



Joseph Cutler (Autor)

New strategies to ensure food production
Certification of virus-tested plant material in Colombia

Berliner ökophysiologische
und phytomedizinische Schriften



Band 52

Joseph Cutler

**New strategies to ensure food
production – certification of virus-
tested plant material in Colombia**



Cuvillier Verlag Göttingen
Internationaler wissenschaftlicher Fachverlag

<https://cuvillier.de/de/shop/publications/8624>

Copyright:

Cuvillier Verlag, Inhaberin Annette Jentsch-Cuvillier, Nonnenstieg 8, 37075 Göttingen,
Germany

Telefon: +49 (0)551 54724-0, E-Mail: info@cuvillier.de, Website: <https://cuvillier.de>

Table of Contents

Summary	3
Zusammenfassung	4
Glossary	5
List of figures and Tables	7
1 Introduction	10
1.1. Background: Colombia as producer of value exports	11
1.2. Selection of the cultivars	12
2 Materials and Methods	22
2.1 Current status of worldwide virus distribution in roses, physalis, and passion fruit	22
2.2 Sampling	22
2.2.1 Selection of sample sites/farms	22
2.2.2 Selection of samples	22
2.3 Questionnaire	23
2.3.1 Template of questionnaire	23
2.3.2 Collection of questionnaire responses	24
2.4 Bioassay	26
2.4.1. Mechanical Inoculation	26
2.5 Serological Assay	27
2.5.1 ELISA	27
2.6 Molecular Assay	29
2.6.1 RT-PCR	29
2.7 High-throughput sequencing analysis	39
2.7.1 NGS- Total RNA, Illumina, RNA-Seq.	39
3 Results	44
3.1 Focus on selected viruses in roses, physalis, and passion fruit	44
3.2 Sample collection	50
3.3 Questionnaire analysis	51
3.4 Bioassay	54
3.4.1. Mechanical Inoculation	54
3.5 Serological Results	59
3.5.1. ELISA	59
3.6 Molecular Results	60
3.6.1. RT-PCR	60
3.7 NGS analysis (Total RNA, Illumina, RNA-Seq)	64
4 Discussion	68
5 Bibliography	79
Appendix 1: Samples	97
Appendix 2: Table of Baseclear and Geneious Contigs	110
Appendix 3: PCR Results	129
Appendix 4: Buffer Formulations	137