

EXTRAPOLATION TABLE for EFFECTIVENESS of FUNGICIDES ► DISEASES ON CUCURBITACEAE

INTRODUCTION

The table provides detailed lists of acceptable extrapolations organized by crop groups, for regulatory authorities and applicants, in the context of the registration of plant protection products for minor uses. The table should be used in conjunction with the EPPO Standard PP1/257(1) - *Efficacy and crop safety extrapolations for minor uses*. It is important to ensure that expert judgment and regulatory experience are employed when using these tables. EPPO excludes liability as to the reliability of the information provided through these tables.

The scope for extrapolation may be extended as data and experience with a certain plant protection products increases. The applicant should always provide appropriate justification and information to support the proposed extrapolation. For example, comparability of target biology may be a relevant factor, either in extrapolating to other target species or for the same target onto another crop. For crops, factors such as comparable growth habit, structure etc. should be considered.

TABLE FORMAT

The main pest species for the crop group are listed in Column 1 (although this is not exhaustive), and the pest group to which they belong is specified in Column 2. Companies may choose if they wish to provide data only for individual named species, which would then appear individually listed on the label. But underlined species have been identified as key major targets and as such it is advisable to generate data on these. Furthermore, data on these species then allow a claim to be made for the whole pest group (as specified in Column 2), if required. If a claim for the whole pest group is required but there is no underlined species, then data must be generated on all listed species.

Column 3 indicates the key indicator crop(s) for the crop group. In some instances this may be only one specified crop. In other cases, when separated by an 'or', the company may choose from a range of alternatives within the group. Data generated on crops in Column 3 may be used to extrapolate to all crops listed in Column 4. However, it is preferable to have data on several of the crops within the crop group, but data on the indicator crop should be available.

Column 5 identifies whether data on other crops against the same target may help to reduce the amount of required data on the indicator crop. It may be possible for a direct extrapolation without the need for further data on the indicator crop (marked with an asterisk (*)). However, this is dependent on the extent of available data and similarity of crop/target biology. The company should provide an appropriate reasoned case when wanting to use supporting data from other crop groups.

Column 6 gives examples of acceptable extrapolations for a particular pest claim onto other minor use crops. This is not a comprehensive list. Whether extrapolation may be direct (no data, marked with an asterisk (*)), or require additional supporting data on the minor use crop, will again be dependent on the extent and relevance of the existing database and companies should provide an appropriate reasoned case. If the crop is considered to be a major crop in some countries then it may not be appropriate to include in this column, and further data would be required. Companies will need to justify the status of the major crop/minor use.

EXAMPLES OF HOW TO USE THIS TABLE:

Pest		Crop: within the Cucurbitaceae		Crops: outside Cucurbitaceae	
1 Pathogen species	2 Disease group name	3 Indicator crops	4 Extrapolation to other crops	5 Data from these crops can support the indicator crops (reduced data or no data *)	6 Extrapolation to crops (reduced or no data*)
<i>Pyrenochaeta lycopersici</i> PYRELY	Root rot	melon CUMME	All crops within the group	tomato LYPES, potato SOLTU	
<i>Verticillium</i> spp. VERTSP	Verticillium wilt	Cucumber CUMSC or melon CUMME or zucchini CUUPG	All crops within the group	tomato LYPES, potato SOLTU, strawberry FRASS, sunflower HELAN, cotton GOSHI	chrysanthemum 1CHYG, pelargonium 1PELG, Tomato LYPES, Tobacco NIOSS

E.g. 1: In the first row above, in order to support a claim for *Pyrenochaeta lycopersici* on all Cucurbitaceae crops, data can be generated on melon. The number of trials required on these crops can be reduced if there are existing relevant data for *Pyrenochaeta lycopersici* on tomato or potato.

E.g. 2: In the second row above, in order to support a claim for *Verticillium* spp. (i.e. particular *Verticillium* spp. within the disease group), data should be generated for the relevant *Verticillium* species on either cucumber or melon or zucchini. The number of trials required on these crops can be reduced if there are existing relevant data for the relevant *Verticillium* species on tomato, potato, strawberry, sunflower or cotton. Data on *Verticillium* spp. generated on Cucurbitaceae can also be used to support claims on minor use crops such as chrysanthemum or pelargonium, but further additional data may be required. The company may also need to consider and justify the minor use status of the specified crop.

EXTRAPOLATION REGARDING PROTECTED/OUTDOOR SITUATIONS

Please note that where crops may be grown in both protected and field situations, and where significant differences are expected in pest relevance or crop agronomy between indoor and outdoor situations, it is important to generate a proportion of the data on crops grown in both situations to ensure the product has been tested under a suitable range of typical and challenging conditions.

EXTRAPOLATION TABLE for EFFECTIVENESS of FUNGICIDES

► DISEASES ON CUCURBITACEAE

CUMSC Cucumber *Cucumis sativus*, CUUPG Courgette *Cucurbita pepo* var. *giromontiina* (including zucchini and marrow squash), CUUPE Marrow *Cucurbita maxima* (Squash and pattypan/scallop squash and gourds), CUUPM Pumpkin *Cucurbita pepo* var. *melo*, CUMME Melon *Cucumis melo*, CITLA Water Melon *Citrullus lanatus*

Pest		Crop: within the Cucurbitaceae		Crops: outside Cucurbitaceae	
1 Pathogen species	2 Disease group name	3 Indicator crops	4 Extrapolation to other crops	5 Data from these crops can support the indicator crops (reduced data or no data *)	6 Extrapolation to crops (reduced or no data*)
<i>Pyrenochaeta lycopersici</i> PYRELY	Root rot	Melon CUMME	All crops within the group	Tomato LYPES, Potato SOLTU	Tomato LYPES
<i>Pseudoperonospora cubensis</i> PSPECU	Downy mildew	Cucumber CUMSC or Melon CUMME	All crops within the group		Basil OCIBA, Sage SALSS, Herbs
<i>Alternaria</i> spp. ALTESP <i>A. cucumerina</i> ALTECU	Leaf blight	Cucumber CUMSC or Melon CUMME	All crops within the group	Strawberry FRASS, Tomato LYPES	Auberginesolme, Turnip BRSRR, Scorzonera 1SCVG, Wild Lettuce LACSE, Endive CICEN, Chicory CICIN, Fennel FOESS, Sweet Pepper CPSAN, Umbelliferous Herbs

<i>Cladosporium</i> spp. CLADSP	Scab	Cucumber CUMSC or Melon CUMME,	All crops within the group	Tomato LYPES	Spinach SPQOL
<i>Erysiphe</i> spp. ERYSSP, <i>Golovinomyces cichoracearum</i> ERYSCI or ¹ <i>Sphaerotheca</i> spp. SPHRSP, <i>Sphaerotheca fuliginea</i> SPHRFU	Powdery mildew	Melon CUMME or Cucumber CUMSC	All crops within the group	Tobacco NIOTA	Endive CICEN, Lambs lettuce VLLLO, Chicory CICIN, Tobacco NIOSS, Parsley PARSS
<i>Didymella bryoniae</i> DIDYBR	Gummy stem blight Black stem rot	Melon CUMME or Cucumber CUMSC	All crops within the group	Cabbage BRSOL, Raspberry RUBID	
<i>Colletotrichum</i> spp. COLLSP	Anthracnose	Melon CUMME or Cucumber CUMSC	All crops within the group	Tomato LYPES	Spinach SPQOL, Sweet pepper CPSAN, Beans PHSSS, Peas PIBSS
The following extrapolation possibilities are proposed to be addressed in tables covering generic pests					
<i>Fusarium oxysporum</i>	Fusarium wilt	Melon CUMME	All crops within the group	tomato LYPES	Tomato LYPES
<i>Fusarium oxysporum</i> f.sp. <i>radicis-cucumerinum</i> FUSARC	Fusarium crown and stem rot	Cucumber CUMSC	All crops within the group	tomato LYPES, asparagus	Sweet basil OCIBA, Tomato LYPES
<i>Verticillium</i> spp. VERTSP	Verticillium wilt	Cucumber CUMSC or melon CUMME or zucchini CUUPG	All crops within the group	tomato LYPES, potato SOLTU, strawberry FRASS, sunflower HELAN, cotton GOSHI	chrysanthemum 1CHYG, pelargonium 1PELG, Tomato LYPES, Tobacco NIOSS
<i>Botrytis</i> spp. BOTRSP, <i>Botrytis cinerea</i> BOTRCI	Grey mould	cucumber CUMSC or melon CUMME	All crops within the group	tomato LYPES, strawberry FRASS, fabaceae 1LEGF, eggplant SOLME, sweet pepper CPSAN, chilli pepper CPSFR	chrysanthemum 1CHYG, begonia, pelargonium PELSS, Tomato LYPES, Lettuce LACSS, Beans PHSSS, Proteaginous peas, Basil OCIBA, rosmarin RMSS

¹ In order to claim for the whole pest group 'Powdery mildew', one full data package is needed including both species *Golovinomyces cichoracearum* ERYSCI and *Sphaerotheca* spp. SPHRSP.

<i>Pythium spp.</i> PYTHSP	Damping off/root rot	cucumber CUMSC	All crops within the group	Most vegetable crops are susceptible	susceptible minor vegetable crops, Tomato LYPES, Lettuce LACSS, Spinach SPQOL
<i>Rhizoctonia solani</i> RHIZSO	Damping off/root rot	melon CUMME or cucumber CUMSC	All crops within the group	Most vegetable crops are susceptible, strawberry FRASS, tobacco NIOTA, potato SOLTU	begonia BEGSS, chrysanthemum 1CHYG, saintpaulia 1SNPG, susceptible minor vegetable crops, Tomato LYPES, Roman chamomile ANTNO, Rosmarin RMSS
<i>Sclerotinia sclerotiorum</i> SCLESC	White mould	melon CUMME or cucumber CUMSC	All crops within the group	Most vegetable crops are susceptible, field beans VICFX, potato SOLTU	turnip BRSRR, susceptible minor vegetable crops, Lettuce LACSS
<i>Phytophthora (Phytophthora nicotianae</i> PHYTNN, <i>P. capsici</i> PHYTCP, <i>P. cactorum</i> PHYTCC etc.)	Blight of sweet pepper	Melon CUMME or cucumber CUMSC	All crops within the group		Sweet pepper CPSAN