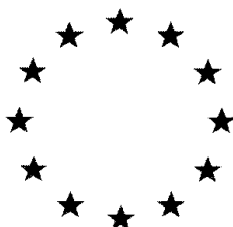


# **European Commission**



**VOLUME 3 – Annex B (PPP)**

**Laminarin**

**B.3 Data on application and efficacy**

**Rapporteur Member State: The Netherlands**

**April 2016**

**Draft Re-Assessment Report and Proposed decision of the Netherlands  
prepared in the context of the possible renewal of laminarin under Regulation  
(EC) 1107/2009**

## Version history page

Date	Version history
April 2016	Initial RAR

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### **B.3 Data on application and efficacy**

#### **B.3.1 Field of use envisaged**

Laminarin is intended to be used as an elicitor of the crop's self-defense mechanisms against pathogens on various crops in agriculture under field or glasshouse conditions. By inducing systemic resistance on plants, this allows protection during growth. Laminarin-based formulations are used alone or in combination with fungicides for the protection of crops against fungal diseases and bacteria.

The representative plant protection product containing Laminarin is "Vacciplant Fruits et Légumes".

#### **B.3.2 Effects on harmful organisms**

Laminarin is an elicitor of the crop's self-defense mechanisms and as such has no direct effect on harmful organisms. It stimulates the natural defences of the plant against pathogens, i.e. it enhances defense reactions which inhibit the development of the pathogens.

Laminarin will afford a systemic protection to the plant against pathogens.

For a full list of representative uses, please refer to table 3.3-1. Claimed pathogens include fungi, oomycetes and bacteria.

#### **B.3.3 Details of intended use**

The representative plant protection product containing Laminarin is Vacciplant Fruits et Légumes. Its representative uses are shown in Table 3.3-1

Table 3.3.-1 GAP table of representative uses

GAP rev. 0, date: 2014-07-31

PPP (product name/code)    Vacciplant Fruits et Légumes  
active substance 1    Laminarin  
active substance 2    -

Formulation type:    SL  
Conc. of as 1: 45 g/L  
Conc. of as 2: -

safener    not relevant  
synergist    not relevant

Conc. of safener:    -  
Conc. of synergist:    -

Applicant:    Laboratoires Goëmar SAS  
Zone(s):    central/southern/EU

professional use    ☒  
non professional use    ☒

Verified by MS: Yes

1	2	3	4	5	6	7	8	10	11	12	13	14
Use- No.	Member state(s)	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 per treatment			PHI (days)	Remarks:
					Method / Kind	Timing / Growth stage of crop & season	Number / (min Interval Between Appli cations)	kg, L product / ha	g, kg as/ha	Water L/ha  min / max		
1	EU	Apple (MABSD)	F	Gloeosporium GLOESP  Powdery mildew <i>Podosphaera leucotricha</i> PODOLE  Scab <i>Venturia inaequalis</i> VENTIN	Foliar spraying	BBCH 11-89 March to November	20 / (7 days)	Standard orchard 1 L/ha  LWA 0.67 L/ha	Standardorchard 45 g a.s./ha  LWA 30.2 g as/ha	200 - 500	0	a)  Per season: 20  b) 20 L/ha  c) Standard orchard in this case is 3 m tall, with a row distance of 4 m.

1	2	3	4	5	6	7	8	10	11	12	13	14
Use- No.	Member state(s)	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 per treatment			PHI (days)	Remarks:
					Method / Kind	Timing / Growth stage of crop & season	Number / (min Interval Between Appli cations)	kg, L product / ha	g, kg as/ha	Water L/ha  min / max		
2	EU	Apple (MABSD)	F	Fire blight <i>Erwinia amylovora</i> EWIAM	Foliar spraying	BBCH 56-89 April to November	7 / (10 days)	Standard orchard : 0.75 L/ha  LWA : 0.5 L/ha	Standard orchard : 33.8 g a.s./ha  LWA 22.5 g a.s./ha	500- 1000	0	a) Per season: 7  b) 5.25L/ha LWA: 3.5L/ha  c) Standard orchard in this case is 3 m tall, with a row distance of 4 m.
3	EU	Pear (PYUCO)	F	Fire blight <i>Erwinia amylovora</i> EWIAM	Foliar spraying	BBCH 56-89 April to November	7 / (10 days)	Standard orchard : 0.75 L/ha  LWA : 0.5 L/ha	Standard orchard : 33.8 g a.s./ha  LWA 22.5 g a.s./ha	500- 1000	0	a) Per season: 7  b) 5.25L/ha LWA: 3.5L/ha  c) Standard orchard in this case is 3 m tall, with a row distance of 4 m.

1	2	3	4	5	6	7	8	10	11	12	13	14
Use- No.	Member state(s)	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 per treatment			PHI (days)	Remarks:
					Method / Kind	Timing / Growth stage of crop & season	Number / (min Interval Between Appli cations)	kg, L product / ha	g, kg as/ha	Water L/ha  min / max		
4	EU	Vine (VITVI)	F	Powdery mildew <i>Erysiphe necator</i> UNCINE	Foliar spraying	BBCH 11-89 April to october	10 / (10 days)	2 L/ha	a) 90 g a.s./ha	100- 1000	0	a) Per season: 10 b)20L/ha
5	EU	Lettuce (LACSA)	F, G	Downy mildew <i>Bremia lactucae</i> BREMLA	Foliar spraying	BBCH 13-49 January to December	per cycle: 6 per / 7 days season: 16 / ( 7 days)	2.5 L/ha	113 g a.s./ha	500- 1000	0	a)Per crop:6 Per season: 16 b)Per cycle: 15L/ha Per season:40L/ha
6	EU	Strawberry (FRASS)	F, G	Powdery mildew <i>Podosphaera aphanis</i> PODOAP	Foliar spraying	BBCH 12-92 March to October	7 / (7 days)	Min : 0.75 l Max : 1 L/ha	45 g a.s./ha	300- 1000	0	a)Per crop : 7 Per season : 7 b) 7L/ha c) Min 0.75 L/ha Max 1L/ha



1	2	3	4	5	6	7	8	10	11	12	13	14
Use- No.	Member state(s)	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 per treatment			PHI (days)	Remarks:
					Method / Kind	Timing / Growth stage of crop & season	Number / (min Interval Between Appli cations)	kg, L product / ha	g, kg as/ha	Water L/ha  min / max		
7	EU	Strawberry (FRASS)	F, G	Grey mould <i>Botrytis cinerea</i> BOTRCI  Leaf spot <i>Mycosphaerella fragariae</i> MYCOFR  Leaf scorch <i>Diplocarpon earliana</i> DIPCEA  Leather rot <i>Phytophthora cactorum</i> PHYTCC	Foliar spraying	BBCH 12-92 February to September	7 / (5-7 days)	Min 1 L/ha Max 2 L/ha	Min 45 g a.s./ha Max 90 g a.s./ha	300- 1000	0	a) Per crop: 7 Per season: 7 b) Min: 7L/ha Max: 14L/ha  c) Apply Vacciplant at 1 L/ha for water volume below 500 L/ha. Above 500 L/ha keep the product concentration at 0.2 L/hL .

1	2	3	4	5	6	7	8	10	11	12	13	14
Use- No.	Member state(s)	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 per treatment			PHI (days)	Remarks:
					Method / Kind	Timing / Growth stage of crop & season	Number / (min Interval Between Appli cations)	kg, L product / ha	g, kg as/ha	Water L/ha  min / max		
8	EU	Tomato (LYPES)	F, G	Bacterial speck <i>Pseudomonas syringae</i> pv tomato PSDMTM	Foliar spraying	BBCH 10-89 April to October	7 / (7 days)	Min 1 L/ha Max 2 L/ha	Min 45 g a.s./ha Max 90 g a.s./ha	500- 1300	0	a) Per crop:7 Per season: 7 b)Min: 7L/ha Max: 14L/ha c)
9	EU	Tomato (LYPES)	F, G	Grey mould <i>Botrytis cinerea</i> BOTRCI	Foliar spraying	BBCH 10-89 January to December	7 / (7 days)	Min 1.5 L/ha Max 3 L/ha	Min 67.5 g a.s./ha Max 135 g a.s./ha	500- 1300	0	a) Per crop:7 Per season: 7 b)Min: 10.5L/ha Max: 21L/ha
10	EU	Tomato (LYPES)	F, G	Powdery mildew <i>Leveillula taurica</i> LEVETA	Foliar spraying	BBCH 10-89 March to December	7 / (7 days)	1 L/ha	45 g a.s./ha	500- 1300	0	a) Per crop:7 Per season: 7 b) 7 L/ha

1	2	3	4	5	6	7	8	10	11	12	13	14
Use- No.	Member state(s)	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 per treatment			PHI (days)	Remarks:
					Method / Kind	Timing / Growth stage of crop & season	Number / (min Interval Between Appli cations)	kg, L product / ha	g, kg as/ha	Water L/ha  min / max		
11	EU	Zucchini (CUUPG)	F, G	Powdery mildew <i>Leveillula taurica</i> LEVETA	Foliar spraying	BBCH 10-89 January to December	6 / (5 days)	0.75 L/ha	33.8 g a.s./ha	100- 500	0	a) Per crop: 6 Per season: 6 b) 4.5L/ha
12	EU	Pumpkins (CUUMA)	F	Powdery mildew <i>Leveillula taurica</i> LEVETA	Foliar spraying	BBCH 10-89 January to December	6 / (5 days)	0.75 L/ha	33.8 g a.s./ha	100- 500	0	a) Per crop:6 Per season: 6 b) 4.5L/ha
13	EU	Aubergine (SOLME) Pepper (CPSAN)	F, G	Grey mould <i>Botrytis cinerea</i> BOTRCI	Foliar spraying	BBCH 60-89 February to October	7 / (7 days)	3 L/ha	135 g a.s./ha	500- 1300	0	a) Per crop :7 Per season: 7 b) 21L/ha c)
14	EU	Lettuce (LACSA)	F	Grey mould <i>Botrytis</i> sp. BOTRSP	Foliar spraying	BBCH 16-49 January to December	7 / (7 days)	3 L/ha	135 g a.s./ha	750- 1000	0	a) Per crop: 7 Per season: 7 b) 21L/ha
15	EU	Greenbean (PHSVV)	F,	Grey mould <i>Botrytis</i> spp. BOTRSP	Foliar spraying	BBCH 51-89 March to September	7 / (7 days)	3 L/ha	a) 135 g a.s./ha	800- 1300	0	a) Per crop: 7 Per season: 7 b) 21L/ha

1	2	3	4	5	6	7	8	10	11	12	13	14
Use- No.	Member state(s)	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 per treatment			PHI (days)	Remarks:
					Method / Kind	Timing / Growth stage of crop & season	Number / (min Interval Between Appli cations)	kg, L product / ha	g, kg as/ha	Water L/ha  min / max		
16	EU	Cucurbits: Cucumber (CUMSA) Zucchini (CUUPG)	F, G	Grey mould <i>Botrytis</i> spp. BOTRSP	Foliar spraying	BBCH 60-89 January to December	7 / (7 days)	3 L/ha	135 g a.s./ha	800- 1300	0	a) Per crop: 7 Per season: 7 b) 21L/ha
17	EU	Cucumber (CUMSA)	F, G	Downy mildew <i>Pseudoperonospora cubensis</i> PSPECU	Foliar spraying	BBCH 51-89 January to December	7 / (7 days)	3 L/ha	135 g a.s./ha	800- 1300	0	a) Per crop: 7 Per season: 7 b) 21L/ha c)
18	EU	Kiwi (ATICH)	F	Bacterial canker <i>Pseudomonas syringae</i> pv. <i>Actinidiae</i> PSDMAK	Foliar spraying	BBCH 11-95 March to November	7/(10 days)	2 L/ha	90 g a.s./ha	700- 1000	0	a) Per season: 7 b) 14L/ha

#### **B.3.4 Application rate and concentration of the active substance**

Vacciplant Fruits et Légumes contains 45 g/L laminarin.

See table B.3.3-1 for the representative uses and dose rates.

#### **B.3.5 Method of application**

Representative uses of plant protection products containing the active substance Laminarin comprise a wide range of crops, both Glasshouse (G) and Field (F) situations, using foliar application.

See table B.3.3-1 representative uses.

#### **B.3.6 Number and timing of application and duration of protection**

See table B.3.3-1 for the representative uses. The representative uses include up to 20 applications per year. The interval varies depending on the crop, with a range of 5-10 days.

#### **B.3.7 Necessary waiting periods or other precautions to avoid phytotoxic effects on succeeding crops**

“Vacciplant Fruits et Légumes” is a stimulator of natural defences with a mode of action based on the activation of the defence processes of grown plants. Vacciplant Fruits et Légumes is safe to all intended crops when it is used according to the label recommendations.

Moreover, Vacciplant Fruits et Légumes is quickly destroyed in the soil.

No negative effect on succeeding crop growth is known from currently authorised products. There is no minimum period for sowing/ planting succeeding/ replacement crops, with no limitation in the choice of succeeding/ replacement crops.

It can be concluded that Vacciplant Fruits et Légumes has no adverse effect on succeeding crops.

#### **B.3.8 Proposed instruction for use**

Product labels will be addressed during product registration.

Please refer to table B.3.3-1 for the list of representative uses. In addition, the following information was provided by the applicant:

Vacciplant Fruits et Légumes is used preventive in most of crops against target diseases. It allows to stimulate natural defenses of the plants and to alternate the mode of action in a fungicide program.

On apple and pear against the fire blight, Vacciplant Fruits et Légumes is applied from the stage of growth BBCH 56 to BBCH 69. In case of contamination after the crop growth stage BBCH 69, applications could be continued.

On apple and pear against against scab, Vacciplant Fruits et Légumes is applied on secondary contamination when the contamination risk is moderate. When the contamination risk is high, it is recommended to apply a specific fungicide against scab.

On strawberry against downy mildew, Vacciplant Fruits et Légumes is applied as preventive in a fungicide program to replace some fungicide products. It is recommended to apply Vacciplant Fruit et Légumes before disease development. As soon as the symptoms appear, apply another specific fungicide. Then when the new leaves are healthy, apply Vacciplant Fruits et Légumes and so on. Against the other pathogens, Vacciplant Fruits et Légumes has to be applied in preventive treatment before the pathogen infection.

#### **B.3.9 Effectiveness**

It was already demonstrated in biological assessment dossiers submitted for Vacciplant Fruits et Légumes in Belgium (2008) that this product reached a level of control sufficient when applied as preventive treatment on fruits and vegetables crops against a wide range of various pathogens. For further information see also Volume 1 level 1: 1.5.4 Overview on authorisations in EU Member States. An in depth evaluation of efficacy is not needed for renewal, as efficacy of the claimed dose rate has already been established. The dose rate is found to be realistic for the purpose of renewal of the active substance.

#### **B.3.10 Information on the development of resistance**

In the Fungicide resistance action committee (FRAC) list of 2015, laminarin is classified under FRAC group P4, as a polysaccharide. Laminarin is a linear  $\beta$  D-1,3-linked glucan. No cases of resistance have been reported.

Laminarin has no direct effect on the pathogen (it stimulates several pathways in the plant cell), the chance that resistance or cross-resistance could develop is considered to be low.

#### **B.3.11 Adverse effects on treated crops**

Laminarin is a stimulator of natural defences with a mode of action based on the activation of the defence processes of grown plants. Laminarin-based formulations are safe to all intended crops when they are used according to the label recommendations.

Laminarin-based formulations have no undesirable side-effects.

#### **B.3.12 References relied on**

This concerns a Renewal. No references submitted.

#### **B.3.13 References relied on**

This concerns a Renewal. No references submitted.