
QUESTIONNAIRE – NORTHERN ZONE PRESENTATION

DENMARK, FINLAND AND LITHUANIA

A U

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1. DOSE EXPRESSION FOR POME FRUIT AND STONE FRUIT

	(I) National registration	(II) National efficacy assessment	(III) Zonal efficacy assessment
Denmark	1) Lor kg/ ha 2) %conc. of product + amount of water/ ha	As National registration	No requirement for dose expression.
Finland	As above (includes water amount for different spray equipment and for different plant growth stages)	As National registration	
Lithuania	1) Lor kg/ ha 2) %conc. and max. solution volume (l/ ha) 3) ml/ hl and max. product rate (l/ ha) 4) l/ ha LWA	As National registration	

1. DOSE EXPRESSION FOR TOMATO AND CUCUMBER IN GLASSHOUSES

	(I) National registration	(II) National efficacy assessment	(III) Zonal efficacy assessment
Denmark	1) g or ml product/ hl 2) %conc. of product + amount of water (1000-1500 l/ ha)	As National registration	No requirement for dose expression.
Finland	1)%solution + amount of water per 1000 m2 2)g or ml of product/ 100 l of water + amount of water per 1000m2 for crops of different ages (low, medium, high)	As National registration	
Lithuania	1) Lor kg/ ha 2) %conc. and max. solution volume (l/ ha) 3) ml/ hl and max. product rate (l/ ha) 4) l/ ha LWA	As National registration	

2. ARE DIFFERENT CROP STRUCTURES OR INDIVIDUAL PARAMETERS CHARACTERIZING CROP STRUCTURE CONSIDERED?

	(I) National registration	(II) National efficacy assessment	(III) Zonal efficacy assessment
Denmark	BBCH scale (before and after flowering)	BBCH scale	BBCH scale
Finland	Amount of water applied per 1000m ² of greenhouse area is given for spraying low, medium height and tall crops of cucumber, tomato and sweet pepper (*)	As National registration	-
Lithuania	BBCH growth stage at application is considered	As National registration	As National registration

(*) Pome and stone fruit: amount of water per ha is given separately for young and mature crops (i.e for crops of different heights)

3. ARE CHANGES OF CROP STRUCTURE DUE TO INCREASING CROP (CANOPY) HEIGHT, MID-WIDTH OF THE CROWN ETC. DURING THE GROWING PERIOD CONSIDERED?

	(I) National registration	(II) National efficacy assessment	(III) Zonal efficacy assessment
Denmark	Usually low water vol before flowering and high water vol after –as canopy leaf area increases (*)	As National registration	-
Finland	Height of crop plants (low, medium, tall) are considered for tomato, cucumber and sweet pepper	-	-
Lithuania	No, during assessment the changes of crop structure are not considered	-	-

(*)The growers can be requested on the label to consider ‘plant age’/ establishment phase. This is often balanced with the water vol. The amount of chemical is reduced accordingly. A common strategy is to close the lower/ higher nozzles and thereby adjust the dosage

4. DOES YOUR COUNTRY INTEND TO CHANGE THE PROCEDURES ADDRESSED IN QUESTION 1 TO 3?

Denmark	No - unless a common agreement in EU is made
Finland	This question and problems have been discussed quite a lot, but it is difficult to find good solution
Lithuania	No – But it is not excluded in the case it will be decided that a more precise efficacy assessment for 3D crops is required

5A. ESTIMATION OF LWA (LEAF WALL AREA) RANGES (MIN, MAX, MOST COMMON) FOR HIGH GROWING CROPS

	Min LWA	Max LWA	Most common LWA
Pome fruit	Denmark: 10.000 Finland: 16.666 Lithuania: 5.000	15.000 20.000 22.500	12.500 17.143 7.500 – 11.999
Stone fruit	Denmark: 14.000 (sweet cherry)	20.000 (sour cherry)	14.000-20.000
Tomato, glasshouse	Finland: 27.700 (crops grown with artificial lightning in gutters where LW starts at eye-level, LW 1,8 m)	Finland: 38.000 (crops with their roots at floor level, not in hanging gutters, LW 2,5 m)	
Cucumber, glasshouse	Finland: 27.700 (this is for mature crops using either high-wire or umbrella training when the LW is 1,8-2,0 m tall, just <i>after</i> weekly removal of the lower leaves in high-wire. Row distance is 1,3-1,5 m) Denmark: same system as FI	Finland: 33.800 (this is for mature crops using either high-wire or umbrella training when the LW is 2,2-2,5 m tall, just <i>before</i> weekly removal of the lower leaves in high-wire. Row distance is 1,3-1,5 m) Denmark: same system as FI	The LW height varies weekly and this needs to be taken into account when calculating LWA for a specific time point. Crops trained with the umbrella method are somewhat different as the LW height does not 'pulse' as much from min to max weekly.

5B. DESCRIPTION OF TRAINING SYSTEM

Crop	Description of cropping system
Pome fruit	Denmark: Slender spindle with window (in all new orchards) Finland: Slender spindle with window (in all new orchards) Lithuania: spindle (23%); slender spindle (4%); central axis (17%); open centre tree (22%); free standing tree (34%)
Stone fruit	Denmark: single tree
Tomato in glasshouse	Denmark: High wire Finland: High wire in both seasonal and year-round crops
Cucumber in glasshouse	Denmark: High wire Finland: High wire; umbrella training system in seasonal cucumber crops

5C. INFORMATION FOR ORCHARDS WITH ISOLATED TREES

Crop	Distance between Rows, m	Distance between Trees, m	Crown volume	Mid-with of the crown, m
Pome fruit	<i>Denmark: 3,5</i> Finland: 3 - 5 Lithuania*: 7- 8	<i>Denmark: 0,9-1,25</i> Finland: 2 –4 Lithuania: 4 - 6	<i>DK: 3,5 m³</i>	<i>DK: 1</i> FI: 4 LT: 4-6
Stone fruit	Denmark: 6	Denmark: 2,5 - 3		

*: planting data 1973-1985; training system: Free standing tree

5D. ESTIMATE OF THE PROPORTION OF ORCHARDS LAND WITH ISOLATED TREES IN RELATINO TO THE TOTAL LAND SURFACE OF HIGH GROWING CROPS.

Denmark	Pome fruit decreasing (almost 0%); stone fruit maintaining
Finland	Pome fruit decreasing (25%)
Lithuania*	Pome fruit decreasing (34%)

*: it is considered that the growing area in Lithuania of isolated trees will decrease. Analysis of the planting dates shows that orchards with isolated trees (large) were planted around 1973-1985, whereas after 2000 other cropping and training systems dominate.

6. MAIN APPLICATION TECHNIQUES

Crop	Application technique
Pome fruit	All: Air assisted sprayers
Stone fruit	Denmark and Lithuania: Air assisted sprayers
Tomato in glasshouse	Denmark: Robotic high vertical boom sprayers, motorized hydraulic high pressure tank sprayers Finland: Robotic (automatized) high-volume boom sprayer in high blockhouses; motorized hydraulic high-volume pressure tank sprayer in smaller/ lower houses; the latter can be equipped also with handheld gun to target lower sides of leaves.
Cucumber in glasshouse	Denmark: As for tomato Finland: Robotic (automatized) high-volume boom sprayer in high large blockhouses; motorized hydraulic high-volume pressure tank sprayer in smaller/ lower houses; the latter can be equipped also with handheld gun to target lower sides of leaves when necessary; cold fogging.

7. ARE PARAMETERS TO CALCULATE THE LWA SUFFICIENTLY INCLUDED IN SINGLE TRIAL REPORTS AND ARE THEY CLEARLY DESCRIBED (TREATED FOLIAGE HEIGHT, PLANT HEIGHT, LW HEIGHT, DISTANCE BETWEEN ROWS, ETC.)?

Crop	
Pome fruit	Denmark: these registrations are made in Denmark Lithuania: In some trial reports this information is missing
Stone fruit	As above
Tomato in glasshouse	Denmark: these registrations are not made in all reports in Denmark Finland: trials for pesticides to be used in tomato crops have been tested only in commercial crops using non-GLP test procedures. Parameters to calculate LWA are not required in the trials reports. Lithuania: as above
Cucumber in glasshouse	As above

8. WHICH PARAMETERS TO CALCULATE THE LWA ARE FREQUENTLY MISSING IN CURRENT ZONAL DOSSIERS AND DRAFT EVALUATION REPORTS (BAD AND DRR)?

Crop	Parameters	Comments
Pome fruit	DK: Crown width and height LT: LWA	LT: The parameters required to calculate LWA should be provided in the trial reports, the LWA value also should be calculated and provided there. In the BAD we need only LWA to be indicated in the appendix of data on trial site and effectiveness tables.
Stone fruit	As above	As above
Tomato in glasshouse	DK: Height LT: LWA	As above
Cucumber in glasshouse	As above	As above

9. DO EFFICACY DOSSIERS AND DRAFT EVALUATION REPORTS (BAD AND DRR) PROVIDED BY THE APPLICANT ALWAYS INCLUDE A DISCUSSION OF RESULTS IMPLEMENTING THE LWA APPROACH?

Crop	yes	No	Comments
Pome fruit		X	Lithuania: There is only one BAD where LWA was considered. Prepared by Syngenta.
Stone fruit		X	Lithuania: There is only one BAD where LWA was considered. Prepared by Syngenta.
Tomato in glasshouse		X	
Cucumber in glasshouse		X	

**9A. IF NOT, DO YOU ASK FOR IT
(I) FOR THE NATIONAL EFFICACY ASSESSMENT,
(II) FOR THE ZONAL EFFICACY ASSESSMENT?**

Crop	yes	No	Comments
(I) National efficacy assessment		X	Denmark and Lithuania: so far - we have accepted the applicant's approach regarding dose expression
(II) Zonal efficacy assessment		X	As above

**10. DO YOU CONSIDER THE CURRENT EPPO STANDARD PP 1/ 239(2)
DOSE EXPRESSION FOR PLANT PROTECTION PRODUCTS USEFUL OR DO
YOU RECOMMEND (MAJOR) MODIFICATIONS?**

Denmark	The guide is usefull
Finland	Ye s
Lithuania	No – the standard is detailed and usefull

11. IS IT FEASIBLE TO DO ALL EVALUATIONS (OF HIGH GROWING CROPS) IN THE EU WITH A HARMONIZED DOSE EXPRESSION (E.G. LWA)?

Denmark	Yes, if it really becomes a common standard in all the MS
Finland	Yes, provided that methods to reliably measure parameters needed to calculate LWA for different crops and varieties become available
Lithuania	Yes, if common agreement at EU level among efficacy evaluators is achieved. In principle there are no practical obstacles to do that, although some adaptation period for trials conducting companies, BAD preparing companies and evaluators will be needed.

12. DO YOU CONSIDER LWA AS THE ONLY METHOD TO BE ADOPTED REGARDLESS OF THE VARIABILITY IN CROP STRUCTURES IN THE EU?

Denmark	We also consider the value of the tree row volume
Finland	Growers consider LWA a much better way to calculate the needed dosage than the current crude recommendations of the liquid volume per area unit according to plant height. But they see practical limitations of the usefulness of the LWA method if the aim is to adjust the spray volume according to the LWA: is it possible to adjust the 'spray wall' according to the height of the LW or does the spray wall remain fixed in size? This may depend on the type of sprayer.
Lithuania	For efficacy evaluations the LWA method is probably the most accurate and simple way enabling the comparison of efficacy data from different trials with different crop structures.

14. EXPECTATIONS FOR THE WORKSHOP

Lithuania

It would be nice to get concrete examples on what and how data should be provided in the BAD and dRR to justify the efficacy.

E.g.: Use in greenhouse cucumber is proposed. The application window is broad (BBCH 13-89). Dose rate per application per ha is 0,5 l independently on the volume of the foliage.

What is to be the best way to sort trials in different crops (pome fruit, greenhouse cucumbers)?

14. EXPECTATIONS FOR THE WORKSHOP

Crop and/ or situation (crop destination / purpose of crop)	F G or I	Pests or Group of pests controlled (additionally: developmental stages of the pest or pest group) or	Application			Application rate		
			Method / Kind	Growth stage & season	Max. number (min. interval between applications) a) per use b) per crop/ season	kg, L product / ha a) max. rate per appl. b) max. total rate per crop/season	g, kg as/ ha a) max. rate per appl. b) max. total rate per crop/ season	Water L/ ha min / max
Cucumbers	G	Erysiphe cichoracearum, Sphaerotheca fulginea	Foliar spray	BBCH 13 –89	4 applications per crop/ season (8 days)	0.5 l product/ ha per application	50 g as/ ha per application	500 - 2000

or

Crop and/ or situation (crop destination / purpose of crop)	F G or I	Pests or Group of pests controlled (additionally: developmental stages of the pest or pest group)	Application			Application rate		
			Method / Kind	Timing / Growth stage of crop & season	Max. number (min. interval between applications) a) per use b) per crop/ season	L product / ha a) max. rate per appl. b) max. total rate per crop/ season	kg as/ ha a) max. rate per appl.	Water L/ ha min / max
Pome fruits	F	Venturia spp.	SP	53-81	a) 6 (5) b) 6	a) 2.5 [0.83 L/ha/ mCH] a) 15.0	a) 0.313(*) ++ 1.403(**) b) 1.878(*) + 8.415(**)	150/ 1000 Max 333 L/ ha/ mCH