EMAMECTIN BENZOATE (247)

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EXPLANATION

Emamectin benzoate is a foliar insecticide derivative of abamectin, a naturally occurring soil actinomycete. Emamectin benzoate was first evaluated by the JMPR in 2011 for toxicology and residues. The 2011 Meeting established an ADI of 0–0.0005 mg/kg bw and an acute RfD of 0.03 mg/kg bw, expressed as emamectin benzoate. The 2011 Meeting defined the residue as emamectin B1a benzoate for plant and animal commodities for compliance with the MRL and for estimation of dietary intake. Since the molecular weight difference between emamectin B1a benzoate and emamectin benzoate (consisting of 90% emamectin B1a benzoate and 10% emamectin B1b benzoate) is marginal, residues are not corrected for molecular weight. The 2011 Meeting considered the residue not fat soluble.

Emamectin benzoate was scheduled at the 45th session of the CCPR (2013) for the evaluation of additional maximum residue levels by the 2014 JMPR. The manufacturer submitted additional supervised residue trials on rape forage, almonds, pecans and rape seeds, which were evaluated by the present Meeting.

RESIDUE ANALYSIS

The Meeting received information on analytical methods for the determination of emamectin benzoate and its avermectin-like metabolites as used in the supervised residue trials. The analytical residue methods have been evaluated according to the guidance provided by OECD (Series on Pesticides number 39) as indicated on page 25 of the FAO manual 2009.

Validation results are required for every commodity submitted for MRL-setting: at least one full validation for a commodity within the five defined crop groups (high acid content, high water content, high oil content, high protein content, high starch content) and a reduced validation for every other commodity within a certain crop group. Where validation results do not meet the criteria given below, this is indicated.

When the analytical method is validated according to a full validation scheme, it means that

- at least 5 recovery experiments per level were conducted on at least 2 levels (LOQ and 10× LOQ) and average recovery per level was shown to be between 70–120% and the relative standard deviation (RSD_r or CV) per level was shown to be < 20%,
- at least two control samples were analysed and were shown to be below 0.3×LOQ and
- the calibration was conducted with at least 5 single points or at least 3 duplicate points and was shown to be linear (either standards in solvent or matrix matched standards).

When the analytical method is validated according to a reduced validation scheme, it means that

- a full validation is available for a crop in the same crop group (high acid content, high water content, high oil content, high protein content, high starch content);
- at least 3 recovery experiments per level were conducted on at least 2 levels (LOQ and 10× LOQ) and the average recovery per level was shown to be between 70–120% and the relative standard deviation (RSD_r or CV) per level was < 20%;
- at least two control samples were analysed and shown to be below 0.3× LOQ
- the calibration was conducted with at least 5 single points or at least 3 duplicate points and was shown to be linear (only relevant for matrix matched standards; standards in solvent are already covered by full validation).

Analytical methods used in study reports in plant commodities

HPLC-MS/MS method RAM 465/01

HPLC-MS/MS Method RAM 465/01 is used for the determination of emamectin benzoate and its avermectin-like residues in almond and pecan nutmeat and almond hulls. Description and validation of RAM 465/01 and its modifications has previously been submitted for the JMPR 2011 evaluation. A modification of the method was issued on 20 March 2007 for almonds and pecans as described in the JMPR 2011 evaluation report [Ediger, 2007, MK244/0714]. The 30 May 2008 modification used in the 2008 supervised residue trials on almonds and pecans [Oakes, 2009, MK244/50014] is the same as the 20 March 2007 modification.

Additional validation results are available from the 2008 supervised residue trials [Oakes, 2009, MK244/50014]. Since all analyses were performed in the same laboratory, the present reviewer combined the recovery results from identical commodities to get within-laboratory reproducibility and recovery results. Reduced validation results are available at 0.001 and 0.005 mg/kg (n=3–4, each level) in almond nutmeat and pecan nutmeat and at 0.001 mg/kg (n=3, each level) in almond hulls for MAB1a (NOA 426007), MAB1b (NOA 422390), 8,9-ZMa (NOA 438376), AB1a (NOA 438309), MFB1a (NOA 415692) and FAB1a (NOA 415693). Limited validation results are available at 0.05-0.1 mg/kg in almond hulls (n=2, each level). Average recoveries for these validations ranged between 70–120% with an RSD < 20% for reduced validations. The only exception is 0.001 mg/kg FAB1a in almond nutmeat where the RSD = 25%. Residues of the analytes were below LOQ (i.e. < 0.001 mg/kg) when measured in untreated control samples of almond nutmeat, pecan nutmeat or almond hulls. Linearity of the response was assessed using 5 single standards in solvent. The response was shown to be linear (1/× weighted) across the range 0.005–0.1 µg/L or 0.05–20 ng/L for ionisable analytes and 0.02–2.0 µg/L for neutral analytes. The correlation coefficient (r) for the calibration regression lines was greater than 0.999 in all cases.

The 20 March 2007 modification of HPLC-MS/MS method RAM 465/01 is valid for quantification of emamectin benzoate (B1a and B1b) and its avermectin-like residues at levels between 0.001–0.005 mg/kg in almond nutmeat and pecan nutmeat and at 0.001–0.1 mg/kg in almond hulls. The only exception is 0.001 mg/kg FAB1a (NOA 415693) in almond nutmeat where the RSD = 25% (n=3). Since this compound is not in the residue definition for enforcement or dietary risk assessment, this has no impact on the MRL derivation.

HPLC-MS/MS method TP/03

Method TP/03 is used for the determination of emamectin benzoate and its isomer 8,9-ZMa in rape seeds and rape forage.

Method TP/03 involves extraction of residues of emamectin B1a (NOA 426007), emamectin B1b (NOA 422390) and 8,9-ZMa (NOA 438376) from rape seeds and rape forage [Balshaw and Fernandez, not dated]. Homogenised sample (5 or 10 g) is mixed with acetonitrile acidified to 1% with acetic acid. Sodium chloride and magnesium sulphate are added and mixed vigorously followed by centrifugation. Where the sample to solvent ratio is not 1:1 a concentration step is included using a nitrogen evaporator. The acetonitrile layer is cleaned up with a primary secondary amine cartridge and magnesium sulphate. The extract is then analysed using HPLC-MS/MS using external standards for emamectin benzoate and 8,9-ZMa. For emamectin B1a benzoate the MRM transition ions were m/z 886.6 to m/z 158 (quantification) and m/z 126 and 302 for confirmation. For emamectin B1b benzoate the MRM transitions were m/z 872.5 to m/z 158 (quantification) and m/z 82 and 126 for confirmation. For 8,9-ZMa the MRM transitions were m/z 890.6 to m/z 305 (quantification) and m/z 193 and 567 for confirmation.

Validation results for rape seeds and rape forage are reported in the supervised residue trials [Lean, 2014a/b, MK244/10298, MK244/10300] as well as a separate validation report [Balshaw and Fernandez, not dated]. Full validation results are available for rape seeds at 0.005 and 0.05 mg/kg

(n=6, each level) for emamectin benzoate (B1a and B1b). Reduced validation results are available at 0.05 mg/kg (n=3) for 8,9-ZMa in rape seeds and at 0.05 mg/kg (n=3) for emamectin benzoate (B1a and B1b) and 8,9-Zma in rape forage. Limited validation results are available at 0.005 mg/kg (n=2) for 8,9-Zma in rape seeds and rape forage and for emamectin benzoate (B1a and B1b) in rape forage. Limited validation results are available at 0.1 mg/kg (n=1) for emamectin benzoate (B1a and B1b) and 8,9-Zma in rape forage. Average recoveries for these validations ranged between 70%-120% with an RSD < 20% for full or reduced validations. Residues of the analytes were below 0.3LOQ (i.e. < 0.002 mg/kg) when measured in untreated control samples of rape seeds and rape forage. The linearity of response was verified for 5–7 single standards in solvent. The linear range was 0.005 to 0.20 mg/kg for 1/× weighted regression and forced origin with a coefficient of determination (R^2) > 0.99 for each analyte.

HPLC-MS/MS method TP/03 is considered valid for quantification of emamectin benzoate (B1a and B1b) at levels between 0.005–0.05 mg/kg in rape seeds and rape forage. The quantification of 8,9-Zma at levels of 0.005–0.05 mg/kg in rape seeds and rape forage is considered insufficiently validated. Since 8,9-Zma is not in the residue definition for enforcement or dietary risk assessment, this has no impact on the MRL derivation.

Stability of pesticide residues in stored analytical samples

Emamectin benzoate is stable in commodities with high oil content such as nutmeat and canola grain for a minimum of 9 months and for a minimum of 2 years in high water content crops and dry crops under deep-frozen conditions. The reports of all relevant storage stability studies have previously been submitted [JMPR 2011 evaluation].

USE PATTERN

Emamectin benzoate is registered for use in several countries for control of insects on several commodities as is indicated in the JMPR 2011 evaluation. Additional label information on tree nuts and rape seed was submitted to the present Meeting and is presented in table 1.

Table 1 lists only the uses for which an original label was available and the dose rate could be verified by the Meeting. The label information on tree nuts is the same as for the JMPR 2011 evaluation and this information is repeated here for convenience. The labels on rape seed and tree nuts indicate that thorough spray coverage is essential for optimum performance. The use of greater water volumes generally results in better coverage, especially in hot and dry weather conditions or when the plant canopy is dense. The use of an adjuvant typically improves coverage and penetration and results in optimum insect control, especially in crops with hard-to-wet leaf surfaces.

Table 1 Registered pre-harvest uses of emamectin benzoate, relevant for the present evaluation

Crop	Country	Formul g ai/kg or g ai/L	Method	Rate per applic (g ai/ha)	Spray concentr (g ai/hL)	Number	Spray interval (days)	PHI, days
Tree nuts [a] including pistachios	USA	SG 50 [c]	concentrate airblast foliar spray ground equipment	11.2-16.8	3.0-4.5	1-3, max 50.4 g ai/ha per season	7	14
	USA	SG 50 [c]	dilute airblast foliar spray ground equipment	11.2-16.8	0.30-0.45	1-3, max 50.4 g ai/ha per season	7	14
Rape seed (canola) for	Australia	EC 17 [c]	foliar spray ground	2.6-5.1	2.6-5.1	1-2	/[d]	14

Crop	Country	Formul g ai/kg or g ai/L	Method	Rate per applic (g ai/ha)	Spray concentr (g ai/hL)	Number	Spray interval (days)	PHI, days
seed production [b]			equipment					
	Australia	EC 17 [c]	foliar aircraft spray	2.6-5.1	13-26	1-2	/[d]	14

SG = water soluble granule, EC = emulsifiable concentrate

[a] The tree nut class in the USA includes: almond, beechnut, Brazil nut, butternut, cashew, chestnut, chinquapin, filbert (hazelnut), hickory nut, macadamia nut (bush nut), pecan, walnut (black and English/Persian).

[b] The Australian label on rape seed contains a restriction for use as feed: "do not use on canola grown as forage crop and also the intended use table indicates: canola for grain production"

[c] The use of a penetrating type spray adjuvant (tree nuts) or a non-ionic surfactant (rape seed, tree nuts) is recommended. Do not use sticker/binder type adjuvant for tree nuts.

[d] Sample crops twice a week after application to determine if a second application is required.

RESIDUES RESULTING FROM SUPERVISED TRIALS ON CROPS

The Meeting received supervised residue trials on rape forage, almonds, pecans and rape seed.

Crop group	Commodity	Table no.
Tree nuts	Almonds	Table 2
	Pecans	Table 3
Oilseeds	Rape seed	Table 4
Miscellaneous fodder and forage crops	Almond hulls	Table 5
	Rape forage	Table 6

Application rates are reported as emamectin benzoate (g ai/ha). Unquantifiable residues are shown as below the reported LOQ (e.g., < 0.001 mg/kg). Residues, application rates and spray concentrations have been rounded to two significant figures. Residue data are recorded unadjusted for percentage recoveries or for residue values in control samples unless otherwise stated. Where multiple samples were taken from a single plot individual values are reported, but the mean value is selected for MRL derivation, if according to cGAP. Where multiple analyses were conducted on a single sample, the average value is reported. Where results from separate plots with distinguishing characteristics such as different formulations, crop varieties or treatment schedules were reported, results are listed for each plot. However in such cases only one residue value may be selected per location. Residues from the trials conducted according to critical GAP have been used for the estimation of maximum residue levels, STMR and HR values. Those results are underlined.

Tree nuts

The Meeting received supervised residue trials on almonds and pecans.

Supervised residue field trials on almonds and pecans were carried out in the USA in 2006 and 2007 [Ediger 2007, MK244/0714, Oakes, 2009, MK244/50014]. The 2006 trials were summarized and evaluated by the 2011 JMPR. The 2007 trials are summarized here. Almond and pecan trees were treated with three foliar cover spray applications using a tractor mounted sprayer or airblast sprayer. The spray volume was either 93–95 L/ha (very concentrate spray as used for aircraft equipment), 450–780 L/ha (concentrate spray as used for airblast sprayers) or 1300–2300 L/ha (dilute spray as used for ground equipment). The spray mix included a horticultural oil, non-ionic surfactant or organo-silicone adjuvant. There were no unusual weather conditions. Whole nuts were harvested at maturity. Samples were prepared by separating shells from nutmeat to generate at least 1.4 kg of nutmeat (=RAC). Samples were stored at -20 ºC for a maximum of 9 months. Samples were analysed for MAB1a (NOA 426007), MAB1b (NOA 422390), 8,9-Zma (NOA 438376), AB1a (NOA 438309), MFB1a (NOA 415692) and FAB1a (NOA 415693) by HPLC-MS/MS Method RAM 465/01

(modification 30 May 2008). Results were not corrected for control levels (< 0.001 mg/kg for each analyte) nor for average concurrent method recoveries (70%-120% for each analyte). Results are shown in table 2 and table 3. Results represent the mean of two replicate samples taken from each plot.

Residues of avermectin-like residues were not found in any of the almond or pecan nutmeat samples (< 0.001 mg/kg). Several trials have been conducted on the same location. From such trials only the highest (mean) value is selected for MRL derivation if compliant with cGAP.

Table 2 Residue results from supervised field trials on almonds (nutmeat) using an SG formulation (50 g ai/kg) with adjuvant

ALMONDS Location, year, (Variety)	Number (interval) soil type	g ai/ha	g ai/hL	Method, last application date, growth stage (BBCH)	DAT (days)	MAB1a (mg/kg)	MAB1b (mg/kg)	Sum1a (mg/kg)	Report, Trial no
Madera, CA, USA, 2007 (Butte)	3 (7, 7), sandy loam	17 17 17	18 18 18	very concentrate foliar spray 27 Aug, BBCH 85	14	< 0.001 < 0.001 mean < 0.001 [a]	< 0.001 < 0.001 mean < 0.001 [a]	< 0.001 < 0.001 mean < 0.001 [a]	Report: T002811-07 Trial: W30CA078291
Madera, CA, USA, 2007, (Mission)	3 (7, 7) loamy sand	17 17 17	2.2 2.2 2.2	concentrate foliar spray 29 Aug, BBCH 85	14	< 0.001 < 0.001 mean < 0.001 [a]	< 0.001 < 0.001 mean < 0.001 [a]	< 0.001 < 0.001 mean < 0.001 [a]	Report: T002811-07 Trial: W29CA078294
Madera, CA, USA, 2007, (Mission)	3 (7, 7) loamy sand	17 17 17	0.90 0.90 0.90	dilute foliar spray 29 Aug, BBCH 85	14	< 0.001 < 0.001 mean < 0.001 [a]	< 0.001 < 0.001 mean < 0.001 [a]	< 0.001 < 0.001 mean < 0.001 [a]	Report: T002811-07 Trial: W29CA078294
Fresno, CA, USA, 2007 (Non-Pareil)	3 (7, 7) sandy loam	16 17 17	1.0 1.0 1.0	dilute foliar spray 27 Aug, BBCH 85	14	< 0.001 < 0.001 mean < 0.001 [a]	< 0.001 < 0.001 mean < 0.001 [a]	< 0.001 < 0.001 mean < 0.001 [a]	Report: T002811-07 Trial: W30CA078292
Kerman, CA, USA, 2007, (Carmel)	3 (7, 7) loamy sand	17 17 17	2.4 2.4 2.4	concentrate foliar spray 27 Aug, BBCH 85	14	< 0.001 < 0.001 mean < 0.001 [a]	< 0.001 < 0.001 mean < 0.001 [a]	< 0.001 < 0.001 mean < 0.001 [a]	Report: T002811-07 Trial: W30CA078293

[a] Results are from two replicate field samples, the mean may be selected for MRL derivation if compliant with cGAP. Sum1aexpressed as MAB1a = sum of MAB1a plus its avermectin-like metabolites, corrected for molecular weight (MAB1a + 1.000 × 8,9-Zma + 1.016 × AB1a + 0.9693 × MFB1a + 0.9844 FAB1a). Metabolites < LOQ were assumed not to be present

Table 3 Residue results from supervised field trials on pecans (nutmeat) using an SG formulation (50 g ai/kg) with adjuvant

PECANS Location, year, (Variety)	Number (interval) soil type	g ai/ha	g ai/hL	Method, last application date, growth stage (BBCH)	DAT (days)	MAB1a (mg/kg)	MAB1b (mg/kg)	Sum1a (mg/kg)	Report, Trial no
Hawkinsville, GA, USA, 2007, (Desirable)	3 (7, 6) sandy clay loam	17 17 17	18 18 18	concentrate foliar spray 25 Oct, BBCH 83	14	< 0.001 < 0.001 mean < 0.001 [a]	< 0.001 < 0.001 mean < 0.001	< 0.001 < 0.001 mean < 0.001	Report: T002811-07 Trial: E12GA078295

PECANS Location, year, (Variety)	Number (interval) soil type	g ai/ha	g ai/hL	Method, last application date, growth stage (BBCH)	DAT (days)	MAB1a (mg/kg)	MAB1b (mg/kg)	Sum1a (mg/kg)	Report, Trial no
							[a]	[a]	
Vienna, GA, USA, 2007, (Desirable)	3 (7, 6) sandy loam	17 17 17	1.3 1.3 1.3	dilute foliar spray 25 Oct, BBCH 83	14	< 0.001 < 0.001 mean < 0.001 [a]	< 0.001 < 0.001 mean < 0.001 [a]	< 0.001 < 0.001 mean < 0.001 [a]	Report: T002811-07 Trial: E12GA078296
Alexandria, LA, USA, 2007, (Sumner)	3 (7, 7) loam	17 17 17	3.5 3.6 3.6	concentrate foliar spray 16 Oct, BBCH 88-89	14	< 0.001 < 0.001 mean < 0.001 [a]	< 0.001 < 0.001 mean < 0.001 [a]	< 0.001 < 0.001 mean < 0.001 [a]	Report: T002811-07 Trial: E17LA078297
Yoakum, TX, USA, 2007, (Cheyenne)	3 (8, 7) sandy loam	17 17 17	1.1 1.1 1.1	dilute foliar spray 1 Oct, BBCH 94-98	14	< 0.001 < 0.001 mean < 0.001 [a]	< 0.001 < 0.001 mean < 0.001 [a]	< 0.001 < 0.001 mean < 0.001 [a]	Report: T002811-07 Trial: W05TX078298

[a] Results are from two replicate field samples, the mean may be selected for MRL derivation if compliant with cGAP. Sum1aexpressed as MAB1a = sum of MAB1a plus its avermectin-like metabolites, corrected for molecular weight (MAB1a + 1.000 × 8,9-Zma + 1.016 × AB1a + 0.9693 × MFB1a + 0.9844 FAB1a). Metabolites < LOQ were assumed not to be present

Rape seed

The Meeting received supervised residue trials on rape seed (canola).

Supervised residue field trials on rape seed (canola) were carried out in 2009, 2010 and 2011 in Australia [Lean, 2014a/b, MK244/10298, MK244/10300 and additional information in Syngenta, 2014]. Rape seed on 12–160 m^2 plots was treated with two foliar applications using a gas powered hand-held boom sprayer. The spray volume was 74–88 L/ha (concentrate spray) or 154–250 L/ha (intermediate spray) or 403–575 L/ha (dilute spray). The spray mix included a non-ionic adjuvant. There were no unusual weather conditions. The mature crop was desiccated by wind-rowing, herbicide desiccation (Reglone® with 200 g/L diquat) or unaided natural desiccation. Herbicide desiccation involves the use of a herbicide to dry off the plant, which leaves it attached in the ground, preventing the crop from blowing away. Whereas wind-rowing involves the cutting of the crop and laying it in the rows to dry, providing a greater chance for loss of crop due to wind. Seeds (at least 2 kg, from at least 12 plants) were collected from each plot 0–15 days after cutting or chemical desiccation. Crops were headed directly in the field in case of unaided natural desiccation. Samples were stored at -2 ºC or lower for a maximum of 265 days (2009–2010 samples) and 99 days (2011 samples).

Samples were analysed for MAB1a (NOA 426007), MAB1b (NOA 422390) and 8,9-Zma (NOA 438376) by HPLC-MS/MS Method TP/03. The isomer 8,9-Zma was only analysed in the 2009 and 2010 residue trials. The other avermectin-like metabolites were not quantified at all. Results were not corrected for control levels (< 0.005 mg/kg for each analyte) nor for average concurrent method recoveries (70–120% for each analyte). Results are shown in Table 4.

HPLC-MS/MS method TP/03 is considered valid for quantification of emamectin benzoate (B1a and B1b) in rape seeds at levels between 0.005-0.05 mg/kg. The quantification of 8,9-Zma at levels of 0.005–0.05 mg/kg in rape seeds is considered insufficiently validated. Since 8,9-Zma is not in the residue definition for enforcement or dietary risk assessment, this has no impact on the MRL derivation.

No residues of MAB1a, MAB1b or 8,9-Zma were not found in any of rape seed samples (< 0.005 mg/kg). The other avermectin-like metabolites were not quantified at all. Several trials have

been conducted on the same location. From such trials only the highest value is selected for MRL derivation if compliant with cGAP.

Table 4 Results from supervised field trials on rape (seeds) using an EC formulation (17 g ai/L) with adjuvant

RAPE SEEDS, Location, year, (Variety)	Number (interval) soil type	g ai/ha	g ai/hL	Method, last application date, GS (BBCH), harvest method	DAT (DAC*)	MAB1a (mg/kg)	MAB1b (mg/kg)	8,9-Zma (mg/kg)	Report, Trial
Inverleigh, VIC, Australia, 2009, (cv Jardee)	2 (14) brown clay loam	6.1 5.8	7.0 7.0	Concentrate foliar spray, 1 Nov 2009 GS 70 natural desiccation	51 (0*)	< 0.005	< 0.005	< 0.005	Report: 09-SAR-018GLP_SR Trial: Site 1
Inverleigh, VIC, Australia, 2009, (cv Jardee)	2 (14) brown clay loam	12 11	14 14	Concentrate foliar spray, 1 Nov 2009 GS 70 natural desiccation	51 (0*)	< 0.005	< 0.005	< 0.005	Report: 09-SAR-018GLP_SR Trial: Site 1
Glenthompson, VIC, Australia, 2009, (cv TT)	2 (14) brown clay loam	6.2 5.3	7.0 7.0	Concentrate foliar spray, 1 Nov 2009 GS 67 natural desiccation	47 (0*)	< 0.005	< 0.005	< 0.005	Report: 09-SAR-018GLP_SR Trial: Site 2
Northam, WA, Australia, 2009, (cv 46Y78)	2 (14) river loam	5.8 6.1	7.0 7.0	Concentrate foliar spray 16 Oct 2009 GS 69 natural desiccation	42 (0*)	< 0.005	< 0.005	< 0.005	Report: 09-SAR-018GLP_SR Trial: Site 3
Northam, WA, Australia, 2009, (cv 46Y78)	2 (14) river loam	11 12	14 14	Concentrate foliar spray 16 Oct 2009 GS 69 natural desiccation	42 (0*)	< 0.005	< 0.005	< 0.005	Report: 09-SAR-018GLP_SR Trial: Site 3
Williams, WA, Australia, 2009, (cv Manola 76TT)	2 (14), sandy loam	6.1 5.7	7.0 7.0	Concentrate foliar spray 15 Oct 2009 GS 68 natural desiccation	50 (0*)	< 0.005	< 0.005	< 0.005	Report: 09-SAR-018GLP_SR Trial: Site 4
Inverleigh, VIC, Australia, 2010, (cv 46Y78)	2 (7), brown clay loam	5.4 5.2	1.1 1.1	Dilute foliar spray, 1 Nov 2010 GS 76 herbicide desiccation	28 (0*) [b]	< 0.005	< 0.005	< 0.005	Report: 09-SAR-018GLP_SR Trial: Site 5, treatment 2
Inverleigh, VIC, Australia, 2010,	2 (8), brown clay loam	5.2 6.3	1.1 1.1	Dilute foliar spray, 16 Nov 2010 GS 78	13 (0*) [b] 21 (8*) 28 (15*)	< 0.005[a] < 0.005 < 0.005	< 0.[005a] < 0.005 < 0.005	< 0.005 a < 0.005 < 0.005	Report: 09-SAR-018GLP_SR Trial: Site 5,

RAPE SEEDS, Location, year, (Variety)	Number (interval) soil type	g ai/ha	g ai/hL	Method, last application date, GS (BBCH), harvest method	DAT (DAC*)	MAB1a (mg/kg)	MAB1b (mg/kg)	8,9-Zma (mg/kg)	Report, Trial
(cv 46Y78)				herbicide desiccation					treatment 3
Inverleigh, VIC, Australia, 2010, (cv 46Y78)	2 (6), brown clay loam	5.9 5.5	1.1 1.1	Dilute foliar spray, 22 Nov 2010 GS 79 herbicide desiccation	7 (0*) [b] 15 (8*) 22 (15*)	< 0.005[a] < 0.005 < 0.005	< 0.005[a] < 0.005 < 0.005	< 0.005[a] < 0.005 < 0.005	Report: 09-SAR-018GLP_SR Trial: Site 5, treatment 4
Inverleigh, VIC, Australia, 2010, (cv 46Y78)	2 (8), brown clay loam	12 12	2.2 2.2	Dilute foliar spray, 16 Nov 2010 GS 78 herbicide desiccation	13 (0*) [b] 21 (8*) 28 (15*)	< 0.005[a] < 0.005 < 0.005	< 0.005[a] < 0.005 < 0.005	< 0.005[a] < 0.005 < 0.005	Report: 09-SAR-018GLP_SR Trial: Site 5, treatment 5
Inverleigh, VIC, Australia, 2010, (cv 46Y78)	2 (6), brown clay loam	12 5.6	2.2 1.1	Dilute foliar spray 22 Nov 2010 GS 79 herbicide desiccation	7 (0*) [b] 15 (8*) 22 (15*)	< 0.005 < 0.005 < 0.005	< 0.005 < 0.005 < 0.005	< 0.005 < 0.005 < 0.005	Report: 09-SAR-018GLP_SR Trial: Site 5, treatment 6
Lake Bolac, VIC, Australia, 2010, (cv 46Y78)	2 (8) soil not stated	5.4 5.9	1.1 1.1	Dilute foliar spray, 16 Nov 2010 GS 78 wind-rowed	13 (0*) [b] 21 (8*) 28 (15*)	< 0.005 < 0.005 < 0.005	< 0.005 < 0.005 < 0.005	< 0.005 < 0.005 < 0.005	Report: 09-SAR-018GLP_SR Trial: Site 6
Lake Bolac, VIC, Australia, 2010, (cv 46Y78)	2 (8) soil not stated	11 13	2.2 2.2	Dilute foliar spray, 16 Nov 2010 GS 78 wind-rowed	13 (0*) [b] 21 (8*) 28 (15*)	< 0.005[a] < 0.005 < 0.005	< 0.005[a] < 0.005 < 0.005	< 0.005[a] < 0.005 < 0.005	Report: 09-SAR-018GLP_SR Trial: Site 6
Longford, TAS, Australia, 2010, (cv 517CL)	2 (7) black brown sandy loam	6.1 4.5	1.1 1.1	Dilute foliar spray, 27 Oct 2010 GS 67 wind-rowed	29 (0*) [b]	< 0.005a	< 0.005 a	< 0.005 a	Report: 09-SAR-018GLP_SR Trial: Site 7, treatment 2
Longford, TAS, Australia, 2010, (cv 517CL)	2 (7) black brown sandy loam	5.3 4.8	1.1 1.1	Dilute foliar spray 10 Nov 2010 GS 75 wind-rowed	15 (0*) [b] 21 (6*) 27 (12*)	< 0.005 < 0.005 < 0.005	< 0.005 < 0.005 < 0.005	< 0.005 < 0.005 < 0.005	Report: 09-SAR-018GLP_SR Trial: Site 7, treatment 3
Longford, TAS, Australia, 2010, (cv 517CL)	2 (8) black brown sandy loam	5.7 5.3	1.1 1.1	Dilute foliar spray, 18 Nov 2010 GS 81 wind-rowed	7 (0*) [b] 13 (6*) 19 (12*)	< 0.005[a] < 0.005 < 0.005	< 0.005[a] < 0.005 < 0.005	< 0.005[a] < 0.005 < 0.005	Report: 09-SAR-018GLP_SR Trial: Site 7, treatment 4
Longford, TAS, Australia, 2010, (cv 517CL)	2 (7) black brown sandy loam	13 11	2.2 2.2	Dilute foliar spray, 10 Nov 2010 GS 75 wind-rowed	15 (0*) [b] 21 (6*) 27 (12*)	< 0.005[a] < 0.005 < 0.005	< 0.005[a] < 0.005 < 0.005	< 0.005[a] < 0.005 < 0.005	Report: 09-SAR-018GLP_SR Trial: Site 7, treatment 5
Longford,	2 (8)	12	2.2	Dilute foliar	7 (0*) [b]	< 0.005	< 0.005	< 0.005	Report: 09-

RAPE SEEDS, Location, year, (Variety)	Number (interval) soil type	g ai/ha	g ai/hL	Method, last application date, GS (BBCH), harvest method	DAT (DAC*)	MAB1a (mg/kg)	MAB1b (mg/kg)	8,9-Zma (mg/kg)	Report, Trial
TAS, Australia, 2010, (cv 517CL)	black brown sandy loam	12	2.2	spray, 18 Nov 2010 GS 81 wind-rowed	13 (6*) 19 (12*)	< 0.005 < 0.005	< 0.005 < 0.005	< 0.005 < 0.005	SAR-018GLP_SR Trial: Site 7, treatment 6
Beverly, WA, Australia, 2010, (cv Hyola 502RR)	2 (7), red loam	5.3 5.5	7.0 7.0	Concentrate foliar spray, 19 Oct 2010 GS 86 herbicide desiccation	13 (0*) [b] 20 (7*) 27 (14*)	< 0.005 < 0.005 < 0.005	< 0.005 < 0.005 < 0.005	< 0.005 < 0.005 < 0.005	Report: 09-SAR-018GLP_SR Trial: Site 8
Beverly, WA, Australia, 2010, (cv Hyola 502RR)	2 (7), red loam	11 11	14 14	Concentrate foliar spray, 19 Oct 2010 GS 86 herbicide desiccation	13 (0*) [b] 20 (7*) 27 (14*)	< 0.005 < 0.005 < 0.005	< 0.005 < 0.005 < 0.005	< 0.005 < 0.005 < 0.005	Report: 09-SAR-018GLP_SR Trial: Site 8
Rosedale, VIC, Australia, 2011, (cv. Crusher TT)	2 (9), gray clay loam	5.4 5.8	2.8 2.8	intermediate foliar spray, 11 Nov 2011, GS not stated wind-rowed	7 (0*) [b]	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 1, treatment 2
Rosedale, VIC, Australia, 2011, (cv. Crusher TT)	2 (9), gray clay loam	11 11	5.6 5.6	intermediate foliar spray, 11 Nov 2011, GS not stated. wind-rowed	7 (0*) [b]	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 1, treatment 8
Rosedale, VIC, Australia, 2011, (cv. Crusher TT)	2 (5), gray clay loam	5.8 6.3	2.8 2.8	intermediate foliar spray, 23 Nov 2011, GS not stated herbicide desiccation	8 (8*)	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 1, treatment 3
Rosedale, VIC, Australia, 2011, (cv. Crusher TT)	2 (5), gray clay loam	11 11	5.6 5.6	intermediate foliar spray, 23 Nov 2011, GS not stated, herbicide desiccation	8 (8*)	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 1, treatment 9
Rosedale, VIC, Australia, 2011, (cv. Crusher TT)	2 (8), gray clay loam	6.5 5.4	2.8 2.8	intermediate foliar spray, 1 Dec 2011, GS not stated, natural desiccation	7 (0*)	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 1, treatment 4
Rosedale, VIC, Australia, 2011, (cv. Crusher	2 (8), gray clay loam	11 12	5.6 5.6	intermediate foliar spray, 1 Dec 2011, GS not stated, natural	7 (0*)	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 1, treatment 10

RAPE SEEDS, Location, year, (Variety)	Number (interval) soil type	g ai/ha	g ai/hL	Method, last application date, GS (BBCH), harvest method	DAT (DAC*)	MAB1a (mg/kg)	MAB1b (mg/kg)	8,9-Zma (mg/kg)	Report, Trial
TT)				desiccation					
Rosedale, VIC, Australia, 2011, (cv. Crusher TT)	2 (6), gray clay loam	6.3 4.7	2.8 2.8	intermediate foliar spray, 2 Nov 2011, GS not stated wind-rowed	16 (0*) [b]	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 1, treatment 5
Rosedale, VIC, Australia, 2011, (cv. Crusher TT)	2 (6), gray clay loam	12 12	5.6 5.8	intermediate foliar spray, 2 Nov 2011, GS not stated wind-rowed	16 (0*) [b]	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 1, treatment 11
Rosedale, VIC, Australia, 2011, (cv. Crusher TT)	2 (7), gray clay loam	5.6 5.6	2.8 2.8	intermediate foliar spray, 18 Nov 2011, GS not stated herbicide desiccation	13 (8*)	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 1, treatment 6
Rosedale, VIC, Australia, 2011, (cv. Crusher TT)	2 (7), gray clay loam	12 11	5.6 5.6	intermediate foliar spray, 18 Nov 2011, GS not stated herbicide desiccation	13 (8*)	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 1, treatment 12
Rosedale, VIC, Australia, 2011, (cv. Crusher TT)	2 (5), gray clay loam	5.8 6.3	2.8 2.8	intermediate foliar spray, 23 Nov 2011, GS not stated natural desiccation	15 (0*)	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 1, treatment 7
Rosedale, VIC, Australia, 2011, (cv. Crusher TT)	2 (5), gray clay loam	11 11	5.6 5.6	intermediate foliar spray, 23 Nov 2011, GS not stated, natural desiccation	15 (0*)	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 1, treatment 13
Francis, SA, Australia, 2011 (cv. Crusher TT)	2 (8) sandy clay	5.7 5.4	2.8 2.8	intermediate foliar spray, 24 Nov 2011, GS not stated, herbicide desiccation	9 (9*)	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 2, treatment 3
Francis, SA, Australia, 2011 (cv. Crusher TT)	2 (8) sandy clay	12 11	5.6 5.6	intermediate foliar spray, 24 Nov 2011, GS not stated, herbicide desiccation	9 (9*)	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 2, treatment 9

RAPE SEEDS, Location, year, (Variety)	Number (interval) soil type	g ai/ha	g ai/hL	Method, last application date, GS (BBCH), harvest method	DAT (DAC*)	MAB1a (mg/kg)	MAB1b (mg/kg)	8,9-Zma (mg/kg)	Report, Trial
Francis, SA, Australia, 2011 (cv. Crusher TT)	2 (8) sandy clay	5.6 5.4	2.8 2.8	intermediate foliar spray, 2 Dec 2011, GS not stated, natural dessication	5 (0*)	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 2, treatment 4
Francis, SA, Australia, 2011 (cv. Crusher TT)	2 (8) sandy clay	13 11	5.6 5.6	intermediate foliar spray, 2 Dec 2011, GS not stated, natural dessication	5 (0*)	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 2, treatment 10
Francis, SA, Australia, 2011 (cv. Crusher TT)	2 (7) sandy clay	5.5 5.8	2.8 2.8	intermediate foliar spray, 16 Nov 2011, GS not stated, herbicide desiccation	17 (9*)	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 2, treatment 6
Francis, SA, Australia, 2011 (cv. Crusher TT)	2 (7) sandy clay	11 11	5.6 5.6	intermediate foliar spray, 16 Nov 2011, GS not stated, herbicide desiccation	17 (9*)	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 2, treatment 12
Francis, SA, Australia, 2011 (cv. Crusher TT)	2 (8) sandy clay	5.6 7.0	2.8 2.8	intermediate foliar spray, 24 Nov 2011, GS not stated, natural desiccation	13 (0*)	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 2, treatment 7
Francis, SA, Australia, 2011 (cv. Crusher TT)	2 (8) sandy clay	11 12	5.6 5.6	intermediate foliar spray, 24 Nov 2011, GS not stated, natural desiccation	13 (0*)	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 2, treatment 13
Marrar, NSW, Australia, 2011, (cv. Stingray)	2 (9) loam	5.8 6.1	3.7 3.7	intermediate foliar spray 3 Nov 2011, GS not stated, wind-rowed	6 (0*) [b]	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 3 treatment 2
Marrar, NSW, Australia, 2011, (cv. Stingray)	2 (9) loam	12 12	7.5 7.5	intermediate foliar spray 3 Nov 2011, GS not stated, wind-rowed	6 (0*) [b]	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 3 treatment 8
Marrar, NSW, Australia, 2011,	2 (9) loam	6.1 6.0	3.7 3.7	intermediate foliar spray 17 Nov 2011, GS not stated,	6 (6*)	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 3

RAPE SEEDS, Location, year, (Variety)	Number (interval) soil type	g ai/ha	g ai/hL	Method, last application date, GS (BBCH), harvest method	DAT (DAC*)	MAB1a (mg/kg)	MAB1b (mg/kg)	8,9-Zma (mg/kg)	Report, Trial
(cv. Stingray)				herbicide desiccation					treatment 3
Marrar, NSW, Australia, 2011, (cv. Stingray)	2 (9) loam	12 12	7.5 7.5	intermediate foliar spray 17 Nov 2011, GS not stated, herbicide desiccation	6 (6*)	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 3 treatment 9
Marrar, NSW, Australia, 2011, (cv. Stingray)	2 (6) loam	6.0 5.8	3.7 3.7	intermediate foliar spray 23 Nov 2011, GS not stated, natural desiccation	8 (0*)	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 3 treatment 4
Marrar, NSW, Australia, 2011, (cv. Stingray)	2 (6) loam	12 12	7.5 7.5	intermediate foliar spray 23 Nov 2011, GS not stated, natural desiccation	8 (0*)	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 3 treatment 10
Marrar, NSW, Australia, 2011, (cv. Stingray)	2 (5) loam	6.1 5.8	3.7 3.7	intermediate foliar spray, 25 Oct 2011, GS not stated, wind-rowed	15 (0*) [b]	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 3 treatment 5
Marrar, NSW, Australia, 2011, (cv. Stingray)	2 (6) loam	14 12	7.5 7.5	intermediate foliar spray, 25 Oct 2011, GS not stated, wind-rowed	15 (0*) [b]	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 3 treatment 11
Marrar, NSW, Australia, 2011, (cv. Stingray)	2 (5) loam	6.1 6.1	3.7 3.7	intermediate foliar spray, 8 Nov 2011, GS not stated, herbicide desiccation	15 (6*)	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 3 treatment 6
Marrar, NSW, Australia, 2011, (cv. Stingray)	2 (5) loam	12 12	7.5 7.5	intermediate foliar spray, 8 Nov 2011, GS not stated, herbicide desiccation	15 (6*)	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 3 treatment 12
Marrar, NSW, Australia, 2011, (cv. Stingray)	2 (9) loam	6.1 6.0	3.7 3.7	intermediate foliar spray, 17 Nov 2011, GS not stated, natural desiccation	14 (0*)	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 3 treatment 7

RAPE SEEDS, Location, year, (Variety)	Number (interval) soil type	g ai/ha	g ai/hL	Method, last application date, GS (BBCH), harvest method	DAT (DAC*)	MAB1a (mg/kg)	MAB1b (mg/kg)	8,9-Zma (mg/kg)	Report, Trial
Marrar, NSW, Australia, 2011, (cv. Stingray)	2 (9) loam	12 12	7.5 7.5	intermediate foliar spray, 17 Nov 2011, GS not stated, natural desiccation	14 (0*)	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 3 treatment 13
Inverleigh, VIC, Australia, 2011, (cv. Crusher TT)	2 (8) clay	5.4 5.9	2.8 2.8	intermediate foliar spray, 24 Nov 2011, GS not stated, herbicide desiccation	9 (8*)	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 4 treatment 3
Inverleigh, VIC, Australia, 2011, (cv. Crusher TT)	2 (8) clay	12 12	5.6 5.6	intermediate foliar spray, 24 Nov 2011, GS not stated, herbicide desiccation	9 (8*)	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 4 treatment 9
Inverleigh, VIC, Australia, 2011, (cv. Crusher TT)	2 (8) clay	5.8 4.9	2.8 2.8	intermediate foliar spray, 2 Dec 2011, GS not stated, natural desiccation	6 (0*)	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 4 treatment 4
Inverleigh, VIC, Australia, 2011, (cv. Crusher TT)	2 (8) clay	11 11	5.6 5.6	intermediate foliar spray, 2 Dec 2011, GS not stated, natural desiccation	6 (0*)	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 4 treatment 10
Inverleigh, VIC, Australia, 2011, (cv. Crusher TT)	2 (6) clay	6.1 5.5	2.8 2.8	intermediate foliar spray, 16 Nov 2011, GS not stated, herbicide desiccation	17 (8*)	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 4 treatment 6
Inverleigh, VIC, Australia, 2011, (cv. Crusher TT)	2 (6) clay	13 11	5.6 5.6	intermediate foliar spray, 16 Nov 2011, GS not stated, herbicide desiccation	17 (8*)	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 4 treatment 12
Inverleigh, VIC, Australia, 2011, (cv. Crusher TT)	2 (8) clay	5.4 5.8	2.8 2.8	intermediate foliar spray, 24 Nov 2011, GS not stated, natural desiccation	14 (0*)	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP Trial: site 4 treatment 7
Inverleigh, VIC, Australia,	2 (8) clay	11 12	5.6 5.6	intermediate foliar spray, 24 Nov 2011,	14 (0*)	< 0.005	< 0.005	NA	Report: 11-SAR-002GLP

RAPE SEEDS, Location, year, (Variety)	Number (interval) soil type	g ai/ha	g ai/hL	Method, last application date, GS (BBCH), harvest method	DAT (DAC*)	MAB1a (mg/kg)	MAB1b (mg/kg)	8,9-Zma (mg/kg)	Report, Trial
2011, (cv. Crusher TT)				GS not stated, natural desiccation					Trial: site 4 treatment 13

*DAT = days after treatment. This timepoint includes the time the crop lies or stands drying in the field (in case of wind-rowing or herbicide desiccation) and refers to the time at which the seeds were collected from the plant.
DAC = days after cutting or desiccation, where the crop was kept in the field, before actual samples were taken.
[a] Results are for seeds + pods. Since the residues are < LOQ, results can be used for MRL derivation for seeds if according to cGAP
[b] Windrowed crop was harvested at 0 days after cutting or herbicide desiccated crop was harvested at the day of desiccation, meaning the crop was not dried off at harvest. Such samples are not considered representative for MRL derivation and the corresponding residues are not selected.

Miscellaneous fodder and forage crops

The Meeting received supervised residue trials on almonds and rape.

Almond hulls

Supervised residue field trials on almonds were carried out in 2006 and 2007 in the USA [Ediger, 2007, MK244/0714, Oakes, 2009, MK50014]. The 2006 trials were summarized and evaluated by the 2011 JMPR. The 2007 trials are summarized here. Almond trees were treated with three foliar cover spray applications using a tractor mounted sprayer or airblast sprayer. The spray volume was either 93-94 L/ha (very concentrate spray as used for aircraft equipment), 700- 780 L/ha (concentrate spray as used for airblast sprayers) or 1600-1900 L/ha (dilute spray as used for ground equipment). The spray mix included a horticultural oil, non-ionic surfactant or organo-silicone adjuvant. There were no unusual weather conditions. Whole nuts were harvested at maturity. Samples were prepared by separating shells from nutmeat to generate at least 1.4 kg of nutmeat (=RAC). Samples were stored at -20 ºC for a maximum of 9 months. Samples were analysed for MAB1a (NOA 426007), MAB1b (NOA 422390), 8,9-Zma (NOA 438376), AB1a (NOA 438309), MFB1a (NOA 415692) and FAB1a (NOA 415693) by HPLC-MS/MS Method RAM 465/01 (modification 30 May 2008). Results were not corrected for control levels (< 0.001 mg/kg for each analyte) nor for average concurrent method recoveries (70%-120% for each analyte). Results are shown in table 5. Results represent the mean of two replicate samples taken from each plot.

Several trials have been conducted on the same location. From such trials only the highest (mean) value is selected for MRL derivation if compliant with cGAP.

For the overall conclusion on avermectin-like metabolites also the data from the 2011 JMPR are taken into account. Residues of avermectin-like metabolites were found at levels (< 0.001–0.010 mg/kg for individual analytes) in several almond hull samples at DALT = 7–35, except in trial WC-IR-06-7116/CA (JMPR 2011). In this single trial MFB1a residues were particularly high: 0.018-0.036 mg/kg at DALT 7–21. Where metabolites were > LOQ, the sum of the four avermectin-like metabolites ranged from 0.002-0.010 mg/kg, expressed as MAB1a, except in trial WC-IR-06-7116/CA (JMPR 2011), where the sum ranged from 0.019–0.038 mg/kg at DALT 7–21. Where MAB1a was at least 0.01 mg/kg, the ratio of the sum of the avermectin-like metabolites to MAB1a ranged from 0.04–0.30 (median 0.09), except in trial WC-IR-06-71116/CA, where the ratio ranged from 0.28–0.78 at DALT=7–35.

Table 5 Residue results from supervised field trials on almonds (hulls) using an SG formulation (50 g ai/kg) with adjuvant

ALMOND HULLS Location, year, (Variety)	Number (interval) soil type	g ai/ha	g ai/hL	Method, last application date, growth stage (BBCH)	DAT (days)	MAB1a (mg/kg)	MAB1b (mg/kg)	Sum1a (mg/kg)	Report, Trial no
Madera, CA, USA, 2007 (Butte)	3 (7, 7), sandy loam	17 17 17	18 18 18	very concentrated foliar spray 27 Aug, BBCH 85	14	0.070 0.048 mean 0.059 [a]	0.004 0.002 mean 0.003 [a]	0.073 0.050 mean 0.061 [a]	Report: T002811-07 Trial: W30CA078291
Madera, CA, USA, 2007, (Mission)	3 (7, 7) loamy sand	17 17 17	2.2 2.2 2.2	concentrated foliar spray 29 Aug, BBCH 85	14	0.088 0.088 mean 0.088 [a]	0.005 0.006 mean 0.006 [a]	0.095 0.098 mean 0.097 [a]	Report: T002811-07 Trial: W29CA078294
Madera, CA, USA, 2007, (Mission)	3 (7, 7) loamy sand	17 17 17	0.90 0.90 0.90	dilute foliar spray 29 Aug, BBCH 85	14	0.062 0.052 mean 0.057 [a]	0.003 0.003 mean 0.003 [a]	0.065 0.055 mean 0.060 [a]	Report: T002811-07 Trial: W29CA078294
Fresno, CA, USA, 2007 (Non-Pareil)	3 (7, 7) sandy loam	16, 17 17	1.0 1.0 1.0	dilute foliar spray 27 Aug, BBCH 85	14	0.021 0.020 mean 0.020 [a]	0.001 0.001 mean 0.001 [a]	0.025 0.024 mean 0.024 [a]	Report: T002811-07 Trial: W30CA078292
Kerman, CA, USA, 2007, (Carmel)	3 (7, 7) loamy sand	17 17 17	2.4 2.4 2.4	concentrated foliar spray 27 Aug, BBCH 85	14	0.013 0.023 mean 0.018 [a]	< 0.001 0.002 mean 0.002 [a]	0.017 0.028 mean 0.022 [a]	Report: T002811-07 Trial: W30CA078293

[a] Results are from two replicate field samples, the mean may be selected for MRL derivation if compliant with cGAP. Sum1aexpressed as MAB1a = sum of MAB1a plus its avermectin-like metabolites, corrected for molecular weight (MAB1a + 1.000 × 8,9-Zma + 1.016 × AB1a + 0.9693 × MFB1a + 0.9844 FAB1a). Metabolites < LOQ were assumed not to be present

Rape forage

Supervised residue field trials on rape forage were carried out in 2009 and 2010 in Australia [Lean, 2014a, MK244/10298 and additional information in Syngenta, 2014]. Rape forage on 12–160 m^2 plots were treated with two foliar applications using a gas powered hand-held boom sprayer. The spray volume was 74–88 L/ha (concentrate spray) or 403–575 L/ha (dilute spray). The spray mix included a non-ionic adjuvant. There were no unusual weather conditions. Immature foliage samples (at least 1 kg, from at least 12 plants) were collected 36–6 days before normal desiccation of the crop. Samples were stored at -2 ºC or lower for a maximum of 274 days.

Samples were analysed for MAB1a (NOA 426007), MAB1b (NOA 422390) and 8,9-Zma (NOA 438376) by HPLC-MS/MS Method TP/03. Results were not corrected for control levels (< 0.005 mg/kg for each analyte) nor for average concurrent method recoveries (70%-120% for each analyte). Results are shown in table 6.

HPLC-MS/MS method TP/03 is considered valid for quantification of emamectin benzoate (B1a and B1b) at levels between 0.005–0.05 mg/kg in rape forage. The quantification of 8,9-Zma at levels of 0.005–.05 mg/kg in rape seeds and rape forage is considered insufficiently validated. Since 8,9-Zma is not in the residue definition for enforcement or dietary risk assessment, this has no impact on the MRL derivation.

Residues of MAB1a in rape forage ranged between < 0.005–0.014 mg/kg; residues of MAB1b ranged between < 0.005–0.006 mg/kg. Residues of 8,9-Zma were not found in any of the samples. The other avermectin-like metabolites were not analysed.

Table 6 Results from supervised field trials on rape forage using an EC formulation (17 g ai/L) with adjuvant

RAPE FORAGE, Location, year, (Variety)	Number (interval) soil type	g ai/ha	g ai/ hL	Method, last application date, growth stage, harvest method	DAT (DBC*)	MAB1a (mg/kg)	MAB1b (mg/kg)	8,9-Zma (mg/kg)	Report, Trial
Inverleigh, VIC, Australia, 2009, (cv Jardee)	2 (14) brown clay loam	6.1 5.8	7.0 7.0	Concentrate foliar spray, 1 Nov 2009 BBCH 70 natural desiccation	16 (35*) 29 (22*)	< 0.005 < 0.005	< 0.005 < 0.005	< 0.005 < 0.005	Report: 09-SAR-018GLP_SR Trial: Site 1
Inverleigh, VIC, Australia, 2009, (cv Jardee)	2 (14) brown clay loam	12 11	14 14	Concentrate foliar spray, 1 Nov 2009, BBCH 70, natural desiccation	16 (35*) 29 (22*)	< 0.005 < 0.005	< 0.005 < 0.005	< 0.005 < 0.005	Report: 09-SAR-018GLP_SR Trial: Site 1
Glenthompson, VIC, Australia, 2009, (cv TT)	2 (14) brown clay loam	6.2 5.3	7.0 7.0	Concentrate foliar spray, 1 Nov 2009 BBCH 67, natural desiccation	16 (31*) 29 (18*)	< 0.005 < 0.005	< 0.005 < 0.005	< 0.005 < 0.005	Report: 09-SAR-018GLP_SR Trial: Site 2
Northam, WA, Australia, 2009, (cv 46Y78)	2 (14) river loam	5.8 6.1	7.0 7.0	Concentrate foliar spray 16 Oct 2009 BBCH 69, natural desiccation	14 (28*) 28 (14*)	< 0.005 < 0.005	< 0.005 < 0.005	< 0.005 < 0.005	Report: 09-SAR-018GLP_SR Trial: Site 3
Northam, WA, Australia, 2009, (cv 46Y78)	2 (14) river loam	11 12	14 14	Concentrate foliar spray 16 Oct 2009 BBCH 69, natural desiccation	14 (28*) 28 (14*)	0.005 < 0.005	< 0.005 < 0.005	< 0.005 < 0.005	Report: 09-SAR-018GLP_SR Trial: Site 3
Williams, WA, Australia, 2009, (cv Manola 76TT)	2 (14), sandy loam	6.1 5.7	7.0 7.0	Concentrate foliar spray 15 Oct 2009 BBCH 68, natural desiccation	14 (36*) 28 (22*) 42 (8*)	< 0.005 < 0.005 < 0.005	< 0.005 < 0.005 < 0.005	< 0.005 < 0.005 < 0.005	Report: 09-SAR-018GLP_SR Trial: Site 4
Inverleigh, VIC, Australia, 2010, (cv 46Y78)	2 (7), brown clay loam	5.4 5.2	1.1 1.1	Dilute foliar spray, 1 Nov 2010 BBCH 76, herbicide desiccation	15 (13*) 21 (7*)	< 0.005 < 0.005	< 0.005 < 0.005	< 0.005 < 0.005	Report: 09-SAR-018GLP_SR Trial: Site 5, treatment 2
Inverleigh, VIC, Australia, 2010,	2 (8), brown clay loam	5.2 6.3	1.1 1.1	Dilute foliar spray, 16 Nov 2010 BBCH 78,	0 (13*) 6 (7*)	< 0.005 < 0.005	< 0.005 < 0.005	< 0.005 < 0.005	Report: 09-SAR-018GLP_SR Trial: Site 5,

RAPE FORAGE, Location, year, (Variety)	Number (interval) soil type	g ai/ha	g ai/ hL	Method, last application date, growth stage, harvest method	DAT (DBC*)	MAB1a (mg/kg)	MAB1b (mg/kg)	8,9-Zma (mg/kg)	Report, Trial
(cv 46Y78)				herbicide desiccation					treatment 3
Inverleigh, VIC, Australia, 2010, (cv 46Y78)	2 (6), brown clay loam	5.9 5.5	1.1 1.1	Dilute foliar spray, 22 Nov 2010 BBCH 79, herbicide desiccation	not sampled	-	-	-	Report: 09-SAR-018GLP_SR Trial: Site 5, treatment 4
Inverleigh, VIC, Australia, 2010, (cv 46Y78)	2 (8), brown clay loam	12 12	2.2 2.2	Dilute foliar spray, 16 Nov 2010 BBCH 78, herbicide desiccation	0 (13*) 6 (7*)	0.006 < 0.005	< 0.005 < 0.005	< 0.005 < 0.005	Report: 09-SAR-018GLP_SR Trial: Site 5, treatment 5
Inverleigh, VIC, Australia, 2010, (cv 46Y78)	2 (6), brown clay loam	12 5.6	2.2 1.1	Dilute foliar spray 22 Nov 2010 BBCH 79, herbicide desiccation	not sampled				Report: 09-SAR-018GLP_SR Trial: Site 5, treatment 6
Lake Bolac, VIC, Australia, 2010, (cv 46Y78)	2 (8) soil not stated	5.4 5.9	1.1 1.1	Dilute foliar spray, 16 Nov 2010 BBCH 78, wind-rowed	0 (13*) 6 (7*)	0.013 < 0.005	0.005 < 0.005	< 0.005 < 0.005	Report: 09-SAR-018GLP_SR Trial: Site 6
Lake Bolac, VIC, Australia, 2010, (cv 46Y78)	2 (8) soil not stated	11 13	2.2 2.2	Dilute foliar spray, 16 Nov 2010 BBCH 78, wind-rowed	0 (13*) 6 (7*)	< 0.005 0.011	< 0.005 < 0.005	< 0.005 < 0.005	Report: 09-SAR-018GLP_SR Trial: Site 6
Longford, TAS, Australia, 2010, (cv 517CL)	2 (7) black brown sandy loam	6.1 4.5	1.1 1.1	Dilute foliar spray, 27 Oct 2010 BBCH 67, wind-rowed	14 (15*) 21 (8*)	< 0.005 < 0.005	< 0.005 < 0.005	< 0.005 < 0.005	Report: 09-SAR-018GLP_SR Trial: Site 7, treatment 2
Longford, TAS, Australia, 2010, (cv 517CL)	2 (7) black brown sandy loam	5.3 4.8	1.1 1.1	Dilute foliar spray 10 Nov 2010 BBCH 75, wind-rowed	0 (15*) 7 (8*)	< 0.005 < 0.005	< 0.005 < 0.005	< 0.005 < 0.005	Report: 09-SAR-018GLP_SR Trial: Site 7, treatment 3
Longford, TAS, Australia, 2010, (cv 517CL)	2 (8) black brown sandy loam	5.7 5.3	1.1 1.1	Dilute foliar spray, 18 Nov 2010 GS 81 wind-rowed	not sampled				Report: 09-SAR-018GLP_SR Trial: Site 7, treatment 4
Longford, TAS, Australia, 2010, (cv 517CL)	2 (7) black brown sandy loam	13 11	2.2 2.2	Dilute foliar spray, 10 Nov 2010 BBCH 75, wind-rowed	0 (15*) 7 (8*)	0.014 < 0.005	0.006 < 0.005	< 0.005 < 0.005	Report: 09-SAR-018GLP_SR Trial: Site 7, treatment 5
Longford, TAS, Australia,	2 (8) black brown sandy	12 12	2.2 2.2	Dilute foliar spray, 18 Nov 2010	not sampled				Report: 09-SAR-018GLP_SR

RAPE FORAGE, Location, year, (Variety)	Number (interval) soil type	g ai/ha	g ai/ hL	Method, last application date, growth stage, harvest method	DAT (DBC*)	MAB1a (mg/kg)	MAB1b (mg/kg)	8,9-Zma (mg/kg)	Report, Trial
2010, (cv 517CL)	loam			BBCH 81, wind-rowed					Trial: Site 7, treatment 6
Beverly, WA, Australia, 2010, (cv Hyola 502RR)	2 (7), red loam	5.3 5.5	7.0 7.0	Concentrate foliar spray, 19 Oct 2010 BBCH 86, herbicide desiccation	0 (13*) 7 (6*)	< 0.005 < 0.005	< 0.005 < 0.005	< 0.005 < 0.005	Report: 09-SAR-018GLP_SR Trial: Site 8
Beverly, WA, Australia, 2010, (cv Hyola 502RR)	2 (7), red loam	11 11	14 14	Concentrate foliar spray, 19 Oct 2010 BBCH 86, herbicide desiccation	0 (13*) 7 (6*)	< 0.005 0.008	< 0.005 < 0.005	< 0.005 < 0.005	Report: 09-SAR-018GLP_SR Trial: Site 8

* = days before cutting or days before desiccation, i.e. the period before normal harvest of the crop

APPRAISAL

Emamectin benzoate is a insecticide derivative of abamectin. Emamectin benzoate was first evaluated by the JMPR in 2011 for toxicology and residues. The 2011 Meeting established an ADI of 0–0.0005 mg/kg bw, expressed as emamectin benzoate. The ARfD was re-evaluated by the 2014 JMPR which reduced the ARfD to 0.02 mg/kg bw expressed as emamectin benzoate. The 2011 Meeting defined the residue as emamectin B1a benzoate for plant and animal commodities for compliance with the MRL and for estimation of dietary intake. Since the molecular weight difference between emamectin B1a benzoate and emamectin benzoate (consisting of 90% emamectin B1a benzoate and 10% emamectin B1b benzoate) is marginal, residues are not corrected for molecular weight. The 2011 Meeting considered the residue not fat soluble.

Emamectin benzoate was scheduled by the Forty-fifth Session of the CCPR (2013) for the evaluation of additional maximum residue levels by the 2014 JMPR. The manufacturer submitted additional supervised residue trials on almonds, pecans and rape, which were evaluated by the present Meeting.

Methods of Analysis

The Meeting received description and validation data for an analytical method for emamectin B1a and B1b benzoate and its 8,9-ZMa isomer in rape commodities for use in supervised residue trials. The analytical method is based on extraction with acidified acetonitrile and analysis by HPLC-MS/MS. The Meeting considered the method valid in the range 0.005–0.05 mg/kg emamectin B1a in rape seeds.

The analytical method for the determination of residues in almonds, pecans and almond hulls was considered valid by the 2011 Meeting.

Stability of pesticide residues in stored analytical samples

Storage stability studies were provided to the 2011 Meeting demonstrating the stability of emamectin B1a benzoate for at least 27 months at -20 ºC or lower in stored plant commodities with high water content, 18 months in plant commodities with high starch content and at least 9 months in plant commodities with high oil content.

All crop commodities from supervised residue trials were analysed within the verified storage stability period. Oilseeds and rape forage were stored at -2 ºC. Since parent is shown to be stable for a long period of time, trials where temperatures during storage were raised to -2 °C, were not rejected.

Results of supervised residue trials on crops

The Meeting received supervised trials data for emamectin benzoate on rape forage, tree nuts, rape seed and almond hulls. In addition, the 2011 JMPR trials on lettuces were re-evaluated by the present Meeting because of an ARfD exceedance for leaf lettuce.

Lettuce

The International Estimated Short Term Intake (IESTI) for emamectin benzoate was recalculated as the ARfD was changed from 0.03 to 0.02 mg/kg bw and a revised IESTI calculation model was available at the 2014 Meeting. The IESTI for the diets submitted to the JMPR represented 0–190% of the ARfD (0.02 mg/kg bw, expressed as emamectin benzoate) for children. The ARfD is exceeded for leaf lettuce (total, i.e., raw and processed commodities) in the diet for children.

At the 2011 JMPR, maximum residue levels for head lettuce, leaf lettuce and Cos lettuce were recommended based on head lettuce data, of 1 mg/kg. The present Meeting re-evaluated the separate datasets for head lettuce, Cos lettuce and leaf lettuce that were available to the 2011 JMPR. The leaf lettuce dataset was considered insufficient to recommend a maximum residue level (n=1–3, depending on the GAP used). The Cos lettuce dataset could however be used to propose a maximum residue level for leaf lettuce and Cos lettuce. The Meeting decided to retain the previous recommendation for head lettuce (current Codex MRL of 1 mg/kg) based on head lettuce data and to propose a new maximum residue level for Cos lettuce and leaf lettuce, based on the Cos lettuce data.

The 2011 Meeting agreed to combine the dataset for indoor and field grown Cos lettuce matching the Italian GAP (3 foliar spray applications, interval 7 days, 14.2 g ai/ha with a 3 day PHI) to represent residues in field and indoor grown Cos lettuce. This resulted in the following dataset: 0.030, 0.033, 0.042, 0.052, 0.10, 0.11, 0.30 and 0.33 mg/kg (n=8).

The present Meeting agreed that the dataset for Cos lettuce matching Italian GAP could be used to support a maximum residue level recommendation for Cos lettuce and leaf lettuce. The Meeting decided to withdraw its previous recommendations for Cos lettuce and leaf lettuce of 1 mg/kg and estimated a new maximum residue level 0.7 mg/kg for Cos lettuce and leaf lettuce. The Meeting estimated an STMR of 0.076 mg/kg and a HR of 0.33 mg/kg.

Tree nuts

The 2011 JMPR Meeting was unable to estimate a maximum residue level for almonds or pecans as the dataset was considered insufficient. Additional trials were submitted to the present Meeting and these were combined with the trials evaluated by the 2011 JMPR.

Field trials involving almonds were performed in the USA.

Critical GAP for tree nuts in the USA is for three foliar spray applications at 16.8 g ai/ha (maximum of 50.4 g ai/ha per season, interval 7 days) and a PHI of 14 days, with adjuvant. In almond trials from the USA (3 × 17 g ai/ha; interval 7 days and a 14 day PHI, applied with adjuvant) matching US GAP emamectin B1a benzoate residues in almonds (nutmeat) were: < 0.001 (4) mg/kg (including 1 value from the 2011 JMPR).

Field trials involving pecans were performed in the USA.

Critical GAP for tree nuts in the USA is for three foliar spray applications at 16.8 g ai/ha (maximum of 50.4 g ai/ha per season, interval 7 days) and a 14 day PHI, with adjuvant. In pecan trials from the USA (3 × 17 g ai/ha; interval 7 days and PHI 14 days, with adjuvant) matching US GAP emamectin B1a benzoate residues in pecans (nutmeat) were < 0.001 (5) mg/kg (including 1 value from the 2011 JMPR).

The Meeting agreed that the dataset for almonds and pecans matching USA GAP could be used to support a maximum residue level recommendation for tree nuts, and estimated a maximum residue level of 0.001* mg/kg in/on tree nuts and estimated an STMR of 0.001 mg/kg and an HR of 0.001 mg/kg.

Rape seed

Field trials involving rape were performed in Australia. Rape seeds were harvested using three different techniques: natural desiccation, herbicide desiccation, and wind-rowing. In natural desiccation seeds were collected after the plants had dried off naturally. Herbicide desiccation involves the use of a herbicide to dry off the green plant followed by seed collection up to 15 days later. Wind-rowing involves the cutting of the green crop and laying it in the rows to dry, followed by seed collection up to 15 days later. Since no residues were found in rape seeds in any of these trials, the impact of the harvest technique could not be assessed. Therefore, trials matching cGAP were selected irrespective of the harvest technique. Trials where the seeds were collected at the day of cutting (wind-rowing technique) or at the day of desiccation (herbicide desiccation technique) were excluded, since in this case the seeds were harvested from the green plant and such samples are not representative for maximum residue level derivation.

Critical GAP for rape in Australia is for two foliar spray applications at 5.1 g ai/ha with an unspecified interval and PHI 14 days. In rape trials from Australia (2 × 5.3–6.1 g ai/ha; interval 6–9 days and PHI 13–17 days, with adjuvant) matching this GAP emamectin B1a benzoate residues in rape seeds were < 0.005 (6) mg/kg. Trials at higher dose rate and shorter PHI (2× 11–13 g ai/ha, interval 5–8 days and PHI 5–8 days) confirmed the non-residue situation: < 0.005 (4) mg/kg.

The Meeting agreed that the dataset for rape matching Australian GAP could be used to support a maximum residue level recommendation for rape seeds, and estimated a maximum residue level of 0.005* mg/kg in/on rape seed and estimated an STMR of 0 mg/kg. An HR is not considered necessary, since bulking/blending of the seeds is likely for a pre-harvest application.

Almond hulls

The 2011 JMPR Meeting was unable to estimate a maximum residue level for almond hulls as the dataset was considered insufficient. Additional trials were submitted to the present Meeting and these were combined with the trials evaluated in the 2011 JMPR report.

Field trials involving almonds were performed in the USA. Three spray concentrations were tested in one trial: very concentrated (for aircraft equipment), concentrated (for airblast equipment) and dilute (for ground equipment). In this one trial, the highest residue was found for the concentrated spray concentration as used for airblast equipment: 0.088 mg/kg versus 0.057–0.059 mg/kg. Since one trial is not sufficient to conclude on the effect of spray concentration and a second trial, where a concentrate spray concentration was used, produced much lower residues (0.018 mg/kg), the Meeting decided to take the highest residue from each location irrespective of the spray concentration.

Critical GAP for tree nuts in the USA is for three foliar spray applications at 16.8 g ai/ha (maximum of 50.4 g ai/ha per season, interval 7 days) and PHI of 14 days, with adjuvant. In almond trials from the USA (3 × 17 g ai/ha; interval 7 days and PHI 14 days, with adjuvant) matching this GAP emamectin B1a benzoate residues in almond hulls were 0.018, 0.020, 0.043, 0.088 mg/kg (n=4), as received (including 1 value from the 2011 JMPR). Since the dry weight for almond hulls is 90%, no dry weight correction is needed.

The Meeting agreed that the dataset for almond hulls matching USA GAP could be used to support a maximum residue level recommendation for almond hulls, and estimated a maximum residue level of 0.2 mg/kg in/on almond hulls and estimated a median residue of 0.0315 mg/kg. A highest residue is not considered necessary, since bulking/blending of the hulls is likely for use as feed commodity.

Rape forage

Field trials involving rape forage were performed in Australia. The only GAP available on rape is from Australia and this GAP contains a restriction not to use emamectin benzoate on rape grown as forage crop (i.e., rape forage). The Meeting decided not to use the trials.

Residues in animal commodities

The Meeting estimated the dietary burden of emamectin benzoate residues on the basis of the livestock diets listed in the FAO manual appendix IX (OECD feedstuff table). Calculation from highest residue, STMR (some bulk commodities) and STMR-P values provides the levels in feed suitable for estimating maximum residue levels, while calculation from STMR and STMR-P values from feed is suitable for estimating STMR values for animal commodities.

The 2014 JMPR Meeting recalculated the livestock dietary burden based on the uses presented by the 2011 JMPR and including the residue values for almond hulls from the 2014 JMPR Meeting. The maximum dietary burden for cattle for maximum residue level setting is not changed, while the mean dietary burden for cattle changed only marginally from 0.018 ppm in the 2011 JMPR Meeting to 0.021 ppm in the 2014 JMPR Meeting. Poultry is not exposed to emamectin benzoate through feed treated with emamectin benzoate. The Meeting therefore confirmed its previous recommendations for animal commodities.

RECOMMENDATIONS

On the basis of the data from supervised trials the Meeting concluded that the residue levels listed below are suitable for establishing maximum residue limits.

Definition of the residue for compliance with the MRL and for dietary risk assessment for plant and animal commodities: *emamectin B1a benzoate*

The Meeting considers the residue not fat soluble.

Summary of recommendations

CCN	Commodity name	MRL proposed mg/kg	MRL Previous mg/kg	STMR mg/kg	HR mg/kg	Comment
VL 0483	Leaf lettuce	0.7	1	0.076	0.33	-
VL 0510	Cos lettuce	0.7	1	0.076	0.33	-
TN 0085	tree nuts	0.001*		0.001	0.001	-
SO 0495-	rape seed	0.005*		0	-	-

CCN	Commodity name	MRL mg/kg	Median residue mg/kg	Highest residue mg/kg	Comment
-	almond hulls	0.2	0.0315	-	feed stuff

DIETARY RISK ASSESSMENT

Long-term intake

The International Estimated Daily Intakes (IEDI) for emamectin benzoate was calculated from recommendations for STMRs for raw and processed commodities in combination with consumption data for corresponding food commodities. The results are shown in Annex 3.

The IEDI of in the 17 GEMS/Food cluster diets, based on the estimated STMRs in the 2011 and 2014 JMPR represented 1–9% of the maximum ADI of 0.0005 mg/kg bw, expressed as

emamectin benzoate. No conversion factor is needed to convert emamectin B1a benzoate residues to emamectin benzoate residues.

The Meeting concluded that the long-term intake of residues of emamectin benzoate from uses considered by the 2011 and 2014 Meeting is unlikely to present a public health concern.

Short-term intake

The International Estimated Short Term Intake (IESTI) for emamectin benzoate was recalculated due to the ARfD being changed from 0.03 to 0.02 mg/kg bw and the availability of a revised IESTI calculation model at the present Meeting. The IESTI was calculated from recommendations for STMRs and HRs for raw and processed commodities evaluated in the 2011 and 2014 JMPR Meeting in combination with consumption data for corresponding food commodities. The results are shown in Annex 4 to the 2014 Report.

The IESTI for the general population represented 0–30% of the ARfD (0.02 mg/kg bw, expressed as emamectin benzoate) and the IESTI for children represented 0–30% of the ARfD. No conversion factor is needed to convert emamectin B1a benzoate residues to emamectin benzoate residues.

The Meeting concluded that the short-term intake of residues of emamectin benzoate from uses considered by the 2011 and 2014 Meeting are unlikely to present a public health concern.

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MK244/50014	Oakes T	2009	Emamectin benzoate – Magnitude of the Residues in or on Almond and Pecan as Representative Commodities of Nut, Tree, Group 14: Final

Code	Author	Year	Title, Institute & report number, Submitting manufacturer and report code, GLP/Non-GLP. Published/Unpublished
			Report. Syngenta Crop Protection Inc., Greensboro, NC, USA. Morse Laboratories Inc, Sacramento, CA, USA 4 February 2009. Syngenta Report No. T002811-07, Morse Report No ML08-1427-SYN, Task Number T002811-07 Submitted by Syngenta RDN MK244/50014. GLP, Unpublished
-	Syngenta	2014	Syngenta answers to questions, 30 July 2014