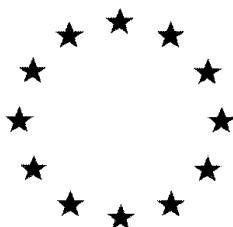


European Commission



Addendum
VOLUME 3 – Annex B (A12115I)

Abamectin

B.3 Data on application and efficacy

Rapporteur Member State: The Netherlands

April 2015

**Draft Assessment Report and Proposed decision of the Netherlands prepared
in the context of the possible extension of the approval conditions of
abamectin under Regulation (EC) 1107/2009**

Version history page

Date	Version history
April 2015	Initial version

TABLE OF CONTENTS – VOLUME 3 B.3

B.3	Data on application and efficacy	4
B.3.1	Field of use envisaged.....	4
B.3.2	Effects on harmful organisms	4
B.3.3	Details of intended use	4
B.3.4	Application rate and concentration of the active substance	7
B.3.5	Method of application	7
B.3.6	Number and timing of application and duration of protection	7
B.3.7	Necessary waiting periods or other precautions to avoid phytotoxic effects on succeeding crops	7
B.3.8	Proposed instruction for use	7
B.3.9	Effectiveness.....	7
B.3.10	Information on the development of resistance.....	8
B.3.11	Adverse effects on treated crops	8
B.3.12	References relied on	9

B.3 Data on application and efficacy

B.3.1 Field of use envisaged

Abamectine is currently approved as insecticide, acaricide. Abamectine is now applied for as nematocide.

For the use as a nematocide as a soil drip (soilbound application) for the control of root-knot nematodes (*Meloidogyne* spp.) in tomato, eggplant, pepper, cucurbits - edible peel (cucumber, zucchini, etc), cucurbits - inedible peel (melon, watermelon, squash) and green beans .

B.3.2 Effects on harmful organisms

In foliar use, main activity is triggered by ingestion, but in nematodes control, due to the difference of pest behaviour and their life cycles, contact activity in the soil solution is the main source of pest control. Treated pests rapidly become paralyzed and eventually die: although feeding stops almost immediately, it can take up to 2-4 days for death to occur. The screening tests with nematodes showed the irreversible stop of the activity after 24 h.

B.3.3 Details of intended use

The product is intended for the use as a nematocide as a soil drip (soilbound application) for the control of root-knot nematodes (*Meloidogyne* spp.) in tomato, eggplant, pepper, cucurbits - edible peel (cucumber, zucchini, etc), cucurbits - inedible peel (melon, watermelon, squash) and green beans.

See table 3.3.1.

Table 3.3.1 List of representative uses evaluated for the extension of abamectin (Annex IIA 3.4; Annex IIIA 3.3 - 3.7, 3.9)

Tradename: Tervigo
Development code: A12115I
Active Ingredient: Abamectin

Crop and/ or situation (a)	Member State or Country	Product name	F G or I (b)	Pests or Group of pests controlled (c)	Formulation		Application				Application rate per treatment			PHI (days) (l)	Remarks: (m)
					Type	Conc. of as	method kind	growth stage & season	number min max	interval between applications (min)	g as/hL	water L/ha	g as/ha		
					(d-f)	(i)	(f-h)	(j)	(k)		min max	min max	min max		

Pepper	C EU, S EU	A12115I	I	<i>Meloidogyne</i> sp.	SC	20	Soil drip	BBCH 12-89	4	10	0.5 - 1.0	10000 - 20000	100	0	
Aubergine	C EU, S EU	A12115I	I	<i>Meloidogyne</i> sp.	SC	20	Soil drip	BBCH 12-89	4	10	0.5 - 1.0	10000 - 20000	100	0	
Tomato	C EU, S EU	A12115I	I	<i>Meloidogyne</i> sp.	SC	20	Soil drip	BBCH 12-89	6	10	0.5 - 1.0	10000 - 20000	100	0	
Cucurbits - edible peel (Cucumber, zucchini, etc)	C EU, S EU	A12115I	I	<i>Meloidogyne</i> sp.	SC	20	Soil drip	BBCH 12-89	4	10	0.5 - 1.0	10000 - 20000	100	0	
Cucurbits - inedible peel (Melon, Watermelon, Squash)	C EU, S EU	A12115I	I	<i>Meloidogyne</i> sp.	SC	20	Soil drip	BBCH 12-89	4	10	0.5 - 1.0	10000 - 20000	100	0	
Green beans	C EU, S EU	A12115I	I	<i>Meloidogyne</i> sp.	SC	20	Soil drip	BBCH 12- 89	4	10	0.5 - 1.0	10000 - 20000	100	0	

- Remarks:**
- (a) For crops, the EU and Codex classifications (both) should be used; where relevant, the use situation should be described (*eg.* fumigation of a structure)
 - (b) Outdoor or field use (F), glasshouse application (G) or indoor application (I)
 - (c) *eg.* biting and suckling insects, soil born insects, foliar fungi, weeds
 - (d) *eg.* wettable powder (WP), emulsifiable concentrate (EC), granule (GR)
 - (e) GCPF Codes - GIFAP Technical Monograph No 2, 1989
 - (f) All abbreviations used must be explained
 - (g) Method, *eg.* high volume spraying, low volume spraying, spreading, dusting, drench
 - (h) Kind, *eg.* overall, broadcast, aerial spraying, row, individual plant, between the plants - type of equipment used must be indicated
 - (i) g/kg or g/l
 - (j) Growth stage at last treatment (BBCH Monograph, Growth Stages of Plants, 1997, Blackwell, ISBN 3-8263-3152-4), including where relevant, information on season at time of application
 - (k) The minimum and maximum number of application possible under practical conditions of use must be provided
 - (l) PHI - minimum pre-harvest interval
 - (m) Remarks may include: Extent of use/economic importance/restrictions

B.3.4 Application rate and concentration of the active substance

The product will be applied at a dose of 5 L/ha (= 100g ai /ha).

The concentration in the spray liquid is dependent on the crop, typical concentrations of 0.5 to 1.0 g as / hL.

B.3.5 Method of application

Soil drip in soilbound crops.

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

Pepper: 4 applications, interval 10 days

Eggplant (=aubergine): 4 applications, interval 10 days

Tomato: 6 applications, interval 10 days

Cucurbits, edible peel (Cucumber, zucchini, etc.): 4 applications, interval 10 days

Cucurbits, inedible peel (melon, watermelon, etc.): 4 applications, interval 10 days

Green beans: 4 applications, interval 10 days

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

No waiting periods or other restrictions are necessary for succeeding crops.

B.3.8 Proposed instruction for use

No product labels have been submitted.

B.3.9 Effectiveness

At the proposed rate of 5 l/ha Tervigo (A12115I) is effective against the root-knot nematode (*Meloidogyne* spp.). As root-knot nematodes are causing the damage throughout the season and hatching occurs during an extended period, several applications of A12115I at 5 L/ha should be used to efficiently control the pest. For eggplant, pepper, melon, watermelon, cucumber, zucchini and green bean the recommended and maximum number of applications for the whole season control is 4, while on tomato the maximum number of application per season is 6 . For tomato the applicants asks for six applications because tomato is a crop where farmers make long growing cycles (much more often than in other fruiting vegetable crops). The product Tervigo is not a soil sterilant, so I doesn't kill inactive stage of the nematodes (eggs), it kills only active larval stages. Tervigo gives protection for about 14 days (best case). With 4 applications of Tervigo plant is protected for about 50 days. Larva which hatch after this period are not affected by Tervigo. For short cycle crops infection at this late stage (up to 120 days) will not affect the yield, since the time period for population growth and galling development is not long enough (farmer finishes the growing). In the crop cycles of 6 months or more (which is quite often for tomato) infection in that late period can affect the late harvesting.

Trials only have been conducted in the Mediterranean EPPO zone. For approval of the active substance these trials show that the proposed dose rate is sufficiently effective. The main goal of

evaluation of efficacy for registration of an active substance is to check if the requested dose rates are realistic, this is important for determination of the risk envelope for the other aspects.

For the purpose of creating a realistic GAP (table of uses) for registration of the active substance the submitted efficacy data can be considered sufficient. For registration of the product additional trials or argumentation would be required to justify that the product is also effective under other conditions (eg. other EPPO zones).

B.3.10 Information on the development of resistance

Avermectin compounds belong to the chloride channel activator group of insecticides (Group 6 – IRAC mode of action classification).

Avermectin compounds act as agonists of gamma-amino butyric acid (GABA)-gated chloride channels, binding with high affinity to the channels in the head and muscle neuronal membranes

A full list of active ingredients belonging to group's 6 of the insecticide mode of action classification can be found on the Insecticide Resistance Action Committee (IRAC) web-site.

Mechanism of resistance

Resistance to the avermectins and in particular abamectin has been recorded in few agricultural pest species, including the most studied two-spotted spider mite (*Tetranychus urticae*) and the diamondback moth (*Plutella xylostella*).

Resistance has been associated with a variety of mechanisms, which include target site insensitivity, increased mono-oxygenase, glutathione-S-transferase and carboxylesterase activity and has also been linked to decreased cuticular penetration and increased excretion.

Resistance risk associated with target pest.

Targets which are polyphagous on insecticide treated agricultural crops, sexually reproductive, have multiple generation per season, highly mobile and has a known history of resistance development can be considered of higher resistance risk than those pests which are monophagous or polyphagous on non-agricultural or untreated crops, have long generation times, with few generations per crop cycle or has no history of resistance development to other insecticides.

A12115I (representative product) is a non fumigant nematicide. Application by drip irrigation system means that the product is applied in a row strip. Big part of inter row area stays without the presence of the product, which means that this area is a kind of a buffer zone which prevents in addition the occurrence of the resistance of nematode population to A12115I.

The evaluation for resistance risk and resistance management strategies will done in more detail during product registration.

B.3.11 Adverse effects on treated crops

No phytotoxicity symptoms caused by A12115I at the proposed use rate of 5 l/ha were recorded in any trial.

B.3.12 References relied on

Annex point	Author	Year	Title Source (where different from company) Company, Report No. GLP or GEP status (where relevant) Published or Unpublished	Data protection claimed Y/N	Owner SYN = Syngenta
KIIIA1 6/01	Ivacic D.	2012	A12115I (Tervigo) for nematodes on protected vegetables Syngenta - No Unpublished Regulatory document No. A12115I_10165	Y	SYN