

SVMA14-004

DOCUMENT M-CP, Section 6

EFFICACY DATA

Version history¹

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¹ It is suggested that applicants adopt a similar approach to showing revisions and version history as outlined in SANCO/10180/2013 Chapter 4 How to revise an Assessment Report

Table of Contents

CP 6	EFFICACY DATA	4
CP 6.1	Preliminary range finding tests	5
CP 6.2	Testing effectiveness	5
CP 6.2.1	Efficacy trials performed on Citrus	5
CP 6.2.1.1	Summary and evaluation of trials performed on citrus	8
CP 6.2.1.2	General Conclusion regarding the efficacy trials performed on citrus	28
CP 6.2.2	Efficacy trials performed on Persimmon	28
CP 6.2.2.1	Summary and evaluation of trials performed on persimmon	30
CP 6.2.2.2	General Conclusion regarding the efficacy trials performed on persimmon	46
CP 6.3	Information on occurrence or possible occurrence of the development of resistance	47
CP 6.4	Effects on the yield of treated plants or plant products in term of quantity and/or quality	47
CP 6.4.1	Effects on quality of plants or plant products	47
CP 6.4.2	Effects on transformation processes	47
CP 6.4.3	Effects on the yield of treated plants or plant products	47
CP 6.5	Phytotoxicity to target plants (including different cultivars) or to target plant products	47
CP 6.6	Observations on undesirable or unintended side-effects, e.g. on beneficial and other non-target organisms, on succeeding crops, other plants or parts of treated plants used for propagating purposes (e.g. seeds, cuttings, runners)	47
CP 6.6.1	Impact on succeeding crops	47
CP 6.6.2	Impact on other plants, including adjacent crops	47
CP 6.6.3	Impact on treated plants or plant products to be used for propagation	48
CP 6.6.4	Effects on beneficial and other non-target organisms	48
CP 6.7	Summary and assessment of data according to points 6.1 to 6.6	48
CP 6.8	List of test facilities including the corresponding certificates ..	49
Appendix 1: GAP Table		51

CP 6 EFFICACY DATA

The purpose of this dossier is to provide the efficacy data to support the renewal of Hydrolysed proteins at EU level.

The smell of hydrolysed protein is related, in its composition, to the scent of "honeydew" naturally produced by aphid, and considered as one of the most suitable diets for larval and adult flies (Mahat, 2009). Among known protein baits, the smell of the hydrolysed protein has been the most powerful attractant used for both male and female fruit flies (Montoya *et al.*, 1999). When it comes to using physical baits, it has been shown that hydrolysed proteins are necessary, but not satisfactory, means to attract the female flies.

Table 6-1: Details of the active substance

Active substance	Hydrolysed proteins
Concentration (Unit: g/kg or g/L...)	300 g/l
Chemical group	Amino group
Mode of action	Mimice protein scent/smell
Biological action	Insect attractant (bait)

SVMA14-004, the representative formulation, is a soluble concentrate product containing 300 g/l of Hydrolysed proteins intended to be used as a bait against *Ceratitidis capitata*, commonly called "Mediterranean fruit fly", in Citrus and Persimmon fields, in mixture with authorized insecticides.

Citrus is a very important crop for the Spanish economy where production in 2014/2015 reached 6.5 MMT. These numbers represent 62 percent of the EU's citrus production (GAIN Report Number: SP1513), which makes Spain together with Italy, the biggest orange producer within the EU with over 80 percent of the EU production. The rest of the production is secured mainly by Greece and Portugal. For 2013/2014 season, Spain orange production reached 3.1 MMT, more than 55 percent of which was exported to other MS of the EU. In the same year, Portugal and Greece had produced over 1 MMT most it sold in the European market. Spain is largest producers of Tangerines/Mandarins in the EU with over 2.15 MMT in 2015. In Spain industry continues to expand and new early and late varieties that cover more of the calendar spectrum are being developed (GAIN Report Number: IT14114). Greece and Portugal are ranked third and fourth in Europe largest Tangerines/Mandarins producers with approximately 150 MT and 90 MT respectively in 2014. In 2014, Spain was also the biggest lemon producers in EU with approximately 818,500 MT, Greece and Portugal are still in top five with 55,000 and 13,000 MT respectively. Lemons are consumed fresh in Europe, and the average consumption per capita is 2.7 kg (GAIN Report Number: IT14114).

As for persimmon, European Mediterranean countries account for less than 5% of world production. According to the FAO, Italy was ranked first among persimmon producer in the area for many years (more than 2650 h, 52,288 t in 2013). However, in the last 20 years, Spain has had led European countries by having and maintaining the highest and quickest increase in acreage and production, which enabled the country to dethrone Italy production over 80,000 MT in 2014.

The Mediterranean fruit fly, *Ceratitidis capitata*, is one the most destructive polyphagous fruit pests worldwide. The specie originated in sub-Saharan Africa and now established in all continents. Because of its Cosmopolitan distribution and its wide range of hosts, *Ceratitidis capitata* is ranked first among financial-loss generating fruit fly species. The economic loss is generated by both direct productivity loss and the great amount of resources used for pest control. In literature, infestation is usually classified into four (4)

mean categories according to the percentage of damaged fruit caused; the infestation is considered low when damage is under 3%, low to medium when it's between 3 to 8%, medium to high when it's between 8 to 13%, and finally high infestation when the percentage damaged fruit is higher than 13%. Major pest of Citrus, it can also generate major damage on several Mediterranean crops such as peach, apple peppers and persimmon. In the Mediterranean EU countries mass producing these crops, are particularly subject to major economic loss every year. In Mediterranean Sea, at the end of the fruit season, some late varieties are not cultivated because of the fly's rapid infestation abilities. In citrus, early-ripening varieties, such as Clementine, are the main plant species subject to extensive damage by *Ceratitis capitata*. Their fruits generally start to ripen in September when they are the most vulnerable to *Ceratitis capitata* stings. In Europe general management of medfly comprise several treatment plans (mostly insecticide), local produce quarantines, sterile males, and ground spraying with organic pesticides.

CP 6.1 Preliminary range finding tests

No preliminary trial was performed with the product SVMA14-004. No field trial was established in order to determine the minimum effective dose for the control of the *Ceratitis capitata* in Citrus and Persimmon fields. However, during the efficacy trials performed in 2015, SVMA14-004 was tested at 1.5 l/ha in citrus and persimmon fields for the control of *Ceratitis capitata*.

CP 6.2 Testing effectiveness

A total of 13 efficacy trials are carried out, under GEP conditions, to evaluate the efficacy of the bait SVMA14-004 against *Ceratitis capitata* in citrus fields (8 trials) and persimmon fields (5 trials). These trials are conducted in 2015, 2016 and 2018 in Spain in the following locations:

- Cartaya (Huelva)
- Gibrleon (Huelva)
- Cantillana (Sevilla)
- Benacazonn (Sevilla)
- Montroy (Valencia)
- La Bernardilla (Granada)
- Brenes (Sevilla)
- La Rinconada (Sevilla)
- Lora del Rio (Sevilla)

A full description of trials per crops was presented in separated chapter below.

CP 6.2.1 Efficacy trials performed on Citrus

A total of 8 trials efficacy trials are carried out, under GEP conditions, to evaluate the efficacy of the bait SVMA14-004 against *Ceratitis capitata* in citrus fields. These trials were performed in Spain in 2015 and 2016 (5 trials) and in 2018 (3 trials).

These trials were carried out by an officially recognized organization (SICOP) in accordance with the Principles of Good Experimental Practice (GEP). Further details of the trials conducted are provided in Table 6.2.1-1 and Table 6.2.1-2.

Table 6.2.1-1: Details on trial methodology – trials 2015-2016

Experimental design	Plot design	RCB			
	Plot size	80 - 150 m ² (5 trees)			
	Number of replications	4			
	EPPO guideline	PP 1/106 (2), PP 1/152 (4), PP 1/ 181 (4), PP 1/135 (4)			
Crop	Trials per crop	Mandarin (2) Orange (1) Sweet orange (2)			
	Varieties per crop	Mandarin: Clemenucci (1), Oronules (1) Orange : Navelina (1) Sweet orange: Navelate (1), Valencia Midknight (1)			
	Sowing period	Mandarin: 2002 (1), 2005 (1) Orange: 2007 (1) Sweet orange: 2000 (1), 2006 (1)			
	Planting rate	Mandarin: 333.33 plants/ha Orange: 555.56 plants/ha Sweet orange: 555.56 to 625 plants/ha			
Application	Crop stage (BBCH) at application	BBCH 79-89			
	Timing, Pest stage at application	Trials performed in 2015: Application A at pest infestation (first flights of <i>Ceratitis capitata</i>). Application B 14 days after the application A Application C 14-22 days after the application B Trials performed in 2016: Application A at pest infestation (first flights of <i>Ceratitis capitata</i>). Application B 21 days after the application A			
	Number of applications	Trials performed in 2015: 3 applications Trials performed in 2016: 2 applications			
	Tested product	KARATE ZEON + SVMA14-004 T1	KARATE ZEON T2	SVMA14- 004* T3	KARATE ZEON + Hydrolysed proteins Life T4
	Application rate	0.033-0.040% + 1.5 l/ha (0.25-0.3%)	0.013%	1.5 l/ha (0.25-0.3%)	0.033-0.040% + 1.5 %
	Application equipment	Maruyama motor backpack sprayer. Operation pressure 4 bar.			
	Application type	T1, T3, T4: on one band of the trees was treated (approximately 1/3 of each tree of the plot), application on the southern side of the trees. T2: on whole plots/plants			
	Spray volume	T1, T3, T4: 100-600 l/ha T2: 1500 l/ha			
	Assessment types	Assessments of damaged fruits			
Assessment	Assessment dates**	0 DAA (5), 7 DAA (5), 14 DAA (5), 21 DAA (2), 7 DAB (5), 14-15 DAB (5), 22 DAB (1), 7 DAC (3), 14 DAC (3)			
	Sample size	Damage on fruits: number of punctures in 100 fruits per plot. Fruits with			

		larvae and fruits without larvae are distinguished.
Other relevant information	Natural / artificial infestation	Natural occurrence
	Field / Greenhouse	Open field
	Test facility	SICOP

*For trial on orange only

**DAX= Day After application X

Table 6.2.1-2: Details on trial methodology – trials 2018

Experimental design	Plot design	RCB		
	Plot size	150 m ² (5 trees)		
	Number of replications	4		
	EPPO guideline	PP 1/106 (2), PP 1/152 (4), PP 1/ 181 (4), PP 1/135 (3)		
Crop	Trials per crop	Orange (3)		
	Varieties per crop	Orange : Valencia late (3)		
	Sowing period	Orange: 1988 (1), 2003 (2)		
	Planting rate	Orange: 415-416 plants/ha		
Application	Crop stage (BBCH) at application	BBCH 87-88		
	Timing, Pest stage at application	Application A at pest infestation (first flights of <i>Ceratitis capitata</i>)		
	Number of applications	1 application		
	Tested product	KARATE ZEON + SVMA14-004 T1	KARATE ZEON T2	KARATE ZEON + Hydrolysed proteins Life T3
	Application rate	0.1% + 1.5 l/ha (1.5%)	0.01%	0.1% + 1.5%
	Application equipment	Maruyama motor backpack sprayer. Operation pressure 5 bar.		
	Application type	T1, T3: On one band of the trees was treated (approximately 1/3 of each tree of the plot), application on the southern side of the trees. T2: whole plots/plants		
	Spray volume	T1, T3: 100 l/ha T2: 1500 l/ha		
Assessment	Assessment types	Assessments of damaged fruits		
	Assessment dates*	0 DAA (3), 7 DAA (3), 14 DAA (3)		
	Sample size	Damage on fruits: number of punctures in 100 fruits per plot. Fruits with larvae and fruits without larvae are distinguished.		
Other relevant information	Natural / artificial infestation	Natural occurrence		
	Field / Greenhouse	Open field		
	Test facility	SICOP		

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*DAX= Day After application X

Details of the reference standards tested are provided in the Table 6.2.1-3.

Table 6.2.1-2: Presentation of reference standards used in trials

Crop	Reference standard	Country where the product is registered	Authorization number	Active substance(s)	Formulation		Registered application rate	Application rate in trials (per treatment)
					Type	Conc. of a.s.		
Citrus	Proteinas Hidrolizadas Life	Spain	14.634	Hydrolysed proteins	SL	30%	1.5%	1.5 %
	KARATE ZEON	Spain	22.398	Lambda-Cyhalothrin	CS	10%	0.01-0.02% alone	0.013%
							0.1-0.125% with bait	0.033-0.085%

CP 6.2.1.1 Summary and evaluation of trials performed on citrus

A total of 8 trials were performed. During the 5 trials performed in Spain in 2015 and 2016, the bait SVMA14-004 was tested at the dose of 1.5 l/ha (0.25-0.3%), applied alone and/or in mixture with an insecticide (KARATE ZEON – 0.033-0.040%), and was compared to the reference mixture of Hydrolysed proteins Life (1.5 %) and KARATE ZEON (0.033-0.040%) and to KARATE ZEON (0.013%) alone. In 3 trials, SVMA14-004 was tested alone in order to demonstrate that this product does not have insecticide effect. During the 3 trials performed in Spain in 2018, the bait SVMA14-004 was tested at the dose of 1.5 l/ha (1.5%), applied in mixture with an insecticide (KARATE ZEON – 0.1% - reduced dose), and was compared to the reference mixture of Hydrolysed proteins Life (1.5 %) and KARATE ZEON (0.1% - reduced dose), and to KARATE ZEON (0.013%) alone. Conclusion of these trials are presented below and evaluations of the trials are presented in the Table 6.2.1.1-1 to Table 6.2.1.1-9.

Trial SI15II011-GR01:

In Spain, farmers are worried about *Ceratitis capitata* damages on fruits due to the important harvest lost. It is why farmers are constrained to use, intensely and regularly, insecticides in order to minimize *Ceratitis capitata* damages. Due to this practice, the infestation level in the agricultural areas is low. This explain the fact that the assessed number of *Ceratitis capitata* per trap per day (on 5 traps were placed out of the trial) is relatively low (<1.51; Table 6.2.1.1-7). However, the percentage of damaged fruit observed in the untreated plots reaches 7.5% (Table 6.2.1.1-1). This value is considered as a low to medium level of *Ceratitis capitata* infestation.

Regarding the reduction of damaged fruits, all the treated plots have shown equivalent results. However, the mixture of the bait SVMA14-004 (1.5 l/ha (0.25-0.3%)) with the insecticide KARATE ZEON (0.033-

0.04%) has shown advantages regarding the mean percentage of damaged fruit (Table 6.2.1.1-1):

- Mixture SVMA14-004 (1.5 l/ha (0.25-0.3%)) + KARATE ZEON (0.033-0.04%): **85.66%**
- Mixture Hydrolysed proteins Life (1.5 %) + KARATE ZEON (0.033-0.04%): **83.68%**
- KARATE ZEON (0.013%): **79.87%**

It can be noted that infected fruits of the plots treated with the mixture of the bait SVMA14-004 (1.5 l/ha (0.25-0.3%)) and the insecticide KARATE ZEON (0.033-0.04%) are in majority without larvae (**98.81%**), in comparison to the infected fruits of the plots treated with the mixture of the attractant Hydrolysed proteins Life (1.5 %) and the insecticide KARATE ZEON (0.033-0.04%) (**73.81%**) and the insecticide KARATE ZEON (0.013%) alone (**60.71%**) (Table 6.2.1.1-5).

Furthermore, the calculation of the financial loss due to the damaged fruits has shown advantages for the plots treated with the bait SVMA14-004 (1.5 l/ha (0.25-0.3%)) and the insecticide KARATE ZEON (0.033-0.04%) (Table 6.2.1.1-8):

- Mixture SVMA14-004 (1.5 l/ha (0.25-0.3%)) + KARATE ZEON (0.033-0.04%): loss of **71.02 € / ha**
- Mixture Hydrolysed proteins Life (1.5 %) + KARATE ZEON (0.033-0.04%): loss of **79.44 € / ha**
- KARATE ZEON (0.013%): loss of **91.96 € / ha**

When the *Ceratitis capitata* infestation is low to medium, the adding of the bait SVMA14-004 (1.5 l/ha (0.25-0.3%)) in the tank containing the insecticide KARATE ZEON (0.033-0.04%), allows to increase the protection of fruits against *Ceratitis capitata* (reduction of damages and reduction of the number of infected fruits with larvae) in comparison to the treatment with the insecticide KARATE ZEON (0.013%) alone. It can be noted that the efficacy against *Ceratitis capitata* of the mixture of the bait SVMA14-004 (1.5 l/ha (0.25-0.3%)) with the insecticide KARATE ZEON (0.033-0.04%) is equivalent to the mixture of the reference attractant Hydrolysed proteins Life (1.5 %) with the insecticide KARATE ZEON (0.033-0.04%).

Trial SI15II011-GR02:

In Spain, farmers are worried about *Ceratitis capitata* damages on fruits due to the important harvest lost. It is why farmers are constrained to use, intensely and regularly, insecticides in order to minimize *Ceratitis capitata* damages. Due to this practice, the infestation level in the agricultural areas is low. This explain the fact that the assessed number of *Ceratitis capitata* per trap per day (on 5 traps were placed out of the trial) is relatively low (<1.31; Table 6.2.1.1-7). However, the percentage of damaged fruit observed in the untreated plots reaches 5% (Table 6.2.1.1-1). This value is considered as a low to medium level of *Ceratitis capitata* infestation.

Regarding the reduction of damaged fruits, all the treated plots have shown equivalent results. However, the mixture of the bait SVMA14-004 (1.5 l/ha (0.25-0.3%)) with the insecticide KARATE ZEON (0.033-0.04%) has shown advantages regarding the mean percentage of damaged fruit (Table 6.2.1.1-1):

- Mixture SVMA14-004 (1.5 l/ha (0.25-0.3%)) + KARATE ZEON (0.033-0.04%): **87.03%**
- Mixture Hydrolysed proteins Life (1.5 %) + KARATE ZEON (0.033-0.04%): **86.95%**
- KARATE ZEON (0.013%): **84.57%**

It can be noted that infected fruits of the plots treated with the mixture of the bait SVMA14-004 (1.5 l/ha (0.25-0.3%)) and the insecticide KARATE ZEON (0.033-0.04%) are in majority without larvae (**85.42%**), in comparison to the infected fruits of the plots treated with the mixture of the attractant Hydrolysed proteins Life (1.5 %) and the insecticide KARATE ZEON (0.033-0.04%) (**81.25%**) and the insecticide KARATE

ZEON (0.013%) alone (**81.53%**) (Table 6.2.1.1-5).

Furthermore, the calculation of the financial loss due to the damaged fruits has shown advantages for the plots treated with the bait SVMA14-004 (1.5 l/ha (0.25-0.3%)) and the insecticide KARATE ZEON (0.033-0.04%) (Table 6.2.1.1-8):

- Mixture SVMA14-004 (1.5 l/ha (0.25-0.3%)) + KARATE ZEON (0.033-0.04%): loss of **35.98 € / ha**
- Mixture Hydrolysed proteins Life (1.5 %) + KARATE ZEON (0.033-0.04%): loss of **38.81 € / ha**
- KARATE ZEON (0.013%): loss of **44.31 € / ha**

When the *Ceratitis capitata* infestation is low to medium, the adding of the bait SVMA14-004 (1.5 l/ha (0.25-0.3%)) in the tank containing the insecticide KARATE ZEON (0.033-0.04%), allows to increase the protection of fruits against *Ceratitis capitata* (reduction of damages and reduction of the number of infected fruits with larvae) in comparison to the treatment with the insecticide KARATE ZEON (0.013%) alone. It can be noted that the efficacy against *Ceratitis capitata* of the mixture of the bait SVMA14-004 (1.5 l/ha (0.25-0.3%)) with the insecticide KARATE ZEON (0.033-0.04%) is equivalent to the mixture of the reference attractant Hydrolysed proteins Life (1.5 %) with the insecticide KARATE ZEON (0.033-0.04%).

Trial SI15II011B-GR03:

In Spain, farmers are worried about *Ceratitis capitata* damages on fruits due to the important harvest lost. It is why farmers are constrained to use, intensely and regularly, insecticides in order to minimize *Ceratitis capitata* damages. Due to this practice, the infestation level in the agricultural areas is low. This explain the fact that the assessed number of *Ceratitis capitata* per trap per day (on 5 traps were placed out of the trial) is relatively low (<1.23; Table 6.2.1.1-7). However, the percentage of damaged fruit observed in the untreated plots reaches 2.25% (Table 6.2.1.1-1). This value is considered as a low level of *Ceratitis capitata* infestation.

Regarding the reduction of damaged fruits, all the treated plots have shown equivalent results. However, the mixture of the bait SVMA14-004 (1.5 l/ha (0.25%)) with the insecticide KARATE ZEON (0.033%) has shown advantages regarding the mean percentage of damaged fruit (Table 6.2.1.1-1):

- Mixture SVMA14-004 (1.5 l/ha (0.25%)) + KARATE ZEON (0.033%): **88.53%**
- Mixture Hydrolysed proteins Life (1.5 %) + KARATE ZEON (0.033%): **84.19%**
- KARATE ZEON (0.013%): **83.50%**
- SVMA14-004 (1.5 l/ha (0.25%)): **0%** - This value allows to demonstrate that SVMA14-004 is a bait and not an insecticide.

Furthermore, the calculation of the financial loss due to the damaged fruits has shown advantages for the plots treated with the bait SVMA14-004 (1.5 l/ha (0.25%)) and the insecticide KARATE ZEON (0.033%) (Table 6.2.1.1-8):

- Mixture SVMA14-004 (1.5 l/ha (0.25%)) + KARATE ZEON (0.033%): loss of **3.15 € / ha**
- Mixture Hydrolysed proteins Life (1.5 %) + KARATE ZEON (0.033%): loss of **16.86 € / ha**
- KARATE ZEON (0.013%): loss of **16.86 € / ha**

When the *Ceratitis capitata* infestation is low to medium, the adding of the bait SVMA14-004 (1.5 l/ha (0.25%)) in the tank containing the insecticide KARATE ZEON (0.033%), allows to increase the protection of fruits against *Ceratitis capitata* (reduction of damages) in comparison to the treatment with the insecticide KARATE ZEON (0.013%) alone. It can be noted that the efficacy against

Ceratitis capitata of the mixture of the bait SVMA14-004 (1.5 l/ha (0.25%)) with the insecticide KARATE ZEON (0.033%) is equivalent to the mixture of the reference attractant Hydrolysed proteins Life (1.5 %) with the insecticide KARATE ZEON (0.033%).

Trial SI16II011GR01:

In Spain, farmers are worried about *Ceratitis capitata* damages on fruits due to the important harvest lost. It is why farmers are constrained to use, intensely and regularly, insecticides in order to minimize *Ceratitis capitata* damages. Due to this practice, the infestation level in the agricultural areas is low. This explains the fact that the assessed number of *Ceratitis capitata* per trap per day (on 5 traps were placed out of the trial) is relatively low (<5.46; Table 6.2.1.1-7). However, the percentage of damaged fruit observed in the untreated plots reaches 2.75% (Table 6.2.1.1-1). This value is considered as a low level of *Ceratitis capitata* infestation.

Regarding the reduction of damaged fruits, all the treated plots have shown equivalent results. However, the mixture of the bait SVMA14-004 (1.5 l/ha (0.25%)) with the insecticide KARATE ZEON (0.033%) has shown advantages regarding the mean percentage of damaged fruit (Table 6.2.1.1-1):

- Mixture SVMA14-004 (1.5 l/ha (0.25%)) + KARATE ZEON (0.033%): **91.33%**
- Mixture Hydrolysed proteins Life (1.5 %) + KARATE ZEON (0.033%): **83.70%**
- KARATE ZEON (0.013%): **87.92%**
- SVMA14-004 (1.5 l/ha (0.25%)): **0.22%** - This value allows to demonstrate that SVMA14-004 is a bait and not an insecticide

It can be noted that infected fruits of the plots treated with the mixture of the bait SVMA14-004 (1.5 l/ha (0.25%)) and the insecticide KARATE ZEON (0.033%) are in majority without larvae (**83.33%**), in comparison to the infected fruits of the plots treated with the mixture of the attractant Hydrolysed proteins Life (1.5 %) and the insecticide KARATE ZEON (0.033%) (**70.00%**) and the insecticide KARATE ZEON (0.013%) alone (**90.00%**) (Table 6.2.1.1-5).

Furthermore, the calculation of the financial loss due to the damaged fruits has shown advantages for the plots treated with the bait SVMA14-004 (1.5 l/ha (0.25%)) and the insecticide KARATE ZEON (0.033%) (Table 6.2.1.1-8):

- Mixture SVMA14-004 (1.5 l/ha (0.25%)) + KARATE ZEON (0.033%): loss of **21.00 € / ha**
- Mixture Hydrolysed proteins Life (1.5 %) + KARATE ZEON (0.033%): loss of **42.00 € / ha**
- KARATE ZEON (0.013%): loss of **31.50 € / ha**

When the *Ceratitis capitata* infestation is low, the adding of the bait SVMA14-004 (1.5 l/ha (0.25%)) in the tank containing the insecticide KARATE ZEON (0.033%), allows to increase the protection of fruits against *Ceratitis capitata* (reduction of damages and reduction of the number of infected fruits with larvae) in comparison to the treatment with the insecticide KARATE ZEON (0.013%) alone. It can be noted that the efficacy against *Ceratitis capitata* of the mixture of the bait SVMA14-004 (1.5 l/ha (0.25%)) with the insecticide KARATE ZEON (0.033%) is equivalent to the mixture of the reference attractant Hydrolysed proteins Life (1.5 %) with the insecticide KARATE ZEON (0.033%).

Trial SI16II011GR02:

In Spain, farmers are worried about *Ceratitis capitata* damages on fruits due to the important harvest lost. It is why farmers are constrained to use, intensely and regularly, insecticides in order to minimize *Ceratitis*

capitata damages. Due to this practice, the infestation level in the agricultural areas is low. This explains the fact that the assessed number of *Ceratitis capitata* per trap per day (on 5 traps were placed out of the trial) is relatively low (<4.39; Table 6.2.1.1-7). However, the percentage of damaged fruit observed in the untreated plots reaches 3.75% (Table 6.2.1.1-1). This value is considered as a low level of *Ceratitis capitata* infestation.

Regarding the reduction of damaged fruits, all the treated plots have shown equivalent results. However, the mixture of the bait SVMA14-004 (1.5 l/ha (0.25%)) with the insecticide KARATE ZEON (0.033%) has shown advantages regarding the mean percentage of damaged fruit (Table 6.2.1.1-1):

- Mixture SVMA14-004 (1.5 l/ha (0.25%)) + KARATE ZEON (0.033%): **92.94%**
- Mixture Hydrolysed proteins Life (1.5 %) + KARATE ZEON (0.033%): **87.21%**
- KARATE ZEON (0.013%): **88.65%**
- SVMA14-004 (1.5 l/ha (0.25 %)): **0.00%** - This value allows to demonstrate that SVMA14-004 is a bait and not an insecticide

It can be noted that infected fruits of the plots treated with the mixture of the bait SVMA14-004 (1.5 l/ha (0.25%)) and the insecticide KARATE ZEON (0.033%) are without larvae (**100%**), like the infected fruits of the plots treated with the mixture of the attractant Hydrolysed proteins Life (1.5 %) and the insecticide KARATE ZEON (0.033%) (**100%**) and the insecticide KARATE ZEON (0.013%) alone (**100%**) (Table 6.2.1.1-5).

Furthermore, the calculation of the financial loss due to the damaged fruits has shown advantages for the plots treated with the bait SVMA14-004 (1.5 l/ha (0.25%)) and the insecticide KARATE ZEON (0.033%) (Table 6.2.1.1-8):

- Mixture SVMA14-004 (1.5 l/ha (0.25%)) + KARATE ZEON (0.033%): loss of **26.25 € / ha**
- Mixture Hydrolysed proteins Life (1.5 %) + KARATE ZEON (0.033%): loss of **47.25 € / ha**
- KARATE ZEON (0.013%): loss of **42.00 € / ha**

When the *Ceratitis capitata* infestation is low, the adding of the bait SVMA14-004 (1.5 l/ha (0.25%)) in the tank containing the insecticide KARATE ZEON (0.033%), allows to increase the protection of fruits against *Ceratitis capitata* (reduction of damages and reduction of the number of infected fruits with larvae) in comparison to the treatment with the insecticide KARATE ZEON (0.013%) alone. It can be noted that the efficacy against *Ceratitis capitata* of the mixture of the bait SVMA14-004 (1.5 l/ha (0.25%)) with the insecticide KARATE ZEON (0.033%) is equivalent to the mixture of the reference attractant Hydrolysed proteins Life (1.5 %) with the insecticide KARATE ZEON (0.033%).

Trial SI18II022-GR01:

In Spain, farmers are worried about *Ceratitis capitata* damages on fruits due to the important harvest lost. It is why farmers are constrained to use, intensely and regularly, insecticides in order to minimize *Ceratitis capitata* damages. Due to this practice, the infestation level in the agricultural areas is low. This explains the fact that the assessed number of *Ceratitis capitata* per trap per day (on 5 traps were placed out of the trial) is relatively low (<2.75; Table 6.2.1.1-7). However, the percentage of damaged fruit observed in the untreated plots reaches 11.8% (Table 6.2.1.1-2). This value is considered as a medium level of *Ceratitis capitata* infestation.

Regarding the reduction of damaged fruits, all the treated plots have shown equivalent results (Table 6.2.1.1-2):

- Mixture SVMA14-004 (1.5 l/ha (1.5%)) + KARATE ZEON (0.1% - reduced dose): **88.98%**
- Mixture Hydrolysed proteins Life (1.5 %) + KARATE ZEON (0.1% - reduced dose): **91.53%**
- KARATE ZEON (0.01%): **88.98%**

Furthermore, the calculation of the financial loss due to the damaged fruits has shown advantages for the plots treated with the bait SVMA14-004 (1.5 l/ha (1.5%)) in mixture with the insecticide KARATE ZEON (0.1% - reduced dose) (Table 6.2.1.1-9):

- Untreated: loss of **1'144.28 € / ha**
- Mixture SVMA14-004 (1.5 l/ha (1.5%)) + KARATE ZEON (0.1% - reduced dose): loss of **100.32 € / ha**
- Mixture Hydrolysed proteins Life (1.5 %) + KARATE ZEON (0.1% - reduced dose): loss of **112.86 € / ha**
- KARATE ZEON (0.01%): loss of **137.94 € / ha**

When the *Ceratitis capitata* infestation is medium, the adding of the bait SVMA14-004 (1.5 l/ha (1.5%)) in the tank containing a reduced dose of the insecticide KARATE ZEON (0.1%), allows to increase the protection of fruits against *Ceratitis capitata* (reduction of damages and reduction of financial loss of the damaged fruits). It can be noted that the efficacy against *Ceratitis capitata* of the mixture of the bait SVMA14-004 (1.5 l/ha (1.5%)) with the insecticide KARATE ZEON (0.1%) is equivalent to the mixture of the reference attractant Hydrolysed proteins Life (1.5 %) with the insecticide KARATE ZEON (0.1%). Furthermore, it can be noted that the use of the bait SVMA14-004 (1.5 l/ha (1.5%)) allows to reduce the application rate of the insecticide KARATE ZEON (0.1% instead of 0.01%) while having a maintained a very good protection of fruits against *Ceratitis capitata*.

Trial SI18II022-GR02:

In Spain, farmers are worried about *Ceratitis capitata* damages on fruits due to the important harvest lost. It is why farmers are constrained to use, intensely and regularly, insecticides in order to minimize *Ceratitis capitata* damages. Due to this practice, the infestation level in the agricultural areas is low. This explain the fact that the assessed number of *Ceratitis capitata* per trap per day (on 5 traps were placed out of the trial) is relatively low (<2.43; Table 6.2.1.1-7). However, the percentage of damaged fruit observed in the untreated plots reaches 12.8% (Table 6.2.1.1-2). This value is considered as a medium level of *Ceratitis capitata* infestation.

Regarding the reduction of damaged fruits, all the treated plots have shown equivalent results (Table 6.2.1.1-2):

- Mixture SVMA14-004 (1.5 l/ha (1.5%)) + KARATE ZEON (0.1% - reduced dose): **88.28%**
- Mixture Hydrolysed proteins Life (1.5 %) + KARATE ZEON (0.1% - reduced dose): **85.94%**
- KARATE ZEON (0.01%): **85.94%**

Furthermore, the calculation of the financial loss due to the damaged fruits has shown advantages for the plots treated with the bait SVMA14-004 (1.5 l/ha (1.5%)) in mixture with the insecticide KARATE ZEON (0.1% - reduced dose) (Table 6.2.1.1-9):

- Untreated: loss of **1'403.16 € / ha**
- Mixture SVMA14-004 (1.5 l/ha (1.5%)) + KARATE ZEON (0.1% - reduced dose): loss of **105.60 € / ha**
- Mixture Hydrolysed proteins Life (1.5 %) + KARATE ZEON (0.1% - reduced dose): loss of **132.00 € / ha**
- KARATE ZEON (0.01%): loss of **132.00 € / ha**

When the *Ceratitis capitata* infestation is medium, the adding of the bait SVMA14-004 (1.5 l/ha (1.5%)) in the tank containing a reduced dose of the insecticide KARATE ZEON (0.1%), allows to increase the protection of fruits against *Ceratitis capitata* (reduction of damages and reduction of financial loss of the damaged fruits). It can be noted that the efficacy against *Ceratitis capitata* of the mixture of the bait SVMA14-004 (1.5 l/ha (1.5%)) with the insecticide KARATE ZEON (0.1%) is equivalent to the mixture of the reference attractant Hydrolysed proteins Life (1.5 %) with the insecticide KARATE ZEON (0.1%). Furthermore, it can be noted that the use of the bait SVMA14-004 (1.5 l/ha (1.5%)) allows to reduce the application rate of the insecticide KARATE ZEON (0.1% instead of 0.01%) while having a maintained a very good protection of fruits against *Ceratitis capitata*.

Trial SI18II022-GR03:

In Spain, farmers are worried about *Ceratitis capitata* damages on fruits due to the important harvest lost. It is why farmers are constrained to use, intensely and regularly, insecticides in order to minimize *Ceratitis capitata* damages. Due to this practice, the infestation level in the agricultural areas is low. This explain the fact that the assessed number of *Ceratitis capitata* per trap per day (on 5 traps were placed out of the trial) is relatively low (<2.11; Table 6.2.1.1-7). However, the percentage of damaged fruit observed in the untreated plots reaches 10.8% (Table 6.2.1.1-2). This value is considered as a medium level of *Ceratitis capitata* infestation.

Regarding the reduction of damaged fruits, all the treated plots have shown equivalent results (Table 6.2.1.1-2):

- Mixture SVMA14-004 (1.5 l/ha (1.5%)) + KARATE ZEON (0.1% - reduced dose): **90.74%**
- Mixture Hydrolysed proteins Life (1.5 %) + KARATE ZEON (0.1% - reduced dose): **81.48%**
- KARATE ZEON (0.01%): **86.11%**

Furthermore, the calculation of the financial loss due to the damaged fruits has shown advantages for the plots treated with the bait SVMA14-004 (1.5 l/ha (1.5%)) in mixture with the insecticide KARATE ZEON (0.1% - reduced dose) (Table 6.2.1.1-9):

- Untreated: loss of **985.50 € / ha**
- Mixture SVMA14-004 (1.5 l/ha (1.5%)) + KARATE ZEON (0.1% - reduced dose): loss of **76.65 € / ha**
- Mixture Hydrolysed proteins Life (1.5 %) + KARATE ZEON (0.1% - reduced dose): loss of **142.35 € / ha**
- KARATE ZEON (0.01%): loss of **137.94 € / ha**

When the *Ceratitis capitata* infestation is medium, the adding of the bait SVMA14-004 (1.5 l/ha (1.5%)) in the tank containing a reduced dose of the insecticide KARATE ZEON (0.1%), allows to increase the protection of fruits against *Ceratitis capitata* (reduction of damages and reduction of financial loss of the damaged fruits). It can be noted that the efficacy against *Ceratitis capitata* of the mixture of the bait SVMA14-004 (1.5 l/ha (1.5%)) with the insecticide KARATE ZEON (0.1%) is equivalent to the mixture of the reference attractant Hydrolysed proteins Life (1.5 %) with the insecticide KARATE ZEON (0.1%). Furthermore, it can be noted that the use of the bait SVMA14-004 (1.5 l/ha (1.5%)) allows to reduce the application rate of the insecticide KARATE ZEON (0.1% instead of 0.01%) while having a maintained a very good protection of fruits against *Ceratitis capitata*.

Table 6.2.1.1-1: Damages on fruits (with and without larvae) – trials 2015-2016

Trial ID	Target Crop	Rating type	Assessment date*	Control untreated	KARATE ZEON + SVMA14-004	KARATE ZEON + Hydrolysed proteins Life	KARATE ZEON	SVMA14-004
					0.033-0.040% + 1.5 l/ha (0.25-0.3%)	0.033-0.040% + 1.5 %	0.013%	1.5 l/ha (0.25-0.3%)
SI15II011-GR01	<i>Ceratitis capitata</i> Mandarin	Average % of damaged fruits (100 fruits per plot) Reduction of damaged fruits (%)	0 DAA	1.500 ^a	0.250 ^b	0.250 ^b	0.250 ^b	-
			7DAA	1.750 ^a -	0.250 ^b 85.71	0.250 ^b 85.71	0.500 ^b 71.43	-
			14DAA	2.750 ^a -	0.500 ^b 81.82	0.500 ^b 81.82	0.500 ^b 81.82	-
			7DAB	5.250 ^a -	0.500 ^b 90.48	0.750 ^b 85.71	1.000 ^b 80.95	-
			14DAB	7.000 ^a -	0.750 ^b 89.29	1.250 ^b 82.14	1.750 ^b 75.00	-
			7DAC	3.750 ^a -	0.500 ^b 86.67	0.750 ^b 80.00	0.750 ^b 80.00	-
			14DAC	7.500 ^a -	1.500 ^b 80.00	1.000 ^b 86.67	0.750 ^b 90.00	-
			MEAN	4.214 -	0.607 85.66	0.679 83.68	0.786 79.87	-
SI15II011-GR02	<i>Ceratitis capitata</i> Mandarin	Average % of damaged fruits (100 fruits per plot) Reduction of damaged fruits (%)	0 DAA	1.750 ^a	0.250 ^a	0.500 ^a	0.500 ^a	-
			7DAA	2.000 ^a -	0.500 ^b 75.00	0.500 ^b 75.00	0.500 ^b 75.00	-
			14DAA	2.250 ^a -	0.250 ^b 88.89	0.250 ^b 88.89	0.250 ^b 88.89	-
			7DAB	3.000 ^a -	0.250 ^b 91.67	0.500 ^b 83.33	0.500 ^b 83.30	-

Trial ID	Target Crop	Rating type	Assessment date*	Control untreated	KARATE ZEON + SVMA14-004	KARATE ZEON + Hydrolysed proteins Life	KARATE ZEON	SVMA14-004
					0.033-0.040% + 1.5 l/ha (0.25-0.3%)	0.033-0.040% + 1.5 %	0.013%	1.5 l/ha (0.25-0.3%)
			15DAB	4.750 ^a	0.250 ^b 94.74	0.500 ^b 89.47	0.750 ^b 84.21	-
			22DAB	5.000 ^a	0.750 ^b 85.00	0.750 ^b 85.00	0.250 ^b 95.00	-
			7DAC	3.500 ^a	0.500 ^b 85.71	0.250 ^b 92.86	1.000 ^b 71.43	-
			14DAC	4.250 ^a	0.500 ^b 88.24	0.250 ^b 94.12	0.250 ^b 94.12	-
			MEAN	3.313	0.406 87.03	0.438 86.95	0.500 84.57	-
SI15II011B-GR03	Ceratitis capitata Orange	Average % of damaged fruits (100 fruits per plot) Reduction of damaged fruits (%)	0 DAA	1.000 ^a	0.250 ^a	0.250 ^a	0.250 ^a	1.250 ^a
			7DAA	2.000 ^{ab}	0.250 ^b 87.50	0.500 ^b 75.00	0.250 ^b 87.50	2.250 ^a 0.00
			14DAA	1.750 ^a	0.250 ^b 85.71	0.250 ^b 85.71	0.000 ^b 100.00	1.500 ^a 14.29
			7DAB	1.500 ^a	0.250 ^a 83.33	0.250 ^a 83.33	0.500 ^a 66.67	1.750 ^a 0.00
			14DAB	1.750 ^a	0.250 ^{ab} 85.71	0.000 ^b 100.00	0.250 ^{ab} 85.71	1.250 ^{ab} 28.57
			7DAC	2.250 ^{ab}	0.250 ^b 88.89	0.500 ^{ab} 77.78	0.500 ^{ab} 77.78	2.500 ^a 0.00
			14DAC	1.500 ^{ab}	0.000 ^c 100.00	0.250 ^{bc} 83.33	0.250 ^{bc} 83.33	2.000 ^a 0.00
			MEAN	1.679	0.214 88.53	0.286 84.19	0.286 83.50	1.786 0.00

Trial ID	Target Crop	Rating type	Assessment date*	Control untreated	KARATE ZEON + SVMA14-004	KARATE ZEON + Hydrolysed proteins Life	KARATE ZEON	SVMA14-004
					0.033-0.040% + 1.5 l/ha (0.25-0.3%)	0.033-0.040% + 1.5 %	0.013%	1.5 l/ha (0.25-0.3%)
SI16II011GR01	Ceratitis capitata Sweet orange	Average % of damaged fruits (100 fruits per plot) Reduction of damaged fruits (%)	0 DAA	2.500	-	-	-	-
			7DAA	2.500 ^a	0.00 ^b 100.00	0.500 ^b 80.00	0.250 ^b 90.00	2.750 ^a 0.00
			14DAA	2.250 ^a	0.250 ^b 88.89	0.250 ^b 88.89	0.250 ^b 88.89	2.250 ^a 0.00
			21DAA	2.750 ^a	0.000 ^b 100.00	0.500 ^b 81.82	0.500 ^b 81.82	2.750 ^a 0.00
			7DAB	2.250 ^a	0.500 ^b 77.78	0.500 ^b 77.78	0.250 ^b 88.89	2.000 ^a 11.11
			14DAB	2.500 ^a	0.250 ^b 90.00	0.250 ^b 90.00	0.250 ^b 90.00	2.500 ^a 0.00
			MEAN	2.170	0.200 91.33	0.400 83.70	0.300 87.92	2.450 0.22
SI16II011GR02	Ceratitis capitata Sweet orange	Average % of damaged fruits (100 fruits per plot) Reduction of damaged fruits (%)	0 DAA	3.750	-	-	-	-
			7DAA	3.500 ^a	0.00 ^b 100.00	0.250 ^b 92.86	0.500 ^b 85.71	3.750 ^a 0.00
			14DAA	3.500 ^a	0.250 ^b 92.86	0.500 ^b 85.71	0.500 ^b 85.71	3.500 ^a 0.00
			21DAA	3.750 ^a	0.500 ^b 86.67	0.750 ^b 80.00	0.500 ^b 86.67	3.500 ^a 6.67
			7DAB	3.250 ^a	0.250 ^b 92.31	0.500 ^b 84.62	0.250 ^b 92.31	3.250 ^a 0.00
			14DAB	3.500 ^a	0.250 ^b 92.86	0.250 ^b 92.86	0.250 ^b 92.56	3.750 ^a 0.00

Trial ID	Target Crop	Rating type	Assessment date*	Control untreated	KARATE ZEON + SVMA14-004	KARATE ZEON + Hydrolysed proteins Life	KARATE ZEON	SVMA14-004
			MEAN	2.700	0.033-0.040% + 1.5 l/ha (0.25-0.3%)	0.033-0.040% + 1.5 %	0.013%	1.5 l/ha (0.25-0.3%)
				-	0.250 92.94	0.450 87.21	0.400 88.65	3.550 0.00

* DAX= Day After application X

Table 6.2.1.1- 2: Damages on fruits (with and without larvae) – trials 2018

Trial ID	Target Crop	Rating type	Assessment date*	Control untreated	KARATE ZEON + SVMA14-004	KARATE ZEON + Hydrolysed proteins Life	KARATE ZEON
					0.1% + 1.5 l/ha (1.5%)	0.1% + 1.5%	0.01%
SI18II022-GR01	Orange	Average % of damaged fruits (100 fruits per plot)	0 DAA	4 ^a	4.5 ^a	3.8 ^a	5 ^a
		Reduction of damaged fruits (%)	7DAA	6.5 ^a	0.8 ^b 87.69	1.3 ^b 80.00	1.5 ^b 76.92
			14DAA	11.8 ^a	1.3 ^b 88.98	1 ^b 91.53	1.3 ^b 88.98
SI18II022-GR02	Orange	Average % of damaged fruits (100 fruits per plot)	0 DAA	7.5 ^a	5.8 ^a	8.8 ^a	6.8 ^a
		Reduction of damaged fruits (%)	7DAA	8.5 ^a	0.5 ^b 94.12	0.8 ^b 90.59	0.8 ^b 90.59
			14DAA	12.8 ^a	1.5 ^b 88.28	1.8 ^b 85.94	1.8 ^b 85.94
SI18II022-GR03	Orange	Average % of damaged fruits (100 fruits per plot)	0 DAA	7 ^a	8 ^a	7.8 ^a	7 ^a
			7DAA	7.3 ^a	0.8 ^b 89.04	1.3 ^b 82.19	1 ^b 86.30

Trial ID	Target Crop	Rating type	Assessment date*	Control untreated	KARATE ZEON + SVMA14-004	KARATE ZEON + Hydrolysed proteins Life	KARATE ZEON
		Reduction of damaged fruits (%)	14DAA	10.8 ^a -	0.1% + 1.5 l/ha (1.5%)	0.1% + 1.5%	0.01%
					1 ^b 90.74	2 ^b 81.48	1.5 ^b 86.11

* DAX= Day After application X

Table 6.2.1.1-3: Damages on fruits with larvae – trials 2015-2016

Trial ID	Target Crop	Rating type	Assessment date*	Control untreated	KARATE ZEON + SVMA14-004	KARATE ZEON + Hydrolysed proteins Life	KARATE ZEON	SVMA14-004
					0.033-0.040% + 1.5 l/ha (0.25-0.3%)	0.033-0.040% + 1.5 %	0.013%	1.5 l/ha (0.25-0.3%)
SI15II011-GR01	<i>Ceratitis capitata</i> Mandarin	Average % of damaged fruits with larvae (100 fruits per plot)	0 DAA	25.000	0.000	0.000	100.000	-
			7DAA	25.000	0.000	0.000	50.000	-
			14DAA	37.500	0.000	50.000	50.000	-
			7DAB	32.292	0.000	33.333	50.000	-
			14DAB	36.161	0.000	0.000	0.000	-
			7DAC	45.833	0.000	75.000	25.000	-
			14DAC	30.060	8.333	25.000	0.000	-
			MEAN	33.121	1.190	26.190	39.286	-
SI15II011-GR02	<i>Ceratitis capitata</i> Mandarin	Average % of damaged fruits with larvae (100 fruits per plot)	0 DAA	27.778	0.000	0.000	0.000	-
			7DAA	45.833	0.000	50.000	0.000	-
			14DAA	54.167	0.000	0.000	100.000	-
			7DAB	35.417	0.000	0.000	50.000	-
			15DAB	31.726	0.000	0.000	0.000	-

Trial ID	Target Crop	Rating type	Assessment date*	Control untreated	KARATE ZEON + SVMA14-004	KARATE ZEON + Hydrolysed proteins Life	KARATE ZEON	SVMA14-004
					0.033-0.040% + 1.5 l/ha (0.25-0.3%)	0.033-0.040% + 1.5 %	0.013%	1.5 l/ha (0.25-0.3%)
			22DAB	34.583	0.000	0.000	0.000	-
			7DAC	20.417	33.333	33.333	0.000	-
			14DAC	32.500	50.000	0.000	0.000	-
			MEAN	35.303	10.417	10.417	18.750	-
SI15II011B-GR03	Ceratitis capitata Orange	Average % of damaged fruits with larvae (100 fruits per plot)	0 DAA	16.667	0.000	0.000	0.000	0.000
			7DAA	12.500	0.000	0.000	0.000	10.000
			14DAA	25.000	0.000	0.000	-	12.500
			7DAB	12.500 ^a	0.000	0.000	0.000	8.333
			14DAB	33.333 ^a	0.000	-	0.000	11.111
			7DAC	33.333 ^a	0.000	50.000	50.000	10.000
			14DAC	50.000 ^a	---	0.000	0.000	20.833
			MEAN	26.190	0.000	8.333	8.333	10.397
SI16II011GR01	Ceratitis capitata Sweet orange	Average % of damaged fruits with larvae (100 fruits per plot)	0 DAA	16.67	-	-	-	-
			7DAA	8.33 ^a	-	50.00 ^a	0.00 ^a	18.75 ^a
			14DAA	20.83 ^a	0.00 ^a	0.00 ^a	0.00 ^a	16.67 ^a
			21DAA	16.67 ^a	-	50.00 ^a	50.00 ^a	14.58 ^a
			7DAB	8.33 ^a	50.00 ^a	50.00 ^a	0.00 ^a	33.33 ^a
			14DAB	16.67 ^a	0.00 ^a	0.00 ^a	0.00 ^a	29.17 ^a
			MEAN	15.28	16.67	30.00	10.00	22.50
SI16II011GR02	Ceratitis capitata	Average % of damaged fruits with larvae	0 DAA	21.67	-	-	-	-
			7DAA	14.58 ^a	-	0.00 ^a	0.00 ^a	6.25 ^a

Trial ID	Target Crop	Rating type	Assessment date*	Control untreated	KARATE ZEON + SVMA14-004	KARATE ZEON + Hydrolysed proteins Life	KARATE ZEON	SVMA14-004
					0.033-0.040% + 1.5 l/ha (0.25-0.3%)	0.033-0.040% + 1.5 %	0.013%	1.5 l/ha (0.25-0.3%)
	Sweet orange	(100 fruits per plot)	14DAA	12.50 ^a	0.00 ^a	0.00 ^a	0.00 ^a	6.25 ^a
			21DAA	19.58 ^a	0.00 ^a	0.00 ^a	0.00 ^a	12.50 ^a
			7DAB	14.58 ^a	0.00 ^a	0.00 ^a	0.00 ^a	5.00 ^a
			14DAB	11.25 ^a	0.00 ^a	0.00 ^a	0.00 ^a	14.58 ^a
			MEAN	19.63	0.00	0.00	0.00	8.92

* DAX= Day After application X

Table 6.2.1.1-4: Damages on fruits with larvae – trials 2018

Trial ID	Target Crop	Rating type	Assessment date*	Control untreated	KARATE ZEON + SVMA14-004	KARATE ZEON + Hydrolysed proteins Life	KARATE ZEON
					0.1% + 1.5 l/ha (1.5%)	0.1% + 1.5%	0.01%
SI18II022-GR01	<i>Ceratitidis capitata</i>	Average % of damaged fruits with larvae (on total % of damaged fruits)	7DAA	2.3 ^a	0 ^b	0.5 ^b	0.5 ^b
	Orange		14DAA	3 ^a	0.3 ^b	0.5 ^b	0.3 ^b
SI18II022-GR02	<i>Ceratitidis capitata</i>	Average % of damaged fruits with larvae (on total % of damaged fruits)	7DAA	3.3 ^a	0 ^b	0.3 ^b	0.3 ^b
	Orange		14DAA	4.3 ^a	0.8 ^b	0.5 ^b	0.8 ^b
SI18II022-GR03	<i>Ceratitidis capitata</i>	Average % of damaged fruits with larvae (on total % of damaged fruits)	7DAA	1.8 ^a	0.3 ^b	0.3 ^b	0.3 ^b
	Orange		14DAA	2.8 ^a	0.5 ^b	0.3 ^b	0.6 ^b

* DAX= Day After application X

Table 6.2.1.1-5: Damages on fruits without larvae - trials 2015-2016

Trial ID	Target Crop	Rating type	Assessment date*	Control untreated	KARATE ZEON + SVMA14-004	KARATE ZEON + Hydrolysed proteins Life	KARATE ZEON	SVMA14-004
					0.033-0.040% + 1.5 l/ha (0.25-0.3%)	0.033-0.040% + 1.5 %	0.013%	1.5 l/ha (0.25-0.3%)
SI15II011-GR01	<i>Ceratitis capitata</i> Mandarin	Average % of damaged fruits without larvae (100 fruits per plot)	0 DAA	75.000	100.000	100.000	0.000	-
			7DAA	75.000	100.000	100.000	50.000	-
			14DAA	62.500	100.000	50.000	50.000	-
			7DAB	67.708	100.000	66.667	50.000	-
			14DAB	63.839	100.000	100.000	100.000	-
			7DAC	54.167	100.000	25.000	75.000	-
			14DAC	69.940	91.667	75.000	100.000	-
			MEAN	66.879	98.810	73.810	60.714	-
SI15II011-GR02	<i>Ceratitis capitata</i> Mandarin	Average % of damaged fruits without larvae (100 fruits per plot)	0 DAA	72.222	100.000	100.000	100.000	-
			7DAA	54.167	100.000	50.000	100.00	-
			14DAA	45.834	100.000	100.000	0.000	-
			7DAB	64.584	100.000	100.000	50.000	-
			15DAB	68.274	100.000	100.000	100.000	-
			22DAB	65.417	100.000	100.000	100.000	-
			7DAC	50.000	33.333	0.000	100.000	-
			14DAC	67.500	50.000	100.000	100.000	-
			MEAN	61.000	85.417	81.250	81.525	-
SI15II011B-GR03	<i>Ceratitis capitata</i> Orange	Average % of damaged fruits without larvae (100 fruits per plot)	0 DAA	83.333	100.000	100.000	100.000	100.000
			7DAA	87.500	100.000	100.000	100.000	90.000
			14DAA	75.000	100.000	100.000	-	87.500

Trial ID	Target Crop	Rating type	Assessment date*	Control untreated	KARATE ZEON + SVMA14-004	KARATE ZEON + Hydrolysed proteins Life	KARATE ZEON	SVMA14-004
					0.033-0.040% + 1.5 l/ha (0.25-0.3%)	0.033-0.040% + 1.5 %	0.013%	1.5 l/ha (0.25-0.3%)
			7DAB	87.500	100.000	100.000	100.000	91.667
			14DAB	66.667	100.000	-	100.000	88.889
			7DAC	66.667	100.000	50.000	50.000	90.000
			14DAC	50.000	-	100.000	100.000	79.167
			MEAN	73.810	85.714	91.667	91.667	89.167
SI16II011GR01	Ceratitis capitata Sweet orange	Average % of damaged fruits without larvae (100 fruits per plot)	0 DAA	83.34	-	-	-	-
			7DAA	91.67 ^a	-	50.00 ^a	100.00 ^a	81.25 ^a
			14DAA	79.17 ^a	100.00 ^a	100.00 ^a	100.00 ^a	83.34 ^a
			21DAA	83.34 ^a	-	50.00 ^a	50.00 ^a	85.42 ^a
			7DAB	91.67 ^a	50.00 ^a	50.00 ^a	100.00 ^a	66.67 ^a
			14DAB	83.34 ^a	100.00 ^a	100.00 ^a	100.00 ^a	70.84 ^a
			MEAN	84.72	83.33	70.00	90.00	77.50
SI16II011GR02	Ceratitis capitata Sweet orange	Average % of damaged fruits without larvae (100 fruits per plot)	0 DAA	78.34	-	-	-	-
			7DAA	85.42 ^a	-	100.00 ^a	100.00 ^a	93.75 ^a
			14DAA	87.50 ^a	100.00 ^a	100.00 ^a	100.00 ^a	93.75 ^a
			21DAA	80.42 ^a	100.00 ^a	100.00 ^a	100.00 ^a	87.50 ^a
			7DAB	85.42 ^a	100.00 ^a	100.00 ^a	100.00 ^a	95.00 ^a
			14DAB	88.75 ^a	100.00 ^a	100.00 ^a	100.00 ^a	85.42 ^a
			MEAN	80.38	100.00	100.00	100.00	91.08

* DAX= Day After application X

Table 6.2.1.1-6: Damages on fruits without larvae - trials 2018

Trial ID	Target Crop	Rating type	Assessment date*	Control untreated	KARATE ZEON + SVMA14-004	KARATE ZEON + Hydrolysed proteins Life	KARATE ZEON
					0.1% + 1.5 l/ha (1.5%)	0.1% + 1.5%	0.01%
SI18II022-GR01	<i>Ceratitis capitata</i>	Average % of damaged fruits without larvae	7DAA	4.3 ^a	0.8 ^b	0.8 ^b	1 ^b
	Orange	(on total % of damaged fruits)	14DAA	8.8 ^a	1 ^b	0.5 ^b	1 ^b
SI18II022-GR02	<i>Ceratitis capitata</i>	Average % of damaged fruits without larvae	7DAA	5.3 ^a	0.5 ^b	0.5 ^b	0.5 ^b
	Orange	(on total % of damaged fruits)	14DAA	8.5 ^a	0.8 ^b	1.3 ^b	1 ^b
SI18II022-GR03	<i>Ceratitis capitata</i>	Average % of damaged fruits without larvae	7DAA	5.5 ^a	0.5 ^b	1 ^b	0.8 ^b
	Orange	(on total % of damaged fruits)	14DAA	8 ^a	0.5 ^b	1.8 ^b	1 ^b

* DAX= Day After application X

In order to determine the infestation level, 5 traps were placed out of each trial. The number of *Ceratitis capitata* per trap per day was assessed and presented in the Table 6.2.1.1-7.

Table 6.2.1.1-7: Assessment of *Ceratitis capitata* captures

Trial ID	Target Crop	Assessment date	Number of <i>Ceratitis capitata</i> / trap / day
SI15II011-GR01	<i>Ceratitis capitata</i>	13/08/2015	0,00
	Mandarin	20/08/2015 (0DAA)	0,51
		27/08/2015	0,83
		03/09/2015 (0DAB)	1,40
		10/09/2015	0,80
		17/09/2015 (0DAC)	1,51
		24/09/2015	0,77
		01/10/2015	0,80
SI15II011-GR02	<i>Ceratitis capitata</i>	19/08/2015	0.00
	Mandarin	26/08/2015	0.00
		02/09/2015	0.00
		09/09/2015 (0DAA)	0.97
		16/09/2015	0.60
		23/09/2015 (0DAB)	1.14
		30/09/2015	0.74
		08/10/2015	0.80
		15/10/2015 (0DAC)	1.31
		22/10/2015	0.57
		29/10/2015	0.40
SI15II011B-GR03	<i>Ceratitis capitata</i>	18/09/2015	0.00
	Orange	25/09/2015 (0DAA)	0.57
		02/10/2015	0.77
		09/10/2015 (0DAB)	1.23
		16/10/2015	0.60
		23/10/2015 (0DAC)	1.03
		30/10/2015	0.63
		06/11/2015	0.77
SI16II011GR01	<i>Ceratitis capitata</i>	15/03/2016	1.46
	Sweet orange	22/03/2016	2.61
		29/03/2016	2.75
		05/04/2016 (0DAA)	3.64

Trial ID	Target Crop	Assessment date	Number of <i>Ceratitis capitata</i> / trap / day
		12/04/2015 (7 DAA)	3.92
		19/04/2016	3.79
		26/04/2016 (21 DAA)	5.46
		03/05/2016 (7 DAB)	4.53
		10/05/2016 (14 DAB)	4.39
SI16II011GR02	<i>Ceratitis capitata</i> Sweet orange	17/03/2016	1.15
		24/03/2016	2.25
		31/03/2016	2.47
		07/04/2016	2.71
		14/04/2015 (0 DAA)	3.57
		21/04/2016 (7 DAA)	3.82
		28/04/2016 (21 DAA)	4.11
		05/05/2016 (7 DAB)	4.31
		12/05/2016 (14 DAB)	4.31
		19/05/2016	4.39
SI18II022-GR01	<i>Ceratitis capitata</i> Orange	05/06/2018	0.32
		12.06.2018	0.5
		19.06.2018	0.54
		26.06.2018	0.54
		03.07.2018	0.86
		10.07.2018	1.50
		17.07.2018	2.32
		24.07.2018	2.75
SI18II022-GR02	<i>Ceratitis capitata</i> Orange	26.06.2018	0.68
		03.07.2018	1.18
		10.07.2018	1.71
		17.07.2018	2.43
SI18II022-GR03	<i>Ceratitis capitata</i> Orange	22.06.2018	0.75
		28.06.2018	0.89
		05.07.2018	1.86
		12.07.2018	2.11
		19.07.2018	2.07

Due to the important commercial aspect of *Ceratitis capitata* damages, the financial loss of damaged fruits was calculated and presented in the Table 6.2.1.1-8 and Table 6.2.1.1-9.

Table 6.2.1.1- 8: Financial loss of the damaged fruits by *Ceratitis capitata* – trials 2015-2016

Trial ID	Crop	Rating type	Control untreated	KARATE ZEON + SVMA14-004	KARATE ZEON + Hydrolysed proteins Life	KARATE ZEON	SVMA14-004
				0.033-0.040% + 1.5 l/ha (0.25-0.3%)	0.033-0.040% + 1.5 l/ha	0.013%	1.5 l/ha (0.25-0.3%)
SI15II011-GR01	Mandarin	Financial loss of the damaged fruits (Euros/ha)	493,04	71,02	79,44	91,96	-
SI15II011-GR02	Mandarin	Financial loss of the damaged fruits (Euros/ha)	387,12	35,98	38,81	44,31	-
SI15II011B-GR03	Orange	Financial loss of the damaged fruits (Euros/ha)	164,96	3,15	16,86	16,86	105,28
SI16II011GR01	Sweet orange	Financial loss of the damaged fruits (Euros/ha)	257.25	21.00	42.00	31.50	257.25
SI16II011GR02	Sweet orange	Financial loss of the damaged fruits (Euros/ha)	367.50	26.25	47.25	42.00	372.75

Table 6.2.1.1-9: Financial loss of the damaged fruits by *Ceratitis capitata* – trials 2018

Trial ID	Crop	Rating type	Control untreated	KARATE ZEON + SVMA14-004	KARATE ZEON + Hydrolysed proteins Life	KARATE ZEON
				0.1% + 1.5 l/ha (1.5%)	0.1% + 1.5%	0.01%
SI18II022-GR01	Orange	Financial loss of the damaged fruits (Euros/ha)	1'144.28	100.32	112.86	137.94
SI18II022-GR02	Orange	Financial loss of the damaged fruits (Euros/ha)	1'403.16	105.60	132.00	132.00
SI18II022-GR03	Orange	Financial loss of the damaged fruits (Euros/ha)	985.50	76.65	142.35	137.94

CP 6.2.1.2 General Conclusion regarding the efficacy trials performed on citrus

A total of 8 trials were carried out in 2015, 2016 and 2018 in Spain on citrus trees. In the trials performed in 2015 and 2016, the bait SVMA14-004 was tested at the dose of 1.5 l/ha (0.25-0.3%), applied alone and/or in mixture with an insecticide (KARATE ZEON – 200 cc/ha 0.033-0.040%), and was compared to the reference mixture of Hydrolysed proteins Life (1.5 %) and KARATE ZEON (0.033-0.040%) and to KARATE ZEON (0.013%) alone. In the 3 trials performed in Spain in 2018, the bait SVMA14-004 was tested at the dose of 1.5 l/ha (1.5%), applied in mixture with an insecticide (KARATE ZEON – 0.1%), and was compared to the reference mixture of Hydrolysed proteins Life (1.5 %) and KARATE ZEON (0.1% - reduced dose), and to KARATE ZEON (0.013%) alone. For the bait treatment, just one band of the trees was treated (approximately 1/3 of each tree of the plot), and the application was done on the southern side of the trees.

In 3 trials, the bait SVMA14-004 was tested alone: the results obtained confirm that SVMA14-004 is a bait and not an insecticide.

When the *Ceratitis capitata* infestation is low to medium, the adding of the bait SVMA14-004 (1.5 l/ha (0.25-1.5 %)) in the tank containing the insecticide KARATE ZEON (0.033-0.1%), allows to increase the protection of fruits against *Ceratitis capitata* (reduction of damages and reduction of the number of infected fruits with larvae and reduction of financial loss of the damaged fruits) in comparison to the treatment with the insecticide KARATE ZEON (0.01-0.013%) alone. It can be noted that the efficacy against *Ceratitis capitata* of the mixture of the bait SVMA14-004 (1.5 l/ha) with the insecticide KARATE ZEON (0.033-0.1%) is equivalent to the mixture of the reference attractant Hydrolysed proteins Life (1.5 %) with the insecticide KARATE ZEON (0.033-0.1%). Furthermore, it can be noted that the use of the bait SVMA14-004 (1.5 l/ha (1.5%)) allows to reduce the application rate of the insecticide KARATE ZEON (0.1% instead of 0.01%) while having a maintained a very good protection of fruits against *Ceratitis capitata*.

CP 6.2.2 Efficacy trials performed on Persimmon

A total of 5 trials efficacy trials are carried out, under GEP conditions, to evaluate the efficacy of the bait SVMA14-004 against *Ceratitis capitata* in persimmon fields. These trials were performed in Spain in 2015.

These trials were carried out by an officially recognized organization (SICOP) in accordance with the Principles of Good Experimental Practice (GEP). Further details of the trials conducted are provided in Table 6.2.2-1 and Table 6.2.2-2.

Table 6.2.2-1: Details on trial methodology

Experimental design	Plot design	RCB
	Plot size	75-160 m ² (5-6 trees)
	Number of replications	4
	EPPO guideline	PP 1/106 (2), PP 1/152 (4), PP 1/ 181 (4), PP 1/135 (3)
Crop	Trials per crop	Persimmon (5)
	Varieties per crop	Rojo brillante (5)
	Sowing period	2009 (3)

		2011 (1) 2012 (1)			
	Planting rate	666.67-757 plants/ha			
Application	Crop stage (BBCH) at application	BBCH 78-86			
	Timing, Pest stage at application	Application A at pest infestation (first flights of <i>Ceratitis capitata</i>). Application B 7-28 days after the application A. Application C 7-14 days after the application B. Application D 14 days after the application C.			
	Number of applications	3 applications (2) 4 applications (3)			
	Tested product	KARATE ZEON + SVMA14-004 T1	KARATE ZEON T2	SVMA14-004* T3	KARATE ZEON + Hydrolysed proteins Life T4
	Application rate	0.033-0.085% + 1.5 l/ha (0.25-0.64%)	0.013%	1.5 l/ha (0.25-0.64%)	0.033-0.085% + 1.5 %
	Application equipment	Maruyama motor backpack sprayer. Operation pressure 4 bar.			
	Application type	T1, T3, T4: On one band of the trees was treated (approximately 1/3 of each tree of the plot), application on the southern side of the trees. T2: whole plots/plants			
	Spray volume	T1, T3, T4: 235-600 l/ha T2: 1500 l/ha			
Assessment	Assessment types	Assessments of damaged fruits			
	Assessment dates**	0 DAA (5), 7 DAA (5), 14 DAA (2), 21DAA (2), 28 DAA (2), 7 DAB (5), 14DAB (3), 21 DAB (1), 7 DAC (5), 14 DAC (5), 7DAD (3)			
	Sample size	Damage on fruits: number of punctures in 100 fruits per plot. Fruits with larvae and fruits without larvae are distinguished.			
Other relevant information	Natural / artificial infestation	Natural occurrence			
	Field / Greenhouse	Open field			
	Test facility	SICOP			

*For trial on persimmon only

**DAX= Day After application X

Details of the reference standards tested are provided in the Table 6.2.1-3.

Table 6.2.2-2: Presentation of reference standards used in trials

Crop	Reference standard	Country where the product is registered	Authorization number	Active substance(s)	Formulation		Registered application rate	Application rate in trials (per treatment)
					Type	Conc. of a.s.		
Persimmon	Proteínas Hidrolizadas Life	Spain	14.634	Hydrolysed proteins	SL	30%	1.5%	1.5 %
	KARATE ZEON	Spain	22.398	Lambda-Cyhalothrin	CS	10%	0.01-0.02% alone	0.013%
							0.1-0.125% with bait	0.033-0.085%

CP 6.2.2.1 Summary and evaluation of trials performed on persimmon

A total of 5 trials were performed. During these 5 trials performed in Spain the bait SVMA14-004 was tested at the dose of 1.5 l/ha (0.25-0.64%), applied alone and/or in mixture with an insecticide (KARATE ZEON – 0.033-0.085%), and was compared to the reference mixture of Hydrolysed proteins Life (1.5 l/ha %) and KARATE ZEON (0.033-0.085%) and KARATE ZEON (0.013%). In one trial, SVMA14-004 was tested alone in order to demonstrate that this product does not have insecticide effect. Conclusion of these trials are presented below and evaluations of the trials are presented in the Table 6.2.2.1-1 to Table 6.2.1.2-5.

SI15II012-GR01:

In Spain, farmers are worried about *Ceratitis capitata* damages on fruits due to the important harvest lost. It is why farmers are constrained to use, intensely and regularly, insecticides in order to minimize *Ceratitis capitata* damages. Due to this practice, the infestation level in the agricultural areas is low. This explain the fact that the assessed number of *Ceratitis capitata* per trap per day (on 5 traps were placed out of the trial) is relatively low (<1.14; Table 6.2.2.1-4). However, the percentage of damaged fruit observed in the untreated plots reaches 2.75% (Table 6.2.2.1-1). This value is considered as a low level of *Ceratitis capitata* infestation.

Regarding the reduction of damaged fruits, all the treated plots have shown equivalent results (Table 6.2.2.1-1):

- Mixture SVMA14-004 (1.5 l/ha (0.25-0.3%)) + KARATE ZEON (0.033-0.04%): **83.15%**
- Mixture Hydrolysed proteins Life (1.5 %) + KARATE ZEON (0.033-0.04%): **81.20%**
- KARATE ZEON (0.013%): **80.77%**

It can be noted that infected fruits of the plots treated with the mixture of the bait SVMA14-004 (1.5 l/ha (0.25-0.3%)) and the insecticide KARATE ZEON (0.033-0.04%) and the insecticide KARATE ZEON (0.013%) alone, are without larvae (**100%**), in comparison to the infected fruits of the plots treated with the mixture of the attractant Hydrolysed proteins Life (1.5 %) and the insecticide KARATE ZEON (0.033-0.04%) (**75%**) (Table 6.2.2.1-3).

Furthermore, the calculation of the financial loss due to the damaged fruits has shown advantages for the treated plots (Table 6.2.2.1-5):

- Mixture SVMA14-004 (1.5 l/ha (0.25-0.3%)) + KARATE ZEON (0.033-0.04%): loss of **6.12 € / ha**

- Mixture Hydrolysed proteins Life (1.5 %) + KARATE ZEON (0.033-0.04%): loss of **6.12 € / ha**
- KARATE ZEON (0.013%): loss of **6.99 € / ha**
- Untreated: **85.65 € / ha**

When the *Ceratitis capitata* infestation is low, the adding of the bait SVMA14-004 (1.5 l/ha (0.25-0.3%)) in the tank containing the insecticide KARATE ZEON (0.033-0.04%), allows to increase the protection of fruits against *Ceratitis capitata* (reduction of damages) in comparison to the treatment with the insecticide KARATE ZEON (0.013%) alone. It can be noted that the efficacy against *Ceratitis capitata* of the mixture of the bait SVMA14-004 (1.5 l/ha (0.25-0.3%)) with the insecticide KARATE ZEON (0.033-0.04%) is equivalent to the mixture of the reference attractant Hydrolysed proteins Life (1.5 %) with the insecticide KARATE ZEON (0.033-0.04%). However, when the bait SVMA14-004 is used instead the commercial attractant Hydrolysed proteins Life, no larvae are observed in the damaged fruits.

SI15II012-GR02:

In Spain, farmers are worried about *Ceratitis capitata* damages on fruits due to the important harvest lost. It is why farmers are constrained to use, intensely and regularly, insecticides in order to minimize *Ceratitis capitata* damages. Due to this practice, the infestation level in the agricultural areas is low. This explain the fact that the assessed number of *Ceratitis capitata* per trap per day (on 5 traps were placed out of the trial) is relatively low (<1.17; Table 6.2.2.1-4). However, the percentage of damaged fruit observed in the untreated plots reaches 2.75% (Table 6.2.2.1-1). This value is considered as a low level of *Ceratitis capitata* infestation.

Regarding the reduction of damaged fruits, all the treated plots have shown equivalent results (6.2.2.1-1):

- Mixture SVMA14-004 (1.5 l/ha (0.25-0.3%)) + KARATE ZEON (0.033-0.04%): **78.53%**
- Mixture Hydrolysed proteins Life (1.5 %) + KARATE ZEON (0.033-0.04%): **75.38%**
- KARATE ZEON (0.013%): **76.03%**

It can be noted that infected fruits of the plots treated with the mixture of the bait SVMA14-004 (1.5 l/ha (0.25-0.3%)) and the insecticide KARATE ZEON (0.033-0.04%) and the insecticide KARATE ZEON (0.013%) alone, are without larvae (**100%**), in comparison to the infected fruits of the plots treated with the mixture of the attractant Hydrolysed proteins Life (1.5 %) and the insecticide KARATE ZEON (0.033-0.04%) (**75%**) (Table 6.2.2.1-3).

Furthermore, the calculation of the financial loss due to the damaged fruits has shown advantages for the treated plots (Table 6.2.2.1-5):

- Mixture SVMA14-004 (1.5 l/ha (0.25-0.3%)) + KARATE ZEON (0.033-0.04%): loss of **11.27 € / ha**
- Mixture Hydrolysed proteins Life (1.5 %) + KARATE ZEON (0.033-0.04%): loss of **12.89 € / ha**
- KARATE ZEON (0.013%): loss of **14.52 € / ha**
- Untreated: **137.17 € / ha**

When the *Ceratitis capitata* infestation is low, the adding of the bait SVMA14-004 (1.5 l/ha (0.25-0.3%)) in the tank containing the insecticide KARATE ZEON (0.033-0.04%), allows to increase the protection of fruits against *Ceratitis capitata* (reduction of damages) in comparison to the treatment with the insecticide KARATE ZEON (0.013%) alone. It can be noted that the efficacy against *Ceratitis capitata* of the mixture of the bait SVMA14-004 (1.5 l/ha (0.25-0.3%)) with the insecticide KARATE ZEON (0.033-0.04%) is equivalent to the mixture of the reference attractant Hydrolysed proteins Life (1.5 %) with the insecticide KARATE ZEON (0.033-0.04%). However, when the bait SVMA14-004 is used instead the commercial attractant Hydrolysed proteins Life, no larvae are observed in the damaged fruits.

SI15II012GR03:

In Spain, farmers are worried about *Ceratitis capitata* damages on fruits due to the important harvest lost. It is why farmers are constrained to use, intensely and regularly, insecticides in order to minimize *Ceratitis capitata* damages. Due to this practice, the infestation level in the agricultural areas is low. This explains the fact that the assessed number of *Ceratitis capitata* per trap per day (on 5 traps were placed out of the trial) is relatively low (<1.29; Table 6.2.2.1-4). However, the percentage of damaged fruit observed in the untreated plots reaches 8.75% (Table 6.2.2.1-1). This value is considered as a low to medium level of *Ceratitis capitata* infestation.

Regarding the reduction of damaged fruits, all the treated plots have shown equivalent results. However, the mixture of the bait SVMA14-004 (1.5 l/ha (0.48%)) with the insecticide KARATE ZEON (0.064%) has shown advantages regarding the mean percentage of damaged fruit (Table 6.2.2.1-1):

- Mixture SVMA14-004 (1.5 l/ha (0.48%)) + KARATE ZEON (0.064%): **69.833%**
- Mixture Hydrolysed proteins Life (1.5 %) + KARATE ZEON (0.064%): **64.487%**
- KARATE ZEON (0.013%): **46.817%**

It can be noted that infected fruits of the plots treated with the mixture of the bait SVMA14-004 (1.5 l/ha (0.48%)) and the insecticide KARATE ZEON (0.064%) are in majority without larvae (**93.056%**), in comparison to the infected fruits of the plots treated with the mixture of the attractant Hydrolysed proteins Life (1.5 %) and the insecticide KARATE ZEON (0.064%) (**91.343%**) and the insecticide KARATE ZEON (0.013%) alone (**90.417%**) (Table 6.2.2.1-3).

Furthermore, the calculation of the financial loss due to the damaged fruits has shown advantages for the plots treated with the bait SVMA14-004 (1.5 l/ha (0.48%)) and the insecticide KARATE ZEON (200 cc/ha) (Table 6.2.2.1-5):

- Mixture SVMA14-004 (1.5 l/ha (0.48%)) + KARATE ZEON (0.064%): loss of **83.52 € / ha**
- Mixture Hydrolysed proteins Life (1.5 %) + KARATE ZEON (0.064%): loss of **102.65 € / ha**
- KARATE ZEON (0.013%): loss of **127.03 € / ha**
- Untreated: **417.57 € / ha**

When the *Ceratitis capitata* infestation is low, the adding of the bait SVMA14-004 (1.5 l/ha (0.48%)) in the tank containing the insecticide KARATE ZEON (0.064%), allows to increase the protection of fruits against *Ceratitis capitata* (reduction of damages) in comparison to the treatment with the insecticide KARATE ZEON (0.013%) alone. It can be noted that the efficacy against *Ceratitis capitata* of the mixture of the bait SVMA14-004 (1.5 l/ha (0.48%)) with the insecticide KARATE ZEON (0.064%) is equivalent to the mixture of the reference attractant Hydrolysed proteins Life (1.5 %) with the insecticide KARATE ZEON (0.064%).

SI15II012GR04:

In Spain, farmers are worried about *Ceratitis capitata* damages on fruits due to the important harvest lost. It is why farmers are constrained to use, intensely and regularly, insecticides in order to minimize *Ceratitis capitata* damages. Due to this practice, the infestation level in the agricultural areas is low. This explains the fact that the assessed number of *Ceratitis capitata* per trap per day (on 5 traps were placed out of the trial) is relatively low (<1.29; Table 6.2.2.1-4). However, the percentage of damaged fruit observed in the untreated plots reaches 12.75% (Table 6.2.2.1-1). This value is considered as a medium level of *Ceratitis capitata* infestation.

Regarding the reduction of damaged fruits, all the treated plots have shown equivalent results (Table 6.2.2.1-1):

- Mixture SVMA14-004 (1.5 l/ha (0.64%)) + KARATE ZEON (0.085%): **72.645%**
- Mixture Hydrolysed proteins Life (1.5 %) + KARATE ZEON (0.085%): **72.622%**

- **KARATE ZEON (0.013%): 63.506%**

Furthermore, the calculation of the financial loss due to the damaged fruits has shown advantages for the plots treated with the bait SVMA14-004 (1.5 l/ha (0.64%)) and the insecticide KARATE ZEON (0.085%) (Table 6.2.2.1-5):

- Mixture SVMA14-004 (1.5 l/ha (0.64%)) + KARATE ZEON (0.085%): loss of **83.54€ / ha**
- Mixture Hydrolysed proteins Life (1.5 %) + KARATE ZEON (0.085%): loss of **94.44 € / ha**
- KARATE ZEON (0.013%): loss of **141.71 € / ha**
- Untreated: **337.24 € / ha**

When the *Ceratitis capitata* infestation is medium, the adding of the bait SVMA14-004 (1.5 l/ha (0.64%)) in the tank containing the insecticide KARATE ZEON (0.085%), allows to increase the protection of fruits against *Ceratitis capitata* (reduction of damages) in comparison to the treatment with the insecticide KARATE ZEON (0.013%) alone. It can be noted that the efficacy against *Ceratitis capitata* of the mixture of the bait SVMA14-004 (1.5 l/ha (0.64%)) with the insecticide KARATE ZEON (0.085%) is equivalent to the mixture of the reference attractant Hydrolysed proteins Life (1.5 %) with the insecticide KARATE ZEON (0.085%).

SI15II012-BGR05:

In Spain, farmers are worried about *Ceratitis capitata* damages on fruits due to the important harvest lost. It is why farmers are constrained to use, intensely and regularly, insecticides in order to minimize *Ceratitis capitata* damages. Due to this practice, the infestation level in the agricultural areas is low. This explains the fact that the assessed number of *Ceratitis capitata* per trap per day (on 5 traps were placed out of the trial) is relatively low (<1.29; Table 6.2.2.1-4). However, the percentage of damaged fruit observed in the untreated plots reaches 7.5% (Table 6.2.2.1-1). This value is considered as a low to medium level of *Ceratitis capitata* infestation.

Regarding the reduction of damaged fruits, all the treated plots have shown equivalent results. However, the mixture of the bait SVMA14-004 (1.5 l/ha (0.32%)) with the insecticide KARATE ZEON (0.042%) has shown advantages regarding the mean percentage of damaged fruit (Table 6.2.2.1-1):

- Mixture SVMA14-004 (1.5 l/ha (0.32%)) + KARATE ZEON (0.042%): **81.8%**
- Mixture Hydrolysed proteins Life (1.5 %) + KARATE ZEON (0.042%): **77.0%**
- KARATE ZEON (0.013%): **60.9%**
- SVMA14-004 (1.5 l/ha (0.32%)): **1.7%** - This value allows to demonstrate that SVMA14-004 is an attractant and not an insecticide.

Furthermore, the calculation of the financial loss due to the damaged fruits has shown advantages for the plots treated with the bait SVMA14-004 (1.5 l/ha (0.32%)) and the insecticide KARATE ZEON (0.042%) (Table 6.2.2.1-5):

- Mixture SVMA14-004 (1.5 l/ha (0.32%)) + KARATE ZEON (0.042%): loss of **8 € / ha**
- Mixture Hydrolysed proteins Life (1.5 %) + KARATE ZEON (0.042%): loss of **56 € / ha**
- KARATE ZEON (0.013%): loss of **73 € / ha**
- SVMA14-004 (1.5 l/ha (0.32%)): **186 € / ha**
- Untreated: **327 € / ha**

When the *Ceratitis capitata* infestation is low to medium, the adding of the bait SVMA14-004 (1.5 l/ha (0.32%)) in the tank containing the insecticide KARATE ZEON (0.042%), allows to increase the protection of fruits against *Ceratitis capitata* (reduction of damages) in comparison to the treatment with the insecticide KARATE ZEON (0.013%) alone. It can be noted that the efficacy against *Ceratitis capitata* of the mixture of the bait SVMA14-004 (1.5 l/ha (0.32%)) with the insecticide KARATE ZEON (0.042%) is equivalent to the mixture of the reference attractant Hydrolysed proteins Life (1.5 %) with the insecticide KARATE ZEON (0.042%).

Table 6.2.2.1-1: Damages on fruits (with and without larvae)

Trial ID	Target Crop	Rating type	Assessment date*	Control untreated	KARATE ZEON + SVMA14-004	KARATE ZEON + Hydrolysed proteins Life	KARATE ZEON	SVMA14-004
					0.033-0.085% + 1.5 l/ha (0.25-0.64%)	0.033-0.085% + 1.5 %	0.013%	1.5 l/ha (0.25-0.64%)
SI15II012-GR01	Ceratitis capitata Persimmon	Average % of damaged fruits (100 fruits per plot) Reduction of damaged fruits (%)	0DAA	0.250	0.000	0.00	0.000	-
			7DAA	0.500 -	0.250 50.00	0.250 50.00	0.250 50.00	-
			14DAA	0.500 -	0.000 100.00	0.000 100.00	0.000 100.00	-
			21DAA	0.250 -	0.000 100.00	0.000 100.00	0.000 100.00	-
			28DAA	0.750 -	0.250 66.67	0.500 33.33	0.500 33.33	-
			7DAB	1.500 ^a -	0.250 ^b 83.33	0.250 ^b 83.33	0.250 ^b 83.33	-
			14DAB	2.000 ^a -	0.250 ^b 87.50	0.250 ^b 87.50	0.250 ^b 87.50	-
			21DAB	2.750 ^a -	0.250 ^b 90.91	0.250 ^b 90.91	0.750 ^b 72.73	-
			7DAC	1.750 ^a -	0.250 ^b 85.71	0.250 ^b 85.71	0.000 ^b 100.00	-
			14DAC	2.000 -	0.250 87.50	0.000 100.00	0.000 100.00	-
			MEAN	1.225 -	0.175 83.51	0.175 81.20	0.200 80.77	-
SI15II012-GR02	Ceratitis capitata	Average % of damaged fruits	0 DAA	0.025 ^a	0.000 ^a	0.000 ^a	0.000 ^a	-

Trial ID	Target Crop	Rating type	Assessment date*	Control untreated	KARATE ZEON + SVMA14-004	KARATE ZEON + Hydrolysed proteins Life	KARATE ZEON	SVMA14-004
					0.033-0.085% + 1.5 l/ha (0.25-0.64%)	0.033-0.085% + 1.5 %	0.013%	1.5 l/ha (0.25-0.64%)
	Persimmon	(100 fruits per plot)						
		Reduction of damaged fruits (%)	7DAA	0.250 ^a -	0.250 ^a 0.00	0.250 ^a 0.00	0.250 ^a 0.00	-
			14DAA	1.250 ^a -	0.000 ^a 100.00	0.250 ^a 80.00	0.000 ^a 100.00	-
			21DAA	0.750 ^a -	0.000 ^b 100.00	0.000 ^b 100.00	0.000 ^b 100.00	
			28DAA	1.750 ^a -	0.250 ^b 85.71	0.500 ^b 71.43	0.500 ^b 71.43	
			7DAB	2.000 ^a -	0.250 ^b 87.50	0.250 ^b 87.50	0.000 ^b 100.00	-
			14DAB	2.000 ^a -	0.250 ^b 87.50	0.250 ^b 87.50	0.250 ^b 87.50	-
			7DAC	2.750 ^a -	0.500 ^b 81.82	0.250 ^b 90.91	1.000 ^b 63.64	-
			14DAC	1.750 ^a -	0.250 ^b 85.71	0.250 ^b 85.71	0.250 ^b 85.71	-
			MEAN	1.417 -	0.194 78.53	0.222 75.38	0.250 76.03	-
SI15II012GR03	Ceratitis capitata Persimmon	Average % of damaged fruits (100 fruits per plot)	0 DAA	0.000 ^a	0.000 ^a	0.000 ^a	0.000 ^a	-
		Reduction of damaged fruits (%)	7DAA	8.750 ^a	3.000 ^a 65.714	3.000 ^a 65.714	2.500 ^a 71.429	-
			7DAB	8.500 ^a	6.000 ^a 29.412	9.750 ^a 0.000	8.500 ^a 0.000	-
			7DAC	7.000 ^a	2.000 ^a 71.429	2.000 ^a 71.429	4.250 ^a 39.286	-

Trial ID	Target Crop	Rating type	Assessment date*	Control untreated	KARATE ZEON + SVMA14-004	KARATE ZEON + Hydrolysed proteins Life	KARATE ZEON	SVMA14-004
					0.033-0.085% + 1.5 l/ha (0.25-0.64%)	0.033-0.085% + 1.5 %	0.013%	1.5 l/ha (0.25-0.64%)
			14DAC	5.750 ^a	1.000 ^b 82.609	0.000 ^b 100.00	2.250 ^b 60.870	-
			7DAD	2.000 ^b	0.000 ^b 100.000	0.000 ^b 100.00	0.750 ^b 62.500	-
			MEAN	5.333	2.000 69.833	2.458 64.487	3.042 46.817	-
SI15II012GR04	Ceratitis capitata Persimmon	Average % of damaged fruits (100 fruits per plot) Reduction of damaged fruits (%)	0 DAA	0.000 ^a	0.000 ^a	0.000 ^a	0.000 ^a	-
			7DAA	3.000 ^a	1.500 ^a 50.000	1.500 ^a 50.000	1.500 ^a 50.000	-
			7DAB	12.750 ^a	2.000 ^b 84.314	2.500 ^b 80.392	4.500 ^b 64.706	-
			7DAC	5.750 ^a	1.500 ^a 73.913	2.000 ^a 65.217	3.000 ^a 47.826	-
			14DAC	2.000 ^a	0.500 ^a 75.000	0.250 ^a 87.500	0.500 ^a 75.000	-
			7DAD	1.250 ^a	0.250 ^a 80.000	0.250 ^a 80.000	0.250 ^a 80.000	-
			MEAN	4.125	0.958 72.645	1.083 72.622	1.625 63.506	-
SI15II012-BGR05	Ceratitis capitata Persimmon	Average % of damaged fruits (100 fruits per plot) Reduction of damaged fruits (%)	0 DAA	0.000	0.000	0.000	0.000	0.000
			7DAA	5.000	1.300 74.000	2.50 50.000	2.500 50.000	5.000 50.000
			7DAB	7.500	6.300 60.000	3.800 60.000	2.800 72.857	8.000 0.000

Trial ID	Target Crop	Rating type	Assessment date*	Control untreated	KARATE ZEON + SVMA14-004	KARATE ZEON + Hydrolysed proteins Life	KARATE ZEON	SVMA14-004
					0.033-0.085% + 1.5 l/ha (0.25-0.64%)	0.033-0.085% + 1.5 %	0.013%	1.5 l/ha (0.25-0.64%)
			7DAC	3.800	0.000 100.000	0.000 100.000	1.300 66.667	4.000 0.000
			14DAC	5.000	1.300 75.000	1.300 75.000	3.300 35.000	5.000 0.000
			7DAD	2.500	0.000 100.000	0.000 100.000	0.500 80.000	3.500 0.000
			MEAN	4.000	1.500 81.800	1.300 77.000	1.700 60.905	4.300 1.714

* DAX= Day After application X

Table 6.2.2.1-2: Damages on fruits with larvae

Trial ID	Target Crop	Rating type	Assessment date*	Control untreated	KARATE ZEON + SVMA14-004	KARATE ZEON + Hydrolysed proteins Life	KARATE ZEON	SVMA14-004
					0.033-0.085% + 1.5 l/ha (0.25-0.64%)	0.033-0.085% + 1.5 %	0.013%	1.5 l/ha (0.25-0.64%)
SI15II012-GR01	Ceratitis capitata Persimmon	Average % of damaged fruits with larvae (100 fruits per plot)	0 DAA	0.000	---	---	---	!
			7DAA	50.000	0.000	0.000	0.000	!
			14DAA	50.000	---	---	---	!
			21DAA	0.000	---	---	---	!
			28DAA	33.333	0.000	50.000	0.000	!
			7DAB	25.000	0.000	0.000	0.000	!
			14DAB	20.833	0.000	100.000	0.000	!
			21DAB	12.500	0.000	0.000	0.000	!
			7DAC	25.000	0.000	0.000	---	!
			14DAC	52.778	0.000	---	---	!
			MEAN	26.944	0.000	25.000	0.000	!
SI15II012-GR02	Ceratitis capitata Persimmon	Average % of damaged fruits with larvae (100 fruits per plot)	0 DAA	0.000	---	---	---	!
			7DAA	0.000	0.000	0.000	0.000	!
			14DAA	37.500	---	0.000	---	!
			21DAA	0.000	---	---	---	!
			28DAA	25.000	0.000 ^a	50.000	50.000	!
			7DAB	8.333	0.000	0.000	---	!
			14DAB	33.333	0.000	0.000	0.000	!
			7DAC	16.667	100.000	0.000	16.667	!
			14DAC	12.500	0.000	0.000	0.000	!

Trial ID	Target Crop	Rating type	Assessment date*	Control untreated	KARATE ZEON + SVMA14-004	KARATE ZEON + Hydrolysed proteins Life	KARATE ZEON	SVMA14-004
					0.033-0.085% + 1.5 l/ha (0.25-0.64%)	0.033-0.085% + 1.5 %	0.013%	1.5 l/ha (0.25-0.64%)
			MEAN	14.815	16.667	7.143	13.333	-
SI15II012GR03	<i>Ceratitis capitata</i> Persimmon	Average % of damaged fruits with larvae (100 fruits per plot)	0 DAA	---	---	---	---	-
			7DAA	6,250 ^b	12,500 ^a	18,750 ^a	31,250 ^a	-
			7DAB	15,625 ^a	2,778 ^a	7,222 ^a	2,083 ^a	-
			7DAC	7,083 ^a	12,500 ^a	0,000 ^a	6,250 ^a	-
			14DAC	9,375 ^a	0,000 ^a	---	8,333 ^a	-
			7DAD	20,833 ^a	---	---	0,000 ^a	-
			MEAN	11,833	6,944	8,657	9,583	-
SI15II012GR04	<i>Ceratitis capitata</i> Persimmon	Average % of damaged fruits with larvae (100 fruits per plot)	0 DAA	-	-	-	-	-
			7DAA	4.167	16.667	16.667	33.333	-
			7DAB	5.000	11.111	8.333	0.000	-
			7DAC	3.571	16.667	8.333	16.667	-
			14DAC	33.333	0.000	0.000	0.000	-
			7DAD	12.500	0.000	0.000	0.000	-
			MEAN	11.714	8.889	6.667	10.000	-
SI15II012-BGR05	<i>Ceratitis capitata</i> Persimmon	Average % of damaged fruits with larvae (100 fruits per plot)	0 DAA	---	---	---	---	---
			7DAA	10.000	0.000	10.000	10.000	10.000
			7DAB	6.667	2.500	0.000	6.667	4.167
			7DAC	0.000	---	---	0.000	0.000
			14DAC	3.333	0.000	0.000	0.000	3.571
			7DAD	0.000	---	---	0.000	0.000

Trial ID	Target Crop	Rating type	Assessment date*	Control untreated	KARATE ZEON + SVMA14-004	KARATE ZEON + Hydrolysed proteins Life	KARATE ZEON	SVMA14-004
					0.033-0.085% + 1.5 l/ha (0.25-0.64%)	0.033-0.085% + 1.5 %	0.013%	1.5 l/ha (0.25-0.64%)
			MEAN	4.000	0.833	3.333	3.333	3.548

* DAX= Day After application X

Table 6.2.2.1-3: Damages on fruits without larvae

Trial ID	Target Crop	Rating type	Assessment date*	Control untreated	KARATE ZEON + SVMA14-004	KARATE ZEON + Hydrolysed proteins Life	KARATE ZEON	SVMA14-004
					0.033-0.085% + 1.5 l/ha (0.25-0.64%)	0.033-0.085% + 1.5 %	0.013%	1.5 l/ha (0.25-0.64%)
SI15II012-GR01	<i>Ceratitis capitata</i> Persimmon	Average % of damaged fruits without larvae (100 fruits per plot)	0 DAA	100.000	---	---	---	!
			7DAA	50.000	100.000	100.000	100.000	!
			14DAA	50.000	---	---	---	!
			21DAA	100.000	---	---	---	
			28DAA	66.667	100.000	50.000	100.000	
			7DAB	75.000	100.000	100.000	100.000	!
			14DAB	79.167	100.000	0.000	100.000	!
			21DAB	87.500	100.000	100.000	100.000	
			7DAC	75.000	100.000	100.000	---	!
			14DAC	47.222	100.000	---	---	!
			MEAN	73.056	100.000	75.000	100.000	!
SI15II012-GR02	<i>Ceratitis capitata</i> Persimmon	Average % of damaged fruits without larvae (100 fruits per plot)	0 DAA	100.000	---	---	---	!
			7DAA	100.000	100.000	100.000	100.000	!
			14DAA	62.500	---	100.000	---	!
			21DAA	83.333	---	---	---	!
			28DAA	75.000	100.000	50.000	50.000	!
			7DAB	91.667	100.000	100.000	---	!
			14DAB	66.667	100.000	100.000	100.000	!
			7DAC	83.333	0.000	100.000	83.333	!
			14DAC	87.500	100.000	100.000	100.000	!

Trial ID	Target Crop	Rating type	Assessment date*	Control untreated	KARATE ZEON + SVMA14-004	KARATE ZEON + Hydrolysed proteins Life	KARATE ZEON	SVMA14-004
					0.033-0.085% + 1.5 l/ha (0.25-0.64%)	0.033-0.085% + 1.5 %	0.013%	1.5 l/ha (0.25-0.64%)
			MEAN	83.333	83.333	92.857	86.667	-
SI15II012GR03	Ceratitis capitata Persimmon	Average % of damaged fruits without larvae (100 fruits per plot)	0 DAA	---	---	---	---	-
			7DAA	93,750	87,500	81,250	68,750	-
			7DAB	84,375	97,222	92,778	97,917	-
			7DAC	92,917	87,500	100,000	93,750	-
			14DAC	90,625	100,000	---	91,667	-
			7DAD	79,167	---	---	100.000	-
			MEAN	88,167	93,056	91,343	90,417	-
SI15II012GR04	Ceratitis capitata Persimmon	Average % of damaged fruits without larvae (100 fruits per plot)	0 DAA	---	---	---	---	-
			7DAA	95.833	83.333	83.333	66.667	-
			7DAB	95.000	88.889	91.667	100.000	-
			7DAC	96.429	83.333	91.667	83.333	-
			14DAC	66.667	100.000	100.000	100.000	-
			7DAD	87.500	100.000	100.000	100.000	-
			MEAN	88.286	91.111	93.333	90.000	-
SI15II012-BGR05	Ceratitis capitata Persimmon	Average % of damaged fruits without larvae (100 fruits per plot)	0 DAA	---	---	---	---	---
			7DAA	90.000	100.000	90.000	90.000	90.000
			7DAB	93.333	97.500	100.000	93.333	95.833
			7DAC	100.000	---	---	100.000	100.000
			14DAC	96.667	100.000	100.000	100.000	96.429
			7DAD	100.000	---	---	100.000	100.000

Trial ID	Target Crop	Rating type	Assessment date*	Control untreated	KARATE ZEON + SVMA14-004	KARATE ZEON + Hydrolysed proteins Life	KARATE ZEON	SVMA14-004
					0.033-0.085% + 1.5 l/ha (0.25-0.64%)	0.033-0.085% + 1.5 %	0.013%	1.5 l/ha (0.25-0.64%)
			MEAN	96.000	99.167	96.667	96.667	96.452

* DAX= Day After application X

In order to determine the infestation level, 5 traps were placed out of each trial. The number of *Ceratitis capitata* per trap per day was assessed and presented in the Table 6.2.2.1-4.

Table 6.2.2.1-4: Assessment of *Ceratitis capitata* captures

Trial ID	Target Crop	Assessment date	Number of <i>Ceratitis capitata</i> / trap / day
SI15II012-GR01	<i>Ceratitis capitata</i>	19/08/2015	0.00
	Persimmon	26/08/2015 (0DAA)	0.23
		02/09/2015	0.31
		09/09/2015	0.34
		16/09/2015	0.54
		23/09/2015 (0DAB)	1.03
		30/09/2015	0.2
		07/10/2015	0.66
		14/10/2015 (DAC)	1.14
		21/10/2015	0.17
		28/10/2015	0.60
SI15II012-GR02	<i>Ceratitis capitata</i>	27/08/2015	0.00
	Persimmon	03/09/2016 (0DAA)	0.20
		10/09/2015	0.29
		17/09/2015	0.57
		24/09/2015	0.31
		01/10/2015 (0DAB)	1.17
		08/10/2015	0.51
		15/10/2015 (0DAC)	1.09
		22/10/2015	0.49
		29/10/2015	0.54
SI15II012GR03	<i>Ceratitis capitata</i>	18/09/2015 (0DAA)	0.67
	Persimmon	25/09/2015 (0DAB)	1.29
		28/09/2015	0.33
		02/10/2015 (0DAC)	1.14
		05/10/2015	0.67
		09/10/2015	0.86
		12/10/2015	0.90
		16/10/2015 (0DAD)	1.21
		19/10/2015	0.33
		23/10/2015	0.29

Trial ID	Target Crop	Assessment date	Number of <i>Ceratitis capitata</i> / trap / day
SI15II012GR04	<i>Ceratitis capitata</i>	21/09/2015 (DAB)	0.33
	Persimmon	25/09/2015	1.14
		28/05/2015	0.67
		02/10/2015 (0DAC)	1.29
		05/10/2015	0.33
		09/10/2015	0.71
		12/10/2015	0.90
		16/10/2015 (0DAD)	1.29
		19/10/2015	0.33
		23/10/2015	0.29
SI15II012-BGR05	<i>Ceratitis capitata</i>	18/09/2015	First flight
	Persimmon	21/09/2015	0.33
		25/09/2015	1.14
		28/09/2015	0.67
		02/10/2015	1.29
		05/10/2015	0.67
		09/10/2015	0.86
		12/10/2015	0.90
		16/10/2015	1.14
		19/10/2015	0.33
		23/10/2015	0.29

Due to the important commercial aspect of *Ceratitis capitata* damages, the financial loss of damaged fruits was calculated and presented in the Table 6.6.2.1-5.

Table 6.2.2.1-5: Financial loss of the damaged fruits by *Ceratitis capitata*

Trial ID	Crop	Rating type	Control untreated	KARATE ZEON + SVMA14-004	KARATE ZEON + Hydrolysed proteins Life	KARATE ZEON	SVMA14-004
				0.033-0.085% + 1.5 l/ha (0.25-0.64%)	0.033-0.085% + 1.5 %	0.013%	1.5 l/ha (0.25-0.64%)
SI15II012-GR01	Persimmon	Financial loss of the damaged fruits (Euros/ha)	85.65	6.12	6.12	6.99	-
SI15II012-GR02	Persimmon	Financial loss of the damaged fruits (Euros/ha)	137.17	11.27	12.89	14.52	-
SI15II012GR03	Persimmon	Financial loss of the damaged fruits (Euros/ha)	417.57	83.52	102.65	127.03	-
SI15II012GR04	Persimmon	Financial loss of the damaged fruits (Euros/ha)	337.24	83.54	94.44	141.71	-
SI15II012-BGR05	Persimmon	Financial loss of the damaged fruits (Euros/ha)	327	8	56	73	186

CP 6.2.2.2 General Conclusion regarding the efficacy trials performed on persimmon

A total of 5 trials were carried out in 2015 in Spain on persimmon trees. In these trials, the bait SVMA14-004 was tested at the dose of 1.5 l/ha (0.25-0.64%), applied alone and/or in mixture with an insecticide (KARATE ZEON —0.033-0.085%), and was compared to the reference mixture of Hydrolysed proteins Life (1.5 %) and KARATE ZEON (0.033-0.085%) and KARATE ZEON (0.013%). For the bait treatment, just one band of the trees was treated (approximately 1/3 of each tree of the plot), and the application was done on the southern side of the trees.

In one trial, the bait SVMA14-004 was tested alone: the results obtained confirm that SVMA14-004 is a bait and not an insecticide.

When the *Ceratitis capitata* infestation is low to high, the adding of the bait SVMA14-004 (1.5 l/ha (0.25-0.64%)) in the tank containing the insecticide KARATE ZEON (0.033-0.085%), allows to increase the protection of fruits against *Ceratitis capitata* (reduction of damages and reduction of the number of infected fruits with larvae) in comparison to the treatment with the insecticide KARATE ZEON (0.013%) alone. It can be noted that the efficacy against *Ceratitis capitata* of the mixture of the bait SVMA14-004 (1.5 l/ha (0.25-0.64%)) with the insecticide KARATE ZEON (0.033-0.085%) is equivalent to the mixture of the reference attractant Hydrolysed proteins Life (1.5 %) with the insecticide KARATE ZEON (0.033-0.085%).

CP 6.3 Information on occurrence or possible occurrence of the development of resistance

Not relevant. SVMA14-004 is a bait intended to be used in association with a commercial insecticide. A possible occurrence observed could be due to the commercial insecticide, but not to SVMA14-004.

CP 6.4 Effects on the yield of treated plants or plant products in term of quantity and/or quality**CP 6.4.1 Effects on quality of plants or plant products**

Not relevant. SVMA14-004 is a bait intended to be used in association with a commercial insecticide. A possible occurrence observed could be due to the commercial insecticide, but not to SVMA14-004.

CP 6.4.2 Effects on transformation processes

Not relevant. SVMA14-004 is a bait intended to be used in association with a commercial insecticide. A possible occurrence observed could be due to the commercial insecticide, but not to SVMA14-004.

CP 6.4.3 Effects on the yield of treated plants or plant products

Not relevant. SVMA14-004 is a bait intended to be used in association with a commercial insecticide. A possible occurrence observed could be due to the commercial insecticide, but not to SVMA14-004.

CP 6.5 Phytotoxicity to target plants (including different cultivars) or to target plant products

Not relevant. SVMA14-004 is a bait intended to be used in association with a commercial insecticide. A possible occurrence observed could be due to the commercial insecticide, but not to SVMA14-004.

CP 6.6 Observations on undesirable or unintended side-effects, e.g. on beneficial and other non-target organisms, on succeeding crops, other plants or parts of treated plants used for propagating purposes (e.g. seeds, cuttings, runners)**CP 6.6.1 Impact on succeeding crops**

Not relevant. SVMA14-004 is intended to be used on Citrus and Persimmon.

CP 6.6.2 Impact on other plants, including adjacent crops

Not relevant. Please refer to the impact on other plants including adjacent crops of the insecticide used in association with SVMA14-004.

CP 6.6.3 Impact on treated plants or plant products to be used for propagation

Not relevant.

CP 6.6.4 Effects on beneficial and other non-target organisms

Detailed studies on the possible adverse effects to beneficial organisms are submitted and summarised in the document M-CP 10 (Ecotoxicology).

CP 6.7 Summary and assessment of data according to points 6.1 to 6.6

SVMA14-004, the representative formulation, is a soluble concentrate product containing 300 g/l of Hydrolysed proteins intended to be used as a bait against *Ceratitis capitata*, commonly called "Mediterranean fruit fly", in Citrus and Persimmon fields, in. This product is applied mixture with authorized insecticides (please refer to the GAP table in Appendix 1).

A total of 13 efficacy trials are carried out, under GEP conditions, to evaluate the efficacy of the bait SVMA14-004 against *Ceratitis capitata* in citrus fields (8 trials) and persimmon fields (5 trials). These trials are conducted in 2015, 2016 and 2018 in Spain.

Trials on citrus:

A total of 8 trials were carried out in 2015, 2016 and 2018 in Spain on citrus trees. In the trials performed in 2015 and 2015, the bait SVMA14-004 was tested at the dose of 1.5 l/ha (0.25-0.3%), applied alone and/or in mixture with an insecticide (KARATE ZEON – 200 cc/ha 0.033-0.040%), and was compared to the reference mixture of Hydrolysed proteins Life (1.5 %) and KARATE ZEON (0.033-0.040%) and to KARATE ZEON (0.013%) alone. In the 3 trials performed in Spain in 2018, the bait SVMA14-004 was tested at the dose of 1.5 l/ha (1.5%), applied in mixture with an insecticide (KARATE ZEON – 0.1%), and was compared to the reference mixture of Hydrolysed proteins Life (1.5 %) and KARATE ZEON (0.1% - reduced dose), and to KARATE ZEON (0.013%) alone. For the bait treatment, just one band of the trees was treated (approximately 1/3 of each tree of the plot), and the application was done on the southern side of the trees. In 3 trials, the bait SVMA14-004 was tested alone: the results obtained confirm that SVMA14-004 is a bait and not an insecticide.

When the *Ceratitis capitata* infestation is low to medium, the adding of the bait SVMA14-004 (1.5 l/ha (0.25-1.5 %)) in the tank containing the insecticide KARATE ZEON (0.033-0.1%), allows to increase the protection of fruits against *Ceratitis capitata* (reduction of damages and reduction of the number of infected fruits with larvae and reduction of financial loss of the damaged fruits) in comparison to the treatment with the insecticide KARATE ZEON (0.01-0.013%) alone. It can be noted that the efficacy against *Ceratitis capitata* of the mixture of the bait SVMA14-004 (1.5 l/ha) with the insecticide KARATE ZEON (0.033-0.1%) is equivalent to the mixture of the reference attractant Hydrolysed proteins Life (1.5 %) with the insecticide KARATE ZEON (0.033-0.1%). Furthermore, it can be noted that the use of the bait SVMA14-004 (1.5 l/ha (1.5%)) allows to reduce the application rate of the insecticide KARATE ZEON (0.1% instead of 0.01%) while having a maintained a very good protection of fruits against *Ceratitis capitata*.

Trials on persimmon:

A total of 5 trials were carried out in 2015 in Spain on persimmon trees. In these trials, the bait SVMA14-004 was tested at the dose of 1.5 l/ha (0.25-0.64%), applied alone and/or in mixture with an insecticide (KARATE ZEON —0.033-0.085%), and was compared to the reference mixture of Hydrolysed proteins Life (1.5 %) and KARATE ZEON (0.033-0.085%) and KARATE ZEON (0.013%). For the bait treatment, just one band of the trees was treated (approximately 1/3 of each tree of the plot), and the application was done on the southern side of the trees.

In one trial, the bait SVMA14-004 was tested alone: the results obtained confirm that SVMA14-004 is a bait and not an insecticide.

When the *Ceratitis capitata* infestation is low to high, the adding of the bait SVMA14-004 (1.5 l/ha (0.25-0.64%)) in the tank containing the insecticide KARATE ZEON (0.033-0.085%), allows to increase the protection of fruits against *Ceratitis capitata* (reduction of damages and reduction of the number of infected fruits with larvae) in comparison to the treatment with the insecticide KARATE ZEON (0.013%) alone. It can be noted that the efficacy against *Ceratitis capitata* of the mixture of the bait SVMA14-004 (1.5 l/ha (0.25-0.64%)) with the insecticide KARATE ZEON (0.033-0.085%) is equivalent to the mixture of the reference attractant Hydrolysed proteins Life (1.5 %) with the insecticide KARATE ZEON (0.033-0.085%).

CP 6.8 List of test facilities including the corresponding certificates**Table 6.8-1: List of test facilities**

Test facility	Address	Certificate (Yes or No)
SICOP (SISTEMAS DE CONTROL DE PRODUCCIÓN)	Polígono Industrial “La Gasolinera”, 4 18680 Salobreña, Granada, SPAIN	YES



MINISTERIO DE AGRICULTURA
ALIMENTACION Y MEDIO
AMBIENTE

SECRETARÍA GENERAL DE
AGRICULTURA Y ALIMENTACION

DIRECCIÓN GENERAL DE SANIDAD
DE LA PRODUCCIÓN AGRARIA

ASUNTO: Renovación Acreditación Nº EOR 50/03

De acuerdo con lo establecido en el artículo 19 de la Orden de 11 de diciembre de 1995 por el que se establecen las disposiciones relativas a las renovaciones de autorizaciones de ensayos y experiencias con productos fitosanitarios, esta Dirección General ha resuelto, previo informe favorable de la Comisión de Evaluación de Productos Fitosanitarios, renovar la acreditación Nº EOR 50/03 concedida a su empresa, para realizar ensayos oficialmente reconocidos.

La validez de esta acreditación queda ampliada hasta el 30 de enero del año 2018, salvo que sea revisada o revocada antes de la conclusión de dicho plazo si se determina que ha dejado de cumplirse alguno de los requisitos exigidos para su autorización o de las obligaciones establecidas por la Orden Ministerial de 11 de diciembre de 1995.

Madrid 29 de enero de 2013

EL DIRECTOR GENERAL

Valentín Almansa de Lara

SISTEMAS DE CONTROL
DE PRODUCCIÓN, S.L.
SALOBREÑA (Granada)
FA/mgf



C/ Alfonso XII, 62
28071 - MADRID

Appendix 1: GAP Table

Product: SVMA14-004

Active substance: Hydrolysed protein

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			PHI (days)	Remarks: e.g. g safener/synergist per ha
					Method / Kind	Timing / Growth stage of crop & 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		
1	Southern zone	Citrus	F	Mediterranean Fruit Fly <i>Ceratitis capitata</i>	Bait applicatio n*	#	#	a) 1.5 (0.25- 1.5%) b) #	a) 0.45 b) #	#	#	*spray on 1 band of the trees (representing approximately 1/3 of the field), on the southern side of the trees. The application must be done on branches. To be used in mixture with insecticides # corresponds to the GAP of the insecticide used in mixture
2	Southern zone	Persimmon	F	Mediterranean Fruit Fly <i>Ceratitis capitata</i>	Bait applicatio n*	#	#	a) 1.5 (0.25- 0.64%) b) #	a) 0.45 b) #	#	#	*spray on 1 band of the trees (representing approximately 1/3 of the field), on the southern side of the trees. The application must be done on branches. To be used in mixture with insecticides # corresponds to the GAP of the insecticide used in mixture