EXTRAPOLATION TABLE for EFFECTIVENESS of FUNGICIDES
► DISEASES ON VEGETABLE BRASSICAS

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 <u>underlined</u> 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.

EXAMPLE OF HOW TO USE THIS TABLE:

Pests		**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 spp. (*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 spp* 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 spp* 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 VEGETABLE BRASSICAS:

Leafy brassicas: BRSOA kale *Brassica oleracea* var. *acephala* including collards and curly kale *Brassica oleracea* var. *sabellica* BRSOC; BRSPK Peking cabbage *Brassica pekinensis;* BRSCH *B. chinensis* [synonyms: *B. rapa* subsp. chinensis; *B. chinensis* var. *parachinensis*; *B. parachinensis*]; BRSNO Mitzuna *Brassica rapa* subsp. *nipposinica*; BRSPE Komatsuna *Brassica perviridis;* SINSP mustard *Sinapis* sp. (red, white brown black); DIPER Rockets *Diplotaxis erucoides* and ERUVE *Eruca vesicaria subsp. sativa*.

Head brassicas: (Head) Cabbage (includes red BRSOR *Brassica oleracea* var. *capitata* f. *rubra* and white *Brassica oleracea* var. *capitata* f. *alba* BRSOL); BRSON *Brassica oleracea* var. *capitata* f. *conica;* BRSOF Brussels sprouts *B. oleracea* var. *gemmifera*; BRSOS Savoy cabbage *B. oleracea* var. *sabauda.*

Flowerhead brassicas: (Flowering brassicas); BRSOB Cauliflower *B. oleracea* var. *botrytis* subvar. *cultiflora*, BRSOK Broccoli, Calabrese, cima di rapa *B. oleracea* var. *italic*; BRSAG Chinese kale (Chinese broccoli) *Brassica alboglabra.*

Root / Stem brassicas and radish crops: BRSNA Swedes *B. napus var. napobrassica*, BRSRR Turnips *B. rapa*, RAPSS Radishes *Raphanus* spp. (including red, white, Black Spanish radish); RAPSR Small radish *Raphanus sativus;* RAPSN Garden radish *Raphanus sativus* var. *niger*; ARWLA Horseradish *Armoracia lapathifolia;* BRSOG Kohlrabi, *B. oleracea* var. *gongylodes.*

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Alternaria spp. (*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
Pseudocercosporella capsellae (=*Mycosphaerella capsellae*) PSDCCA	--	Chinese cabbage BRSCH	Leafy and flower head and root brassicas		
Pyrenopeziza brassicae PYRPBR	--	Leafy brassicas	Leafy and flower head brassicas	Oilseed rape BRSNN	Oilseed rape BRSNN
Mycosphaerella brassicicola MYCOBR	--	Leafy brassicas or Brussels sprouts BRSOF	Flower head brassicas and leafy brassicas		Cucumber CUMSC

Albugo candida ALBUCA	--	Flower head brassicas or leafy brassicas	Leafy brassicas and flower head brassicas	Oilseed rape BRSNN, Mustard SINSS	Oilseed rape BRSNN, Mustard SINSS, Horseradish RAPSN, Purslane PORSS
Colletotrichum higginsianum COLLHG	--	Chinese cabbage BRSCH or turnip BRSRR	Leafy and root brassicas	Mustard SINSS	
Botryotinia fuckeliana BOTRCI	--	Cabbage BRSOL or Brussels sprouts		Lettuce LACSA Strawberry FRASS, all cucurbit crops 1CUCF, rose ROSSS, artichoke CYUSC, lettuce LACSS, pea PIBSS, potato SOLTU, leek ALLPO, garden bean PHSVX, grapes VITVI, Beans PHSSS, Proteaginous peas	Lettuce LACSA, Tomato LYPES
Erysiphe cruciferarum ERYSCR, *Erysiphe polygoni* ERYSPG	Powdery mildews	Cabbage BRSOL or Brussels sprouts BRSOF or Swede BRSNA	Leafy brassicas and flower head brassicas, root brassicae	Cucurbits 1CUCF, Oilseed rape BRSNN Rocket (*Diplotaxis erucoides* DIPER and *Eruca vesicaria subsp. sativa* ERUVE)	
Peronospora parasitica PEROPA *Hyaloperonospora brassicae* HPERBR	Downy mildews	Flower head brassicas (any crop where use is on seedlings)	Leafy brassicas	Lettuce LACSS Onion ALLCE, Oilseed rape BRSNN	
Plasmodiophora brassicae PLADBR	--	Flower head brassicas or leafy brassicas	Flower head brassicas and leafy brassicas	Oilseed rape BRSNN, mustard SINSS	
Leptosphaeria maculans = Phoma lingam LEPTMA	--	Flower head brassicas or leafy brassicas	Flower head brassicas and leafy brassicas	Oilseed rape BRSNN	Origano ORISS, Fennel FOESS

The following extrapolation possibilities are proposed to be addressed intables covering generic pests					
Rhizoctonia solani RHIZSO *Fusarium* spp. FUSASP *Pythium* spp. PYTHSP	Damping off	Any vegetable brassica	Leafy and flower head and head and root brassicas	Any relevant crop*	Lettuce LACSS, Tomato LYPES
Sclerotinia sclerotiorum SCLESC *Sclerotinia minor* SCLEMI	--	Flower head brassicas or leafy brassicas	Flower head brassicas and leafy brassicas	Lettuce LACSA, oilseed rape BRSNN	Oilseed rape BRSNN, Lettuce LACSS, Tomato LYPES
Acidovorax valerianella ACVRVA, *Pseudomonas sp.* ERWICA, *Xanthomonas sp.* XANTSP	Bacterium disease	Any vegetable brassica			Lettuce LACSS, Herbs
Verticillium spp. VERTSP	Verticillium wilt	Brussels sprouts BRSOF		Tomato LYPES, Eggplant SOLME, Capsicum CPSSS	