

# Acronyms and Abbreviations

## Acronyms

ACIAR	Australian Centre for International Agricultural Research	BMNH	British Museum of Natural History
AID	Agency for International Development	BNN	Banco Nacional de Nicaragua ( <i>National Bank of Nicaragua</i> )
ANPP	Association Nationale pour la Protection des Plantes ( <i>National Association for Plant Protection</i> ), France	C&F	New Zealand Crop and Food Research
ARI	Agricultural Research Institute	CATIE	Centro Agronómico Tropical de Investigación y Enseñanza ( <i>Tropical Agricultural Research and Higher Education Centre</i> ), Costa Rica
ARP	African Regional Program of AVRDC	CENSA	Centro Nacional de Sanidad Agropecuaria ( <i>National Centre for Plant and Animal Health</i> ), Cuba
ARS	Agricultural Research Service of USDA, USA	CENTA	Centro Nacional de Tecnificación Agrícola ( <i>National Centre of Agricultural Technification</i> ), El Salvador
ASARECA	Association for the Strengthening of Agricultural Research in Eastern and Central Africa	CGIAR	Consultative Group on International Agricultural Research
ASDI	Agencia Sueca para el Desarrollo Internacional ( <i>Swedish Agency for International Development</i> )	CIAL	Comité de Investigación Agrícola Local ( <i>Local Agricultural Research Committee</i> )
ATC	Agriculture Trading Company, Malawi	CIAS	Centro de Investigaciones Agrícolas del Sureste ( <i>South-eastern Agricultural Research Centre</i> ), Mexico
AVRDC	Asian Vegetable Research and Development Center	CIAT	Centro Internacional de Agricultura Tropical ( <i>International Center for Tropical Agriculture</i> ), Cali, Colombia
BBA	Biologische Bundesanstalt für Land und Fortwirtschaft ( <i>Federal Biological Research Centre for Agriculture and Forestry</i> ), Germany		

CIAZA	Centro de Investigaciones Aplicadas a Zonas Áridas ( <i>Research Centre for Arid Zones</i> ), Dominican Republic	DANIDA	Danish International Development Agency
CINVESTAV	Centro de Investigaciones y Estudios Avanzados ( <i>Centre for Research and Advanced Studies</i> ), Irapuato, Mexico	DARNDR	Fondo Salvadoreño de Estudios de l'Agriculture, des Ressources Naturelles et du Développement Rural ( <i>Salvadoran Fund for studies in Agriculture, Natural Resources and Rural Development</i> )
CIP	Centro Internacional de la Papa ( <i>International Potato Center</i> ), Peru	DDR	German Democratic Republic
CNIA	Centro Nacional de Investigación Agropecuaria ( <i>National Centre for Agricultural Research</i> ), Nicaragua	DFID	Department for International Development, UK
CNRE	Centre National de Recherche sur l'Environnement ( <i>National Centre for Environmental Research</i> ), Madagascar	DICTA	Departamento de Investigación y Capacitación Agropecuaria ( <i>Agricultural Research and Training Department</i> ), Honduras
CONAL	Comisión Nacional del Algodón ( <i>National Cotton Commission</i> ), Nicaragua	DIGESA	Dirección General de Salud Ambiental ( <i>State Environmental Health Office</i> ), El Salvador
CONVERDS	Collaborative Network for Vegetable Research and Development in Southern Africa	DRC	Democratic Republic of Congo
CORPOICA	Corporación Colombiana de Investigación Agropecuaria ( <i>Colombian Corporation of Agricultural Research</i> )	EAP	Escuela Agrícola Panamericana ( <i>Pan-American Agricultural School</i> ), Honduras
COSCA	Collaborative Study of Cassava in Africa	EARRNET	East Africa Root Crops Research Network
CRDA	Centre de recherche et de documentation agricoles ( <i>Centre for Agricultural Research and Documentation</i> ), Haiti	ESARC	Eastern and Southern Africa Regional Center of IITA
CRS	Chitedze Research Station, Malawi	ESCaPP	Ecologically Sustainable Cassava Plant Protection, regional project, Ghana
CSIRO	Commonwealth Scientific and Industrial Research Organisation, Australia	EXTOXNET	Extension Toxicology Network
		FAO	Food and Agriculture Organization of the United Nations, Italy
		FCA	Florida Collection of Arthropods

FIRA	Fideicomisos Instituidos en Relación con la Agricultura ( <i>Agriculturally Related Trusts</i> ), Mexico	IDIAP	Instituto de Investigación Agropecuaria de Panamá ( <i>Panamanian Agricultural Research Institute</i> )
FOFIFA	Centre National de Recherche Appliquée au Développement Rural ( <i>National Centre for Applied Research in Rural Development</i> ), Madagascar	IDRC	International Development Research Centre, Canada
FSCA	Florida State Collection of Arthropods	IICA	Instituto Interamericano de Cooperación para la Agricultura ( <i>Inter-American Institute for Cooperation on Agriculture</i> )
FUNDESA	Fundación para el Desarrollo Agropecuario ( <i>Foundation for Agricultural Development</i> ), Santo Domingo, Dominican Republic	IIE	Institution of International Education, UK
GCF	Gatsby Charitable Foundation, UK	IITA	International Institute of Tropical Agriculture, Nigeria
GCRIO	Global Change Research Information Office, USA	IITA-ESARC	International Institute of Tropical Agriculture-Eastern and Southern Regional Center, Nigeria
GIIT	Grupo Interinstitucional e Interdisciplinario de Tomate ( <i>Interinstitutional and Interdisciplinary Tomato Group</i> ), Nicaragua	INIA	Instituto Nacional de Investigación Agraria ( <i>National Institute of Agricultural Research</i> ), Mexico
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit ( <i>German Agency for Technical Cooperation</i> )	INIAP	Instituto Nacional Autónomo de Investigaciones Agropecuarias ( <i>National Institute for Agricultural Research</i> ), Ecuador
HORTI	Horticultural Research and Training Institute, Tanzania	INIFAP	Instituto Nacional de Investigaciones Forestales y Agropecuarias ( <i>National Institute for Agricultural and Forestry Research</i> ), Sinaloa, Mexico
HPR	Host Plant Resistance Project of MFAT	INISAV	Instituto de Investigaciones de Sanidad Vegetal ( <i>National Institute for Research on Plant Health</i> ), Havana, Cuba
IARCs	International Agricultural Research Centres	INRAB	Institut National de Recherche Agronomique du Bénin ( <i>Benin National Institute for Agricultural Research</i> )
ICA	Instituto Colombiano Agropecuario ( <i>Colombian Institute of Agriculture and Livestock</i> )		
ICIPE	International Centre of Insect Physiology and Ecology, Kenya		
ICTA	Instituto de Ciencia y Tecnología Agrícolas ( <i>Institute of Agricultural Science and Technology</i> ), Guatemala City, Guatemala		

IOBC	International Organisation for Biological and Integrated Control for Noxious Animals and Plants	NARES	National Agricultural Research and Extension Systems
IRA	Institut de Recherche Agronomique ( <i>Agricultural Research Institute</i> ), Cameroon	NARO	National Agricultural Research Organisation, Uganda
ISA	Instituto Superior de Agricultura ( <i>Higher Institute for Agriculture</i> ), Dominican Republic	NORAD	Norwegian Agency for Co-operation for Development
ISTRC-AB	International Society for Tropical Root Crops-Africa Branch	NRCRI	National Root Crops Research Institute, Nigeria
JIC	John Innes Centre, UK	NRI	Natural Resources Institute, UK
KARI	Kenya Agricultural Research Institute	NRTCIP	National Root and Tuber Crops Improvement Project, Ghana
LILIANA	Instituto de Investigaciones de Hortícolas "Liliana Dimitrova" ( <i>Horticultural Research Institute "Liliana Dimitrova"</i> ), Cuba	OFDA	Office for Foreign Disaster Assistance of USAID
LZARDI	Lake Zone Agricultural Research and Development Institute, Tanzania	OIRSA	Organismo Internacional Regional de Sanidad Agropecuaria ( <i>Regional International Organization for Plant Protection and Animal Health</i> ), Nicaragua
MAG	Ministerio de Agricultura y Ganadería ( <i>Ministry of Agriculture</i> ), Nicaragua	PAUP	Phylogenetic Analysis Using Parsimony
MARNDR	Ministère de l'agriculture, des ressources naturelles et du développement rural ( <i>Ministry of Agriculture, Natural Resources and Rural Development</i> ), Haiti	PCCMCA	Programa Cooperativo Centroamericano para el Mejoramiento de Cultivos Alimenticios ( <i>Centroamerican Cooperative Programme for the Improvement of Food Crops</i> ), Guatemala
MFAT	Ministry of Foreign Affairs and Trade, New Zealand	PHYLIP	Phylogeny Inference Package
MIP	Manejo Integrado de Plagas ( <i>Integrated Pest Management</i> )	PNUMA	Programa de las Naciones Unidas para el Medio Ambiente ( <i>United Nations Environment Programme</i> ), Geneva
MSU	Montana State University, USA	PPRI	Plant Protection Research Institute, South Africa
NAARI	Namulonge Agricultural and Animal Production Research Institute, Uganda	PPRSO	Plant Protection and Regulatory Services Directorate, Ghana

PROFRIJOL	Programa Cooperativo Regional de Frijol para Centro América, México y el Caribe ( <i>Regional Cooperative Bean Programme for Central America, Mexico and the Caribbean</i> )	TRTCP	Tanzania Root and Tuber Crops Programme
PROMIPAC	Programa Regional de Manejo Integrado de Plagas en América Central ( <i>Regional Integrated Pest Management Program for Central America</i> )	TWF-IPM	Tropical Whitefly Integrated Pest Management Project
REDCAHOR	Red Colaborativa de Investigación y Desarrollo de Hortalizas para América Central, Panamá y República Dominicana ( <i>Collaborative Network for Vegetable Research and Development for Central America, Panama and Dominican Republic</i> )	UA	University of Arizona-Tucson, USA
SADC	Southern Africa Development Community	UFL	University of Florida-Gainesville, USA
SARH	Secretaría de Agricultura y Recursos Hidráulicos ( <i>Secretariat of Agriculture and Hydraulic Resources</i> ), Mexico	UNA	Universidad Nacional Agraria ( <i>National Agricultural University</i> ), Nicaragua
SARI	Selian Agricultural Research Institute, Tanzania	UNDP	United Nations Development Programme
SARRNET	Southern African Root Crops Research Network	USAID	United States Agency for International Development
SDC	Swiss Agency for Development and Cooperation	USDA	United States Department of Agriculture
SEA	Secretaría del Estado de Agricultura ( <i>State Agricultural Secretariat</i> ), Dominican Republic	USNM	United States National Museum
SENASA	Servicio Nacional de Salud Animal ( <i>National Service for Animal Health</i> ), El Salvador	UTLA	Universidad Técnica Latinoamericana ( <i>Latin American Technical University</i> )
SP-IPM	Systemwide Programme on Integrated Pest Management	UW	University of Wisconsin-Madison, USA

## Abbreviations

AC1	replicase
ACMD	African cassava mosaic disease
ACMV	<i>African cassava mosaic virus</i>
A.f.	<i>Aleurothrixus floccosus</i>
AFLP	amplified fragment length polymorphism
ANOVA	analysis of variance
A.p.	<i>Aleyrodes proletella</i>
AV1	capsid protein
B.a.	<i>Bemisia afer</i>
BCaMV	<i>Bean calico mosaic virus</i>
BDMV	<i>Bean dwarf mosaic virus</i>
BG	begomovirus
BGMV	<i>Bean golden mosaic virus</i>
BGYMV	<i>Bean golden yellow mosaic virus</i>
B.h.	<i>Bemisia hirta</i>
BMMV	<i>Bean mild mosaic virus</i>

BR	Brazil	ICMV	<i>Indian cassava mosaic virus</i>
B.t.	<i>Bemisia tabaci</i>	IPM	integrated pest management
B.t.-A	<i>Bemisia tabaci</i> A biotype	Is	Israel
B.t.-B	<i>Bemisia tabaci</i> B biotype	ITS	internal transcribed spacers
C	plant infected as cutting	L	late infected plant
CAR	carbamates	LC	lethal concentration
CLCuV	<i>Cotton leaf curl virus</i>	LSD	least significant difference
CMD	cassava mosaic disease	MABs	monoclonal antibodies
CMG	cassava mosaic geminivirus	MAB-BS	a broad spectrum monoclonal antibody used to detect bi-partite begomoviruses
CMV	cucumoviruses, <i>Cucumber mosaic virus</i>	MAB-GA	a monoclonal antibody used to detect the original Middle American isolates of <i>Bean golden yellow mosaic virus</i> -Guatemala
CO	Colombia	MAP	months after planting
COI	cytochrome oxidase I	MIU	multiple infection units
CPMMV	<i>Cowpea mild mottle virus</i>	Mo	Mochis
CVYV	<i>Cucumber vein yellowing virus</i>	MR	moderately resistant
DAS	double antibody sandwich	MYMV	<i>Mungbean yellow mosaic virus</i>
DNA	deoxyribonucleic acid	NARS	national agricultural research systems
DR	Dominican Republic	NCM	nitrocellulose membrane
DSM	Dar es Salaam	nt	not tested
E	early infected plant	O.c.	<i>Orchamoplatus citri</i>
EACMV	<i>East African cassava mosaic virus</i>	OLCV	<i>Okra leaf curl virus</i>
Eg	Egypt	OPs	organophosphate insecticides
EIL	economic injury level	ORF	open reading frame
ELISA	enzyme-linked immunosorbent assay	PAGE	polyacrylamide gel electrophoresis
EM	electron microscopy	PCR	polymerase chain reaction
EMIF	electronic monitoring of insect feeding	PepGMV	<i>Pepper golden mosaic virus</i>
EPG	electrical penetration graph	PepLCV	<i>Pepper leaf curl virus</i>
ES	El Salvador	PHYVV	<i>Pepper Huasteco yellow vein virus</i>
FFS	farmer field school	PR	Puerto Rico
FL	fiducial limits	PTY1	monoclonal antibody to detect potyviruses
GA	Guatemala	PVY	<i>Potato virus Y</i>
GIS	geographic information systems		
GV	geminiviruses		
H	healthy, symptomless plant		
HD	Honduras		
HPR	host plant resistant		
HR	highly resistant		
HS	highly susceptible		
I	intermediate infected plant		
I	intermediate resistance		

PYR	pyrethroids	Tan	Tanzania
QTL	quantitative trait locus	TAS	triple antibody sandwich
R	whitefly resistant cultivar	TBR	tree-bisection reconnection
RAPD	random amplified polymorphic DNA	TEV	<i>Tobacco etch virus</i> (Potyviridae: Potyvirus)
RF	resistance factor	TLC	tomato leaf curl disease
RFLPs	restriction fragment length polymorphisms	TLCV	<i>Tomato leaf curl virus</i> , now ToLCV
RH	relative humidity	TMV	<i>Tobacco mosaic virus</i> ( <i>Tobamovirus</i> )
S	susceptible	ToLCV	<i>Tomato leaf curl virus</i>
S	whitefly susceptible cultivar	ToMoTV	<i>Tomato mottle Taino virus</i>
SACMV	<i>South African cassava mosaic virus</i>	ToMoV	<i>Tomato mottle virus</i>
SCAR	sequence characterized amplified region	ToYMoV	<i>Tomato yellow mottle virus</i>
S <sub>EA</sub>	East African strain	ToYMV	<i>Tomato yellow mosaic virus</i>
SiGMV	<i>Sida golden mosaic virus</i>	TPV	Texas pepper virus (= <i>Pepper golden mosaic virus</i> )
SLCV	<i>Squash leaf curl virus</i>	T.r.	<i>Trialeurodes ricini</i>
S.p.	<i>Siphoninus phillyreae</i>	T.v.	<i>Trialeurodes vaporariorum</i>
SPCFV	<i>Sweetpotato chlorotic fleck virus</i>	TVT	<i>Tomato vein thickening virus</i>
SPCSV	<i>Sweetpotato chlorotic stunt virus</i>	TYLCV	<i>Tomato yellow leaf curl virus</i>
SPFMV	<i>Sweetpotato feathery mottle virus</i>	Ug	Uganda
SPLV	<i>Sweetpotato latent virus</i>	WmCSV	<i>Watermelon chlorotic stunt virus</i>
SPMMV	<i>Sweetpotato mild mottle virus</i>	WTVs	whitefly-transmitted viruses
SPSV-SEA	East African strain of SPCSV	Xam	<i>Xanthomonas axonopodis</i> pv. <i>manihotis</i>
SPVD	sweetpotato virus disease		
T	whitefly tolerant cultivar		
T.a.	<i>Tetraleurodes andropogon</i>		