

POSSIBILITIES FOR EXTRAPOLATION OF EFFICACY AND
PHYTOTOXICITY OF PLANT PROTECTION PRODUCTS FOR
ORNAMENTAL CROPS

Version 1.2

Handled by : Netherlands Food and Consumer Product Safety Authority
Division Tactical Direction & Expertise
Department of Expertise
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PREFACE

The current extrapolation document is based on knowledge and experience gained from previous efficacy and crop safety research, based on expert judgement. It provides insight into which extrapolations are possible from specific pest/crop combinations. It is a working document that has been regularly updated between 1999 and 2014 for pests or diseases, crops and extrapolation possibilities.

In the new structure of the extrapolation document, the extrapolation possibilities are approached in a different way. For each pest or disease group, the most prevalent pests or diseases in ornamental crops are listed. The most important test organisms and test crops for efficacy have been listed with the associated extrapolation possibilities within the crop group. Wherever possible, extrapolation possibilities from other crop groups have also been specified. For phytotoxicity, the test crops and extrapolation possibilities are shown.

In version 1.0, specific pests and diseases, or groups of pests and diseases, for one of the underlying crop groups (such as fire blight in flower bulbs) were not included in the extrapolation document for ornamentals. These have been added in version 1.1.

In version 1.2 the document was updated so that crop names are now based on version 2.2 of the DTG¹ list.

1 Definition list, scope of permitted use plant protection products (version 2.2, Ctgb June 2019)

Contents

PREFACE.....	2
1 GENERAL INTRODUCTION	5
2 READER'S GUIDE	6
EXTRAPOLATION TABLES for EFFICACY OF NEMATOCIDES	8
Nematodes (soil treatment - soil and stem nematodes; crop treatment - foliar nematodes)	8
EXTRAPOLATION TABLES for EFFICACY of FUNGICIDES	9
Leaf spot diseases (crop treatment).....	9
Grey mould (<i>Botrytis</i> rot) (crop treatment)	9
Seedling diseases/stem rot and root rot (soil treatment, irrigation treatment, drip treatment).....	11
Powdery mildew (crop treatment).....	11
Downy mildew (crop treatment).....	12
Rust (crop treatment).....	12
EXTRAPOLATION TABLE for EFFICACY of FUNGICIDES (SPECIFIC CROP PESTS OR -DISEASES).....	13
Botrytis (crop treatment)	13
Fusarium (bulb or tuber treatment) 1).....	13
Sclerotinia blight (crop treatment).....	14
Rhizoctonia spp. (soil treatment)	14
Rhizoctonia solani (bulb or tuber treatment).....	14
EXTRAPOLATION TABLE for EFFICACY of INSECTICIDES	15
Aphids - sucking damage (crop treatment).....	15
Mites, spider mites (larva and adult) (crop treatment)	15
Caterpillars (crop treatment)	16
Thrips (crop treatment).....	16
Mealybugs and scale insects ((Pseudo)coccidae) (larva and imago) (crop treatment)	17
Vine weevils and leaf-eating weevils (soil treatment for larva; crop treatment for adults).....	17
Whitefly (larva and adult) (crop treatment).....	18
EXTRAPOLATION TABLES for EFFICACY of INSECTICIDES (SPECIFIC CROP PESTS OR -DISEASES).....	19
Aphids (virus transmission) (crop treatment)	19
Bulb mites and tulip gall mites (bulb or tuber treatment)	19
Bulb and rust mites (crop treatment)	20
Echinothrips (larva and adult) (crop treatment)	20
Leafminers (larva) (crop treatment).....	20
True bugs (crop treatment)	20
EXTRAPOLATION TABLES for EFFICACY of HERBICIDES	21

EXTRAPOLATION TABLES for PHYTOTOXICITY.....	22
FUNGICIDES, INSECTICIDES, ACARICIDES AND NEMATICIDES.....	22
HERBICIDES.....	23

1 GENERAL INTRODUCTION

Motivation and objective

The Geurts motion of 18 December 2014 called for 'development of a wider-meshed authorisation system for ornamental crops aimed at the great diversity in the floriculture sectors'. In a letter to the Lower House of Parliament¹ of the Netherlands, the State Secretary of the Ministry of Infrastructure and the Environment at that time (Sharon Dijksma) pledged that the Ctgb, in anticipation of European harmonisation, would consider whether the extrapolation possibilities for ornamental crops could be expanded. The Ctgb then requested the Netherlands Food and Consumer Product Safety Authority to develop a new extrapolation document. This new extrapolation document is more compatible with the layout of the DTG list and the EPPO extrapolation tables for minor uses. The advantage of the latter is that consultation with other Member States can be started with the aim of replacing the case-by-case approach that is currently used in practice with a harmonised method for the EU.

The objective is to develop a 'coarse-mesh' authorisation system for ornamental crops based on an extrapolation document.

Scope

The extrapolation possibilities for the efficacy and phytotoxicity of plant protection products for controlling nematodes, insects/mites, fungi and weeds in ornamental crops² have been identified. The most important test organisms and test crops for efficacy are listed for each pest or disease (or group of pests or diseases), and the corresponding extrapolation possibilities within the ornamental crops group are shown. The extrapolation possibilities from other crop groups are also shown. For phytotoxicity, the test crops and extrapolation possibilities are shown.

The document was initially drawn up for the Netherlands, but where possible the structure is the same as the existing EPPO extrapolation tables for minor uses.

In this extrapolation document no guidelines are given for the number of tests to be carried out or how the tests must be carried out. For this information, please refer to the relevant EPPO guidelines.

¹ Lower House of Parliament, 2014-2015, 27 858, letter no. 323

² Flower bulb and flower tuber crops, floriculture crops, tree nursery crops, perennial plant cultivation, flower seed cultivation, swamp and aquatic plants and plant breeding crops and seed production

2 READER'S GUIDE

The extrapolation tables describe the possibilities for extrapolation of efficacy and phytotoxicity for the ornamental sector. Both the extrapolation possibilities within the crop group and the use of efficacy data outside this crop group to support or replace the substantiation of the efficacy in ornamental crops are described.

A general condition for extrapolation is that it concerns the same product and a similar use of the product (dosage of active substance, method of application, application time and frequency, etc.). In addition, aspects such as the characteristics of the product (systemic or not, preventive or curative effect, specific or broad-spectrum), the cultivation method and cultivation conditions of the crops (protected versus unprotected) and soil type (in case it is known that this affects the efficacy) should be taken into consideration. Any specific conditions for extrapolation are indicated in the individual tables.

In the extrapolation tables, both the scientific name (including EPPO code) and common name are indicated as far as possible for pests, diseases and crops. In addition, in columns 3 and 4 it is indicated whether the study/extrapolation concerns protected (G, greenhouse) or unprotected culture (F, field). If no specification is stated, it concerns both protected and unprotected culture.

Efficacy

In column 1 the most important test organisms for ornamental crops are listed (the list is not exhaustive). Column 2 lists the corresponding pest or disease group. An underlined test organism is an essential test organism within the relevant group. Based on the results when used against these underlined test organisms, extrapolation is possible to the entire pest or disease group (column 2). If several underlined test organisms are listed for a pest or disease group, then research involving all the underlined test organisms is required before extrapolation to the total group is possible. If there are no underlined test organisms in the specific pest or disease group, then efficacy must be demonstrated against several of the test organisms listed in column 1 before extrapolation is possible to the entire pest or disease group (conditions are listed in column 2).

Column 3 lists the test crops for the pest or disease group that corresponds with a crop group. Depending on the pest or disease, the research must be carried out on a single crop or multiple crops. Crops separated by 'AND' must be tested in any case. If they are separated by a comma, a choice can be made between the various test crops that are listed. Based on the results in the test crops, extrapolation is possible to the entire crop group (or groups) listed in column 4. If correctly substantiated, other test organisms and test crops can also be chosen.

Column 5 indicates which data (crop-pest or crop-disease combinations) outside the ornamental crop sector can support or replace an efficacy claim. If an asterisk (*) is placed behind the crop, this means that data in these crops can replace data from ornamental crops

Pest or disease		Crop: within the ornamental crops group		Crop: outside the group ornamental crops
1 Test organism	2 Pest or disease group	3 Test crops (Protected, Unprotected)	4 Extrapolation to other crops	5 Data from these crops can support the test crop (no data* or less data)

Phytotoxicity

Nematicides, fungicides, acaricides and insecticides do not require separate phytotoxicity data (for similar applications) unless there are indications of phytotoxicity in the efficacy tests or in formulation of the product. In case of such indications, separate phytotoxicity data must be submitted. Separate phytotoxicity data must always be submitted for herbicides.

Column 1 lists the critical crops within the ornamental crops group. If no phytotoxicity is observed in three different critical crops, extrapolation to the entire floriculture crops group (column 2) is possible.

Column 3 indicates which data (crops) outside the ornamental crops group can support or replace the assessment of harmful effects in ornamentals.

The crop assortment in ornamental crops is enormous. As a result, it cannot be said with certainty that if a product does not cause damage to the tested crops, there will be no damage in different crop or different cultivar of the same crop. When in doubt for ornamental crops, it is advisable to always include a warning message on the label that the operator should perform a test treatment to determine the tolerance for the plant protection product.

In general, crops in protected culture are more sensitive to phytotoxicity than crops in unprotected culture. If the use in protected culture is also claimed, then the efficacy test should also be conducted in protected culture; this enables extrapolation to the use in unprotected culture.

EXTRAPOLATION TABLES for EFFICACY OF NEMATICIDES

Nematodes (soil treatment - soil and stem nematodes; crop treatment - foliar nematodes)

Pest or disease		Crop: within the ornamental crops group		Crop: outside the ornamental crops group
1 Test organism	2 Pest or disease group	3 Test crops (Protected, Unprotected)	4 Extrapolation to other crops	5 Data from these crops can support the test crop (no data* or less data)
<i>Pratylenchus penetrans</i> PRATPE (Root-lesion nematodes)	Soil nematodes ^{a)}	Narcissus NARSS (F), Lily LILSS (F), Rose ROSSS (F or G),	Ornamental crops ^{b)}	Potato SOLTU*, carrot DAUCS*, strawberry FRAAN*
<i>Trichodorus</i> spp. TRIHSP (free-living root-lesion)		Tulip TULSS (F), Gladiolus GLASS (F)		Potato SOLTU*, carrot DAUCS*, onion ALLCE*, leek ALLPO*
<i>Meloidogyne</i> spp. MELGSP (root-knot nematodes)		Perennial plant (F) (excluding Hemerocallis) Bouvardia BVAHY (G)		Potato SOLTU*, carrot DAUCS*, strawberry FRAAN*, tomato LYPES*, cucumber CUMSA*, melon CUMME*
<i>Ditylenchus dipsaci</i> DITYDI (stem nematodes)	<i>Ditylenchus</i> spp. DITYSP (stem nematodes)	Tulip (F), Narcissus NARSS (F),	Ornamental crops ^{b)}	Carrot DAUCS*, onion ALLCE*, broad beans VICFX, garlic ALLSA, alfalfa MEDSA
<i>Aphelenchoides fragariae</i> (APLOFR) (strawberry leaf nematode) <i>Aphelenchoides ritzemabosi</i> (APLORI) (chrysanthemum leaf)	<i>Aphelenchoides</i> spp. APLOSP (foliar nematodes)	Chrysanthemum DDMJA (G), Nephrolepis NEHSS (G), Anemone ANMSS (F), Peony PAOMA (F)	Ornamental crops	Strawberry FRAAN

a) Root-knot, root-lesion and free-living root-lesion nematodes. Cyst nematodes are of little importance in Dutch ornamentals.

b) On comparable cultivation media (extrapolation from soil-bound culture to artificial substrate is not possible).

EXTRAPOLATION TABLES for EFFICACY of FUNGICIDES

Leaf spot diseases (crop treatment)

Pest or disease		Crop: within the ornamentals crops group		Crop: outside the ornamental crops group
1 Test organism	2 Pest or disease group	3 Test crops (Protected, Unprotected)	4 Extrapolation to other crops	5 Data from these crops can support the test crop (no data* or less data)
<i>Colletotrichum</i> spp. COLLSP	All leaf spot diseases ONLY when efficacy is shown against 3 separate species	Lupin LUPSS (F)	Ornamental crops (F)	Spinach SPQOL, tomato LYPES, <i>Cucurbitaceae</i> 1CUCF, lettuce LACSS
<i>Phoma viburni</i> PHOMEV		<i>Viburnum</i> VIBSS (F), <i>Clematis</i> CLVSS (F)		
<i>Septoria</i> spp. SEPTSP		<i>Hebe</i> HBESS (F), <i>Veronica</i> VERSP (F)		Arable crops and vegetable crops*
<i>Cylindrocladium buxicola</i> CYLDBU		<i>Buxus</i> 1BUXG (F)		
<i>Pestalotiopsis funerea</i> PESPFU (black root disease)		Conifer 1CUPF, TAXSS (F)		

Grey mould (*Botrytis* rot) (crop treatment)

Pest or disease		Crop: within the ornamental crops group		Crop: outside the ornamental crops group
1 Test organism	2 Pest or disease group	3 Test crops (Protected, Unprotected)	4 Extrapolation to other crops	5 Data from these crops can support the test crop (no data* or less data)

<p><i>Botryotinia fuckeliana</i> BOTRCI (grey mould)</p>	<p><i>Botryotinia</i> sp. BOTTSP</p>	<p>Cut flowers (G): <i>Lisianthus</i> EVMGR, <i>Gerbera</i> GEBSS, Rose ROSSS, <i>Chrysanthemum</i> DDMJA</p> <p>Pot plants (G): <i>Pelargonium</i> PELSS, <i>Cyclamen</i> CYZSS, <i>Begonia</i> BEGSS, <i>Saintpaulia</i> SNPI, <i>Exacum affine</i> EXUAF</p>	<p>Ornamental crops ONLY if studies have been conducted in two separate test crops</p>	<p>Strawberry FRAAN (F)*, lettuce LACSS*, pulses*, grapes VITVI</p>
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Seedling diseases/stem rot and root rot (soil treatment, irrigation treatment, drip treatment)

Pest or disease		Crop: Ornamentals		Crops outside ornamental crop group
1 Test organism	2 Pest or disease group	3 Test crops (Protected, Unprotected)	4 Extrapolation to other crops	5 Data from these crops can support the test crop (no data* or less data)
<i>Pythium</i> sp. PYTHSP	Seedling diseases/ stem rot and root rot	<i>Dianthus</i> DINSS (G) <i>Chrysanthemum</i> CHYHO (G), Hyacinth HYASS (F), Tulip TULSS	Ornamental crops	Lettuce LACSA*, cucumber CUMSA, Melon CUMME*, tomato LYPES, beans PHSSS*
<i>Thanatephorus cucumeris</i> (= <i>Rhizoctonia solani</i>) RHIZSO		<i>Saintpaulia</i> SNPIO (G), <i>Begonia</i> BEGSS (G), <i>Kalanchoe</i> KANBH (G)		Potato SOLTU, lettuce LACSA, <i>Cucurbitaceae</i> 1CUCF (in soil), brassica vegetables, <i>Fabaceae</i> 1LEGF, strawberry FRAAN
<i>Phytophthora cinnamomi</i> PHYTCN		<i>Chamaecyparis</i> CHCSS (F)		

Powdery mildew (crop treatment)

Pest or disease		Crop: Ornamentals		Crops outside ornamental crop group
1 Test organism	2 Pest or disease group	3 Test crops (Protected, Unprotected)	4 Extrapolation to other crops	5 Data from these crops can support the test crop (no data* or less data)
<i>Sphaerotheca pannosa</i> SPHRPA	Powdery mildew ONLY when efficacy is shown against two separate species of powdery mildew	Rose ROSSS,	Ornamental crops	Strawberry FRAAN*, cucumber CUMSA*,
<i>Microsphaera alphitoides</i> MCRSAL		<i>Quercus robur</i> QUERO Oak (F)		
<i>Oidium</i> spp. OIDISP		<i>Saintpaulia</i> SNPIO (G), <i>Pot chrysanthemum</i> CHYHO (G)		

Downy mildew (crop treatment)

Pest or		Crop: Floriculture		Crops outside floriculture crop group
1 Test organism	2 Pest or disease group	3 Test crops (Protected, Unprotected)	4 Extrapolation to other crops	5 Data from these crops can support the test crop (no data* or less data)
<i>Peronospora chlorae</i> PEROCL <i>Peronospora sparsa</i> PSPE SR <i>Plasmopara obducens</i> PLASOB	Downy mildew	<i>Lisianthus</i> EVMGR (G), <i>Alyssum</i> AYSSS, Rose ROSSS, <i>Impatiens</i> 1IPAG	Ornamental crops	Onion ALLCE

Rust (crop treatment)

Pest or		Crop: Floriculture		Crops outside floriculture crop group
1 Test organism	2 Pest or disease group	3 Test crops (Protected, Unprotected)	4 Extrapolation to other crops	5 Data from these crops can support the test crop (no data* or less data)
<i>Puccinia horiana</i> PUCCHN (Chrysanthemum white rust)	Rust ONLY when efficacy is shown against 2 separate rust species	<i>Chrysanthemum</i> CHYHO (G)	Ornamental crops	Field-grown vegetables
<i>Melampsora caprearum</i> MELMCP <i>Melampsora hypericorum</i> MELMHY		<i>Salix</i> SAXSS, <i>Larix</i> LAXSS, <i>Hypericum</i> HYPSP		

EXTRAPOLATION TABLE for EFFICACY of FUNGICIDES (SPECIFIC CROP PESTS OR -DISEASES)

Botrytis (crop treatment)

Pest or disease		Crop: Flower bulb and flower tuber crops		Crops outside the flower bulb/flower tuber group
1 Test organism	2 Pest or disease group	3 Test crops (Protected, Unprotected)	4 Extrapolation to other crops	5 Data from these crops can support the test crop (no data* or less data)
<i>Botrytis tulipae</i> BOTRTU	<i>Botrytis</i> spp. BOTRSP ONLY when efficacy is shown against both <i>Botrytis</i> species	Tulip TULSS	Flower bulbs ONLY when studies have been conducted in tulip AND lily OR tulip AND gladiolus	Ornamentals
<i>Botrytis elliptica</i> BOTREL		Lily (Asian OR longiflorum) LILAH, LILLO		
<i>Sclerotinia draytonii</i> SCLEDR (fire blight)		Gladiolus GLASS		

Fusarium (bulb or tuber treatment) 1)

Pest or disease		Crop: Flower bulb and flower tuber crops		Crops outside the flower bulb/flower tuber group
1 Test organism	2 Pest or disease group	3 Test crops (Protected, Unprotected)	4 Extrapolation to other crops	5 Data from these crops can support the test crop (no data* or less data)
<i>Fusarium oxysporum</i> f.sp. <i>tulipae</i> FUSATU	All <i>Fusarium</i> spp. FUSASP	Tulip TULSS	Flower bulb/flower tuber crops and bulb flower/tuber flower crops	Potato SOLTU, onion ALLCE, ornamentals

1) Hot water treatment can affect the efficacy of products. If hot water treatment is the standard procedure with a crop (for example with narcissus), it must be shown that this does not affect the efficacy of the product.

Sclerotinia blight (crop treatment)

Pest or disease		Crop: Floriculture crops, tree nursery crops and perennial plants		Crops outside floriculture crop group
1 Test organism	2 Pest or disease group	3 Test crops (Protected, Unprotected)	4 Extrapolation to other crops	5 Data from these crops can support the test crop (no data* or less data)
<i>Sclerotinia sclerotiorum</i> SCLESC (sclerotinia blight)	<i>Sclerotinia</i> spp. SCLESP	<i>Skimmia</i> SKMSS	Floriculture crops, tree nursery crops and perennial plants	Lettuce LACSA, melon CUMME, cucumber CUMSC, beans 1LEGF, oilseed rape BRSNN, common sunflower HELAN, carrots DAUCA

Rhizoctonia spp. (soil treatment)

Pest or		Crop: Flower bulb and flower tuber crops		Crops outside floriculture crop group
1 Test organism	2 Pest or disease group	3 Test crops (Protected, Unprotected)	4 Extrapolation to other crops	5 Data from these crops can support the test crop (no data* or less data)
<i>Rhizoctonia tuliparum</i> SCLOTU (grey bulb-rot)	<i>Rhizoctonia tuliparum</i> SCLOTU and <i>Rhizoctonia solani</i> RHIZSO	Tulip TULSS (F),	Flower bulb/flower tuber crops (F)	
<i>Rhizoctonia solani</i> RHIZSO (Rhizoctonia disease)		Lily LILSS (F),	Flower bulb/flower tuber crops (F)	Potato SOLTU*, lettuce LACSA, <i>Cucurbitaceae</i> 1CUCF (in soil), brassica vegetables 1CRUF, beet BEAVD, <i>Fabaceae</i> 1LEGF, strawberry FRASS

Rhizoctonia solani (bulb or tuber treatment)

Pest or disease		Crop: Ornamentals		Crops outside floriculture crop group
1 Test organism	2 Pest or disease group	3 Test crops (Protected, Unprotected)	4 Extrapolation to other crops	5 Data from these crops can support the test crop (no data* or less data)
<i>Rhizoctonia solani</i> RHIZSO (Rhizoctonia disease)		Lily LILSS (F), Tulip TULSS (F),	Flower bulb/flower tuber crops (F)	Potato SOLTU

EXTRAPOLATION TABEL for EFFICACY of INSECTICIDES

Aphids - sucking damage (crop treatment)

Pest or disease		Crop: Ornamentals		Crops outside ornamental crops group
1 Test organism	2 Pest or disease group	3 Test crops (Protected, Unprotected)	4 Extrapolation to other crops	5 Data from these crops can support the test crop (no data* or less data)
<i>Aphis gossypii</i> APHIGO (Cotton aphid) <i>Myzus persicae</i> MYZUPE (green peach aphid) <i>Macrosiphum euphorbiae</i> MACSEU (potato aphid) <i>Aphis fabae</i> APHIFA (Black bean aphid)	Aphids with the exception of <i>Phyllaphis fagi</i> PHYAFA wooly beech aphid	<i>Chrysanthemum</i> DDMJA (G), <i>Hibiscus</i> HIBSY (P or F), <i>Rose</i> ROSS (P or F)	ornamental crops ONLY when half of the research in unprotected cultured crops	Cucumber CUMSC* (G), Tomato (G) LYPES*, <i>Phaseolus</i> sp. PHSSS, <i>Vicia</i> sp. VICSS (F), lettuce LACSS

Mites, spider mites (larva and adult) (crop treatment)

Pest or disease		Crop: Ornamentals		Crops outside ornamental crops group
1 Test organism	2 Pest or disease group	3 Test crops (Protected, Unprotected)	4 Extrapolation to other crops	5 Data from these crops can support the test crop (no data* or less data)
<i>Tetranychus urticae</i> TETRUR (red spider mite)	<i>Tetranychus</i> sp. TETRSP	Rose ROSS (G), <i>Chrysanthemum</i> CHYHO (G), <i>Dianthus</i> DINSS (G) <i>Ficus</i> FIUSS (G), <i>Hibiscus</i> HIBSY (G), <i>Hedera</i> HEESS (G)	ornamental crops	Cucumber CUMSC* (G), Tomato LYPES* (G), beans PHSSS* (G)

Caterpillars (crop treatment)

Pest or disease		Crop: Ornamentals		Crops outside ornamentals crop group
1 Test organism	2 Pest or disease group	3 Test crops (Protected, Unprotected)	4 Extrapolation to other crops	5 Data from these crops can support the test crop (no data* or less data)
<i>Spodoptera exigua</i> LAPHEG Beet armyworm	Caterpillars (G)	Rose ROSSS (G), <i>Chrysanthemum</i> CHYHO (G)	Ornamental crops (G)	Lettuce LACSA,
<i>Chrysodeixis chalcites</i> (Tomato looper)				
<i>Orthosia</i> spp. ORTHOSP (clouded drab moths)	Free-living species of caterpillars	<i>Betula</i> BETSS, <i>Salix</i> SAXSS,	Ornamental crops (F)	Apple MABSD*, pear PYUCO*

Thrips (crop treatment)

Pest or disease		Crop: Ornamentals		Crops outside the ornamentals crop group
1 Test organism	2 Pest or disease group	3 Test crops (Protected, Unprotected)	4 Extrapolation to other crops	5 Data from these crops can support the test crop (no data* or less data)
<i>Frankliniella occidentalis</i> FRANOC (Western flower thrips) <i>Thrips tabaci</i> THRITB (Tobacco thrips) <i>Thrips fuscipennis</i> THRIFU	Thrips	<i>Chrysanthemum</i> CHYHO (G), <i>Saintpaulia</i> SNPIO (G), <i>cyclamen</i> CYZPE (G), Rose ROSS (F)	Ornamental crops	Sweet pepper CPSAN*, aubergine SOLME*, cucumber CUMSC*, French bean PHSSS* (G), strawberry FRAAN*, leek ALLPO*, onion ALLCE*, brassica vegetables BRSOL*

Mealybugs and scale insects ((Pseudo)coccidae) (larva and imago) (crop treatment)

Pest or disease		Crop: Ornamentals		Crops outside ornamental crops group
1 Test organism	2 Pest or disease group	3 Test crops (Protected, Unprotected)	4 Extrapolation to other crops	5 Data from these crops can support the test crop (no data* or less data)
<i>Pseudococcus citri</i> PSECCI (Citrus mealybug) <i>Pseudococcus maritimus</i> PSECM (Grape mealybug)	<i>Pseudococcus</i> sp. PSECSP	<i>Ficus</i> FIUSS (G), <i>Kalanchoe</i> KANBH (G), Rose ROSSS (G),	Ornamental crops (G)	Sweet pepper CPSAN*, tomato LYPES*
<i>Parthenolecanium corni</i> LECACO (European fruit lecanium)	<i>Coccoidea</i> 1CCOIF <i>Diaspididae</i> 1DIASF	<i>Prunus laurocerasus</i> PRNLR (F)	Ornamental crops (F)	Apple MABSD*, Pear PYUCO*

Vine weevils and leaf-eating weevils (soil treatment for larva; crop treatment for adults)

Pest or disease		Crop: Ornamentals		Crops outside ornamental crops group
1 Test organism	2 Pest or disease group	3 Test crops (Protected, Unprotected)	4 Extrapolation to other crops	5 Data from these crops can support the test crop (no data* or less data)
<i>Otiorhynchus sulcatus</i> OTIOSU (black vine weevil) (Larvae)	<i>Otiorhynchus</i> sp. OTIOSP larvae	<i>Taxus</i> TAXSS (F), <i>Astilbe</i> (F)	Ornamental crops	
<i>Otiorhynchus sulcatus</i> OTIOSU (black vine weevil) (Adults)	<i>Otiorhynchus</i> sp.OTIOSP adults and adults of leaf-eating weevils (<i>Phyllobius</i> sp. PLLBSP and <i>Polydrusus</i> sp. POLOSP)	<i>Taxus</i> TAXSS (F), <i>Euonymus</i> 1EUOG (F), <i>cyclamen</i> CYZSS (G)	Ornamental crops	Strawberry FRAAN*,

Whitefly (larva and adult) (crop treatment)

Pest or disease		Crop: Ornamentals		Crops outside Ornamentals crop group
1 Test organism	2 Pest or disease group	3 Test crops (Protected, Unprotected)	4 Extrapolation to other crops	5 Data from these crops can support the test crop (no data* or less data)
<i>Bemisia tabaci</i> BEMITA (silverleaf whitefly) <i>Trialeurodes</i> <i>vaporariorum</i> TRIAVA (Greenhouse whitefly)	Whitefly	<i>Poinsettia</i> EPHPU (G), <i>Gerbera</i> GEBSS (G), <i>Fuchsia</i> FUCSS (G)	Floriculture crops (G)	Aubergine SOLME*, tomato LYPES*, cucumber CUMSC*

EXTRAPOLATION TABLES for EFFICACY of INSECTICIDES (SPECIFIC CROP PESTS OR -DISEASES)

Aphids (virus transmission) (crop treatment)

Pest or disease		Crop: Flower bulb/flower tuber crops		Crops outside ornamental crops group
1 Test organism	2 Pest or disease group	3 Test crops (Protected, Unprotected)	4 Extrapolation to other crops	5 Data from these crops can support the test crop (no data* or less data)
Lily symptomless virus LSV000 (LSV) Tulip breaking virus TBV000 (TBV)	non-persistent viruses	Lily LILSS (F),	Flower bulb/flower tuber crops	Potato SOLTU

Bulb mites and tulip gall mites (bulb or tuber treatment)

Pest or disease		Crop: Flower bulb/flower tuber crops		Crops outside ornamental crops group
1 Test organism	2 Pest or disease group	3 Test crops (Protected, Unprotected)	4 Extrapolation to other crops	5 Data from these crops can support the test crop (no data* or less data)
<i>Rhizoglyphus echinopus</i> RHIGEC <i>Rhizoglyphus robini</i> RHIGRO (bulb mite)	Bulb mites	Lily LILSS (G)	Flower bulb/flower tuber crops	
<i>Eriophyes tulipae</i> ACEITU (tulip gall mite)	Gall mites	Tulip TULSS (G)		

Bulb and rust mites (crop treatment)

Pest or disease		Crop: Tree nursery crops and perennial plants		Crops outside ornamental crop group
1 Test organism	2 Pest or disease group	3 Test crops (Protected, Unprotected)	4 Extrapolation to other crops	5 Data from these crops can support the test crop (no data* or less data)
<i>Cecidophyopsis psilaspis</i> ERPHPS	<i>Eriophyidae</i> 1ERIOF (gall and rust mites)	<i>Buxus</i> (BUXSE), <i>Taxus</i> (TAXBA)	Tree nursery crops and perennial plants	Apple MABSD, pear PYUCO
<i>Phytoptus canestrinii</i> PHTPCA		<i>Prunus</i> (1PRNG)		
<i>Aculus fockeui</i> VASAFL (plum nursery mite)				

Echinothrips (larva and adult) (crop treatment)

Pest or disease		Crop: Floriculture crops, tree nursery crops and perennial plants		Crops outside ornamental crop group
1 Test organism	2 Pest or disease group	3 Test crops (Protected, Unprotected)	4 Extrapolation to other crops	5 Data from these crops can support the test crop (no data* or less data)
<i>Echinothrips americanus</i> ECHTAM (Echinothrips)		<i>Spathiphyllum</i> SQFSS (G), <i>Dieffenbachia</i> DIFSS (G)	Floriculture crops (G), tree nursery crops (G) and perennial plants (G)	

Leafminers (larva) (crop treatment)

Pest or disease		Crop: Floriculture crops, tree nursery crops and perennial plants		Crops outside ornamental crop group
1 Test organism	2 Pest or disease group	3 Test crops (Protected, Unprotected)	4 Extrapolation to other crops	5 Data from these crops can support the test crop (no data* or less data)
<i>Liriomyza trifolii</i> LIRITR (American serpentine leafminer)	<i>Liriomyza</i> 1LIRIG (leafminers)	<i>Gerbera</i> GEBSS (G), <i>Gypsophila</i> GYPSS (G), <i>Dendranthema</i> CHYHO (G)	Floriculture crops, tree nursery crops and perennial plants	melon CUMME, cucumber CUMSC*, lettuce LACSS, tomato LYPES*

True bugs (crop treatment)

Pest or disease		Crop: Tree nursery crops and perennial plants		Crops outside ornamental crop group
1 Test organism	2 Pest or disease group	3 Test crops (Protected, Unprotected)	4 Extrapolation to other crops	5 Data from these crops can support the test crop (no data* or less data)
<i>Lygus pabulinus</i> LYGUPA (Common green capsid)	<i>Miridae</i> 1MIRIF (other true bug species, <i>Miridae</i>)	<i>Forsythia</i> FOSSS	Tree nursery crops and perennial plants	Apple MABSD, pear PYUCO

EXTRAPOLATION TABLES for EFFICACY of HERBICIDES

Remarks on the extrapolation of herbicides:

Extrapolation from one weed species to another is usually not possible because the sensitivity to herbicides may differ per species of weed. With similar uses, extrapolation to a crop that can compete better with weeds is possible. Outdoors, weeds are generally more hardened and therefore less susceptible to herbicides. Extrapolation is therefore possible from unprotected culture to protected, soil-bound culture. For a soil herbicide, it is not possible to extrapolate from soil-bound culture to uses in pots or containers.

Pest or		Crop - crop group	
1 Test organism	2 Extrapolation	3 Test crops (Protected, Unprotected)	4 Extrapolation
annual grasses, volunteer cereals	to entire group of annual grasses ONLY when		In principle, for extrapolation of efficacy it does not matter in which crop the effect has been tested, as long as the use (e.g. application time, dosage of the product, crop duration, extent of soil coverage by crop, soil type, weed assortment etc.) of the crops is comparable.
perennial grasses	Extrapolation to the entire group of perennial grasses		
annual broadleaf weeds	Extrapolation to the entire group of annual broadleaf weeds ONLY when 3 relevant species are tested		
perennial broadleaf weeds	Extrapolation to the entire group of perennial broadleaf weeds ONLY when 3 relevant species are tested		
			Use of contact herbicide in unprotected culture extrapolated to use of a contact herbicide in pots or container crops, unprotected or protected.
			For efficacy, uses in unprotected culture can be extrapolated to protected culture.

EXTRAPOLATION TABLES for PHYTOTOXICITY

If there are no indications of phytotoxicity in the efficacy tests (for similar uses) or in the formulation of the product, nematicides, fungicides, acaricides and insecticides do not require separate phytotoxicity data. The table below therefore only applies if the above conditions are not met.

The crops listed are examples of sensitive ornamental crops (for phytotoxicity or visible residue).

FUNGICIDES, INSECTICIDES, ACARICIDES AND NEMATICIDES

Crop: Ornamental crops		Crops outside ornamental crop group
1 Test crops (Protected, Unprotected)	2 Extrapolation to other crops	3 Data from these crops can support the test crop
Tulip Lily <i>Lisianthus</i> (Eustoma) Rose <i>Chrysanthemum</i> (<i>Dendranthema</i>) <i>Gerbera</i> <i>Dianthus</i> <i>Gypsophila Muralis</i> <i>Fuchsia</i> <i>Begonia</i> <i>Ficus benjamina</i> <i>Saintpaulia</i> <i>Exacum</i> <i>Cyclamen</i>	Extrapolation to ornamental crops only when 3 different crops are tested	Data acquired in crops outside ornamentals, but from the same botanical family, can be used as support. Data acquired in sensitive crops such as cucumber, lettuce, spinach in protected cultivation can be substituted when determining phytotoxicity.

For herbicides, the risk of phytotoxicity in the crop is high and the consequences (also economic) are often greater than with other products. Therefore, separate phytotoxicity studies are required for the use of herbicides.

HERBICIDES

Crop: Ornamental crops		Crops outside ornamental crop group
1 Test crops (Protected, Unprotected)	2 Extrapolation to other crops ¹	3 Data from these crops can support the test crop
At least three sensitive floriculture crops	Floriculture crops, tree nursery crops and perennial plants	Tests in sensitive crops outside ornamental crops can reduce the number or scope of required studies.
Tulip (F) and <i>Hyacinth</i> (F) and <i>Narcissus</i> (F)	Autumn-planted flower bulb/flower tuber crops and bulb flower/tuber flower crops	
Lily (F) and <i>Gladiolus</i> (F)	Spring-planted flower bulb/flower tuber crops and bulb flower/tuber flower crops	

¹ If data are available from floriculture crops, autumn-planted flower bulb/flower tuber crops and bulb flower/tuber flower crops as well as spring-planted flower bulb/flower tuber crops and bulb flower/tuber flower crops, then extrapolation to the ornamental crops group is possible.