

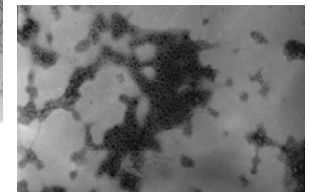
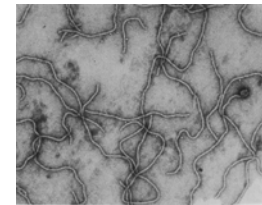
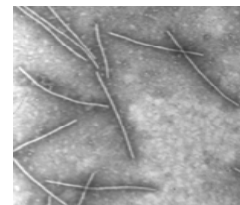


Sweetpotato virus indexing

Segundo Fuentes



Viruses affecting sweetpotato

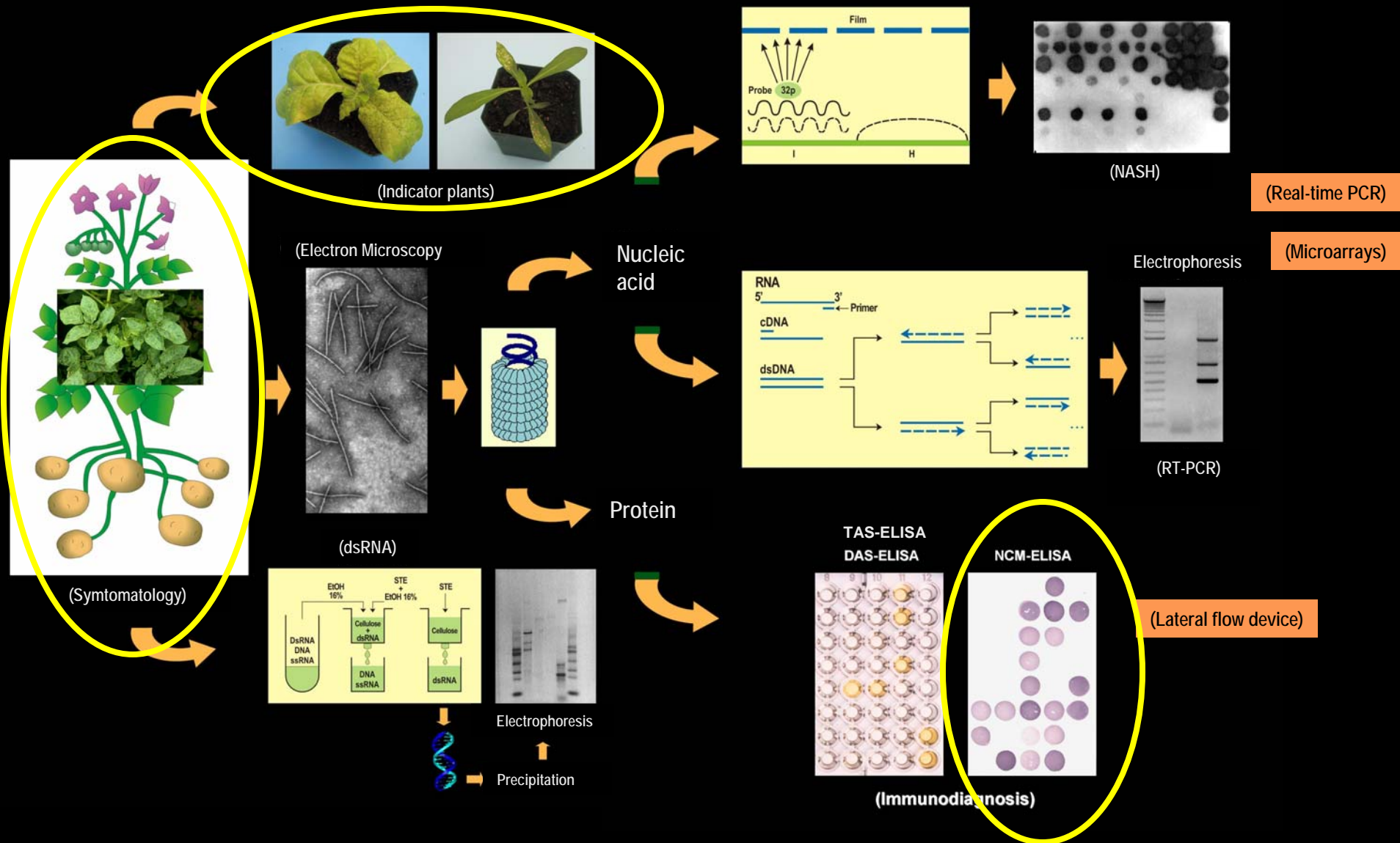


> 20 viruses

Recognized viruses that infect sweetpotato

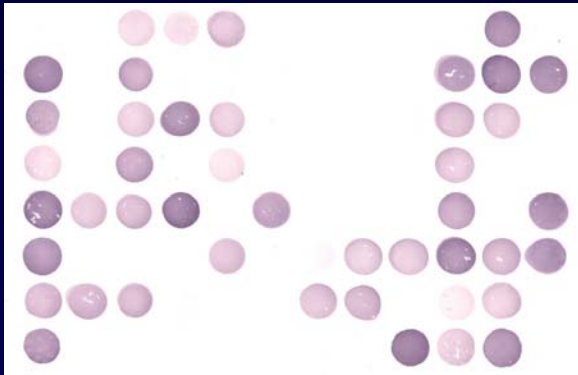
Genus	Virus	Transmission	Distribution
<i>Potyvirus</i>	SPFMV	Aphid	Worldwide
	SPLV	Aphid	Taiwan, China, Japan, Indonesia, Philippines, India, Egypt
	SPMSV	Aphid	Argentina, Peru, Indonesia, Philippines, China, Egypt, South Africa, Nigeria, New Zealand
	SPVG	Aphid	China, Japan, USA, Egypt, Ethiopia, Nigeria, Barbados, Peru, Spain, South Africa
	SPV2	Aphid	USA, Taiwan, China, South Africa, Portugal, Australia, Barbados
	SPCSV?	Unknown	Caribbean Region, Zimbabwe, Uganda, Kenya
	SPVMV	Aphid	Argentina
<i>Ipomovirus</i>	SPMMV	Whitefly?	Africa, Indonesia, China, PNG, India, Egypt, New Zealand
	SPYDV	Whitefly	Taiwan, Far East
<i>Crinivirus</i>	SPCSV	Whitefly	Worldwide
<i>Cucumovirus</i>	CMV	Aphid	Israel, Egypt, Kenya, South Africa, Japan, New Zealand
<i>Begomovirus</i>	SPLCV	Whitefly	Far East, USA, China, Taiwan, Japan, Korea, Europe, Africa?, Peru
	SPLCGV	Whitefly	USA, Puerto Rico
	IYVV	Whitefly	Spain, Italy
	ICLCV	Whitefly	Israel
<i>Carlavirus</i>	SPCFV	Unknown	Africa, China, Taiwan, North Korea, Cuba, Panama, South Americaa, N. Zealand
	C-6?	Unknown	USA, Peru, Cuba, Dom. Rep., Indonesia, Philippines, P. Rico, Egypt, Kenya, South Africa, New Zealand
<i>Nepovirus</i>	SPRSV	Unknown	Papua New Guinea, Kenya?
<i>Caulimovirus</i>	SPCaLV	Unknown	South Pacific Region, Madeira, China, Egypt, P. Rico, Nigeria, Kenya?
<i>Ilarvirus</i>	TSV	Unknown	Guatemala
<i>Polerovirus</i>	SPLSV	Aphid	Peru, Cuba
<i>Tobamovirus</i>	TMV	None	USA
Unknown	C-3	Unknown	Brazil. Unknown in others countries
	C-9	Unknown	?

Virus detection methods



Serological test

NCM-ELISA test



NCM-ELISA kit



Ipomoea setosa (universal indicator plant)





Transmission of plant viruses

I. Mechanical and by contact

II. **Grafting** ← (universal method for transmitting viruses) — **Sweetpotato**

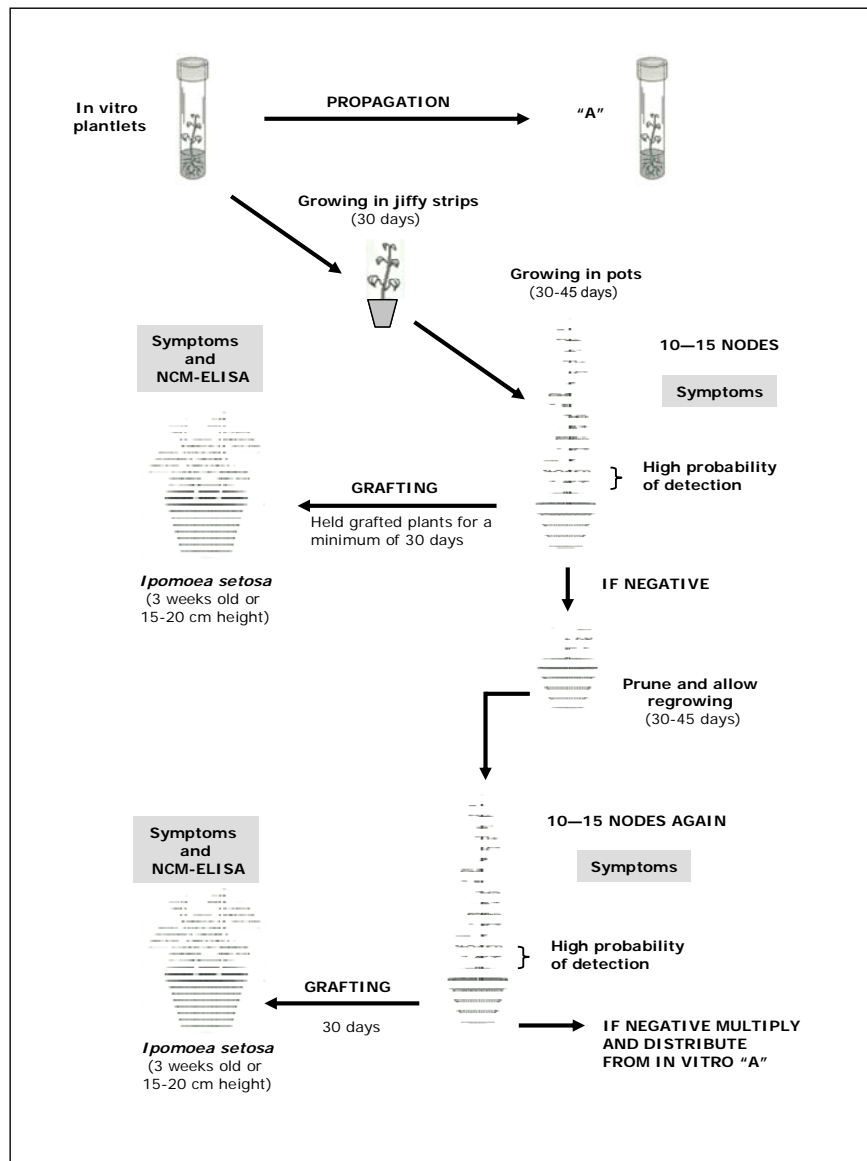
III. Vectors

Insects (aphids, whiteflies)

IV. Pollen and sexual seed



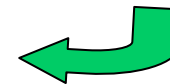
Indexing procedure for sweetpotato viruses



NCM-ELISA is performed for 10 viruses (SPFMV, SPLV, SPVG, SPMSV, SPMMV, SPCSV, SPCFV, C-6, SPCaLV, and CMV).



Growing plantlets in a greenhouse



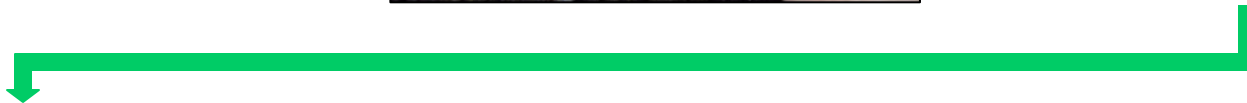
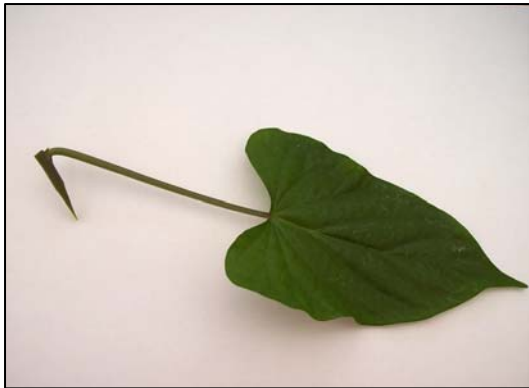


Ipomoea setosa (universal indicator plant for viruses that infect sweetpotato)



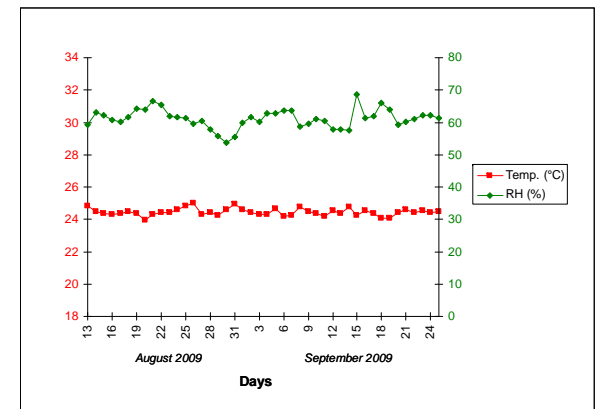


Wedge-grafting to *Ipomoea setosa*





Recording symptoms

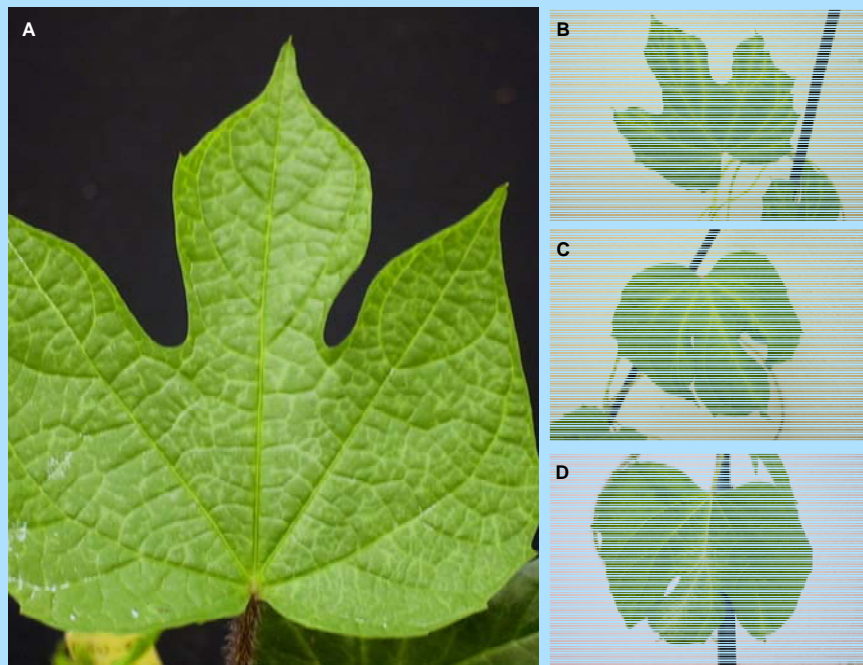




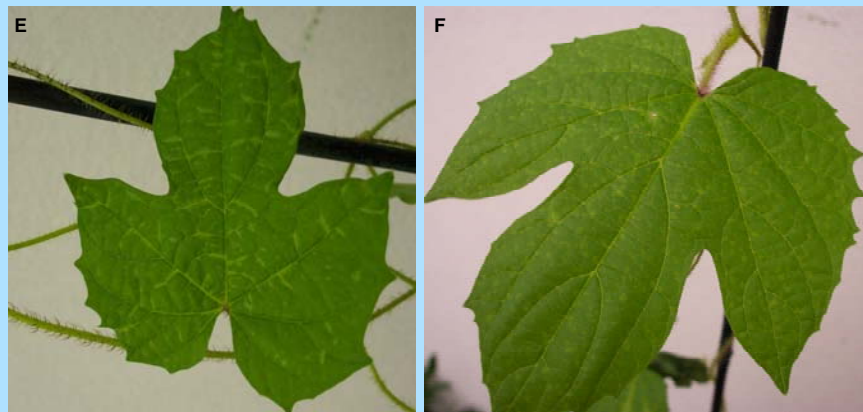
Symptoms 1: vein clearing

(Potyvirus)

SPFMV



SPVG



Unknown
(Negative in NCM-ELISA)



Symptoms 2: chlorotic points

(Carlavirus)





Symptoms 3: vein clearing / blistering





Symptoms 4: vein necrosis/ necrotic points or spots

(Cavemovirus)





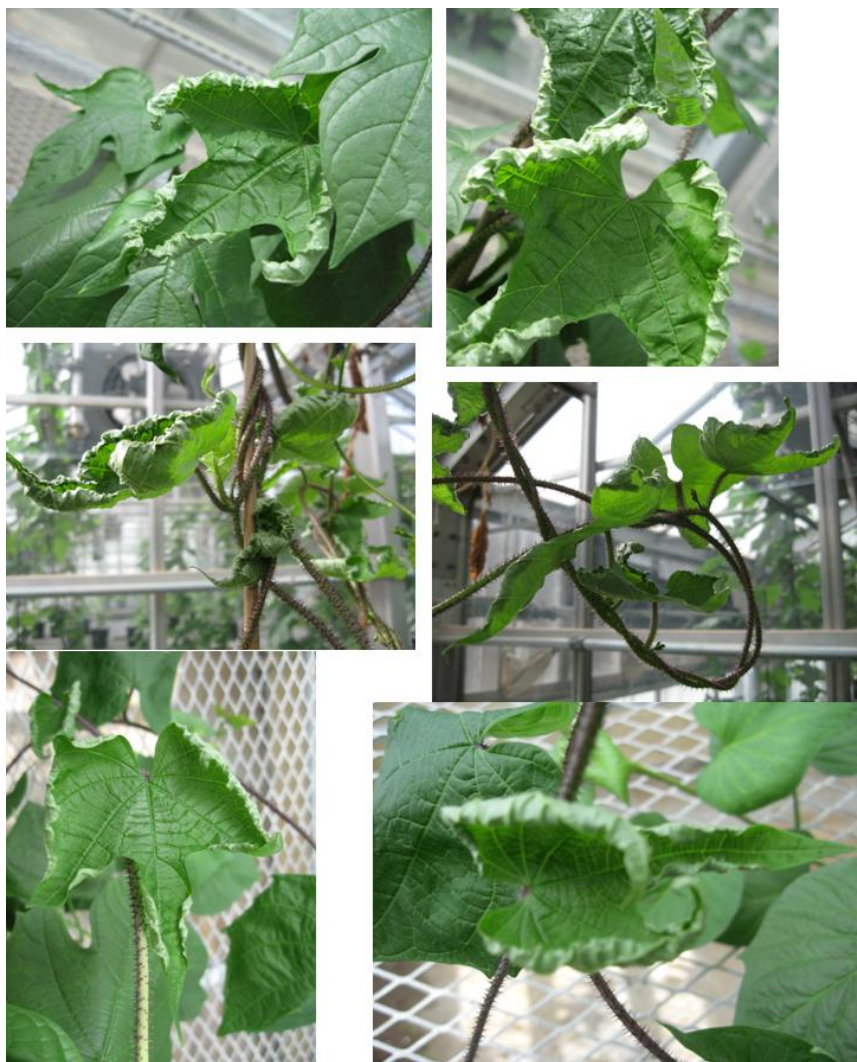
Symptoms 5: chlorosis/ interveinal chlorosis / leaf curling

(Begomovirus)

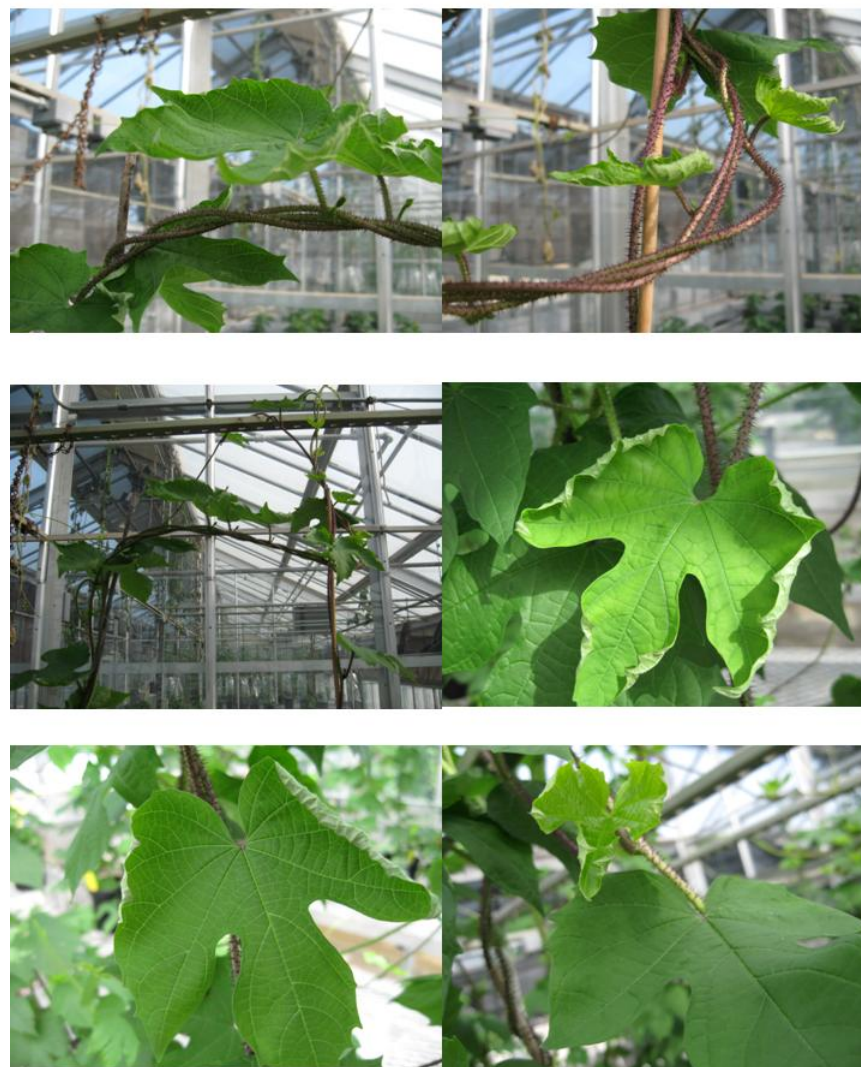




CIP 400025 (Lovers Name)
Saint Vincent & Grenadines)



CIP 440379 (Dilaw)
Philippines





Final Results of Virus Indexing (Group 25, 2009)

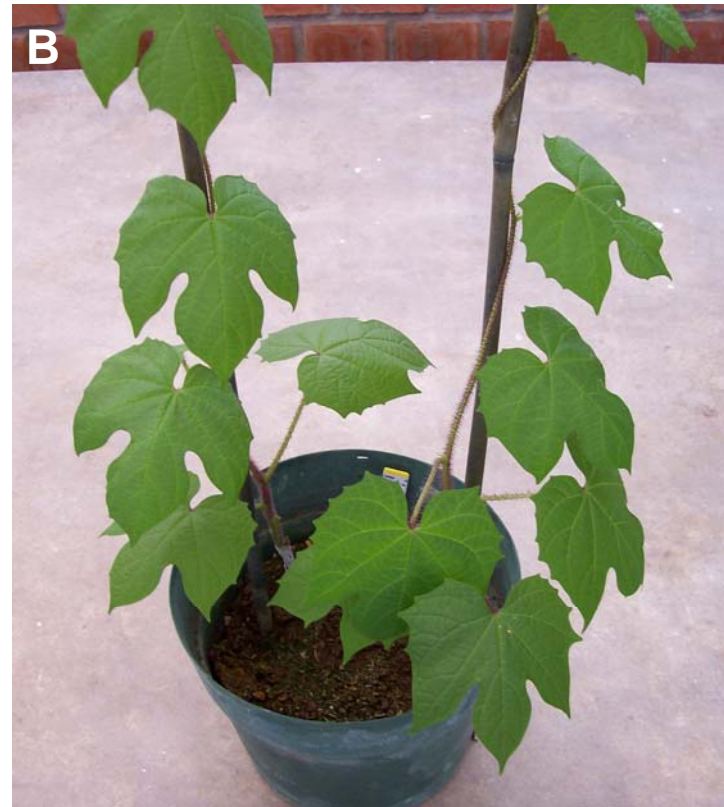
Record	Other code	Accession number	Labcode	Collecting number	Accession name	SP symptoms	<i>I. setosa</i> symptoms	Serology	PCR	Results	Observations
38	35	1	CIP 401066	SG-1477	GTM 392	Camote Morado	Ve,Vn			REJECTED	
39	36	2	CIP 401448	SG-1524	DLP 2888	Morada				APROVED	
40	37	2	CIP 403380	SG-1558	INIVIT 9	Blanco Especial				APROVED	
41	38	2	CIP 402666	SG-1588	INIVIT1049		RU,D,IVC		Begomo	REJECTED	
42	39	5	CIP 402691	SG-1592	INIVIT1078		C,RU		Begomo	REJECTED	
43	40	5	CIP 402721	SG-1604	INIVIT1216		RU		Begomo	REJECTED	
44	41	6	CIP 401130	SG-1681	GTM 1108	Camote Morado	IVC		Begomo	REJECTED	
45	42	7	CIP 401375	SG-1688	SVG 27	Six Weeks	D,IVC		Begomo	REJECTED	
46	43	4	CIP 402619	SG-1702	INIVIT 217		RU		Begomo	REJECTED	
47	44	3	CIP 402655	SG-1717	INIVIT1038		D,Ve,Vn,Ln	SPCaLV		REJECTED	SPCaLV (PCR)
48	45	5	CIP 402696	SG-1731	INIVIT1084		C,IVC		Begomo	REJECTED	
49	46	1	CIP 403435	SG-1786	CESDA861607	86-1607				APROVED	
50	47	5	CIP 400789	SG-1790	CENDA 20	Jacobina 5	RD,D,Ve,Vn,Ln	SPCaLV	Begomo	REJECTED	Virus C-9 (PCR)
51	48	2	CIP 401120	SG-1816	GTM 949	Camote Blanco				APROVED	
52	49	5	CIP 401277	SG-1827	DLP 3898	Rojo-kinit				APROVED	
53	50	1	CIP 420565	SG-1852	DLP 66	Espelma	D,Ve	SPFMV,SPVG		REJECTED	
54	51	6	CIP 420163	SG-1859	DLP 123	Morado Morado				APROVED	
55	52	2	CIP 420181	SG-1907	DLP 887	unknown	Cp	SPFMV,SPVG		REJECTED	
56	53	6	CIP 420715	SG-1935	DLP 1312	Zapallona	RD,Ve	SPFMV,SPVG	Begomo	REJECTED	
57	54	6	CIP 420291	SG-2089	DLP 3549	unknown				APROVED	
58	55	5	CIP 420113	SG-2154	ARB 323	Camote Papa	Cp	SPFMV,SPVG		REJECTED	
59	56	1	CIP 420114	SG-2156	ARB 347	Camote				APROVED	
60	57	6	CIP 420488	SG-2172	ARB 425	Espelma				APROVED	
61	58	3	CIP 442115	SG-2283	IITA-CL 57		C,RU,D		Begomo	REJECTED	
62	59	2	CIP 443083	SG-2384	IITA-CL 249	TIS 2180	C,B		Begomo	REJECTED	
63	60	3	CIP 442858	SG-2452	IITA-CL 377	TIS 8030				APROVED	



Somatic mutation



Clone CIP 401430 (Morada) showing somatic mutation (symptom of genetic distortion of leaves).



Indicator plant *I. seotsa* grafted with tissue scion from clone CIP 401430. No symptom is observed.



Somatic mutation



Clone CIP 440029 (Feng Shou Bai) showing somatic mutation (symptom of genetic distortion of leaves).



Indicator plant *I. seotsa* grafted with tissue scion from clone CIP 440029. No symptom is observed.



Final Results of Virus Indexing (Group 25, 2009)

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40	37	2	CIP 403380	SG-1558	INIVIT 9	Blanco Especial				APROVED	
41	38	2	CIP 402666	SG-1588	INIVIT1049		RU,D,IVC		Begomo	REJECTED	
42	39	5	CIP 402691	SG-1592	INIVIT1078		C,RU		Begomo	REJECTED	
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44	41	6	CIP 401130	SG-1681	GTM 1108	Camote Morado	IVC		Begomo	REJECTED	
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Virology Lab Info Management System (CIPVIR)

Maintenance ▶ Register a Diagnostic ▶ Distribution KITS ▶ Reports ▶ Tools ▶ Help ▶



Welcome!

The 'Virology Lab Info Management System' provides services that the 'Virology Section' of the 'Crop Protection' provides to the CIP staff and external clients.

The facilities are: Register the request of a diagnostic (Range), register the results of diagnostics, maintain on pathogens, etc, print reports by different criteria.

We welcome any comments and/or suggestions.
RIU@cgiar.org

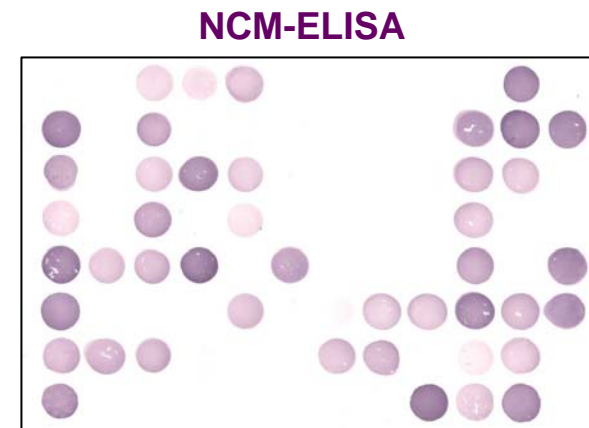
Virology Lab Info Management System version 1.0 (2003)+++Last software review: April, 2003+++Contact: CIP-RIU@cgiar.org



Sweetpotato vs *Ipomoea setosa* vs serology

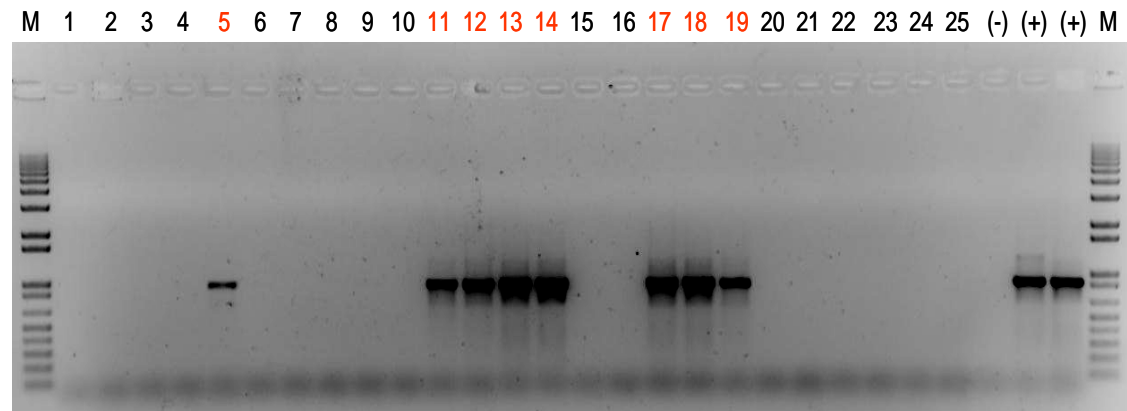


- Symptomless
- Low virus concentration



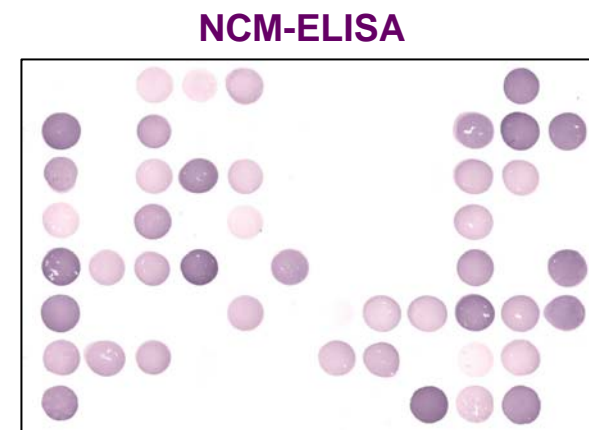


Sweetpotato vs *Ipomoea setosa* vs PCR (begomovirus)





Sweetpotato versus *I. setosa* versus serology



- Symptomless
- Low virus concentration

Indicator plant

+

Serology (ELISA)

Reliable detection of viruses



External audit conducted by UKAS (C. Jeffries), October 2009



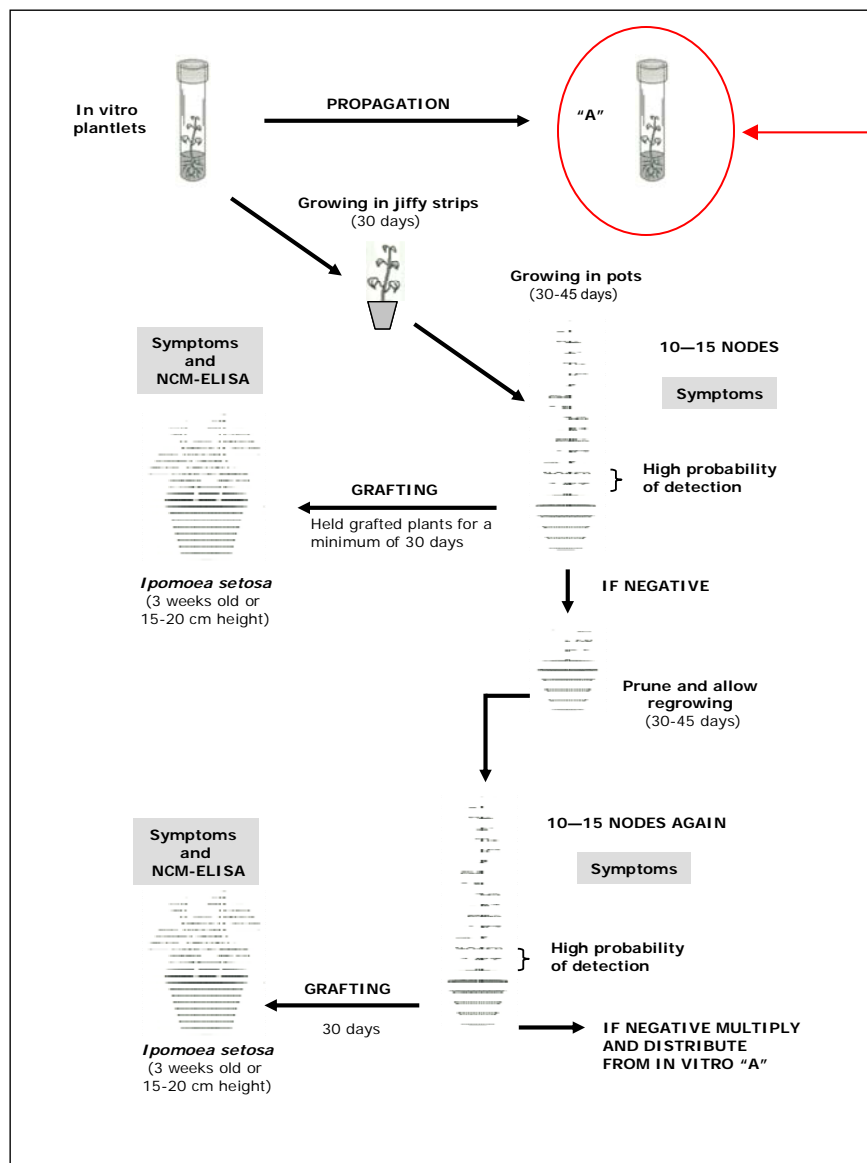
ISO 17025



Testing laboratory
No. 4229



Indexing procedure for sweetpotato viruses

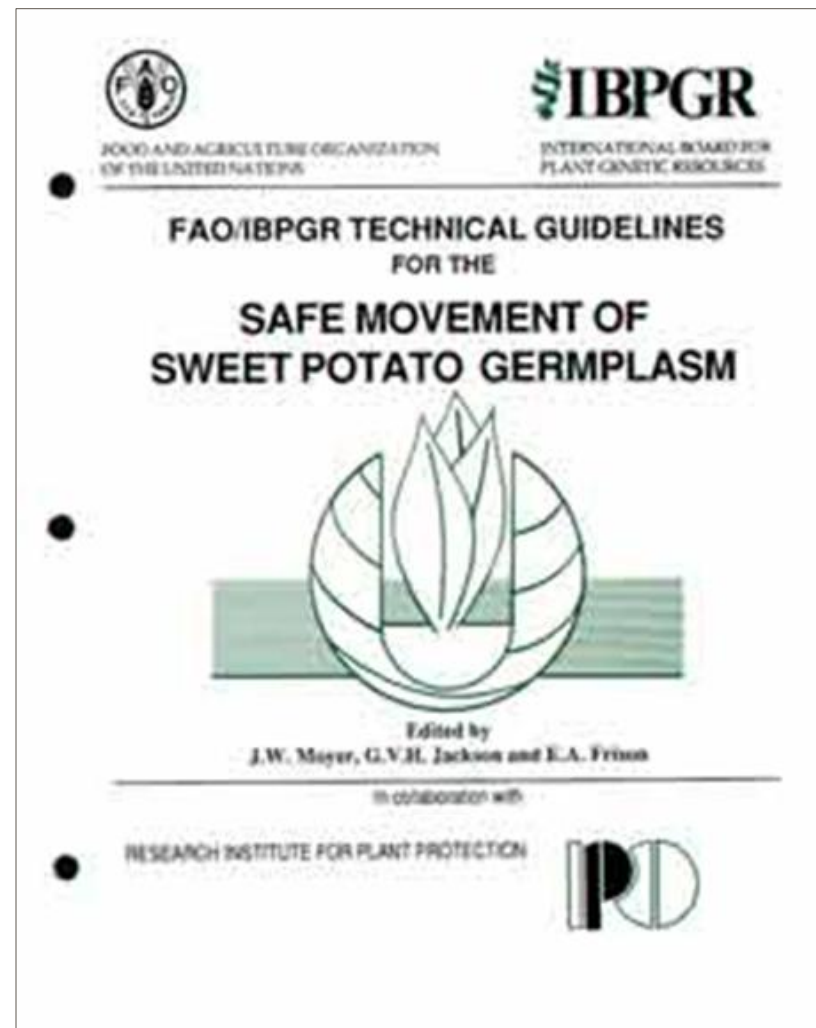


Use plantlets grown from the same meristem when distributing

NCM-ELISA is performed for 10 viruses (SPFMV, SPLV, SPVG, SPMSV, SPMNV, SPCSV, SPCFV, C-6, SPCaLV, and CMV).



Safe movement of sweetpotato germplasm





SP plantlets in jiffys



SP plants in pots



Ipomoea setosa



Grafted *Ipomoea setosa* plants





Pruned SP plants for regrowing



2nd grafting on *I. setosa*



SP plants and *I. setosa* plants growing in the same greenhouse



Starting record of symptoms

Preventive spraying of insecticides (controlling of whiteflies and aphids)

Sweetpotato summary record sheet

[illegible]



Format of Final Results

2												
3	Record	Other code	Accession number	Labcode	Collecting number	Accession name	SP symptoms	<i>I. setosa</i> symptoms	Serology	PCR	Results	Observations
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