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EXTRAPOLATION TABLE for EFFECTIVENESS of FUNGICIDES
► DISEASES ON LEGUME VEGETABLES

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 certain plant protection products increase. 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. In specific circumstances data from crops outside of the crop group highlighted by an asterisk in column 5 can replace the need for any data on the indicator crop in column 3.

Column 5 identifies whether relevant data on crops outside the crop group, 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 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 data from crops outside the crop group.

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Column 6 gives examples of acceptable extrapolations for a particular pest claim onto other minor use crops. This is <u>not</u> 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.

EXAMPLE OF HOW TO USE THE TABLE:

Diseases		Crops: within the Vegetable Brassicas		Crops: outside the Vegetable Brassicas	
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*)**
Alternaria sp. (*Alternaria brassicicola* ALTEBI, *A. brassicae* ALTEBA, *A. raphani* ALTERP)	Alternaria	Cauliflower BRSOB or broccoli BRSOK or Brussels sprouts BRSOF	Leafy and flower head and root brassicas	Oilseed rape BRSNN, Mustard SINSS	Carrot DAUCS, Tomato LYPES

E.g.: In the first row above, in order to support a claim for *Alternaria sp* on leafy and flower head and root brassicas, data can be generated on Cauliflower or Broccoli or Brussels sprouts. The number of trials required on this crop can be reduced if there are existing relevant data for *Alternaria spp* on oilseed rape or mustard. Data on *Alternaria sp* generated on Vegetable Brassicas can also be used to support claims on minor use crops such as carrot and tomato, 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 LEGUME VEGETABLES
Vicia faba VICFX, *Phaseolus* sp. PHSSS, *Pisum sativum* PIBSX, *Lens culinaris* LENCU, *Cicer arietinum* CIEAR, *Arachis hypogea* ARHHY

Diseases		Crop: within Legume vegetables		Crops: outside Legume vegetables	
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*)
Phytophthora pisi PHYTPI	Root rot	Pea PIBSX or Broad bean VICFX	Pea PIBSX, Broad bean VICFX	*Vicia faba* subsp *minor** VICFM (field beans)	*Vicia* sp. VICSS, *Pisum* sp. PIBSS
<u>*Fusarium* sp. FUSASP</u> *(e.g. Fusarium solani, Fusarium oxysporum)*	Root rot	*Phaseolus vulgaris* PHSVX or Pea PIBSX or Broad bean VICFX or Lentils LENCU or Chickpea CIEAR	All legume vegetables	Fabaceae 1LEGF	Fabaceae 1LEGF
Thanatephorus cucumeris (=Rhizoctonia solani) RHIZSO				Potato SOLTU (AG3, AG2-1), Lettuce LACSA (AG4), Cucurbitaceae 1CUCF (in soil) (AG4 (AG5)), Vegetable brassica (AG2-1, AG4), Beets BEAVD (AG2-2, AG4, AG1, AG3, AG5), Fabaceae 1LEGF (AG4, AG2-2)*, Strawberry FRASS (AG2-1), Tomato LYPES (AG3, AG4) AG (Anastomosis groups)	All crops where root rot caused by the same AG-groups appear
Pythium sp. PYTHSP				Fabaceae 1LEGF	Fabaceae 1LEGF
Phytophthora sp. PHYTSP				Fabaceae 1LEGF	Fabaceae 1LEGF

Thielaviopsis basicola THIEBA				Any relevant crop where root rot caused by THIEBA appear	Any relevant crop where root rot caused by THIEBA appear
Peyronellaea pinodella PHOMMP				Fabaceae 1LEGF	Fabaceae 1LEGF
Aphanomyces euteiches APHAEU		*Phaseolus vulgaris* PHSVX or Pea PIBSX	Broad bean VICFX, *Phaseolus* sp. PHSSS, Lentils LENCU Chickpea CIEAR	Sugar beet BEAVA	Fabaceae 1LEGF, Beta sp. BEASS, Chenopodioideae 1CHES
<u>*Didymella sp.*</u> DIDYSP*, D. fabae* ASCOFA*, D. pisi* ASCOPI, *D. rabiei* MYCORA, *Ascochyta phaseolorum* PHOMEX, *Peyronellaea arachidicola* PHOMAR	Leaf and pod spot	Broad bean VICFX or Pea PIBSX or *Phaseolus vulgaris* PHSVX or Chickpea CIEAR or Lentils *LENCU*	Pea PIBSX, Broad bean VICFX, *Phaseolus vulgaris* PHSVX, Lentils LENCU, Chickpea CIEAR, Peanut ARHHY	*Pisum* sp. PIBSS, *Vicia* sp. VICSS	*Pisum* sp. PIBSS, *Vicia* sp. VICSS
Didymella pisi ASCOPI (=*Ascochyta pisi*) or *Peyronellaea pinodes* MYCOPI (= *Mycosphaerella pinodes, Ascochyta pinodes*) or *Peyronellaea pinodella* PHOMMP (= *Phoma medicaginis var. pinodella, Ascochyta pinodella*)	Ascochyta blight	Pea PIBSX	Broad bean VICFX, *Phaseolus vulgaris PHSVX*, Lentils LENC, Chickpea CIEAR	Fabaceae 1LEGF	All relevant Fabaceae 1LEGF*
Cercospora sp. CERCSP	Leaf spot	*Phaseolus vulgaris* PHSVX or Broad bean VICFX or Lentils *LENCU*	*Broad bean* VICFX, Lentils LENCU, Chickpea CIEAR, Peanut ARHHY	*Vicia* sp. VICSS*, *Lathyrus* sp. LTHSS	*Vicia* sp. VICSS*, *Lathyrus* sp. LTHSS
Phaeoisariopsis griseola PHAIGR		*Phaseolus vulgaris* PHSVX	*Phaseolus* 1PHSG	Fabaceae 1LEGF	Vigna sp. VIGSS

Pleospora herbarum PLEOHE *(= Stemphylium botryosum)*		Any legume vegetable	All legume vegetables	Any relevant crop where leaf spots caused by PLEOHE appear	Any relevant crop where leaf spots caused by PLEOHE appear
Davidiella tassiana MYCOTA *(= Cladosporium herbarum)*	Leaf yellowing	*Phaseolus* sp. PHSSS or Pea PIBSX or Broad bean VICFX	*Phaseolus* sp. PHSSS, Pea PIBSX, Broad bean VICFX	Any relevant crop where leaf yellowing by MYCOTA appear	Any relevant crop where leaf yellowing by MYCOTA appear
<u>*Botrytis sp.*</u> BOTRSP, *B. fabae* BOTRFA, *Botryotinia fuckeliana* BOTRCI	Chocolate spot	*Vicia faba* VICFX		*Vicia faba** (field bean)	All *Vicia sp.*VICSS
<u>*Colletotrichum* sp</u>. (E.g *C.lindemuthianum* COLLLD, *C. truncatum* COLLDU)	Anthracnose	*Phaseolus vulgaris* PHSVX	Pea PIBSX, Broad bean VICFX, *Phaseolus* sp. PHSSS, Lentil LENCU, Chickpea CIEAR, Peanut ARHHY	*Phaseolus* sp. PHSSS, *Vigna* sp. VIGSS, Glycine 1GLXG	*Phaseolus* sp. PHSSS, *Vigna* sp. VIGSS, Glycine 1GLXG, *Vicia* sp. VICSS
<u>*Uromyces sp.*</u> UROMSP, *U. viciae-fabae* UROMVF, *U. appendiculatus* UROMAP *Uromyces ciceris-arietini* UROMCA	Rust	Broad bean VICFX or *Phaseolus* sp. PHSSS or Lentils LENCU or Chickpea CIEAR	All legume vegetables	Fabaceae 1LEGF*	Fabaceae 1LEGF
<u>*Erysiphe sp.*</u> ERYSSP, *E. pisi* ERYSPI, *E. betae* ERYSBE, *Blumeria graminis f. sp. avenae* ERYSGA	Powdery mildew	*Phaseolus vulgaris* PHSVX or Pea PIBSX or Broad Bean VICFX	Pea PIBSX, Broad Bean VICFX, *Phaseolus* sp. PHSSS Chickpea CIEAR, Lentils LENCU	Fabaceae 1LEGF*, Beta 1BEAG	Fabaceae 1LEGF
Peronospora viciae PEROVI	Downy mildew	Pea PIBSX or Broad bean VICFX or *Phaseolus vulgaris* PHSVX or Lentils LENCU	Pea PIBSX, Broad Bean VICFX, *Phaseolus vulgaris*	*Pisum* sp. PIBSS, *Vicia* sp. VICSS, *Medicago* 1MEDG, *Trifolium* 1TRFG	*Pisum* sp. PIBSS, *Vicia* sp. VICSS, *Medicago* 1MEDG, *Trifolium* 1TRFG

Phytopthora sp., *Phytopthora phaseoli* PHYTPH, *Phytophthora nicotianae* var. *parasitica* PHYTNP			PHSVX, Lentil LENCU	Any other relevant crop	Any other relevant crop
Botryotinia fuckeliana BOTRCI	Grey mold	Any legume vegetable	All legume vegetables	Strawberry FRASS, Grapes VITVI, any other relevant crop	All relevant crops where this disease appear[1]
Fusarium oxysporum FUSAOX	Wilt	*Phaseolus vulgaris* PHSVX or Pea PIBSX or Broad Bean VICFX	All legume vegetables	*Lupinus* sp. LUPSS, *Pisum* sp. PIBSS, *Phaseolus* sp. PHSSS	*Lupinus* sp. LUPSS, *Pisum* sp. PIBSS, *Phaseolus* sp. PHSSS
Sclerotinia sp. *(S. sclerotiorum* SCLESC*, S. minor* SCLEMI*, S. trifoliorum* SCLETR)*	White mould Watery soft rot	Pea PIBSX or *Broad bean* VICFX or *Phaseolus* sp. PHSSS or Lentils LENCU or Chickpea CIEAR or Peanut ARHHY	Pea PIBSX, Broad bean VICFX, *Phaseolus* sp. PHSSS, Lentils LENCU, Chickpea CIEAR, Peanut ARHHY	Lettuce LACSA, Oilseed rape BRSNN, Sunflower HELAN, Carrots DAUCA or any other relevant crop	All relevant crops where these diseases appear[1]
The following extrapolation possibilities are proposed to be addressed in tables covering generic pests					
Pythium sp. PYTHSP, Oomycetes 1OOMYC	Damping off	Any legume vegetable	All legume vegetables	Lettuce LACSA or Vegetable brassica or Cucumber CUMSA or Melon CUMME or Spinach SPQOL or Beet BEASS or Tomato LYPES	All crops where damping off caused by Oomycetes appear
Aphanomyces sp. APHASP				Pea PIBSX or Sugar beet BEAVA	Other leguminous crops Other beet crops (Beta sp. BEASS), Chenopodioideae 1CHES

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[1] Data packages proposed for extrapolation should take into consideration the affected plant part, the crop groups and the modes of application of the products. The proposed extrapolation does not cover post-harvest applications. With a full data package from outdoor conditions, only a reduced data package from indoor conditions is needed

Fusarium FUSASP				Tomato LYPES or Cucurbitaceae 1CUCF (both grown in the soil) or any other relevant crop	All crops where Fusarium damping off appear
Thanatephorus cucumeris RHIZSO				Potato SOLTU (AG3, AG2-1), Lettuce LACSA (AG4), Cucurbitaceae 1CUCF (in soil) (AG4 (AG5)), Vegetable brassica (AG2-1, AG4) Beets BEAVD (AG2-2, AG4, AG1, AG3, AG5) Fabaceae 1LEGF (AG4, AG2-2) Strawberry FRASS (AG2-1), Tomato LYPES (AG3, AG4)	All crops where damping off caused by the same AG-groups appear
Sclerotinia sp. SCLESP or *Sclerotium rolfsii* SCLORO				Lettuce LACSA or Tomato LYPES or Pepper CPSAN or Phaseolus sp. PHSSS	All crops where Sclerotina damping off appear
Botryotinia fuckeliana BOTRCI				Fabaceae 1LEGF or Lettuce LACSA or Tomato LYPES	All crops where damping off appear. Not covering post-harvest effects.
Pseudomonas syringae (incl. *Pseudomonas syringae* pv. *pisi* PSDMPI, *Pseudomonas savastanoi* pv. *phaseolicola* PSDMPH)	Bacterium	*Phaseolus vulgaris* PHSVX or Pea PIBSX	*Phaseolus* sp. PHSSS		
Xanthomonas axonopodis pv. *phaseoli* XANTPH		*Phaseolus vulgaris* PHSVX	*Phaseolus* sp. PHSSS		