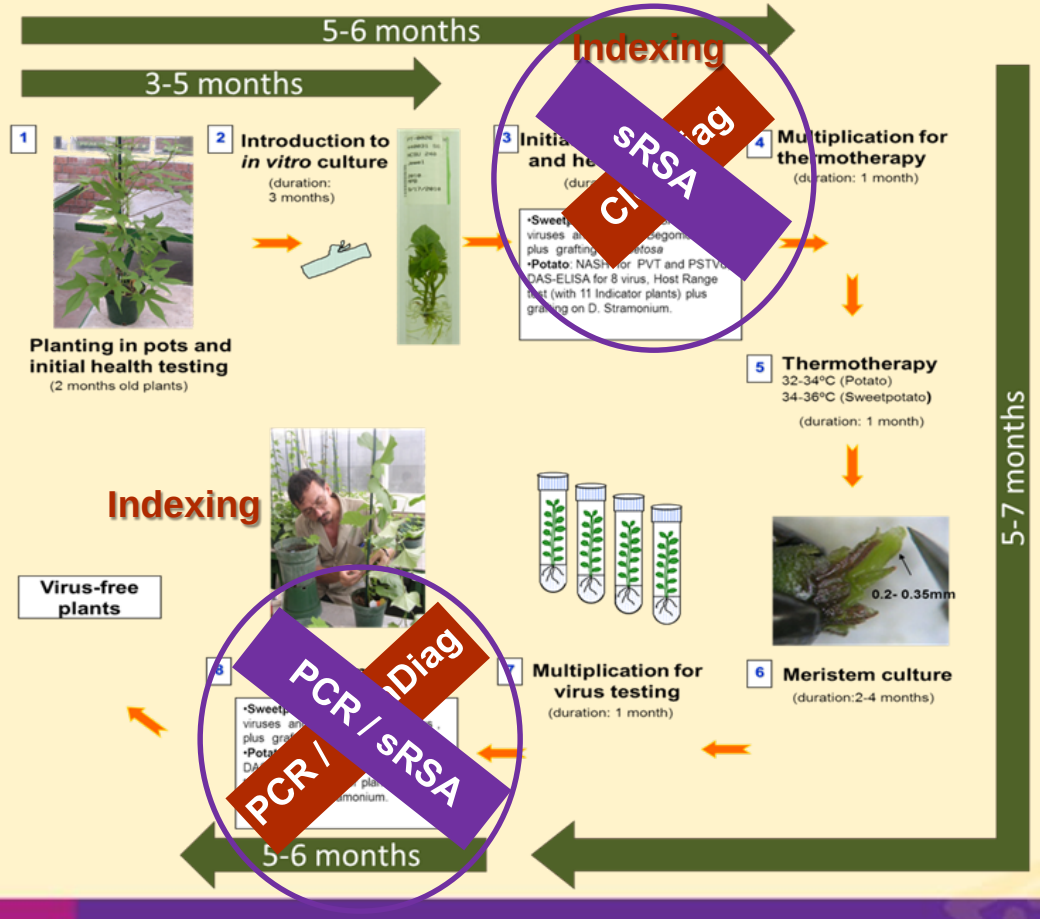


## Vine multiplication


Accurate field diagnosis
(quality of vines)

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# Asante Sana
# Thank you
# Gracias