

Annex A1 - DPP Crop Specific Requirements – Cucurbitaceae

Table of Contents

Introduction	1
1. Crop list.....	1
2. Pest scope.....	1
3. Hygiene measures	1
3.1. Nursery	1
3.2. Growing medium use during seed production	2
3.3. Water use	2
3.4. Isolation.....	3
3.5. Weed Management.....	3
3.6. Insect management.....	3
3.7. Crop protection measures.....	3
3.8. Access restrictions	3
3.9. Contact risk.....	4
3.10 Disease scouting.....	4
3.11. Mitigation measures in case of symptomatic plants	4
3.12. Harvest / Extraction.....	5
Pest in scope overview	5
Table 1a-1g. Pests in scope overview	6
Revision history	10

Introduction

These crop specific requirements are additional to the DPP General requirements when producing plant material and/ or seeds of Cucurbitaceae.

1. Crop list

These requirements cover the *Cucurbitaceae* crops. This includes, but is not limited to the following crops:

- *Citrulus lanatus* (watermelon)
- *Cucumis sativus* (cucumber, gherkin)
- *Cucumis melo* (melon)
- *Cucurbita spp.* (pepo, ficifolia, moschata, maxima), (pumpkin, summer squash, winter squash)
- *Momordica charantia* (Bittergourd)
- *Lagenaria siceraria* (Gourds)
- *Luffa spp.*

2. Pest scope

- 2.1. The pests in scope are the primary seed transmitted pathogens in *cucurbits* and listed in Table 1a-g.
- 2.2. For pests which shall require a seed health test, sampling shall be carried out as described in Table 1a-g and following a procedure as described in Annex E.

3. Hygiene measures

3.1. Nursery

In case seedlings are produced in a nursery the following requirements shall be met:

- 3.1.1. DPP seeds shall be sown physically separated or separated in time from non-DPP seeds from the same crop family, in such a way that cross infection is not possible and lot integrity is maintained. Criteria related to maintaining DPP lot integrity in the sowing phase shall be documented.
- 3.1.2. DPP seedlings shall be raised physically separated from non-DPP material from the same crop family, in such a way that cross infection is not possible. Criteria related to maintaining DPP lot integrity in the nursery phase shall be documented.
- 3.1.3. Materials/equipment used for sowing shall be cleaned and free from (non-DPP) seeds, plant remains and adhering soil and substrate before being used for sowing DPP seeds. The method to prevent contamination via these pathways shall be documented.
- 3.1.4. Contact between potentially contaminated clothing and DPP-plants shall be prevented. E.g. before entering the nursery, clothes are changed into dedicated site clothes or own clothes are covered in such a way that contact between plants and uncontrolled clothing is prevented. The participant shall document nursery hygiene measures.
- 3.1.5. Hands and feet hygiene measures shall be in place before entering the nursery and between handling non-DPP crops and DPP crops. The related hygiene requirements shall be documented, including the disinfectant used and the frequency of refreshing.
 - 3.1.5.1. The disinfectant and working solution shall be documented, have a proven effectiveness and meet industry standards.

Annex A1 - DPP Crop Specific Requirements - Cucurbitaceae v2.2.1

- 3.1.6. In case of grafting: Rootstock seed or plants are DPP starting material and shall comply with the DPP Hygiene Standard. DPP status of scion and rootstock shall be recorded.
- 3.1.7. For seedling raising on growing medium, new or disinfected materials shall be used and documented. This applies for both the growing medium and the medium carrier (e.g. trays).
- 3.1.8. Growing medium shall be free from pests in scope.
- 3.1.9. A risk assessment shall be performed and recorded on the growing media and the medium carrier (e.g. trays) to identify relevant pathways for pests in scope.
- 3.1.10. All items mentioned in paragraphs 3.3., 3.5., 3.6., 3.7., 3.8., 3.10, 3.11 of this document also apply to nursery activities within DPP.

3.2. Growing medium use during seed production

- 3.2.1. A risk assessment shall be performed and recorded on the growing media to identify relevant pathways for pests in scope.
- 3.2.2. It is recommended to have minimally three crop cycles crop rotation out of same crop family or fallow should be practiced for all growing media when substrate or soil disinfection is not applied. Rotation history shall be recorded.
 - 3.2.2.1. In case of substrate as growing medium it is recommended to renew or disinfect the growing medium annually against pests in scope. Renewal or disinfection shall be recorded.
- 3.2.3. If the growing medium is disinfected, recommended processes should be used for which the effectivity of the disinfection and application shall be demonstrable, proven or generally accepted.
- 3.2.4. When growing medium is soil, procedures to limit movement of soil between fields prior to planting or sowing should be in place.
- 3.2.5. When transportation of equipment takes place a participant should have documentation of their method to clean equipment from adhering soil and crop remains.

3.3. Water use

- 3.3.1. For each site a risk assessment shall be performed and recorded on water used, to identify relevant pathways for pests in scope.

3.4. Isolation

- 3.4.1. DPP fields shall be separated from non-DPP fields (such as kitchen gardens) containing plants from the same crop family) physically (net/plastic/greenhouse), border crop of a non-host family or spatially to avoid direct contact between crops of the same family. Proof of implementation shall be observable.
- 3.4.2. Physical contact of crop plants with products of plants of the same plant family from outside the DPP controlled area shall be avoided. Consumption of plant products of the same crop family within a DPP field is not allowed.

3.5. Weed Management

- 3.5.1. For each site a risk assessment shall be performed and recorded on weed as a pathway for DPP pests in scope.
- 3.5.2. Weed management process shall be documented.

3.6. Insect management

- 3.6.1. For each site a risk assessment shall be performed and recorded on insects as a pathway for DPP pests in scope.
- 3.6.2. Insect management process shall be documented.

3.7. Crop protection measures

- 3.7.1. Biological or conventional pest control can be applied during plant raising and seed production.
- 3.7.2. Crop protection measures shall be recorded for at least the DPP pests in scope.
 - 3.7.2.1. Minimally: active ingredient, application rate and application date.

3.8. Access restrictions

- 3.8.1. For each site a risk assessment shall be performed and recorded on people as a pathway for pests in scope. The requirements for field visits shall be documented.
- 3.8.2. Authorized visitors shall be briefed in required hygiene measures or accompanied by company staff to ensure that the right hygiene precautions are taken.
- 3.8.3. Visitor vehicles shall not be allowed to drive into the crop.
- 3.8.4. Visitors shall not touch the crop unless specifically required for their activity.
- 3.8.5. A visit to a nursery is recommended to precede a field visit, when both are visited the same day or necessary hygiene measures shall be taken.
- 3.8.6. Field visits should be arranged based on level of risk, starting from low to high risk.

3.9. Contact risk

- 3.9.1. For each site a risk assessment shall be performed and recorded on physical contact as a pathway for DPP pests in scope.
- 3.9.2. Hygienic measures shall be documented for hands and feet or footwear before entering the crop. This is required for all people, including grower.
 - 3.9.2.1. Instead of disinfecting feet or footwear, people can cover shoes or change to dedicated site footwear.
- 3.9.3. The effectivity of the disinfectant and working solution shall be documented, have a proven effectiveness and meet industry standards.
- 3.9.4. A process to determine, proof or control effectivity and availability of the disinfectant shall be present.

3.10 Disease scouting

- 3.10.1. The participant shall document their scouting methods. Disease scouting shall be performed according to the methods described in Annex G Scouting methods.
- 3.10.2. All DPP pests in scope shall be included in disease scouting.
- 3.10.3. Disease scouting shall be performed and recorded at least before transplanting, before pollination, during first fruit setting (approximately 2 weeks after finalising pollination) and before harvesting.

3.11. Mitigation measures in case of symptomatic plants

- 3.11.1. The participant shall document their method to manage potential outbreaks.
- 3.11.2. In case the scout observes symptomatic plants that do not match known pests and cannot identify the pest, follow up actions shall be determined to diagnose the symptoms, resulting in a final conclusion on these symptomatic plants.
 - 3.11.2.1. These follow up actions shall be recorded.
- 3.11.3. If the scout observes symptomatic plants of DPP pests in scope, the Participant shall take reasonable mitigation measures to limit the impact and to prevent spreading. The minimum measures are to:
 - Mark and/or isolate the suspected plant(s)
 - Identify the pest in scope
 - Restrict access to the suspected area
 - Adapt working method in the suspected area
 - Document observation with photos of suspected plant(s)
 - Sample suspected plant(s) and confirm diagnosis by (laboratory) testing
- 3.11.4. If the confirmation testing results in a negative result, the Participant can discontinue the mitigation measures.
- 3.11.5. If the confirmation testing returns a positive result for a pest in scope, the Participant shall:
 - Safely remove and dispose of diseased plant material in such a way that further spread of the pathogen is prevented
 - After removal and disposal of diseased plants, disinfect hands and tools before handling healthy plants
 - Sanitize the contaminated area in such a way that further spread of the pathogen is prevented
 - Increase disease scouting in the nearby area and record this activity.

3.12. Harvest / Extraction

- 3.12.1. For each site a risk assessment shall be performed and recorded on harvest and seed extraction processes to identify pathways for DPP pests in scope. The participant shall document hygiene measures for all harvest and extraction requirements described in section 3.12 (Harvest/Extraction).
- 3.12.2. Fruits shall be inspected before harvest. Symptomatic fruits and plants shall be taken out and not used for seed harvest.
 - 3.12.2.1. Exception: this requirement does not apply to open field cucumber seed crops due to impossibility to perform this in a reasonable manner
- 3.12.3. It is recommended to use safe water for the seed extraction process
- 3.12.4. A process shall be in place to clean equipment from crop remains, prevent cross contamination and unintentional mixing of lots.
- 3.12.5. If preventive seed treatment during seed extraction is required by the Seed Company, the treatment and working solutions shall be documented, have a proven effectiveness and meet industry standards (Annex H.).
- 3.12.6. For seed storage new or disinfected bags/bins shall be used. In case of disinfected bags/bins, the effectivity of the disinfectant and working solution shall be demonstrable or proven by literature.
- 3.12.7. If fermentation extract is used it shall originate from a previous DPP crop or records must be available to prove that it has been tested and found free from DPP pests in scope.

Annex A1 - DPP Crop Specific Requirements - Cucurbitaceae v2.2.1

- 3.12.8. For seed drying a process shall be in place that describes how contamination of DPP seeds with pests in scope is prevented.

Pest in scope overview

Table 1a-1g. Pests in scope overview

Table 1a Pests in scope – *Citrus lanatus*

	Commercial Size Seed Lots		Small Seed Lots		
Pest	Infection rate to be detected (95% confidence)	Minimum sample size	Minimum Sample Size based on nr of mother plants (seeds from fruits)	Minimum Sample Size based on % of original lot size	Maximum Sample Size
Bacterial Fruit Blotch (BFB): <i>Acidovorax citrulli</i>	0.03%	10,000	Nr seeds is 5 x nr of mother plants	5%	10,000
CGMMV: Cucumber Green Mottle Mosaic Virus	0.15%	2,000	Nr seeds is 2 x nr of mother plants	5%	2,000

Table 1b Pests in scope – *Cucumis sativus*

	Commercial Size Seed Lots		Small Seed Lots		
Pest	Infection rate to be detected (95% confidence)	Minimum sample size	Minimum Sample Size based on nr of mother plants (seeds from fruits)	Minimum Sample Size based on % of original lot size	Maximum Sample Size
CGMMV: Cucumber Green Mottle Mosaic Virus	0.15%	2,000	Nr seeds is 2 x nr of mother plants	5%	2,000

Table 1c. Pests in scope - *Cucumis melo*

	Commercial Size Seed Lots		Small Seed Lots		
Pest	Infection rate to be detected (95% confidence)	Minimum sample size	Minimum Sample Size based on nr of mother plants (seeds from fruits)	Minimum Sample Size based on % of original lot size	Maximum Sample Size
Bacterial Fruit Blotch (BFB): <i>Acidovorax citrulli</i>	0.03%	10,000	Nr seeds is 5 x nr of mother plants	5%	10,000
CGMMV: Cucumber Green Mottle Mosaic Virus	0.15%	2,000	Nr seeds is 2 x nr of mother plants	5%	2,000
SQMV: Squash Mosaic Virus	0.15%	2,000	Nr seeds is 2 x nr of mother plants	5%	2,000
MNSV: Melon Necrotic Spot Virus	0.15%	2,000	Nr seeds is 2 x nr of mother plants	5%	2,000

Annex A1 - DPP Crop Specific Requirements - Cucurbitaceae v2.2.1

Table 1d. Pests in scope - *Cucurbita* spp (*pepo*, *ficifolia*, *moschata*, *maxima*).

	Commercial Size Seed Lots		Small Seed Lots		
Pest	Infection rate to be detected (95% confidence)	Minimum sample size	Minimum Sample Size based on nr of mother plants (seeds from fruits)	Minimum Sample Size based on % of original lot size	Maximum Sample Size
Bacterial Fruit Blotch (BFB): <i>Acidovorax citrulli</i>	0.03%	10,000	Nr seeds is 5 x nr of mother plants	5%	10,000
<i>Pseudomonas syringae</i> subsp 'pepo' ¹	0.3%	1,000	Nr seeds is 2 x nr of mother plants	5%	1000
CGMMV: Cucumber Green Mottle Mosaic Virus	0.15%	2,000	Nr seeds is 2 x nr of mother plants	5%	2000
SQMV: Squash Mosaic Virus	0.15%	2,000	Nr seeds is 2 x nr of mother plants	5%	2000

Annex A1 - DPP Crop Specific Requirements - Cucurbitaceae v2.2.1

Table 1e. Pests in scope - *Momordica charantia*

	Commercial Size Seed Lots		Small Seed Lots		
Pest	Infection rate to be detected (95% confidence)	Minimum sample size	Minimum Sample Size based on nr of mother plants (seeds from fruits)	Minimum Sample Size based on % of original lot size	Maximum Sample Size
CGMMV: Cucumber Green Mottle Mosaic Virus	0.15%	2,000	Nr seeds is 2 x nr of mother plants	5%	2,000
SQMV: Squash Mosaic Virus	0.15%	2,000	Nr seeds is 2 x nr of mother plants	5%	2,000

Table 1f. Pests in scope - *Lagenaria siceraria* (gourds)

	Commercial Size Seed Lots		Small Seed Lots		
Pest	Infection rate to be detected (95% confidence)	Minimum sample size	Minimum Sample Size based on nr of mother plants (seeds from fruits)	Minimum Sample Size based on % of original lot size	Maximum Sample Size
CGMMV: Cucumber Green Mottle Mosaic Virus	0.15%	2,000	Nr seeds is 2 x nr of mother plants	5%	2,000
MNSV: Melon Necrotic Spot Virus	0.15%	2,000	Nr seeds is 2 x nr of mother plants	5%	2,000

Table 1g. Pests in scope - *Luffa* spp

	Commercial Size Seed Lots		Small Seed Lots		
Pest	Infection rate to be detected (95% confidence)	Minimum sample size	Minimum Sample Size based on nr of mother plants (seeds from fruits)	Minimum Sample Size based on % of original lot size	Maximum Sample Size
CGMMV: Cucumber Green Mottle Mosaic Virus	0.15%	2,000	Nr seeds is 2 x nr of mother plants	5%	2,000

Revision history

Version 2.2.1 (Oct 2026)

- Updated footer to reflect use of document on the website.

Version 2.2 (Apr 2026)

- 3.7.2.1 Added “application rate”
- 3.12.2 Added “and plants”

Version 2.1 (Sept 2025) compared to version 2.0 (July 2024)

- 3.1.1 Added “Criteria related to maintaining DPP lot integrity in the sowing phase shall be documented”.
- 3.1.2 Added “Criteria related to maintaining DPP lot integrity in the nursery phase shall be documented”.
- 3.1.3 Added “The method to prevent contamination via these pathways shall be documented”
- 3.1.4 Added “The participant shall document nursery hygiene measures”.
- 3.1.5 Added The related hygiene requirement shall be documented, including the disinfectant used and the frequency of refreshing”.
- Replaced “must” with “shall” throughout.
- 3.1.5.1 Added “shall be documented”
- Replaced “General and Crop Specific Requirements” with “DPP Hygiene Standard” throughout.
- 3.1.6 Added DPP status of scion and rootstock shall be recorded.
- 3.1.7 Added “and documented”
- 3.1.9 Added “and recorded”
- 3.2.1 Added “and recorded”
- 3.2.2 Added Rotation history shall be recorded.
- 3.2.2.1 Added “Renewal or disinfection shall be recorded”
- 3.2.5 Replaced “procedure should be in place to clean” with “participant should have documentation of their method to clean”.
- 3.3.1 Replaced “must be carried out” with “shall be performed and recorded”.
- 3.4.1 Added “Proof of implementation shall be observable”.
- 3.5.1 Added “performed and recorded”
- 3.6.1 Added “performed and recorded”
- 3.8.1 Added “performed and recorded” and “The requirements for field visits shall be documented”.
- 3.9.1 Added “performed and recorded”
- 3.9.2 Replaced “in place” with “documented”
- 3.9.3 Replaced “must” with “shall be documented”
- 3.10.1 Added “The participant shall document their scouting methods”.
- 3.10.3 Added “and recorded”
- Added 3.11.1 “The participant shall document their method to manage potential outbreaks”.
- 3.11.5 Added “and record this activity”
- 3.12.1 Replaced “must be carried out” with “shall be performed and recorded” and added “The participant shall document hygiene measures for all harvest and extraction requirements described in section 3.12 (Harvest/Extraction).
- 3.12.5 Added “shall be documented”
- 3.12.7 Added “records must be available to prove that it has been”