SAFLUFENACIL (251)

The first draft was prepared by Dr Michael Doherty, United States Environmental Protection Agency, Washington, DC, USA

EXPLANATION

Saflufenacil is the ISO–approved name for N′-[2-chloro-4-fluoro-5-(3-methyl-2,6-dioxo-4-(trifluoromethyl)-3,6-dihydro-1(2H)-pyrimidinyl)benzoyl]-*N*-isopropyl-*N*-methylsulfamide (IUPAC), for which the Chemical Abstracts Service number is 372137-35-4. Saflufenacil is a herbicide from the uracil family of active ingredients, acting as a protoporphyrinogen IX oxidase (PPO) inhibitor. Saflufenacil was first evaluated by the JMPR in 2011, and the Meeting derived an ADI of 0–0.05 mg/kg bw. An ARfD was determined to be not necessary. The 2011 Meeting determined that the residue definition for MRL compliance and estimation of dietary exposure, for both plant and animal commodities, is parent saflufenacil and that the residue is not fat-soluble.

Saflufenacil was listed by the 47th Session of the CCPR for the evaluation of additional MRLs. The 2016 Meeting received residue data reflecting use of saflufenacil on pomegranate, barley and wheat (desiccant uses), peanut and sunflower (with requested extrapolation to similar minor oilseeds), olive, sugarcane, alfalfa, and perennial grasses. In addition, the sponsor has requested that the Meeting consider extrapolating data from rapeseed (canola, evaluated at the 2011 Meeting) to similar minor oilseeds.

METABOLISM AND ENVIRONMENTAL FATE

The 2016 Meeting received a study depicting the metabolism of saflufenacil by rice (Thiaener *et al.*, 2010; Report 2010/1007833). Upland rice at BBCH growth stages 22–24 received a single, foliar application of saflufenacil, radiolabelled in either the phenyl or uracil moieties, at a nominal rate of 100 g ai/ha. Rice forage samples were collected one week after application, and rice grain and straw were harvested four to five months after application.

Plant matrices were placed into frozen storage immediately after collection. Prior to analysis, the samples were homogenized in the presence of dry ice.

Total radioactive residues (TRR) were determined by combustion and liquid scintillation counting (LSC). Following TRR determination, residues were extracted with methanol (3×) and water (2x), the extracted residues were separated from the solid material by centrifugation, and levels in extracted and unextracted were determined LSC or combustion + LSC, respectively. The post-extraction solids (PES) were incubated overnight with pectinase and then with a combination of α-amylase, ß-amylase, and amyloglucosidase. The resulting solubilisation was extracted with acetonitrile/water (1/1, v/v) and, in the case of rice grain, an additional extraction was made with 2M NaOH. In addition to the extractions described above, the samples were extracted with the enforcement analytical method, BASF Method D0603/02 (see below). Residue analysis was accomplished with high-pressure liquid chromatography (HPLC) using mass spectral detection.

Total radioactive residues (TRR) in were highest in rice straw and lowest in grain (Table 1). The methanol and water extractions were able to extract the majority of residues from forage and straw, but not for rice grain. In the case of the grain, enzyme and base treatments were able to extract significantly more residues from the PES.

Table 1 Summary of total radioactive residues in rice following application of saflufenacil

Matrix	DALA [a]	TRR, mg eq./kg			
		Combustion	Extracted	PES	Extracted + PES
[Phenyl-U-^{14}C] label					
Forage	7	1.825	1.702	0.015	1.717
Straw	125	2.483	2.038	0.217	2.255
Total enzyme- and NaOH-solubilized residue in PES				0.166	--
Grain	125	0.122	0.036	0.098	0.134
Total enzyme- and NaOH-solubilized residue in PES				0.084	--

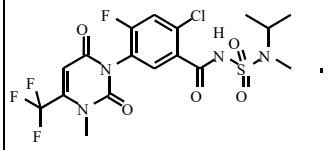
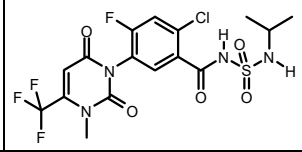
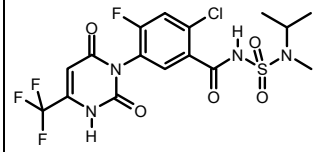
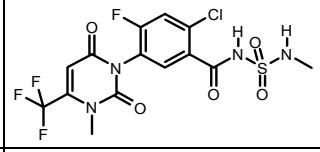
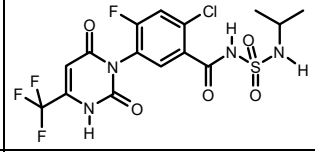
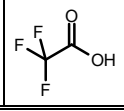
Matrix	DALA [a]	TRR, mg eq./kg			
		Combustion	Extracted	PES	Extracted + PES
[Uracil-4-^{14}C] label					
Forage	7	1.158	1.072	0.026	1.098
Straw	146	0.638	0.494	0.093	0.587
Total enzyme- and NaOH-solubilized residue in PES				0.042	--
Grain	146	0.032	0.014	0.015	0.029
Total enzyme- and NaOH-solubilized residue in PES				0.014	--
Spelt [b]	146	0.120	--	--	--

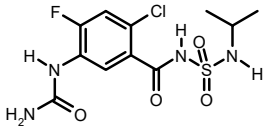
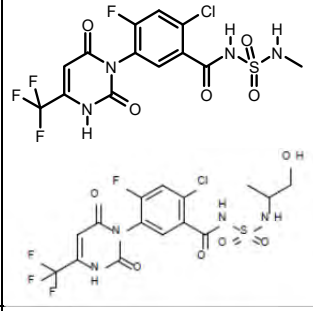
[a] Days after last application

[b] The spelt of rice was separated from the grain in the Uracil-4-14C label sample. The TRR was determined, but no further workup was done.

Major residues (defined as ≥ 10% TRR and ≥ 0.01 mg/kg) occurred only in forage and straw, and were identified as saflufenacil (forage and straw), M800H11 (forage), M800H35 (straw), M800H02 (forage), and M800H29 (straw). In grain, saflufenacil, M800H11, and M800H35 were identified as minor residues; the highest amounts of radioactivity in grain was shown to be incorporated into carbohydrates (grain; Table 2).

Table 2 Summary of residues in rice following treatment with saflufenacil

Metabolite Code	Chemical Structure	Forage, mg/kg [% TRR]		Straw, mg/kg [% TRR]		Grain, mg/kg [% TRR]	
		Phenyl	Uracil	Phenyl	Uracil	Phenyl	Uracil
BAS 800 H		1.041 [57.1]	0.954 [82.4]	1.059 [42.7]	0.284 [44.5]	0.0036 [2.9]	0.0015 [4.6]
M800H01		0.014 [0.7]	n.d.	0.016 [0.6]	0.005 [0.8]	n.d.	n.d.
M800H02		0.295 [16.2]	0.051 [4.4]	0.046 [1.7]	0.006 [0.9]	n.d.	n.d.
M800H03		0.11 [0.6]	n.d.	n.d.	n.d.	n.d.	n.d.
M800H11		0.251 [13.8]	0.078 [6.8]	0.180 [7.2]	0.024 [3.8]	0.0054 [4.4]	0.0005 [1.5]
M800H29 (TFA)		n.d.	n.d.	n.d.	0.090 [14.1]	n.d.	n.d.

Metabolite Code	Chemical Structure	Forage, mg/kg [% TRR]		Straw, mg/kg [% TRR]		Grain, mg/kg [% TRR]	
		Phenyl	Uracil	Phenyl	Uracil	Phenyl	Uracil
M800H35		0.0025 [0.15]	n.d.	0.256 [10.3]	n.d.	0.0033 [2.7]	n.d.
M800H10/ M800H40/ M800H39		0.051 [2.8]	n.d.	0.114 [4.6]	0.011 [1.7]	n.d.	n.d.
Carbohydrates		n.d.	n.d.	n.d.	n.d.	0.0665 [54.4]	0.0197 [61.9]

Conclusions: The residue profile of saflufenacil and metabolites in rice commodities is substantially similar to those observed in studies reviewed by the 2011 Meeting. The results from rice do not alter the residue definitions for saflufenacil.

RESIDUE ANALYSIS

Analytical Methods

The analytical method used in the plant residue and processing studies was either the same LC-MS/MS method that was reviewed and deemed acceptable for data collection and enforcement purposes by the 2011 Meeting (BASF Method D0603/02) or a minor modification (BASF Method D0603/04) of that method to include additional ion transitions for quantification and confirmation of an additional metabolite (M800H02) in the analysis. Independent laboratory validation using wheat forage, wheat hay, wheat grain, and canola seed, each fortified at 0.01 and 0.1 mg/kg, resulted in average M800H02 recoveries ranging from 75 to 105% with a maximum relative standard deviation of 8.3%. The reported LOQ for each analyte is 0.01 mg/kg.

The analytical method used in the livestock feeding studies is the same as that reviewed and deemed acceptable for data collection and enforcement purposes by the 2011 Meeting (BASF Method L0073/01). The reported LOQ is 0.01 mg/kg for all matrices.

Stability of Residues in Stored Samples

Plant Matrices

The stability of saflufenacil, M800H35, and M800H11 in plant matrices was evaluated by the 2011 Meeting, which determined that residues of saflufenacil, M800H11, and M800H35 are stable in maize, soya bean, orange, radish root, raisin, and garbanzo bean matrices for at least 553 days (JMPR, 2011).

The 2016 Meeting received data depicting the stability of the saflufenacil metabolite M800H02 in cereal, oilseed, legume, and citrus matrices (Sears, 2016; Report 2015/7001885). Samples of homogenized matrices were fortified with M800H02 at 0.10 mg/kg and placed into frozen storage for ca 1, 3, 6, 9, 12, 18, and 24 months. Residues of M800H02 were determined using Method D0603/04.

Average concurrent recoveries were within the range of 70 to 120%, with relative standard deviations of less than 20% (Table 3).

Table 3 Storage stability concurrent recoveries of M800H02

Matrix	Storage interval, months (days)								Mean ± RSD
	0 (0)	1 (35)	3 (152)	6 (182)	9 (284)	12 (371)	18 (549)	24 (768)	
Orange fruit	83, 91	77, 90	110, 112	86, 90	84, 82	79, 87	109, 103	108, 74, 108, 90	92 ± 14
Kidney bean	108, 76	n.a.	93, 110	120, 113	108, 104	188, 96	114, 108	72, 72	101 ± 16
Canola seed	81, 75	89, 81	75, 79	81, 70	81, 79	85, 97	115, 112	84, 78	83 ± 15
Wheat grain	75, 82	97, 99	85, 69	72, 81	66, 79	72, 77	102, 119	78, 77	83 ± 17
Wheat forage	77, 71	118, 110	97, 97	112, 102	92, 82	71, 71	106, 102	95, 79	93 ± 17
Wheat hay	95, 92	73, 84	74, 70, 71, 97	79, 79	106, 84	94, 106	99, 95	114, 100	90 ± 15

n.a. = not analysed

Table 4 Storage stability percent of M800H02 remaining in plant matrices [a]

Matrix	Storage duration, months (days)							
	0 (0)	1 (35)	3 (152)	6 (182)	9 (284)	12 (371)	18 (549)	24 (768)
Orange fruit	83, 87 [85]	103, 88 [96]	104, 111 [108]	83, 80 [82]	83, 84 [83]	88, 86 [87]	110, 114 [112]	98, 87, 76, 72 [83]
Kidney bean	76, 75 [76]	n.a.	90, 94 [92]	92, 106 [99]	98, 149 [124]	76, 83 [80]	107, 117 [112]	67, 90 [78]
Canola seed	75, 79 [77]	74, 71 [72]	75, 64 [70]	63, 48 [56]	59, 64 [61]	87, 95 [91]	102, 90 [96]	67, 88 [78]
Wheat grain	81, 86 [84]	93, 100 [96]	103, 86 [94]	61, 67 [64]	123, 117 [120]	82, 84 [83]	101, 109 [105]	80, 113 [96]
Wheat forage	64, 73 [68]	101, 102 [102]	89, 96 [92]	97, 87 [92]	75, 87 [81]	65, 63 [64]	103, 98 [100]	61, 73 [67]
Wheat hay	99, 101 [100]	92, 85 [89]	85, 77, 129, 98 [97]	82, 80 [81]	75, 105 [90]	94, 103 [98]	111, 114 [112]	103, 87 [95]

[a] Averages are in brackets.

n.a. = not analysed

Conclusions: Residues of M800H02 were stable in all matrices for at least 24 months. Although the percent remaining in wheat forage was only 67% at the 24-month time point, it is within the fluctuations observed at other time points and not substantially different from the 0-day time point (68%).

Animal Matrices

The 2016 Meeting received data documenting the stability of saflufenacil in bovine muscle, liver, and milk, and in poultry egg during frozen storage. Samples of muscle, liver, and egg were homogenised in the presence of dry ice. All matrices were fortified with saflufenacil to a level of 0.1 mg/kg and place into frozen storage. Residues were analysed at ca. 0, 1, 2, 3, and 4-month storage durations using Method L0073/01. A freezer malfunction and power outage on Day 70 and lasting until Day 75 resulted in samples reaching room temperature for a brief period.

Concurrent recoveries of saflufenacil across all matrices and time points ranged from 74 to 108%, with an overall average and relative standard deviation of 91 ± 8%.

Table 5 Storage stability percent of saflufenacil remaining in livestock matrices [a]

Matrix	Storage duration, months (days)				
	0 (0)	1 (34)	2 (61)	3 (83)	4 (125)
Muscle (bovine)	85, 80 [82]	86, 65 [76]	76, 62 [69]	74, 92 [83]	86, 86 [86]
Liver (bovine)	94, 95 [94]	96, 100 [98]	86, 100 [96]	82, 93 [88]	60, 84 [72]
Milk (bovine)	85, 91 [88]	100, 98 [99]	110, 100 [110]	90, 95 [92]	83, 89 [86]
Egg (chicken)	86, 97 [92]	59 [b]	96, 98 [97]	84, 83 [84]	68, 83 [76]

[a] Averages are in brackets.

[b] An error occurred during extraction of the one-month egg sample replicate.

Conclusions: Residues of saflufenacil are stable in livestock matrices in frozen storage for at least 125 days. The period of thawing during the 10th week of the study did not negatively impact the results.

USE PATTERN

Information on the registered uses of saflufenacil for the relevant crops, along with copies of labels, were provided to the 2016 Meeting (Table 6).

Table 6 Registered Uses of Saflufenacil Submitted to the 2016 JMPR

Crop	Country	Formulation		Application				PHI (days)
		g ai/L or g ai/kg	Type	Method	g ai/ha	Water L/ha	Number	
Assorted tropical and sub-tropical fruits – edible peel								
Olive	US	700	WG	Broadcast (avoid tree foliage, flowers, buds, and fruit)	25-50	100	4 (1 or 2 between post-harvest and pre-bloom)	0
Assorted tropical and sub-tropical fruits – inedible peel								
Pomegranate	US	700	WG	Broadcast (avoid tree foliage, flowers, buds, and fruit)	50	100	4 (21-day interval)	0
Cereal grains								
Barley	Argentina	700	WG	Pre-plant broadcast	24.5	100-150	n.s.	0
Barley	Australia	700	WG	Pre-plant broadcast	12-18	80-250	n.s.	0
Barley	Canada [a]	342	SC	Pre-seed or crop pre-emergent broadcast	18-50	50-100	n.s.	60
Barley	Canada [a]	342	SC	Pre-harvest broadcast	25-50	100-200	n.s.	3
Barley	Canada [b]	700	WG	Pre-plant or pre-emergent broadcast	25-50	100-200	n.s.	n.s.
Barley (harvest aid)	US	342	SC	Pre-harvest broadcast	25-50	≥40	2; max = 50 g ai/ha/yr	3
Triticale	Canada [a]	342	SC	Pre-harvest broadcast	25-50	100-200	n.s.	3
Triticale (harvest aid)	US	342	SC	Pre-harvest Broadcast	25-50	≥40	2; max = 50 g ai/ha/yr	3
Wheat	Argentina	700	WG	Pre-plant broadcast	24.5	100-150	n.s.	0
Wheat	Australia	700	WG	Pre-plant broadcast	12-18	80-250	n.s.	0
Wheat	Brazil	700	WG	Pre-planting broadcast	24.5-49	150-300	1	n.s.
Wheat	Canada [a]	342	SC	Pre-harvest broadcast	25-50	100-200	n.s.	n.s.
Wheat	Canada [a]	342	SC	Pre-seed or crop pre-emergent broadcast	18-50	50-100	n.s.	60
Wheat	Canada [b]	700	WG	Pre-plant or pre-emergent	25-50	100-200	n.s.	n.s.
Wheat (harvest aid)	US	342	SC	Pre-harvest Broadcast	25-50	≥40	2; max = 50 g ai/ha/yr	3
Grasses for sugar or syrup production								
Sugarcane	Brazil	700	WG	Broadcast	49-98	200-400	1	7
Oilseeds								
Oilseed Sunflower Subgroup [8)] (harvest aid)	US	342	SC	Pre-harvest Broadcast	25-50	≥47	n.s.; max = 100 g ai/ha/yr	7
Peanut	Argentina	700	WG	Pre-plant broadcast	24.5	100-150	n.s.	0
Peanut	Nicaragua	700	WG	Crop pre-emergence broadcast	90	200-300	n.s.	n.s.
Sunflower (harvest aid)	Brazil	700	WG	Pre-harvest Broadcast	49-98	200-300	1	7
Sunflower (harvest aid)	Canada [a]	342	SC	Pre-harvest Broadcast	25-50	200	n.s.	7

Crop	Country	Formulation		Application				PHI (days)
		g ai/L or g ai/kg	Type	Method	g ai/ha	Water L/ha	Number	
Sunflower (harvest aid)	US	342	SC	Pre-harvest Broadcast	25-50	≥47	2	7
Legume animal feeds								
Alfalfa	US	342	SC	Broadcast between cuttings, in season	25	n.s.	1 per cutting, not more than 3 per season	21
				Broadcast, dormant season	25-50	≥94	2 (14-day interval); max = 50 g ai/ha	28
Clover	Australia	700	WG	Pre-plant broadcast	12-18	80-250	n.s.	0
Straw, fodder, and forage of cereal grains and grasses								
Forage grasses	US	342	SC	Post-emergence broadcast	25-50	≥94	3 (14-day interval); max in-season = 50 g ai/ha	n.s.
				Broadcast, dormant season	100			

n.s. = not specified

[a] Prairie Provinces and Peace River region of British Columbia only

[b] Eastern Canada only

RESIDUES RESULTING FROM SUPERVISED TRIALS ON CROPS

The Meeting received data from supervised residue trials conducted on olive, pomegranate, barley, wheat, sugar cane, peanut, sunflower seed, alfalfa, and perennial forage grass.

The field trial reports included method validation data, as recoveries from spiked samples at levels reflecting those observed in the field trial samples; dates from critical events during the study, including application, harvest, storage, and analysis; as well as detailed information on the field site and treatment parameters. Analytical reports were sufficiently detailed and included example chromatograms and example calculations. Samples were analysed by the method described above.

Unless otherwise noted below, harvested commodities were maintained whole in the field and not cut or homogenized until they reached the analytical laboratory.

The field trial study designs included control plots. Measured residues from control plots were < LOQ) and are not included in the summary tables in this evaluation. When calculating average residues, values below the LOQ were assumed to be at the LOQ, and residues are denoted as being <LOQ only when all samples from a plot were <LOQ. In the summary tables, values used for making maximum residue level recommendations are underlined and highest individual values for estimating dietary intake are bolded. Trial locations that the Meeting has determined are not independent are grouped by a heavy cell border in the tables (e.g., Table 8).

Supervised trials for saflufenacil:

Category	Crop	Table
Trop. and sub-trop. fruit – edible peel	Olive (FT 0305)	Table 7
Trop. and sub-trop. fruit – inedible peel	Pomegranate (FI 0355)	Table 8Table 8
Cereal grains	Barley (GC 0640)	Table 9
	Wheat (GC 0654)	Table 10
Grasses for sugar or syrup production	Sugar cane (GS 0659)	Table 11
Oilseeds	Peanut (SO 0697)	Table 12
	Sunflower seed (SO 0702)	Tables 13 and 14

Legume animal feeds	Alfalfa (AL 1020/AL 1021)	Table 15
Straw, fodder, and forage of cereal grains and grasses	Grasses (AF 0162/AS 0162)	Tables 16 and 17
	Barley (AS 0640)	Table 18
	Wheat (AS 0654)	Table 19
	Peanuts	Table 20

Tropical and sub-tropical fruit – edible peel

Olives

Four residue trials were conducted in the US during the 2012 growing season. All trials were conducted in California. At each trial, the orchard floor beneath the olive trees received three banded applications of saflufenacil, each at ca. 50 g ai/ha on a 20-day interval. At one site, a separate plot was treated three times at ca 250 g ai/ha. Olives were hand-harvested zero days after the last application (DALA) and placed into a plastic bag. The olives within the bag were smashed with a plastic-coated hammer to open the fruits within the bag. The pits were removed and discarded. The resulting olive sample was placed into frozen storage within 3 hours of collection, and remained frozen during transportation to the analytical facility and prior to analysis. Homogenisation, if needed, was done in the presence of dry ice. Two trials were conducted in Glenn, California. These trials used different varieties of olives and treatments were offset by 31 days.

Olive samples were stored frozen for 161 to 190 days. Concurrent recoveries across all three analytes and across fortifications at 0.01 and 1.0 mg/kg ranged from 70 to 115%.

Table 7 Results of saflufenacil residue trials in olive in the US (Report 2013/7002536)

Trial No. Location Year	Crop (Variety)	Application			Matrix	DALA (days)	Residues (mg/kg) [Mean]		
		No. (interval, days)	g ai/ha	L/ha			Saflufenacil	H11	H35
Critical GAP US	Olive	4	50	100	--	0	--	--	--
12-CA04 Parlier, California 2012	Olive (Arbequina clone I-18)	1 (--)	49	283	Fruit (w/o pit)	0	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
		1 (20)	49	284					
		1 (21)	50	281					
12-CA04 Parlier, California 2012	Olive (Arbequina clone I-18)	1 (--)	246	282	Fruit (w/o pit)	0	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
		1 (20)	254	293					
		1 (21)	250	282					
12-CA05 Exeter, California 2012	Olive (Manzinillo)	1 (--)	50	146	Fruit (w/o pit)	0	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
		1 (21)	49	141					
		1 (21)	49	141					
12-CA06 Glenn, California 2012	Olive (Arbequina)	1 (--)	50	306	Fruit (w/o pit)	0	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
		1 (21)	50	305					
		1 (21)	52	314					
12-CA07 Glen, California 2012	Olive (Arbosana)	1 (--)	54	169	Fruit (w/o pit)	0	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
		1 (21)	52	163					
		1 (20)	52	165					

Tropical and sub-tropical fruit – inedible peel

Pomegranate

Four residue trials were conducted in the US during the 2013 growing season. All trials were conducted in California. At each trial, the orchard floor beneath the pomegranate trees/shrubs received four banded applications of saflufenacil, each at ca. 50 g ai/ha, with ca. 200 days between Applications 1 and 2, and ca. 21 days between Applications 2, 3, and 4. Pomegranates were harvested zero days after the last application (DALA), quartered in the field, and the retained quarters were placed into a plastic bag. The samples were placed into frozen storage within 2.75 hours of collection, and remained frozen during transportation to the analytical facility and prior to analysis. Homogenisation was done in the presence of dry ice. Two trials were conducted in Parlier, California. The treatments for these trials were offset by 7 days and used spray rates that differed by ca. 2-fold.

Pomegranate samples were stored frozen for 20 to 33 days. Concurrent recoveries across all three analytes and across fortifications at 0.01 and 1.0 mg/kg ranged from 90 to 100%, except for M800H35 fortified at 0.01 mg/kg, for which the recovery was 68%.

Table 8 Results of saflufenacil residue trials in pomegranate in the US (Report 2014/7002080)

Trial No. Location Year	Crop (Variety)	Application			Matrix	DALA (days)	Residues (mg/kg) [Mean]		
		No. (interval, days)	g ai/ha	L/ha			Saflufenacil	H11	H35
Critical GAP US	Pomegranate	4	50	100	--	0	--	--	--
13-CA02 Parlier, California 2013	Pomegranate (Wonderful)	1 (--)	49	142	Fruit	0	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
		1 (201)	49	139					
		1 (21)	50	140					
		1 (20)	50	140					
13-CA03 Parlier, California 2013	Pomegranate (Wonderful)	1 (--)	50	285	Fruit	0	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
		1 (201)	51	339					
		1 (21)	50	297					
		1 (21)	52	309					
13-CA04 Davis, California 2013	Pomegranate (Wonderful)	1 (--)	49	299	Fruit	0	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
		1 (197)	50	335					
		1 (21)	52	347					
		1 (20)	52	348					
13-CA05 Yuba City, California 2013	Pomegranate (Wonderful)	1 (--)	49	157	Fruit	0	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
		1 (177)	51	165					
		1 (21)	51	165					
		1 (20)	50	161					

Cereal grains

Barley

Sixteen residue trials were conducted in Canada and the US during the 2012 growing season (Norris, 2013; Report 2013/7001464). At each trial, barley received one broadcast applications of saflufenacil

at ca. 50 g ai/ha. Barley grain and straw were harvested three days after application. The samples were placed into frozen storage within 24 hours of collection, and remained frozen during transportation to the analytical facility and prior to analysis. Homogenisation was done in an ultracentrifuge mill with liquid nitrogen cooling.

Barley samples were stored frozen for 187 to 300 days. Residues of saflufenacil, M800H11, M800H35, and M800H02 were analysed using Methods D0603/02 and D0603/04. Concurrent recoveries from barley grain across all four analytes and across fortifications at 0.01 and 1.0 mg/kg ranged from 83 to 111%.

Table 9 Results of saflufenacil residue trials conducted in 2012 for barley grain in the US and Canada (Report 2013/7001464)

Trial No. Country Location	Crop (Variety)	Application		Matrix	DALA (days)	Residues (mg/kg) [Mean]			
		g ai/ha	L/ha			Saflufenacil	H11	H35	H02
Critical GAP US	Barley	1 at 50	100	--	3	--	--	--	--
120050 US Wayne, NY	Barley (not specified)	50	167	Grain	3	0.10, 0.14 [0.12]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
120051 US Guthrie, IA	Barley (Robust)	539	177	Grain	0	Residues not reported due to the 10X misapplication			
					1				
					3				
					5				
					7				
120052 CA Portage la Prairie, MB	Barley (Conlon)	50	119	Grain	3	0.40, 0.36 [0.38]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
120053 US Hall, NE	Barley (Lacey)	50	177	Grain	3	0.35, 0.26 [0.30]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
120054 US Foster, ND	Barley (Pinnacle)	81	232	Grain	3	0.04, 0.04 [0.04]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
120055 CA Dundurn, SK	Barley (Copeland)	51	102	Grain	3	0.23, 0.29 [0.26]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
120056 CA Taber, AB	Barley (CDC Earl)	51	154	Grain	3	0.25, 0.30 [0.28]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
120057 US Cache, UT	Barley (Goldeneye)	48	164	Grain	3	0.40, 0.38 [0.39]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
120058 US Kings, CA	Barley (Volunteer)	51	145	Grain	3	0.56, 0.53 [0.54]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
120059 US Power, ID	Barley (Statehood)	51	168	Grain	0	0.25	< 0.01	< 0.01	< 0.01
					1	0.24	< 0.01	< 0.01	< 0.01
					3	0.24, 0.25 [0.24]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
					5	0.40	< 0.01	< 0.01	< 0.01
					7	0.37	< 0.01	< 0.01	< 0.01
120060 CA Strathcona, AB	Barley (Coalition)	52	105	Grain	3	0.06, 0.09 [0.08]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
120061 CA Sturgeon, AB	Barley (Xena)	52	105	Grain	3	0.31, 0.32 [0.32]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]

Trial No. Country Location	Crop (Variety)	Application		Matrix	DALA (days)	Residues (mg/kg) [Mean]			
		g ai/ha	L/ha			Saflufenacil	H11	H35	H02
120062 CA Aberdeen, SK	Barley (Copeland)	51	101	Grain	3	0.31, 0.36 [0.34]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
120063 CA Waldheim, SK	Barley (CDC Cowboy)	50	100	Grain	3	0.34, 0.41 [0.38]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
120064 CA Rosedale, MB	Barley (Newdale)	50	120	Grain	3	0.45, 0.50 [0.48]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
120065 CA Elton, MB	Barley (Newdale)	50	119	Grain	3	0.28, 0.31 [0.30]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]

Wheat

Twenty-five residue trials were conducted in Canada and the US during the 2012 growing season (Devine and Cenni, 2013; Report 2013/7001462). At each trial, wheat received one broadcast applications of saflufenacil, formulated as a wettable granule, at ca. 50 g ai/ha. At four locations, an additional plot was established and treated with a suspension concentrate formulation of saflufenacil as a single application at ca. 50 g ai/ha. Wheat grain and straw were harvested three days after application (except for one trial which was harvested 2 days after application due to expectation of heavy rain on Day 3). The samples were placed into frozen storage within 4 hours of collection, and remained frozen during transportation to the analytical facility and prior to analysis. Homogenisation was done in an ultracentrifuge mill with liquid nitrogen cooling.

Wheat grain samples were stored frozen for 30 to 297 days. Residues of saflufenacil, M800H11, M800H35, and M800H02 were analysed using Methods D0603/02 and D0603/04. Concurrent recoveries from wheat grain across all four analytes and across fortifications at 0.01 and 1.0 mg/kg ranged from 69 to 110%. Relative standard deviations ranged from 8 to 19%.

Table 10 Results of saflufenacil residue trials conducted in 2012 for wheat grain in the US and Canada (Report 2013/7001462)

Trial No. Country Location	Crop (Variety)	Application		Matrix	DALA (days)	Residues (mg/kg) [Mean]			
		g ai/ha	L/ha			Saflufenacil	H11	H35	H02
Critical GAP US	Wheat	1 at 50	100	--	3	--	--	--	--
R120025 US Tallassee, AL	Wheat (AGS 2060)	50	131	Grain	3	0.02, 0.02 [0.02]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
R120026 US Fisk, MO	Wheat (Beretta)	50	187	Grain	3	< 0.01, < 0.01 [< 0.01]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
R120027 US Gardner, ND	Wheat (Barlow)	51	140	Grain	0	0.04, 0.05 [0.045]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
					1	0.02, 0.03 [0.025]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
					3	0.01, < 0.01 [0.01]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
					5	0.02, 0.03 [0.025]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
					7	0.02, 0.02 [0.02]	< 0.010,	< 0.010,	< 0.010,

Trial No. Country Location	Crop (Variety)	Application		Matrix	DALA (days)	Residues (mg/kg) [Mean]			
		g ai/ha	L/ha			Saflufenacil	H11	H35	H02
							< 0.010 [< 0.010]	< 0.010 [< 0.010]	< 0.010 [< 0.010]
R120028 US Olathe, KS	Wheat (Santa Fe)	50	136	Grain	0	0.12, 0.11 [0.12]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
					1	0.05, 0.06 [0.055]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
					3	0.08, 0.08 [0.08]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
					5	0.03, 0.04 [0.035]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
					7	0.04, 0.04 [0.04]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
R120029 US Atlantic, IA	Wheat (Brick Hard red spring)	51	140	Grain	3	0.03, 0.03 [0.03]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
R120030 CA Poplar Point, MB	Wheat (Falcon)	50	120	Grain	3	0.23, 0.20 [0.22]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
R120031 US East Bernard, TX	Wheat (Magnolia)	49	124	Grain	3	0.01, 0.01 [0.01]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
R120032 US Carrington, ND	Wheat (Faller)	50	140	Grain	3	0.03, 0.03 [0.03]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
R120033 US Oberon, ND	Wheat (Faller)	50	140	Grain	3	0.03, 0.01 [0.02]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
R120034 US Eldridge, ND	Wheat (Faller)	51	142	Grain	3	0.01, < 0.01 [0.01]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
R120035 US Grand Island, NE	Wheat (Cert. 3Traverse)	50	179	Grain	3	0.03, 0.03 [0.03]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
R120036 CA Watrous, SK	Wheat (Bellatrex)	49	100	Grain	3	0.06, 0.05 [0.06]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
R120037 CA Taber, AB	Wheat (AC Superb)	48	150	Grain	3	0.02, 0.02 [0.02]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
R120038 US Plainview, TX	Wheat (TAM 111)	50	99	Grain	3	0.02, 0.02 [0.02]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
R120039 US Olton, TX	Wheat (TAM 111)	49	102	Grain	3	0.34, 0.66 [0.50]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
R120040 US Larned, KS	Wheat (Everest)	50	167	Grain	3	0.02, 0.01 [0.02]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
R120041 US Jetmore, KS	Wheat (TAM 112)	50	168	Grain	3	0.02, 0.03 [0.02]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
R120042 US Ephrata, WA	Wheat (Stephens)	51	140	Grain	3	0.05, 0.16 [0.10]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
R120043 CA Kipp, AB	Wheat (AC Carberry)	50	150	Grain	3	0.03, 0.03 [0.03]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]

Trial No. Country Location	Crop (Variety)	Application		Matrix	DALA (days)	Residues (mg/kg) [Mean]			
		g ai/ha	L/ha			Saflufenacil	H11	H35	H02
R120044 CA Rosthern, SK	Wheat (Infinity)	52	150	Grain	3	0.06, 0.05 [0.06]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
R120045 CA Minto, MB	Wheat (Unity)	51	163	Grain	3	0.04, 0.05 [0.04]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
R120046 CA Elgin, MB	Wheat (Buteo)	52	166	Grain	3	0.02, 0.19 [0.10]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
R120047 CA Josephburg, AB	Wheat (Harvest)	51	100	Grain	3	< 0.01, < 0.01 [< 0.01]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
R120048 CA Wakaw, SK	Wheat (Infinity)	50	100	Grain	3	0.02, 0.03 [0.02]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
R120049 CA Brandon, MB	Wheat (Falcon)	49	120	Grain	3	0.08, 0.11 [0.10]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]

Grasses for sugar or syrup production

Sugar cane (GS 0659)

The Meeting received two studies depicting residues in sugar cane following application of saflufenacil (Jones and Souza, 2008; Report 2009/1069193 and Guimaraes, 2011; Report 2012/3002347). Both sets of trials were conducted in Brazil and consisted of a single desiccant application at ca. 98 g ai/ha seven days prior to harvest. Five trials were conducted during the 2008 growing season (2009/1069193) and four trials were conducted during the 2010 growing season (2012/3002347). For both studies, samples were placed into frozen storage immediately after harvest, and remained frozen during transportation to the analytical facility and prior to analysis. Samples were homogenized by crushing in the presence of dry ice.

Cane samples were stored frozen for ca. 30 to 250 days. Residues of saflufenacil, M800H11, and M800H35 were analysed using a method based on BASF Method D0603/02. Concurrent recoveries from sugar cane stalks across all three analytes and across fortifications at 0.01 and 1.0 mg/kg ranged from 70 to 96%. Relative standard deviations ranged from 1.7 to 3.8%.

Table 11 Results of saflufenacil residue trials in sugar cane from Brazil

Report ID Trial No. Location Year	Crop (Variety)	Application			Matrix	DALA (days)	Residues (mg/kg) [Mean]		
		No. (interval, days)	g ai/ha	L/ha			Saflufenacil	H11	H35
Critical GAP Brazil	Sugar cane	1	98	200-400	--	7	--	--	--
2009/1069193 G080116 Santo Antonio de Posse/SP 2008	Sugar cane (Cana-de-acúar)	1	98	200	Stalks	0	< 0.01	< 0.01	< 0.01
						7	< 0.01	< 0.01	< 0.01
						10	< 0.01	< 0.01	< 0.01
						14	< 0.01	< 0.01	< 0.01
						21	< 0.01	< 0.01	< 0.01
2009/1069193 G080117	Sugar cane (Cana-de-acúar)	1	98	200	Stalks	0	< 0.01	< 0.01	< 0.01

Report ID Trial No. Location Year	Crop (Variety)	Application			Matrix	DALA (days)	Residues (mg/kg) [Mean]		
		No. (interval, days)	g ai/ha	L/ha			Saflufenacil	H11	H35
Piracicaba/SP 2008									
						7	< 0.01	< 0.01	< 0.01
						10	< 0.01	< 0.01	< 0.01
						14	< 0.01	< 0.01	< 0.01
						21	< 0.01	< 0.01	< 0.01
2009/1069193 G080118 Artur Nogueira/SP 2008	Sugar cane (Cana-de-acúar)	1	98	200	Stalks	7	< 0.01	< 0.01	< 0.01
						14	< 0.01	< 0.01	< 0.01
2009/1069193 G080119 Mogi Mirim/SP 2008	Sugar cane (Cana-de-acúar)	1	98	200	Stalks	7	< 0.01	< 0.01	< 0.01
						14	< 0.01	< 0.01	< 0.01
2009/1069193 G080198 Uberländia/MG 2008	Sugar cane (not reported)	1	98	200	Stalks	7	< 0.01	< 0.01	< 0.01
						14	< 0.01	< 0.01	< 0.01
2012/3002347 Santo Antonio de Posse/SP 2010	Sugar cane (SP801816)	1	98	200	Stalks	1	< 0.01	< 0.01	< 0.01
						7	< 0.01	< 0.01	< 0.01
						10	< 0.01	< 0.01	< 0.01
						14	< 0.01	< 0.01	< 0.01
						21	< 0.01	< 0.01	< 0.01
2012/3002347 Senador Canedo/GO 2010	Sugar cane (RB 867515)	1	98	200	Stalks	0	< 0.01	< 0.01	< 0.01
						7	0.02	< 0.01	< 0.01
						10	< 0.01	< 0.01	< 0.01
						14	< 0.01	< 0.01	< 0.01
						21	< 0.01	< 0.01	< 0.01
2012/3002347 Jaboticabal/SP 2010	Sugar cane (IAC 862480)	1	98	200	Stalks	7	< 0.01	< 0.01	< 0.01
2012/3002347 Bandeirantes/PR 2010	Sugar cane (RB 72454)	1	98	200	Stalks	7	< 0.01	< 0.01	< 0.01

Oilseeds

Peanut

Eight residue trials were conducted in Argentina, Brazil, the US, and Uruguay during the 2009-2011 growing seasons (Jones and Costa, 2011; Report 2011/7008962). At each trial, peanuts received two applications of saflufenacil. The first was at-planting (pre-emergent) treatment at 50 g ai/ha, and the second was as a pre-harvest desiccant treatment at 100 g ai/ha, seven days before harvest. Additional plots at the US sites received treatment at a 3-fold exaggerated rate. Peanut nutmeat samples were placed into frozen storage immediately after collection from the field, and remained frozen during transportation to the analytical facility and prior to analysis. Nutmeat samples were homogenized in a mill in the presence of dry ice.

Peanut nutmeat samples were stored frozen for a maximum of 467 days. Residues of saflufenacil, M800H11, and M800H35 were analysed using Method D0603/02. Concurrent recoveries from nutmeat across all three analytes and across fortifications at 0.01, 0.1, and 1.0 mg/kg ranged from 71 to 123%. Relative standard deviations ranged from 5 to 13%.

Table 12 Results of saflufenacil residue trials in peanut nutmeat (Report 2011/7006245)

Trial No. Country Location Year	Crop (Variety)	Application			Matrix	DALA (days)	Residues (mg/kg) [Mean]		
		No. (interval, days)	g ai/ha	L/ha			Saflufenacil	H11	H35
Critical GAP Nicaragua	Peanut	1	90	200-300	--	Not specified	--	--	--
R090523 US Montezuma, GA 2010	Peanut (Georgia 02C)	1 (--) 1 (137)	46 100	201 200	Nutmeat	7	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
		1 (--) 1 (137)	138 300	201 200		7	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
R090524 US Jeffersonville, GA 2010	Peanut (Georgia DoG)	1 (--) 1 (122)	47 99	200 198	Nutmeat	7	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
		1 (--) 1 (122)	142 297	200 198		7	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
R090525 Brazil São Paulo 2010	Peanut (Runner IAC 886)	1 (--) 1 (129)	52 98	206 196	Nutmeat	0	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
						3	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
						7	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
						10	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
						14	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
R090527 Brazil São Paulo 2010	Peanut (Runner 38/42)	1 (--) 1 (115)	51 97	256 243	Nutmeat	7	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
R090526 Brazil Mato Grosso do Sul 2009	Peanut (Runner)	1 (--) 1 (118)	53 92	211 185	Nutmeat	7	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
R090528 Brazil Paraná 2010	Peanut (Runner IAC 886)	1 (--) 1 (124)	50 102	252 254	Nutmeat	7	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
R090529 Uruguay Mercedes-Soriano 2010	Peanut (Runner IAC 886)	1 (--) 1 (115)	52 97	211 193	Nutmeat	7	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]
R090530 Argentina San Pedro 2010	Peanut (ASEM 485INTA/ Runner)	1 (--) 1 (131)	54 101	218 202	Nutmeat	7	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]	< 0.010, < 0.010 [< 0.010]

Sunflower seed

Three field trials were conducted in the US during the 210 growing season (Riley and Belcher, 2011; Report 2011/7001273). At each location, two plots of sunflower received two, late season applications of saflufenacil, as a desiccant treatment, at 50 g ai/ha seven days apart. Application was made with saflufenacil formulated as a wettable granule to one treated plot and as a suspension concentrate at the second treated plot. Sunflower seeds were harvested seven and 14 days after application. The samples were placed into frozen storage within three hours of collection, and remained frozen during transportation to the analytical facility and prior to analysis. Homogenisation was done in an ultracentrifuge mill with liquid nitrogen cooling.

Sunflower seed samples were stored frozen for up to 221 days. Residues of saflufenacil, M800H11, and M800H35 were analysed using Method D0603/02. Concurrent recoveries from sunflower seeds are shown in Table 13.

Table 13 Concurrent recovery results for saflufenacil residues in sunflower seeds

Analyte	Fortification, mg/kg	Percent Recovery	Mean ± Rel. Std. Dev.
Saflufenacil	0.01	71, 70	90 ± 25
	0.131	102, 85	
	1.0	124	
M800H11	0.01	89, 90	100 ± 15
	0.118	96, 101	
	1.0	126	
M800H35	0.01	89, 75	91 ± 19
	0.128	91, 80	
	1.0	120	

Table 14 Results of saflufenacil residue trials in sunflower in the US (Report 2011/7001273)

Trial No. Location Year	Crop (Variety)	Application			Matrix	DALA (days)	Residues (mg/kg) [Mean]		
		No. (interval, days)	g ai/ha	L/ha			Saflufenacil	H11	H35
Critical GAP Brazil	Sunflower	1	98	200-300	--	7	--	--	--
GAP CA/US	Sunflower	2 (7)	50	≥ 47	--	7	--	--	--
R100192 Bagley, IA 2010	Sunflower (Sun King)	[WG] 1 (--) 1 (7)	 50 50	 200 200	Seed	7	0.144, 0.140 [0.14]	0.030, 0.025 [0.028]	< 0.01, < 0.01 [< 0.01]
		[SC] 1 (--) 1 (7)	 50 50	 200 200	Seed	7	0.088, 0.140 [0.11]	< 0.01, < 0.01 [< 0.01]	< 0.01, < 0.01 [< 0.01]
R100193 Benson County, ND 2010	Sunflower (Mycogen Clearfield 8N386)	[WG] 1 (--) 1 (7)	 50 50	 190 190	Seed	7	0.027, 0.028 [0.028]	< 0.01, < 0.01 [< 0.01]	< 0.01, < 0.01 [< 0.01]
		[SC] 1 (--) 1 (7)	 50 50	 190 190	Seed	7	0.029, 0.031 [0.030]	< 0.01, < 0.01 [< 0.01]	< 0.01, < 0.01 [< 0.01]
R100194 Grand Island, NE 2010	Sunflower (Confection)	[WG] 1 (--) 1 (7)	 50 50	 190 190	Seed	7	0.093, 0.060 [0.077]	< 0.01, < 0.01 [< 0.01]	< 0.01, < 0.01 [< 0.01]
		[SC] 1 (--) 1 (7)	 50 50	 190 190	Seed	7	0.131, 0.107 [0.12]	< 0.01, < 0.01 [< 0.01]	< 0.01, < 0.01 [< 0.01]

Legume animal feeds

Alfalfa

Twelve residue trials were conducted in the US during the 2013 growing season (Jordan, 2014; Report 2013/7002889). At each trial, alfalfa received either one broadcast applications of saflufenacil at ca. 50 g ai/ha during winter dormancy, just prior to green-up, or a sequential treatment consisting of one broadcast application at ca. 50 g ai/ha just prior to green-up plus a second application at ca. 25 g ai/ha immediately after the first cutting. Three cuttings of forage and hay (dried to a moisture content of 10-20%) were harvested under the first treatment regime and four cuttings were harvested under the second regime. Under both regimes, the first cutting was made at the late bud to early bloom stage and subsequent cuttings were made at the next early bloom stage. The samples were placed into frozen storage within 24 hours of collection, and remained frozen during transportation to the analytical facility and prior to analysis. Samples were homogenized in the presence of dry ice prior to analysis.

Alfalfa forage samples were stored frozen for up to 223 days, and hay samples for up to 264 days. Residues of saflufenacil, M800H11, M800H35, and M800H02 were analysed using Methods D0603/02 and D0603/04. Average concurrent recoveries from forage across all four analytes and across fortifications at 0.025 and 2.5 mg/kg ranged from 84 to 114%. Relative standard deviations ranged from 8.1 to 18%.

Residues of saflufenacil, M800H11, M800H35, and M800H02 were < 0.025 in all samples of alfalfa forage. Results for alfalfa hay are shown in Table 15.

Table 15 Results of saflufenacil residue trials conducted in 2013 for alfalfa hay in the US (Report 2013/7002889)

Trial No. Location	Crop (Variety)	Application			Matrix	DALA (days) [% Moisture]	Residues (mg/kg) [Mean]			
		No. (interval, days)	g ai/ha	L/ha			Saflufenacil	H11	H35	H02
Critical GAP US	Alfalfa	1 (dormant) 2 (in season)	50 25, per cutting	--	--	21	--	--	--	--
Forage – all trials						See Hay entries	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
R130002 Ephrata, WA	Alfalfa (Mutiny)	1 (dormant)	50	190	Hay	80 [15]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						121 [15]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						149	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
		1 (dormant) 1 (in season)	50 25	190 192	Hay	80 [a]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						39	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						67	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						102	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
R130003	Alfalfa	1 (dormant)	51	191	Hay	48	< 0.025,	< 0.025,	< 0.025,	< 0.025,

Trial No. Location	Crop (Variety)	Application			Matrix	DALA (days) [% Moisture]	Residues (mg/kg) [Mean]			
		No. (interval, days)	g ai/ha	L/ha			Saflufenacil	H11	H35	H02
Orland, CA	(Genoa)					[16]	< 0.025 [< 0.025]	< 0.025 [< 0.025]	< 0.025 [< 0.025]	< 0.025 [< 0.025]
						83 [33]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						128	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
		1 (dormant) 1 (in season)	51 25	191 192	Hay	48 [a]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						25	0.025, 0.026 [0.026]	0.027, < 0.025 [0.026]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						70	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						99	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
R130004 Thatcher, AZ	Alfalfa (Revolution)	1 (dormant)	52	198	Hay	63 [17]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						117 [14]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						152	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
		1 (dormant) 1 (in season)	52 25	198 190	Hay	63 [a]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						54	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						89	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						131	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
R130005 Yuma, AZ	Alfalfa (Pinal 9)	1 (dormant)	51	197	Hay	28 [20]	0.038, 0.032 [0.035]	0.026, 0.033 [0.030]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						50 [14]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						78	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
		1 (dormant) 1 (in season)	50 24	190 191	Hay	28 [a]	0.036, 0.032 [0.034]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						21	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						49	< 0.025, < 0.025	< 0.025, < 0.025	< 0.025, < 0.025	< 0.025, < 0.025

Trial No. Location	Crop (Variety)	Application			Matrix	DALA (days) [% Moisture]	Residues (mg/kg) [Mean]			
		No. (interval, days)	g ai/ha	L/ha			Saflufenacil	H11	H35	H02
							[< 0.025]	[< 0.025]	[< 0.025]	[< 0.025]
						73	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, 0.031 [0.028]
R130006 North Rose, NY	Alfalfa (Regen)	1 (dormant)	51	192	Hay	77 [58]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						110 [39]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						142	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
		1 (dormant) 1 (in season)	51 25	195 192	Hay	77 [a]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						26	< 0.025, < 0.025 [< 0.025]	0.027, < 0.025 [0.026]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						58	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						90	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
R130007 Rutledge, GA	Alfalfa (425 RR)	1 (dormant)	51	286	Hay	73 [17]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						105 [24]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						161	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
		1 (dormant) 1 (in season)	51 25	286 270	Hay	73 [a]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						28	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						84	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
R130008 Richland, IA	Alfalfa (Green Valley 30-06)	1 (dormant)	50	180	Hay	56 [33]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						95 [13]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						136	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
		1 (dormant) 1 (in season)	50 24	180 169	Hay	56 [a]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						34	< 0.025, < 0.025	< 0.025, < 0.025	< 0.025, < 0.025	< 0.025, < 0.025

Trial No. Location	Crop (Variety)	Application			Matrix	DALA (days) [% Moisture]	Residues (mg/kg) [Mean]			
		No. (interval, days)	g ai/ha	L/ha			Saflufenacil	H11	H35	H02
							[< 0.025]	[< 0.025]	[< 0.025]	[< 0.025]
						75	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						112	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
R130009 Bradshaw, NE	Alfalfa (Pioneer 55V48)	1 (dormant)	50	195	Hay	76 [25]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						112 [22]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						144	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
		1 (dormant) 1 (in season)	50 25	194 199	Hay	76 [a]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						21	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						53	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						81	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
R130010 St. John, KS	Alfalfa (WL 363 HQ)	1 (dormant)	51	214	Hay	62 [22]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						90 [34]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						114	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
		1 (dormant) 1 (in season)	50 25	211 210	Hay	62 [a]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						27	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						51	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						83	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
R130011 Adrian, ND	Alfalfa (Not reported)	1 (dormant)	52	147	Hay	35 [16]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						62 [18]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						109	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]

Trial No. Location	Crop (Variety)	Application			Matrix	DALA (days) [% Moisture]	Residues (mg/kg) [Mean]			
		No. (interval, days)	g ai/ha	L/ha			Saflufenacil	H11	H35	H02
		1 (dormant) 1 (in season)	50 25	144 151	Hay	35 [a]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						27	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						74	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						118	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
R130012 Smithfield, UT	Alfalfa (Not reported)	1 (dormant)	52	183	Hay	61 [14]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						98 [16]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						140	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
		1 (dormant) 1 (in season)	51 24	181 175	Hay	61 [a]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						27	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						69	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						115	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
R130013 American Falls, ID	Alfalfa (Liberator, Roundup Ready)	1 (dormant)	51	180	Hay	70 [17]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						105 [12]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						141	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
		1 (dormant) 1 (in season)	52 24	184 169	Hay	70 [a]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						28	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						64	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						112	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]

[a] Elapsed time after the first application

Straw, fodder, and forage of cereal grains and grasses

Grasses

Sixteen residue trials were conducted in the US and Canada during the 2012 growing season (Schreier, 2013; Report 2013/7001466). At each trial, forage grass received one broadcast applications of saflufenacil at ca. 100 g ai/ha during dormancy, just prior to green-up, and one broadcast application at ca. 50 g ai/ha at the boot growth stage. Applications were with a soluble concentrate formulation of saflufenacil. At four locations, an additional plot was established and treated with the same regimen using a wettable granule formulation. Forage and hay samples were collected prior to the second application and immediately after the second application. At four trials, samples of straw and seed screenings were also collected. Two trials were conducted in York, Nebraska. These trials used different varieties of grasses, and the in-season treatments were temporally offset by 15 days. The samples were placed into frozen storage within 3 hours of collection, and remained frozen during transportation to the analytical facility and prior to analysis. Samples were homogenized using either a floor chopper in the presence of dry ice or an ultracentrifuge mill with liquid nitrogen cooling prior to analysis.

Grass samples were stored frozen for up to 332 days. Residues of saflufenacil, M800H11, M800H35, and M800H02 were analysed using Methods D0603/02 and D0603/04. Average concurrent recoveries from forage, hay, and seed screenings, across all four analytes, and across fortifications ranging from 0.025 to 25 mg/kg ranged from 85 to 115%. Relative standard deviations ranged from 1 to 25%. For grass straw, concurrent recoveries are summarized in Table 16.

Table 16 Concurrent recovery results for saflufenacil residues in forage grass straw

Analyte	Fortification, mg/kg	Percent Recovery	Mean ± Rel. Std. Dev.
Saflufenacil	0.025	101, 98	118 ± 14
	2.5	129	
	25	126	
M800H11	0.025	81, 109	104 ± 13
	2.5	120	
	25	98	
M800H35	0.025	82, 112	113 ± 15
	2.5	130	
	25	112	

Table 17 Results of saflufenacil residue trials conducted in 2013 for forage grasses (Report 2013/7001466)

Trial No. Country Location	Crop (Variety)	Application			Matrix	DALA (days)	Residues (mg/kg) [Mean]			
		No. (interval, days)	g ai/ha	L/ha			Saflufenacil	H11	H35	H02
Critical GAP US	Perennial forage grasses	1 (dormant) 1 (in season)	100 50	≥94	--	n.s.	--	--	--	--
R120002 US Chula, GA	Bermuda (Trift 85)	1 (dormant)	100	224	Forage	71	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	<< 0.025, < 0.025 [< 0.025]
					Hay	71	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	<< 0.025, < 0.025 [< 0.025]
		1 (dormant) 1 (71)	100 50	224 222	Forage	0	2.16, 2.94 [2.6]	0.040, 0.040 [0.040]	< 0.025, < 0.025 [< 0.025]	0.121, 0.100 [0.110]
					Hay	0	3.91, 4.55 [4.2]	0.070, 0.090 [0.080]	< 0.025, < 0.025 [< 0.025]	0.144, 0.138 [0.141]
					Seed screen.	47	< 0.025, < 0.025	< 0.025, < 0.025	< 0.025, < 0.025	<< 0.025, < 0.025

Trial No. Country Location	Crop (Variety)	Application			Matrix	DALA (days)	Residues (mg/kg) [Mean]			
		No. (interval, days)	g ai/ha	L/ha			Saflufenacil	H11	H35	H02
							[< 0.025]	[< 0.025]	[< 0.025]	[< 0.025]
					Straw	47	< 0.025, < 0.025 [< 0.025]	< 0.025, 0.030 [0.028]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
R120003 US Lebanon, OK	Bermuda (Common)	1 (dormant)	99	199	Forage	60	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	<< 0.025, < 0.025 [< 0.025]
					Hay	60	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	<< 0.025, < 0.025 [< 0.025]
		1 (dormant) 1 (60)	99 50	199 205	Forage	0	4.24, 4.15 [4.2]	0.070, 0.080 [0.075]	< 0.025, < 0.025 [< 0.025]	0.095, 0.123 [0.109]
					Hay	0	6.35, 6.22 [6.3]	0.140, 0.290 [0.215]	< 0.025, < 0.025 [< 0.025]	0.170, 0.225 [0.198]
					Seed screen.	23	0.050, 0.040 [0.045]	0.110, 0.110 [0.110]	< 0.025, 0.040 [0.033]	< 0.025, < 0.025 [< 0.025]
					Straw	23	0.050, 0.030 [0.040]	0.210, 0.100 [0.155]	0.050, < 0.025 [0.038]	< 0.025, < 0.025 [< 0.025]
R120004 US Pilot Point, TX	Bermuda (Common/ Coastal)	1 (dormant)	99	198	Forage	89	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	<< 0.025, < 0.025 [< 0.025]
					Hay	89	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	<< 0.025, < 0.025 [< 0.025]
		1 (dormant) 1 (89)	99 52	198 210	Forage	0	3.15, 4.70 [3.9]	0.070, 0.050 [0.060]	< 0.025, < 0.025 [< 0.025]	0.126, 0.130 [0.128]
					Hay	0	12.2, 8.42 [10]	0.340, 0.240 [0.290]	< 0.025, < 0.025 [< 0.025]	0.289, 0.233 [0.261]
					Seed screen.	22	0.420, 0.370 [0.40]	0.120, 0.120 [0.120]	0.070, 0.090 [0.080]	< 0.025, < 0.025 [< 0.025]
					Straw	22	0.470, 0.520 [0.50]	0.090, 0.120 [0.105]	0.120, 0.160 [0.140]	< 0.025, < 0.025 [< 0.025]
R120005 US Groom, TX	Bermuda (Coastal)	1 (dormant)	100	207	Forage	56	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
					Hay	56	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	<< 0.025, < 0.025 [< 0.025]
		1 (dormant) 1 (56)	100 50	207 156	Forage	0	3.41, 3.71 [3.6]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
					Hay	0	2.72, 4.59 [3.7]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
					Seed screen.	45	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	<< 0.025, < 0.025 [< 0.025]
					Straw	45	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	<< 0.025, < 0.025 [< 0.025]
R120006	Bluegrass	1 (dormant)	104	195	Forage	63	< 0.025,	< 0.025,	< 0.025,	<< 0.025,

Trial No. Country Location	Crop (Variety)	Application			Matrix	DALA (days)	Residues (mg/kg) [Mean]			
		No. (interval, days)	g ai/ha	L/ha			Saflufenacil	H11	H35	H02
US York, NE	(not reported)						< 0.025 [< 0.025]	< 0.025 [< 0.025]	< 0.025 [< 0.025]	< 0.025 [< 0.025]
					Hay	63	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	<< 0.025, < 0.025 [< 0.025]
		1 (dormant) 1 (63)	104 49	195 186	Forage	0	1.94, 1.21 [1.6]	0.070, 0.060 [0.065]	< 0.025, < 0.025 [< 0.025]	0.486, 0.460 [0.473]
						1	1.61, 1.51 [1.6]	0.140, 0.180 [0.160]	< 0.025, < 0.025 [< 0.025]	0.240, 0.344 [0.292]
						3	0.030, 0.030 [0.030]	0.390, 0.380 [0.385]	< 0.025, < 0.025 [< 0.025]	0.212, 0.181 [0.196]
						5	0.040, 0.080 [0.060]	0.340, 0.410 [0.375]	< 0.025, < 0.025 [< 0.025]	0.058, 0.084 [0.071]
						7	< 0.025, < 0.025 [< 0.025]	0.200, 0.330 [0.265]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
					Hay	0	7.99, 5.85 [6.9]	1.52, 0.890 [1.20]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
						1	6.11, 3.18 [4.6]	0.810, 1.29 [1.05]	< 0.025, < 0.025 [< 0.025]	1.24, 0.775 [1.01]
						3	0.100, 0.140 [0.12]	1.56, 2.44 [2.00]	< 0.025, 0.040 [0.033]	0.077, 0.238 [0.158]
						5	0.220, 0.370 [0.30]	2.34, 2.39 [2.37]	0.040, < 0.025 [0.033]	0.126, 0.164 [0.145]
						7	0.150, 0.200 [0.18]	1.63, 1.86 [1.74]	< 0.025, < 0.025 [< 0.025]	0.059, 0.060 [0.060]
R120010 US York, NE	Fescue (not reported)	1 (dormant)	99	186	Forage	48	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
					Hay	48	0.060, 0.040 [0.050]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
		1 (dormant) 1 (48)	99 50	186 187	Forage	0	1.99, 2.66 [2.3]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	0.025, 0.045 [0.035]
					Hay	0	4.21, 3.40 [3.8]	0.640, 0.560 [0.600]	< 0.025, < 0.025 [< 0.025]	0.603, 0.423 [0.513]
R120007 US Parkersburg, IN	Bluegrass (not reported)	1 (dormant)	100	142	Forage	61	0.030, < 0.025 [0.028]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
					Hay	61	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
		1 (dormant) 1 (61)	100 50	142 148	Forage	0	2.22, 2.13 [2.2]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	0.158, 0.150 [0.154]
					Hay	0	3.96, 5.56 [4.8]	0.220, 0.270 [0.245]	< 0.025, < 0.025 [< 0.025]	0.347, 0.495 [0.421]

Trial No. Country Location	Crop (Variety)	Application			Matrix	DALA (days)	Residues (mg/kg) [Mean]			
		No. (interval, days)	g ai/ha	L/ha			Saflufenacil	H11	H35	H02
R120008 US Germansville, PA	Bluegrass (Unique, Midnight, Blacksburg)	1 (dormant)	102	244	Forage	44	< 0.025, < 0.025 [< 0.025]	0.060, 0.060 [0.060]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
					Hay	44	0.030, < 0.025 [0.028]	0.170, 0.130 [0.150]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
		1 (dormant) 1 (44)	102 53	244 237	Forage	0	1.67, 2.01 [1.8]	0.060, 0.070 [0.065]	< 0.025, < 0.025 [< 0.025]	0.239, 0.216 [0.227]
					Hay	0	2.81, 3.49 [3.2]	1.63, 1.31 [1.47]	< 0.025, < 0.025 [< 0.025]	2.08, 1.98 [2.03]
R120009 US Pocatello, ID	Bluegrass (Everest, New Destiny, Midnight, Langara)	1 (dormant)	100	168	Forage	72	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	<< 0.025, < 0.025 [< 0.025]
					Hay	72	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	<< 0.025, < 0.025 [< 0.025]
		1 (dormant) 1 (72)	100 52	168 177	Forage	0	1.46, 1.40 [1.4]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	0.081, 0.132 [0.107]
					Hay	0	2.78, 2.19 [2.5]	1.74, 2.09 [1.92]	< 0.025, < 0.025 [< 0.025]	0.870, 0.813 [0.841]
R120011 US Yuba City, CA	Fescue (Scotts tall)	1 (dormant)	100	187	Forage	56	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	<< 0.025, < 0.025 [< 0.025]
					Hay	56	0.070, < 0.025 [0.048]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
		1 (dormant) 1 (56)	100 50	187 187	Forage	0	7.01, 7.15 [7.1]	0.210, 0.250 [0.230]	< 0.025, < 0.025 [< 0.025]	0.269, 0.274 [0.272]
						1	0.460, 0.650 [0.56]	0.340, 0.420 [0.380]	< 0.025, < 0.025 [< 0.025]	0.141, 0.136 [0.138]
						3	0.230, 0.100 [0.16]	0.470, 0.190 [0.330]	< 0.025, < 0.025 [< 0.025]	0.038, 0.033 [0.036]
						5	0.170, 0.110 [0.14]	0.290, 0.230 [0.260]	< 0.025, < 0.025 [< 0.025]	0.032, 0.039 [0.036]
						7	0.090, 0.150 [0.12]	0.240, 0.390 [0.315]	< 0.025, < 0.025 [< 0.025]	0.040, 0.037 [0.039]
					Hay	0	11.4, 14.2 [13]	0.140, 0.180 [0.160]	< 0.025, < 0.025 [< 0.025]	0.359, 0.344 [0.352]
						1	0.570, 0.560 [0.56]	0.530, 0.460 [0.495]	< 0.025, < 0.025 [< 0.025]	0.358, 0.335 [0.347]
						3	0.270, 0.280 [0.28]	0.580, 0.450 [0.515]	< 0.025, < 0.025 [< 0.025]	0.097, 0.078 [0.088]
						5	0.200, 0.420 [0.31]	0.370, 0.540 [0.455]	< 0.025, < 0.025 [< 0.025]	0.045, 0.099 [0.072]

Trial No. Country Location	Crop (Variety)	Application			Matrix	DALA (days)	Residues (mg/kg) [Mean]			
		No. (interval, days)	g ai/ha	L/ha			Saflufenacil	H11	H35	H02
						7	0.290, 0.270 [0.28]	0.380, 0.550 [0.465]	< 0.025, < 0.025 [< 0.025]	0.065, 0.090 [0.078]
R120012 US Carlyle, IL	Fescue (5-way turf fescue mix)	1 (dormant)	101	201	Forage	29	0.160, 0.190 [0.18]	0.030, 0.030 [0.030]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
					Hay	29	1.08, 0.680 [0.88]	0.100, 0.070 [0.085]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
		1 (dormant) 1 (29)	101 51	201 195	Forage	0	3.07, 2.24 [2.7]	0.040, 0.030 [0.035]	< 0.025, < 0.025 [< 0.025]	0.110, 0.091 [0.100]
					Hay	0	4.54, 6.30 [5.4]	0.560, 0.590 [0.575]	< 0.025, < 0.025 [< 0.025]	0.265, 0.249 [0.257]
		1 (dormant) (WG Form.)	101	201	Forage	29	0.08, 0.11 [0.095]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	
					Hay	29	0.620, 0.470 [0.54]	0.100, 0.050 [0.075]	< 0.025, < 0.025 [< 0.025]	
		1 (dormant) 1 (29) (WG Form.)	101 51	201 194	Forage	0	3.45, 4.45 [4.0]	0.040, 0.050 [0.040]	< 0.025, < 0.025 [< 0.025]	
					Hay	0	10.4, 9.18 [9.8]	0.820, 1.34 [1.08]	< 0.025, < 0.025 [< 0.025]	
R120013 US Hastings, NE	Fescue (not reported)	1 (dormant)	100	185	Forage	68	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	<< 0.025, < 0.025 [< 0.025]
					Hay	68	< 0.025, < 0.025 [< 0.025]	< 0.025, 0.040 [0.033]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
		1 (dormant) 1 (68)	100 50	185 186	Forage	0	3.11, 3.28 [3.2]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	0.052, 0.044 [0.048]
					Hay	0	3.98, 4.52 [4.2]	0.210, 0.260 [0.235]	< 0.025, < 0.025 [< 0.025]	0.184, 0.166 [0.175]
		1 (dormant) (WG Form.)	99	185	Forage	68	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	<< 0.025, < 0.025 [< 0.025]
					Hay	68	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	<< 0.025, < 0.025 [< 0.025]
		1 (dormant) 1 (68) (WG Form.)	99 50	185 187	Forage	0	3.35, 3.29 [3.3]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	
					Hay	0	7.04, 4.08 [5.6]	0.37, 0.24 [3.05]	< 0.025, < 0.025 [< 0.025]	
R120014 CA Crystal City, MB	Bromegrass (Fleet)	1 (dormant)	102	153	Forage	47	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	<< 0.025, < 0.025 [< 0.025]
					Hay	47	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	<< 0.025, < 0.025 [< 0.025]
		1 (dormant) 1 (47)	102 51	153 154	Forage	0	2.40, 7.52	< 0.025, < 0.025	< 0.025, < 0.025	0.026, < 0.025

Trial No. Country Location	Crop (Variety)	Application			Matrix	DALA (days)	Residues (mg/kg) [Mean]			
		No. (interval, days)	g ai/ha	L/ha			Saflufenacil	H11	H35	H02
							[5.0]	[< 0.025]	[< 0.025]	[0.026]
					Hay	0	3.52, 2.62 [3.1]	0.770, 0.690 [0.730]	< 0.025, < 0.025 [< 0.025]	0.525, 0.580 [0.552]
		1 (dormant) (WG Form.)	102	154	Forage	47	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	
					Hay	47	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	
		1 (dormant) 1 (47) (WG Form.)	102 50	154 152	Forage	0	3.02, 12.0 [7.5]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	
					Hay	0	4.53, 5.57 [5.0]	0.25, 0.33 [0.29]	< 0.025, < 0.025 [< 0.025]	
R120015 CA Kenton, MB	Bromegrass (Armada)	1 (dormant)	96	145	Forage	49	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	<< 0.025, < 0.025 [< 0.025]
					Hay	49	0.040, < 0.025 [0.033]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
		1 (dormant) 1 (49)	96 50	145 151	Forage	0	5.70, 8.54 [7.1]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	0.056, 0.085 [0.071]
					Hay	0	6.44, 11.4 [8.9]	0.710, 4.36 [2.54]	< 0.025, < 0.025 [< 0.025]	0.761, 0.903 [0.832]
R120016 CA Melfort, SK	Bromegrass (Meadow)	1 (dormant)	100	186	Forage	36	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	<< 0.025, < 0.025 [< 0.025]
					Hay	36	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	<< 0.025, < 0.025 [< 0.025]
		1 (dormant) 1 (36)	100 51	186 192	Forage	0	3.76, 3.81 [3.8]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
					Hay	0	4.06, 4.07 [4.1]	0.980, 1.00 [0.990]	< 0.025, < 0.025 [< 0.025]	0.595, 0.593 [0.594]
R120017 CA Bon Accord, AB	Bromegrass (Big Foot)	1 (dormant)	102	190	Forage	43	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	<< 0.025, < 0.025 [< 0.025]
					Hay	43	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
		1 (dormant) 1 (43)	102 51	190 192	Forage	0	2.82, 3.96 [3.4]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
					Hay	0	6.83, 6.75 [6.8]	0.910, 1.32 [1.12]	< 0.025, < 0.025 [< 0.025]	0.615, 0.723 [0.669]
		1 (dormant) (WG Form.)	100	188	Forage	43	< 0.025, 0.050 [0.033]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	
					Hay	43	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	
		1 (dormant)	100	188	Forage	0	3.77,	< 0.025,	< 0.025,	

Trial No. Country Location	Crop (Variety)	Application			Matrix	DALA (days)	Residues (mg/kg) [Mean]			
		No. (interval, days)	g ai/ha	L/ha			Saflufenacil	H11	H35	H02
		1 (43) (WG Form.)	52	195			3.37 [3.6]	< 0.025 [< 0.025]	< 0.025 [< 0.025]	
					Hay	0	6.11, 6.22 [6.2]	0.60, 1.11 [0.86]	< 0.025, < 0.025 [< 0.025]	

Barley straw and fodder, dry

Residue trials in barley (Report 2013/7001464) are described above. Concurrent recoveries from barley straw across all four analytes and across fortifications at 0.025 to 25 mg/kg ranged from 82 to 115%.

Table 18 Results of saflufenacil residue trials for barley straw in the US and Canada (Report 2013/7001464)

Trial No. Country Location Year	Crop (Variety)	Application		Matrix	DALA (days)	Residues (mg/kg) [Mean]			
		g ai/ha	L/ha			Saflufenacil	H11	H35	H02
Critical GAP US	Barley	1 at 50	100	--	3	--	--	--	--
120050 US Wayne, NY 2012	Barley (not specified)	50	167	Straw	3	0.90, 0.72 [0.81]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
120051 US Guthrie, IA 2012	Barley (Robust)	539	177	Straw	0	Residues not reported due to the 10X misapplication			
					1				
					3				
					5				
					7				
120052 CA Portage la Prairie, MB 2012	Barley (Conlon)	50	119	Straw	3	5.45, 5.97 [5.7]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
120053 US Hall, NE 2012	Barley (Lacey)	50	177	Straw	3	0.98, 0.81 [0.90]	0.03, < 0.025 [0.028]	0.028, < 0.025 [0.026]	0.0275, < 0.025 [0.026]
120054 US Foster, ND 2012	Barley (Pinnacle)	81	232	Straw	3	0.11, 0.08 [0.10]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
120055 CA Dundurn, SK 2012	Barley (Copeland)	51	102	Straw	3	4.74, 6.70 [5.7]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
120056 CA Taber, AB 2012	Barley (CDC Earl)	51	154	Straw	3	0.86, 0.85 [0.86]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
120057 US Cache, UT	Barley (Goldeneye)	48	164	Straw	3	1.39, 1.53 [1.5]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]

Trial No. Country Location Year	Crop (Variety)	Application		Matrix	DALA (days)	Residues (mg/kg) [Mean]			
		g ai/ha	L/ha			Saflufenacil	H11	H35	H02
2012									
120058 US Kings, CA 2012	Barley (Voluneer)	51	145	Straw	3	2.55, 2.38 [2.5]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
120059 US Power, ID 2012	Barley (Statehood)	51	168	Straw	0	--	< 0.025	< 0.025	< 0.025
					1	--	< 0.025	< 0.025	< 0.025
					3	1.79, 1.44 [1.6]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
					5	--	< 0.025	< 0.025	< 0.025
					7	--	< 0.025	< 0.025	< 0.025
120060 CA Strathcona, AB 2012	Barley (Coalition)	52	105	Straw	3	0.10, 0.15 [0.12]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
120061 CA Sturgeon, AB 2012	Barley (Xena)	52	105	Straw	3	2.50, 2.31 [2.4]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
120062 CA Aberdeen, SK 2012	Barley (Copeland)	51	101	Straw	3	6.53, 6.69 [6.6]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
120063 CA Waldheim, SK 2012	Barley (CDC Cowboy)	50	100	Straw	3	3.55, 4.59 [4.1]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
120064 CA Rosedale, MB 2012	Barley (Newdale)	50	120	Straw	3	5.27, 3.91 [4.6]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]
120065 CA Elton, MB 2012	Barley (Newdale)	50	119	Straw	3	2.58, 1.93 [2.3]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]

Wheat straw and fodder, dry

Residue trials in wheat (Report 2013/7001462) are described above. Concurrent recoveries from wheat straw across all four analytes and across fortifications at 0.025 to 10 mg/kg ranged from 74 to 116%.

Table 19 Results of saflufenacil residue trials conducted in 2013 for wheat straw in the US and Canada (Report 2013/7001462)

Trial No. Country Location	Crop (Variety)	Application		Matrix	DALA (days)	Residues (mg/kg) [Mean]			
		g ai/ha	L/ha			Saflufenacil	H11	H35	H02
Critical GAP US	Wheat	1 at 50	100	--	3	--	--	--	--
R120025 US Tallassee, AL	Wheat (AGS 2060)	0.050	131	Straw	3	0.19, 0.25 [0.22]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.01, < 0.01 [< 0.01]
R120026	Wheat	0.050	187	Straw	3	2.16, 2.54	< 0.025,	< 0.025,	< 0.01,

Trial No. Country Location	Crop (Variety)	Application		Matrix	DALA (days)	Residues (mg/kg) [Mean]			
		g ai/ha	L/ha			Saflufenacil	H11	H35	H02
US Fisk, MO	(Beretta)					[2.4]	< 0.025 [< 0.025]	< 0.025 [< 0.025]	< 0.01 [< 0.01]
R120027 US Gardner, ND	Wheat (Barlow)	0.051	140	Straw	0	2.49, 1.42 [2.0]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.01, < 0.01 [< 0.01]
					1	1.87, 2.04 [2.0]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.01, < 0.01 [< 0.01]
					3	1.35, 2.44 [1.9]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.01, < 0.01 [< 0.01]
					5	1.51, 1.55 [1.5]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.01, < 0.01 [< 0.01]
					7	1.93, 1.65 [1.8]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.01, < 0.01 [< 0.01]
R120028 US Olathe, KS	Wheat (Santa Fe)	0.050	136	Straw	0	2.78, 2.25 [2.5]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.01, < 0.01 [< 0.01]
					1	3.02, 2.25 [2.6]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.01, 0.01 [0.01]
					3	2.33, 2.47 [2.4]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.01, < 0.01 [< 0.01]
					5	2.26, 2.50 [2.4]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.01, < 0.01 [< 0.01]
					7	1.08, 2.27 [1.7]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.01, < 0.01 [< 0.01]
R120029 US Atlantic, IA	Wheat (Brick Hard red spring)	0.051	140	Straw	3	1.35, 1.41 [1.4]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.01, < 0.01 [< 0.01]
R120030 CA Poplar Point, MB	Wheat (Falcon)	0.050	120	Straw	3	2.36, 2.15 [2.3]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.01, < 0.01 [< 0.01]
R120031 US East Bernard, TX	Wheat (Magnolia)	0.049	124	Straw	3	3.45, 3.38 [3.4]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.01, < 0.01 [< 0.01]
R120032 US Carrington, ND	Wheat (Faller)	0.050	140	Straw	3	0.72, 0.93 [0.82]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	0.02, 0.02 [0.02]
R120033 US Oberon, ND	Wheat (Faller)	0.050	140	Straw	3	0.98, 0.82 [0.90]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.01, < 0.01 [< 0.01]
R120034 US Eldridge, ND	Wheat (Faller)	0.051	142	Straw	3	0.33, 0.36 [0.34]	0.03, 0.03 [0.03]	< 0.025, < 0.025 [< 0.025]	0.08, 0.08 [0.08]
R120035 US Grand Island, NE	Wheat (Cert. 3Traverse)	0.050	179	Straw	3	1.21, 1.39 [1.3]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	0.03, 0.03 [0.03]
R120036 CA Watrous, SK	Wheat (Bellatrex)	0.049	100	Straw	3	0.32, 1.36 [0.84]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	0.02, 0.02 [0.02]
R120037 CA Taber, AB	Wheat (AC Superb)	0.048	150	Straw	3	2.55, 2.74 [2.6]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.01, 0.01 [0.01]
R120038 US	Wheat (TAM 111)	0.050	99	Straw	3	0.25, 0.18 [0.22]	< 0.025, < 0.025	< 0.025, < 0.025	< 0.01, < 0.01

Trial No. Country Location	Crop (Variety)	Application		Matrix	DALA (days)	Residues (mg/kg) [Mean]			
		g ai/ha	L/ha			Saflufenacil	H11	H35	H02
Plainview, TX							[< 0.025]	[< 0.025]	[< 0.01]
R120039 US Olton, TX	Wheat (TAM 111)	0.049	102	Straw	3	2.44, 1.33 [1.9]	0.03, < 0.025 [0.03]	< 0.025, < 0.025 [< 0.025]	0.02, 0.01 [0.02]
R120040 US Larned, KS	Wheat (Everest)	0.050	167	Straw	3	1.48, 0.36 [0.92]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.01, < 0.01 [< 0.01]
R120041 US Jetmore, KS	Wheat (TAM 112)	0.050	168	Straw	3	2.47, 3.49 [3.0]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.01, 0.02 [0.02]
R120042 US Ephrata, WA	Wheat (Stephens)	0.051	140	Straw	3	1.08, 1.14 [1.1]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.01, < 0.01 [< 0.01]
R120043 CA Kipp, AB	Wheat (AC Carberry)	0.050	150	Straw	3	1.86, 1.76 [1.8]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.01, < 0.01 [< 0.01]
R120044 CA Rosthern, SK	Wheat (Infinity)	0.052	150	Straw	3	1.93, 2.28 [2.1]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.01, < 0.01 [< 0.01]
R120045 CA Minto, MB	Wheat (Unity)	0.051	163	Straw	3	1.30, 1.57 [1.4]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	0.05, 0.03 [0.04]
R120046 CA Elgin, MB	Wheat (Buteo)	0.052	166	Straw	3	2.09, 1.81 [2.0]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.01, < 0.01 [< 0.01]
R120047 CA Josephburg, AB	Wheat (Harvest)	0.051	100	Straw	3	0.08, 0.05 [0.065]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.01, < 0.01 [< 0.01]
R120048 CA Wakaw, SK	Wheat (Infinity)	0.050	100	Straw	3	2.55, 3.76 [3.2]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	0.01, 0.02 [0.02]
R120049 CA Brandon, MB	Wheat (Falcon)	0.049	120	Straw	3	2.51, 2.42 [2.5]	< 0.025, < 0.025 [< 0.025]	< 0.025, < 0.025 [< 0.025]	< 0.01, < 0.01 [< 0.01]

Peanut hay

Residue trials in peanut (Report 2011/7006245) are described above. Average concurrent recoveries from peanut hay across all three analytes and across fortifications at 0.01 to 10 mg/kg ranged from 75 to 108%, with a maximum relative standard deviation of 17%.

Table 20 Results of saflufenacil residue trials in peanut hay (Report 2011/7006245)

Trial No. Country Location Year	Crop (Variety)	Application			Matrix	DALA (days)	Residues (mg/kg) [Mean]		
		No. (interval, days)	g ai/ha	L/ha			Saflufenacil	H11	H35
Critical GAP Nicaragua	Peanut	1	90	200- 300	--	Not specified	--	--	--
R090523 US Montezuma, GA 2010	Peanut (Georgia 02C)	1 (--) 1 (137)	46 100	201 200	Hay	7	n.s.	n.s.	n.s.
		1 (--) 1 (137)	138 300	201 200		7	n.s.	n.s.	n.s.

Trial No. Country Location Year	Crop (Variety)	Application			Matrix	DALA (days)	Residues (mg/kg) [Mean]		
		No. (interval, days)	g ai/ha	L/ha			Saflufenacil	H11	H35
R090524 US Jeffersonville, GA 2010	Peanut (Georgia DoG)	1 (--) 1 (122)	47 99	200 198	Hay	7	n.s.	n.s.	n.s.
		1 (--) 1 (122)	142 297	200 198		7	n.s.	n.s.	n.s.
R090525 Brazil São Paulo 2010	Peanut (Runner IAC 886)	1 (--) 1 (129)	52 98	206 196	Hay	0	3.29, 3.27 [3.3]	0.04, 0.02 [0.03]	< 0.01, < 0.01 [< 0.01]
						3	5.47, 6.29 [5.9]	0.17, 0.16 [0.16]	< 0.01, < 0.01 [< 0.01]
						6	6.55, 6.63 [6.6]	0.27, 0.14 [0.20]	< 0.01, < 0.01 [< 0.01]
						10	4.05, 4.90 [4.5]	0.10, 0.10 [0.10]	< 0.01, < 0.01 [< 0.01]
						12	5.14, 5.30 [5.2]	0.17, 0.17 [0.17]	< 0.01, < 0.01 [< 0.01]
R090527 Brazil São Paulo 2010	Peanut (Runner 38/42)	1 (--) 1 (115)	51 97	256 243	Hay	7	0.75, 1.06 0.90]	0.10, 0.10 [0.10]	< 0.01, < 0.01 [< 0.01]
R090526 Brazil Mato Grosso do Sul 2009	Peanut (Runner)	1 (--) 1 (118)	53 92	211 185	Hay	7	0.14, 0.17 [0.16]	0.07, 0.10 [0.08]	< 0.01, < 0.01 [< 0.01]
R090528 Brazil Paraná 2010	Peanut (Runner IAC 886)	1 (--) 1 (124)	50 102	252 254	Hay	7	5.10, 5.04 [5.1]	0.71, 0.66 [0.68]	< 0.01, < 0.01 [< 0.01]
R090529 Uruguay Mercedes-Soriano 2010	Peanut (Runner IAC 886)	1 (--) 1 (115)	52 97	211 193	Hay	7	0.08, 0.13 [0.11]	0.22, 0.32 [0.27]	< 0.01, < 0.01 [< 0.01]
R090530 Argentina San Pedro 2010	Peanut (ASEM 485INTA/ Runner)	1 (--) 1 (131)	54 101	218 202	Hay	7	0.10, 0.13 [0.12]	0.12, 0.18 [0.15]	< 0.01, < 0.01 [< 0.01]

n.s. = no sample

FATE OF RESIDUES IN STORAGE AND PROCESSING

A high-temperature hydrolysis study was reviewed by the 2011 Meeting, which concluded that saflufenacil is stable under conditions representative of pasteurization, baking, and sterilization. The 2016 Meeting received data showing residues of saflufenacil in raw commodities and processed commodities of barley, wheat, sugar cane, and peanut.

Barley

Four field trials were conducted in the US in 2012 for purposes of examining residues of saflufenacil in processed commodities of barley (Greenland, 2013; Report 2013/7001465). Barley received one

application of saflufenacil at 250g ai/ha ca. three days before harvest at maturity. The application rate reflects a five-fold exaggeration over the critical GAP. Harvested grain was shipped either under ambient conditions (ND and MN sites) or frozen (NE sites) to the processing facility. The grain samples were placed into frozen storage at the processing facility and processed, using simulated commercial practices, into pearled barley, bran (unprocessed), flour, brewing malt, malt culms, spent grain, spent hops, spent yeast, and beer. The processed commodities were placed into frozen storage immediately after processing, and remained frozen during transport to the analytical facility and prior to analysis for residues. Residues of saflufenacil, M800H11, M800H35, and M800H02 were determined using Method D0603/04.

Barley grain and processed commodities were stored for a maximum of 198 days prior to extraction. Concurrent recoveries are presented in Table 21.

Table 21 Concurrent recovery of saflufenacil residues in barley grain and processed commodities

Matrix	Fortification level, mg/kg	Recovery, %			
		Saflufenacil	M800H11	M800H35	M800H02
Grain	0.01	93, 89	78	74	70
	1.0	85	--	102	84
	10	76	--	--	--
Pearled barley	0.01	84	70	72	131
	1.0	82	95	73	68
Bran (unprocessed)	0.01	96, 100	83	90	91
	1.0	80	84	75	89
	10	115	--	--	--
Flour	0.01	89	78	79	86
	1.0	90	79	87	78
Brewing malt	0.01	93	90	73	71
	1.0	98	72	81	87
Malt culms	0.01	108, 86	75	71	84
	1.0	81, 104	74	87	81
Spent grain	0.01	78	118, 98	80, 105	69, 122
	1.0	70	78, 72	77, 77	101, 88
Spent hops	0.01	92	76	74	82
	1.0	83	65	62	73
Spent yeast	0.01	109, 87	72	65	81
	1.0	74, 69	78	72	65
Beer	0.01	69	66	70	77
	1.0	65	71	75	74

Table 22 Residues of saflufenacil in barley processed commodities (Report 2013/7001465)

Trial Location	Matrix	Residue [a], mg/kg			Processing factor	
		Saflufenacil	M800H11	Total	Saflufenacil	Total
120072 Cass, ND	Grains	0.51	< 0.01	0.53	--	--
	Pearled barley	0.14	< 0.01	0.16	0.28	0.30
	Bran (unprocessed)	1.60	< 0.01	1.62	3.1	3.1
	Flour	0.11	< 0.01	0.13	0.22	0.24
	Brewing malt	0.08	0.02	0.11	0.16	0.21
	Malt culms	0.05	0.03	0.09	0.098	0.17
	Spent grain	0.02	< 0.01	0.04	0.039	0.075
	Spent hops	0.04	< 0.01	0.06	0.078	0.11
	Spent yeast	0.07	< 0.01	0.09	0.14	0.17
	Beer	0.05	< 0.01	0.07	0.098	0.13
120073 Norman, MN	Grains	1.56	< 0.01	1.58	--	--
	Pearled barley	0.10	< 0.01	0.12	0.064	0.076
	Bran (unprocessed)	2.46	< 0.01	2.48	1.6	1.6
	Flour	0.09	< 0.01	0.11	0.058	0.070
	Brewing malt	0.02	< 0.01	0.04	0.013	0.025

Trial Location	Matrix	Residue [a], mg/kg			Processing factor	
		Saflufenacil	M800H11	Total	Saflufenacil	Total
	Malt culms	0.02	< 0.01	0.04	0.013	0.025
	Spent grain	< 0.01	< 0.01	< 0.03	< 0.006	< 0.019
	Spent hops	< 0.01	< 0.01	< 0.03	< 0.006	< 0.019
	Spent yeast	0.02	< 0.01	0.04	0.013	0.025
	Beer	< 0.01	< 0.01	< 0.03	< 0.006	< 0.019
120074 York, NE	Grains	1.07	< 0.01	1.09	--	--
	Pearled barley	0.09	< 0.01	0.11	0.084	0.10
	Bran (unprocessed)	2.93	< 0.01	2.95	2.7	2.7
	Flour	0.09	< 0.01	0.11	0.084	0.10
	Brewing malt	0.03	< 0.01	0.05	0.028	0.046
	Malt culms	0.02	< 0.01	0.04	0.019	0.037
	Spent grain	< 0.01	< 0.01	< 0.03	< 0.009	< 0.028
	Spent hops	0.01	< 0.01	0.03	< 0.009	0.028
	Spent yeast	0.03	< 0.01	0.05	0.028	0.046
	Beer	< 0.01	< 0.01	< 0.03	< 0.009	< 0.028
120075 Hall, NE	Grains	1.18	< 0.01	1.20	--	--
	Pearled barley	0.12	< 0.01	0.14	0.10	0.12
	Bran (unprocessed)	4.13	< 0.01	4.15	3.5	3.5
	Flour	0.13	< 0.01	0.15	0.11	0.12
	Brewing malt	0.05	< 0.01	0.07	0.042	0.058
	Malt culms	0.06	< 0.01	0.08	0.051	0.067
	Spent grain	< 0.01	< 0.01	< 0.03	< 0.008	< 0.025
	Spent hops	0.02	< 0.01	0.04	0.017	0.033
	Spent yeast	0.04	< 0.01	0.06	0.034	0.050
	Beer	< 0.01	< 0.01	< 0.03	< 0.008	< 0.025

[a] Residues of M800H35 and M800H02 were < 0.01 mg/kg in all samples. Total values assume residues of 0.01 mg/kg for results reported as < 0.01 mg/kg, and do not include M800H02.

Wheat

Two field trials were conducted in the US in wheat during the 2012 growing season (Norris, 2013; Report 2013/7001463). At each trial, wheat received a single broadcast application of saflufenacil at 50 g ai/ha. In addition, a second plot was established at each trial where wheat received a single application of saflufenacil at 250 g ai/ha. Grain was harvested from each plot three days after application and immediately frozen. Grain samples were shipped, frozen, to the analytical laboratory and to the processing facility. At the processing facility, grain from the 1X plots was processed into aspirated grain fractions, and grain from the 5× plots was processed into bran (unprocessed), flour, germ, gluten, gluten feed meal, middlings, shorts, starch, and whole-grain bread. All samples were maintained frozen, except during processing, from harvest to analysis. Residues of saflufenacil M800H11, M800H35, and M800H02 were determined using Method D0603/04.

Wheat grain and processed commodities were stored frozen for a maximum of 282 days. Concurrent recoveries are presented in Table 23.

Table 23 Concurrent recovery of saflufenacil residues in wheat grain and processed commodities

Matrix	Fortification level, mg/kg	Recovery, %			
		Saflufenacil	M800H11	M800H35	M800H02
Grain	0.01	92	73	89	84
	1.0	--	--	--	75
	10	83	--	--	--
Aspirated grain fractions	0.025	111, 85	87, 88	99, 74	99
	2.5	70	91	93	--
	10	85	79	94	--
Bran (unprocessed)	0.01	85	81	68, 83	75, 81
	1.0	79	102	84, 98	69, 72

Matrix	Fortification level, mg/kg	Recovery, %			
		Saflufenacil	M800H11	M800H35	M800H02
Flour	0.01	83, 82	99	67, 100	100
	1.0	62, 84	91	71, 86	91
Germ	0.01	67, 94	79, 87	94, 83	65, 83
	1.0	73, 76	71, 74	68, 71	67, 90
Gluten	0.01	108	65	72	83
	1.0	98	72	73	80
Gluten feed meal	0.025	109	88	93	84
	2.5	110	75	87	92
Middlings	0.01	86	95	79	92
	1.0	87	68	83	82
Shorts	0.01	96, 107	67	72	81, 67, 110
	1.0	67, 95	88	80	62, 67, 79
Starch	0.01	73, 80	77, 93	72	96, 83
	1.0	73, 101	68, 95	80	69, 72
Whole grain bread	0.01	85	66, 70	85	91
	1.0	81	68, 81	89	71

Table 24 Residues of saflufenacil in wheat processed commodities (Report 2013/7001463)

Trial Location	Matrix	Residue [a], mg/kg			Processing factor	
		Saflufenacil	M800H11	Total	Saflufenacil	Total
R120023 Jefferson, IA	Grain (50 g ai/ha)	< 0.01	< 0.01	< 0.03	--	--
	Aspirated grain fraction	0.29	< 0.025	0.36	n.c.	n.c.
	Grain (250 g ai/ha)	0.12	< 0.01	0.14	--	--
	Bran (unprocessed)	0.18	< 0.01	0.20	1.50	1.43
	Flour	0.01	< 0.01	0.03	0.083	0.21
	Germ	0.17	< 0.01	0.19	1.42	1.36
	Gluten	0.06	< 0.01	0.08	0.50	0.57
	Gluten Feed Meal	0.06	< 0.025	0.11	0.50	0.79
	Middlings	0.09	< 0.01	0.11	0.75	0.79
	Shorts	0.12	< 0.01	0.14	1.00	1.00
	Starch	< 0.01	< 0.01	< 0.03	< 0.08	<0.21
	Whole grain bread	0.06	< 0.01	0.08	0.50	0.57
R120024 Foster, ND	Grain (50 g ai/ha)	0.03	< 0.01	0.05	--	--
	Aspirated grain fraction	7.35	0.08	7.46	245	149
	Grain (250 g ai/ha)	0.21	< 0.01	0.23	--	--
	Bran (unprocessed)	0.21	< 0.01	0.23	1.00	1.00
	Flour	0.05	< 0.01	0.07	0.24	0.30
	Germ	0.17	< 0.01	0.19	0.81	0.83
	Gluten	0.16	< 0.01	0.18	0.76	0.78
	Gluten Feed Meal	0.09	< 0.025	0.14	0.43	0.61
	Middlings	0.04	< 0.01	0.06	0.19	0.26
	Shorts	< 0.01	< 0.01	< 0.03	< 0.050	<0.13
	Starch	< 0.01	< 0.01	< 0.03	< 0.050	<0.13
	Whole grain bread	0.06	< 0.01	0.08	0.29	0.35

[a] Residues of M800H35 and M800H02 were <LOQ (< 0.01 or < 0.025 mg/kg; see Table 23 for lowest limits of method validation) in all samples. Total values assume residues at the LOQ for results reported as <LOQ, and do not include M800H02.

n.c. = not calculated due to non-quantifiable residues in the raw agricultural commodity.

Sugar cane

Two field trials were conducted in Brazil in sugar cane during the 2009 growing season (Jones, 2010; Report 2010/1220995). At each trial, sugar cane received a single broadcast application of saflufenacil at 490 g ai/ha while it was between the BBCH growth stages 47 and 49. Sugar cane stalks were harvested from each plot seven days after application and shipped to the processing facility. At the

processing facility, the stalks were processed into bagasse, very-high polarization (VHP) sugar, VHP molasses, white sugar, and white molasses. Following processing, all samples were frozen and shipped to the analytical facility for analysis. Residues of saflufenacil M800H11, and M800H35 were determined using a variation of Method D0603/02.

Samples were stored for a maximum of 333 days. Concurrent recoveries from fortified control samples of stalks, molasses, and bagasse ranged from 70 to 120%, with relative standard deviations of less than 16%. For sugar, concurrent recoveries of saflufenacil ranged from 105 to 131%, with a relative standard deviation of 5.7%. Recoveries of M800H11 and M800H35 from sugar ranged from 81 to 117%, with a maximum relative standard deviation of 11%.

Table 25 Residues of saflufenacil in sugar cane processed commodities (Report 2010/1220995)

Trial Location	Matrix	Residue[a], mg/kg		Processing factor	
		Saflufenacil	Total	Saflufenacil	Total
G080442	Stalks	0.02	0.04	--	--
	Bagasse	0.05	0.07	2.5	1.8
	VHP sugar	0.03	0.05	1.5	1.2
	VHP molasses	0.06	0.08	3.0	2.0
	White sugar	0.01	0.03	0.5	0.75
	White molasses	0.06	0.08	3.0	2.0
G080443	Stalks	< 0.01	< 0.03	n.c.	n.c.
	Bagasse	0.01	0.03	n.c.	n.c.
	VHP sugar	< 0.01	< 0.03	n.c.	n.c.
	VHP molasses	0.01	0.03	n.c.	n.c.
	White sugar	< 0.01	< 0.03	n.c.	n.c.
	White molasses	0.01	0.03	n.c.	n.c.

[a] Residues of M800H11 and M800H35 were < 0.01 in all samples. Total values assume residues at the LOQ for results reported as <LOQ.

n.c. = not calculated due to non-quantifiable residues in the raw agricultural commodity.

Peanut

In the peanut trials described above, peanuts from exaggerated rate trials were processed into meal, crude oil, refined oil, peanut butter, processed nutmeat, and dry roasted peanuts using commercial processing procedures (Report 2011/7006245). Peanuts destined for processing were stored under ambient conditions for one day after harvest, until receipt at the processing facility, where they were placed into frozen storage. Residues of saflufenacil, M800H11, and M800H35 were determined using Method D0603/02.

Peanut samples were stored frozen for a maximum of 467 days. Concurrent recoveries from all matrices ranged from 71 to 117%, with relative standard deviations ranging from 7 to 29%.

No quantifiable residues were found in any samples from the processing study; therefore, processing factors could not be calculated.

RESIDUES IN ANIMAL COMMODITIES

The Meeting received feeding studies conducted with lactating dairy cattle and laying hens.

In the cattle feeding study (Weich, 2013; Report 2013/7002229), lactating Holstein cows were dosed for 28 consecutive days via gelatine capsule using a balling gun at levels equivalent to ca. 0, 5, 17.8, or 62.5 ppm in their feed (dry-weight basis). Three cows were used for each of the lowest three dose levels, and six cows were used for the 62.5-ppm dose level. Milk was collected twice daily and composited (evening milking with the next morning milking). Extra milk samples were collected for analysis of residues in cream and whey. All milk samples were held frozen prior to transport to the analytical facility.

After administration of the final dose, the animals were slaughtered, except for three from the 62.5-ppm group which were used to determine depuration of residues. Samples of liver, both kidneys, fat (omental, perirenal, and subcutaneous), and muscle (loin, round, and flank) were collected and weighed. After collection, the liver, kidney, and muscle samples were chopped and frozen. Frozen tissue samples were homogenized in the presence of dry ice and then shipped, frozen, along with the milk samples to the analytical facility.

Residues of saflufenacil were determined by Method L0073/01. Average recoveries across all matrices ranged from 78 to 115% with a maximum relative standard deviation of 21%. Analyses were completed within 115 days of collection for milk, 105 days for liver, 63 days for kidney, 54 days for muscle, and 110 days for fat. Residues were < 0.01 mg/L in all whole milk, skim milk, milk fat (with the exception of one milk fat sample from the 62.35-ppm dose group bearing residues at 0.0119 mg/L), omental fat, subcutaneous fat, and muscle samples. Residues in perirenal fat, kidney and liver are summarized in Table 26.

Table 26 Residues in cattle tissues following 28 days of dosing with saflufenacil

Tissue	Feeding level, ppm	Residues, mg/kg	
		Range	Mean
Milk	0 – 62.5	< 0.01 (3)	< 0.01
Muscle	0 – 62.5	< 0.01 (3)	< 0.01
Fat (omental)	0 – 62.5	< 0.01 (3)	< 0.01
Fat (subcutaneous)	0 – 62.5	< 0.01 (3)	< 0.01
Fat (perirenal)	0	< 0.01 (3)	< 0.01
	5	< 0.01 (3)	< 0.01
	17.8	0.0318, 0.0343, 0.0514	0.039
	62.5	< 0.01, 0.0224, 0.0268	0.019
	62.5 (3 days post dose termination)	< 0.01	< 0.01
	62.5 (7 days post dose termination)	< 0.01	< 0.01
	62.5 (10 days post dose termination)	< 0.01	< 0.01
Kidney	0	< 0.01(3)	< 0.01
	5	0.0674, 0.0838, 0.0902	0.081
	17.8	0.217, 0.266, 0.287	0.26
	62.5	0.333, 0.472, 0.811	0.54
	62.5 (3 days post dose termination)	0.0887	0.089
	62.5 (7 days post dose termination)	0.0235	0.024
	62.5 (10 days post dose termination)	0.0243	0.024
Liver	0	0.0144, 0.0227, 0.0299	0.022
	5	13.5, 15.7, 16.4	15
	17.8	22.8, 35.8, 56.5	38
	62.5	36.8, 41.4, 45.6	41
	62.5 (3 days post dose termination)	21.5	22
	62.5 (7 days post dose termination)	3.61	3.6
	62.5 (10 days post dose termination)	4.77	4.8

In the hen feeding study (Cai, 2013; Report 2013/7001530), white leghorn hens were dosed for 28 consecutive days via gelatine capsule at levels equivalent to ca. 0, 0.98, 9.82, or 49.11 ppm in their feed (dry-weight basis). Twelve hens were used for each of the dose groups. Eggs were collected twice daily and composited (evening collection with the next morning's collection). After compositing, egg samples were held frozen prior to transport to the analytical facility.

Within 24 hours of the final dose, the animals were slaughtered, except for birds selected to determine depuration of residues. Samples of liver, fat (abdominal and subcutaneous), and muscle (thigh and breast) were collected and weighed. After collection, the liver, kidney, and muscle samples were chopped and frozen. Frozen tissue samples were homogenized in the presence of dry ice and then shipped, frozen, along with the egg samples to the analytical facility.

Residues of saflufenacil were determined by Method 029778-0. Average recoveries across all matrices ranged from 83 to 93% with a maximum relative standard deviation of 8%. Analyses were completed within 30 days for all samples. Residues were < 0.01 mg/kg in all control and 49.11-ppm

samples for eggs, fat, and muscle; residues in those matrices from the other dose groups were not analysed. Residues in liver were < 0.01 mg/kg in all control and 9.82-ppm samples; residues in liver from the 0.98-ppm dose group were not analysed. Residues in liver samples from the 49.11 ppm dose group ranged from < 0.01 to 0.0189 mg/kg (mean = 0.016 mg/kg).

APPRAISAL

Saflufenacil is a herbicide belonging to the uracil family of compounds. The biochemical mode of action is a protoporphyrinogen IX oxidase (PPO) inhibitor. Saflufenacil was evaluated as a new compound by the 2011 JMPR. The 2011 Meeting determined that the residue definition for MRL compliance and estimation of dietary exposure for both plant and animal commodities is parent saflufenacil, and that the residue is not fat soluble. The 2011 Meeting also derived an ADI of 0–0.05 mg/kg bw and determined that an ARfD is not necessary.

Saflufenacil was listed by the 47th Session of the CCPR for the evaluation of additional MRLs. The 2016 Meeting received residue data reflecting use of saflufenacil on pomegranate, dessicant uses on barley and wheat, peanut, sunflower, olive, sugarcane, alfalfa, and perennial grasses. In addition, the Meeting received a metabolism study for rice.

Plant metabolism

In a study depicting the metabolism of saflufenacil in rice, upland (dry land) rice (BBCH 22–24) was treated with a single, foliar application of saflufenacil, radiolabelled in either the phenyl or uracil moieties, at a rate of 100 g ai/ha. A sample of rice forage was collected one week after application, and samples of rice grain and straw were collected four to five months after application. Major residues (defined as ≥ 10% TRR and ≥ 0.01 mg/kg) occurred only in forage and straw, and were identified as saflufenacil (ca. 60–80% TRR, ca. 1 mg/kg in forage; ca. 44% TRR, 0.3–1 mg/kg in straw), M800H11 (14% TRR, 0.25 mg/kg in forage (phenyl-label only)), M800H35 (10% TRR, 0.26 mg/kg in straw(phenyl-label only)), M800H02 (16% TRR 0.3 mg/kg in forage (phenyl-label only)), M800H29 (trifluoroacetic acid; 14% TRR, 0.09 mg/kg in straw (uracil-label only)). In grain, radioactivity was associated primarily with carbohydrates (54–62% TRR, 0.02–0.07 mg eq./kg).

As with studies reviewed by the 2011 Meeting, the metabolism study in rice shows that saflufenacil is the predominant residue in matrices where it was found. The metabolism study in rice supports the original conclusion that the residue definition for both compliance and dietary intake is saflufenacil.

Methods of analysis

Analytical methods used for analysis of saflufenacil trials being evaluated by the current Meeting were found to be acceptable by the 2011 Meeting. The reported limit of quantification (LOQ) is based on the lowest limit of method validation and is either 0.01 mg/kg or 0.025 mg/kg, depending on the matrix.

Stability of pesticide residues in stored analytical samples

The stability of saflufenacil, M800H35, and M800H11 in plant matrices was evaluated by the 2011 Meeting, which determined that residues of saflufenacil, M800H11, and M800H35 are stable in maize, soya bean, orange, radish root, raisin, and chickpea matrices for at least 553 days (JMPR, 2011).

The 2016 Meeting received storage stability data for the saflufenacil metabolite M800H02 in cereal, oilseed, legume, and citrus matrices. The data indicate that M800H02 is stable in orange fruit, kidney bean, canola seed, wheat grain, wheat forage, and wheat hay for at least 768 days. In addition,

the 2016 Meeting received storage stability data for saflufenacil in bovine muscle, liver, and milk, and in poultry egg. The data demonstrate that saflufenacil is stable in those matrices for at least 125 days.

Results of supervised residue trials on crops

The Meeting received data from supervised residue trials conducted on olive, pomegranate, barley, wheat, sugar cane, peanut, sunflower seed, alfalfa, and perennial forage grass. Field trials were conducted in Brazil, Canada, and the US. All residue results are supported by adequate method and storage stability data, and reflect independent trials unless otherwise noted.

Olives

For olives, the critical GAP is from the registration in the US (four applications at 50 g ai/ha with a 0-day PHI). The Meeting notes that the label directs the applicator to avoid treating tree foliage, flowers, buds, and fruit. Four field trials are available reflecting residues resulting from three applications, each at 50 g a.i/ha and harvest zero days after the last application (DALA). The Meeting determined that a fourth application would be unlikely to significantly impact residues since it would be made early in the growing season and saflufenacil has a relatively short field half-life. The Meeting noted that olives were harvested by hand and pitted in the field prior to being frozen. Given that residues of saflufenacil are stable to hydrolysis at pH ≤ 7 (JMPR 2011) and that no degradation of residues was observed in homogenised, frozen storage stability samples, the current Meeting determined that the field pitting is unlikely to have had a negative impact on the suitability of the trials.

Mean field trial residues of saflufenacil in pitted olives from independent field trials matching the critical GAP (n = 4) were: < 0.01 (4) mg/kg. Furthermore, residues from a single trial conducted at a five-fold exaggerated application rate were also < 0.01 mg/kg.

Olives are considered a major commodity, generally requiring a minimum of six trials to support a recommendation by the Meeting. Furthermore, hand harvesting of the olives precludes contamination from residues on the ground that would be expected to occur based on the use pattern (ground-directed spray, 0-day PHI) and mechanical harvesting techniques that are frequently used. As the trials are unlikely to reflect residues that would be expected following common agricultural practices for olive, the Meeting decided to not make a recommendation for olives.

Pomegranate

For pomegranate, the critical GAP is from the registration in the US (four applications at 50 g ai/ha on a 21-day interval with a 0-day PHI). The Meeting notes that the label directs the applicator to avoid treating tree foliage, flowers, buds, and fruit. Four field trials are available reflecting residues resulting from four applications, each at 50 g ai/ha and harvest 0 DALA. The Meeting noted that pomegranates were quartered in the field prior to being frozen. Given that residues of saflufenacil are stable to hydrolysis at pH ≤ 7 (JMPR 2011) and that no degradation of residues was observed in homogenised storage stability samples, the field quartering is unlikely to have had a negative impact on the suitability of the trials. Furthermore, the Meeting determined that the two trials conducted in Parlier, California are not independent; therefore, only data from only three independent trials are available.

Mean field trial residues of saflufenacil in pomegranate from independent field trials matching the critical GAP (n = 3) were: < 0.01 (3) mg/kg.

The Meeting noted that saflufenacil is a herbicide that is not translocated, that residues would not be expected from the use under consideration, and that all of the available trials had non-quantifiable residues, the Meeting determined that the available data are sufficient. The Meeting estimated a maximum residue level for pomegranate of 0.01* mg/kg and an STMR of 0.

Barley

For barley, the critical GAP is from registration in the US as a harvest aid (one application at 50 g ai/ha with a 3-day PHI). Fifteen field trials are available reflecting residues resulting from one application at 50 g ai/ha and harvest 3 DALA.

Mean field trial residues of saflufenacil in barley grain from independent field trials matching the critical GAP (n = 14) were: 0.08, 0.12, 0.26, 0.28, 0.30, 0.30, 0.32, 0.34, 0.38, 0.38, 0.39, 0.40, 0.48, and 0.54 mg/kg.

The Meeting estimated a maximum residue level for barley grain of 1 mg/kg and an STMR of 0.33 mg/kg.

Wheat

For wheat, the critical GAP is from a registration in the US as a harvest aid (one application at 50 g ai/ha with a 3-day PHI). Twenty-five field trials are available, reflecting residues resulting from one application at 50 g ai/ha and harvest 3 DALA.

Mean field trial residues of saflufenacil in wheat grain from independent field trials matching the critical GAP (n = 25) were: < 0.01 (2), 0.01 (2), 0.02 (7), 0.03 (5), 0.04, 0.06 (2), 0.08, 0.1 (3), 0.22, and 0.50 mg/kg.

The Meeting estimated a maximum residue level for wheat grain of 0.7 mg/kg and an STMR of 0.03 mg/kg. Noting that the GAP in the US includes use on triticale, the Meeting decided to extrapolate the recommendation to triticale.

Sugar cane

For sugar cane, the critical GAP is from registrations in Brazil as a harvest aid (one application at 98 g ai/ha with a 7-day PHI). Nine field trials are available reflecting residues resulting from one application at 98 g ai/ha and harvest 7 DALA.

Mean field trial residues of saflufenacil in sugar cane stalks from independent field trials matching the critical GAP (n = 9) were: < 0.01 (8), and 0.02 mg/kg.

The Meeting estimated a maximum residue level for sugar cane of 0.03 mg/kg, an STMR of 0.01 mg/kg and a highest residue of 0.02 mg/kg.

Peanut

For peanut, the critical GAP is from registrations in Nicaragua (one crop pre-emergence application at 90 g ai/ha).

Mean independent field trial residues of saflufenacil in peanut nutmeat following a single application at 50 g ai/ha with harvest seven days later (n = 8) were: < 0.01 (8) mg/kg.

The meeting concluded that the use pattern used in the field trials is likely to lead to higher residues than the label GAP due to the much shorter time between application and harvest. As all of the residues in the trials were < LOQ, the Meeting decided to make a recommendation for residues in peanut nutmeat.

The Meeting estimated a maximum residue level for peanut nutmeat of 0.01* mg/kg and an STMR of 0 mg/kg.

Sunflower

The GAP for sunflower in Canada and the US is up to two applications on a 7-day interval at up to 50 g ai/ha, with a 7-day PHI. An additional GAP exists in Brazil (one application up to 98 g ai/ha, 7-day PHI). The 2011 Meeting evaluated eight saflufenacil residue trials on sunflower matching the US GAP (residues ranging from 0.056 to 0.44 mg/kg) and four trials matching the Brazil GAP (residues ranging from < 0.01 to 0.07 mg/kg). The 2011 Meeting noted that there was no GAP corresponding to

the Brazil trials. Comparison of the US and Brazil data showed the Canadian/US GAP to be more critical. The current Meeting received three additional field trials on sunflower matching the GAP in Canada and the US as a harvest aid (two applications at 50 g ai/ha with a 7-day PHI).

Mean field trial residues of saflufenacil in sunflower seed from the newly submitted independent field trials matching the GAP (n = 3) were: 0.03, 0.12, and 0.14 mg/kg.

The Meeting recognised that residues found in the newly submitted supervised field trials are covered by the existing MRL, and confirms its previous recommendation for sunflower (maximum residue = 0.7 mg/kg, STMR = 0.12 mg/kg).

Alfalfa

For alfalfa, the critical GAP is from registrations in the US as broadcast applications during the dormant season (not to exceed 50 g ai/ha) and between cuttings (one application per cutting at 25 g ai/ha with a 21-day PHI). Twelve field trials are available reflecting residues resulting from one application at 50 g ai/ha during the dormant period, just prior to green-up and a second application at 25 g ai/ha immediately after the first cutting. Multiple cuttings were harvested, ranging from 21 to 161 DALA. Of those, eight trials had harvest approximating the label PHI (i.e., 21–28 DALA).

Mean field trial residues of saflufenacil in alfalfa forage from independent field trials matching the critical GAP (n = 8) were: < 0.025 (8) mg/kg. Residues were also < 0.025 mg/kg at all other cuttings, regardless of the DALA.

For alfalfa forage the Meeting estimated median and highest residues of 0.025 mg/kg.

Mean field trial residues of saflufenacil in alfalfa fodder (fresh) from independent field trials matching the critical GAP (n = 8) were: < 0.025 (7), and 0.026 mg/kg.

The Meeting estimated a maximum residue level for alfalfa fodder (dry) of 0.06 mg/kg, a median residue of 0.025 mg/kg (fresh), and a highest residue of 0.026 mg/kg (fresh).

Forage grass

For forage grasses, the critical GAP is from registration in the US as a post-crop emergence broadcast application (applications any time during the dormant phase, not to exceed 100 g ai/ha, followed by applications in season, on a 14-day interval, not to exceed 50 g ai/ha; neither a PHI nor a pre-grazing interval (PGI) is specified). Sixteen field trials are available reflecting residues resulting from one application at 100 g ai/ha during the dormant period, just prior to green-up and a second application at 50 g ai/ha at the boot growth stage.

Mean field trial residues of saflufenacil in grass forage from independent field trials matching the critical GAP (n = 16) were: 1.4, 1.6, 1.8, 2.2, 2.3, 2.6, 3.3, 3.6 (2), 3.8, 3.9, 4.0, 4.2, 7.1 (2), and 7.5 mg/kg.

For grass forage (fresh) the Meeting estimated a median residue of 3.6 mg/kg and a highest residue of 7.5 mg/kg.

Hay or fodder (dry) of grasses

Mean field trial residues of saflufenacil in grass hay (as received) from independent field trials matching the critical GAP noted above (n = 16) were: 2.5, 3.2, 3.7, 3.8, 4.1, 4.2, 4.8, 5.0, 5.6, 6.3, 6.8, 6.9, 8.9, 9.8, 10, and 13 mg/kg.

The Meeting estimated a maximum residue level for grass hay (dry) of 30 mg/kg based on a dry matter content of 88%.

For grass hay (as received), the Meeting estimated a median residue of 5.3 and a highest residue of 13 mg/kg.

Barley straw

For barley, the critical GAP is from registrations in Canada and the US as a harvest aid (one application at 50 g ai/ha with a 3-day PHI). Fifteen field trials are available reflecting residues resulting from one application at 50 g ai/ha and harvest 3 DALA.

Mean field trial residues of saflufenacil in barley straw (as received) from independent field trials matching the critical GAP (n = 15) were: 0.10, 0.12, 0.81, 0.86, 0.90, 1.5, 1.6, 2.3, 2.4, 2.5, 4.1, 4.6, 5.7 (2), and 6.6 mg/kg.

Wheat straw

For wheat, the critical GAP is from registrations in Canada and the US as a harvest aid (one application at 50 g ai/ha with a 3-day PHI). Twenty-five field trials are available, reflecting residues resulting from one application at 50 g ai/ha and harvest 3 DALA.

Mean field trial residues of saflufenacil in wheat straw (as received) from independent field trials matching the critical GAP (n = 25) were: 0.07, 0.22 (2), 0.34, 0.82, 0.84, 0.90, 0.92, 1.1, 1.3, 1.4 (2), 1.8, 1.9 (2), 2.0, 2.1, 2.3, 2.4 (2), 2.5, 2.6, 3.0, 3.2, and 3.4 mg/kg.

Noting that it is difficult to discern cereal straws from one another, and that there is no evidence for a difference in the residue populations between straw from barley and hay (Kruskal-Wallis test), the Meeting decided to combine the residues (as received; n = 40): 0.07, 0.10, 0.12, 0.22 (2), 0.34, 0.81, 0.82, 0.84, 0.86, 0.90 (2), 0.92, 1.1, 1.3, 1.4 (2), 1.5, 1.6, 1.8, 1.9 (2), 2.0, 2.1, 2.3 (2), 2.4 (3), 2.5 (2), 2.6, 3.0, 3.2, 3.4, 4.1, 4.6, 5.7 (2), and 6.6 mg/kg.

Based on a dry matter content of 89%, the Meeting estimated a maximum residue level for straw of barley and wheat (dry) of 10 mg/kg.

For barley and wheat straw (as received), the Meeting estimated a median residue of 1.85 mg/kg, and a highest residue of 6.6 mg/kg.

As the GAP in the US includes use on triticale, the Meeting decided to extrapolate the estimates to triticale straw.

Peanut hay

For peanuts, the critical GAP is from registrations in Nicaragua (one crop pre-emergence application at 90 g ai/ha). Eight field trials are available reflecting residues resulting from a single application at 50 g ai/ha with harvest seven days later.

No data are available from trials matching GAP; therefore, the Meeting is not making a recommendation for peanut hay.

Fate of residues during processing

Residues after processing

The Meeting received data depicting the concentration/dilution of residues during processing of barley, wheat, sugar cane, and peanuts. For all crops, processed commodities were derived using simulated commercial practices. The resulting processing factors and STMR-P estimates are summarized below.

Raw agricultural commodity	Processed commodity	Processing factors [median/best estimate][a]	MRL, mg/kg	STMR-P, mg/kg
Barley grain MRL = 1 STMR = 0.33	Pearled barley	0.28, 0.064, 0.084, 0.10 [0.092]	--	0.03
	Bran (unprocessed)	3.1, 1.6, 2.7, 3.5 [2.9]	3	0.96
	Flour	0.22, 0.058, 0.084, 0.11 [0.097]	--	0.032
	Spent grain	0.039, < 0.006, < 0.009, < 0.008 [0.039]	--	0.013
	Beer	0.098, < 0.006, < 0.009, < 0.008 [0.098]	--	0.032

Raw agricultural commodity	Processed commodity	Processing factors [median/best estimate][a]	MRL, mg/kg	STMR-P, mg/kg
Wheat grain MRL = 0.7 STMR = 0.03	Aspirated grain fraction	245 [245]	--	7.4
	Flour	0.083, 0.24 [0.16]	--	0.0048
	Gluten feed meal	0.50, 0.43 [0.46]	--	0.014
	Shorts	1.0, < 0.05 [1.0]	--	0.03
	Whole grain bread	0.50, 0.29 [0.40]	--	0.012
Sugar cane stalk MRL = 0.03 STMR = 0.01	Bagasse	2.5 [2.5]	--	0.025
	Molasses	3.0 [3]	1	0.03

[a] Only finite factors were used to derive the mean processing factor. If no finite factor is available, then the highest factor was used to derive the STMR-P.

Residues in animal commodities

The 2011 Meeting evaluated a cattle feeding study for saflufenacil (feeding levels were 0.15 ppm, 0.48 ppm, and 1.7 ppm), and estimated dietary burdens based on saflufenacil residues in animal feed items from tree nuts, cotton, pulses, cereals, and sunflower. The current Meeting received new feeding studies conducted with lactating cattle and laying hens dosed at higher levels.

In the new cattle feeding study, lactating cows were dosed for 28 days at levels equivalent to ca. 5, 17.8, and 62.5 ppm in the feed. The study is supported by adequate analytical methods and storage stability data. Residues of saflufenacil were < 0.01 mg/kg in all samples from the control group and from all dosing levels in milk, muscle, omental fat, and subcutaneous fat. For other matrices, mean (and maximum) residues of saflufenacil at the 5, 17.8, and 62.5 ppm dose levels, respectively, were:

Perirenal fat = < 0.01 (< 0.01), 0.039, (0.051), and 0.019 (0.027) mg/kg;

Kidney = 0.081 (0.090), 0.26 (0.29), and 0.54 (0.81) mg/kg; and

Liver = 15 (16), 38 (56), and 41 (45) mg/kg.

Residues in kidney increased linearly over the dosing levels used in the study. The levels in perirenal fat and liver indicate that uptake into those commodities reached saturation between the mid- and high-dose levels.

In the new poultry feeding study, laying hens were dosed for 28 days at levels equivalent to ca. 0.98, 9.8, and 49 ppm in the feed. The study is supported by adequate analytical methods and storage stability data. Residues of saflufenacil were < 0.01 mg/kg in all control samples and from samples of eggs, fat, and muscle from the 49 ppm feeding level. Analyses were not conducted for those matrices at lower feeding levels. Residues in liver were < 0.01 mg/kg from the 9.8 ppm dose group; samples from the 0.98 ppm dose group were not analysed. The mean and maximum residues in liver from the 49 ppm dose group were 0.016 and 0.019 mg/kg, respectively.

Estimated maximum and mean dietary burdens of livestock

Dietary burden estimates from the 2011 Meeting have been recalculated by the 2016 Meeting to include contributions from barley, wheat, sugar cane, alfalfa, and forage grasses. Estimated dietary burdens for Australia, the EU, Japan, and Canada/US are summarized below. The livestock diets are listed in Annex 6.

Livestock Dietary Burdens (ppm of dry matter diet) for saflufenacil.

	Australia		EU		Japan		Canada/US	
Livestock	Max	Mean	Max	Mean	Max	Mean	Max	Mean
Cattle (beef)	30	14	15	7.4	7.0	3.1	2.9	1.5
Cattle (dairy)	30	14	18	8.8	12	5.2	14	6.7

	Australia		EU		Japan		Canada/US	
Livestock	Max	Mean	Max	Mean	Max	Mean	Max	Mean
Poultry (broiler)	0.083	0.083	0.28	0.28	0.043	0.043	0.31	0.31
Poultry (layer)	0.083	0.083	3.3	1.8	0.060	0.060	0.31	0.31

The bold values, above, reflect the highest burdens for both MRL estimation (maximum diet) and STMR estimation (mean diet).

Animal commodities residue level estimation

Anticipated residues resulting from the dietary burdens and based on the new feeding studies are summarized below.

Saflufenacil feeding study	Feed level (ppm) for milk residues	Residues (mg/kg) in milk	Feed level (ppm) for tissue residues	Residues (mg/kg)			
				Muscle	Liver	Kidney	Fat [C]
MRL beef or dairy cattle							
Feeding study [A]	17.8	< 0.01	17.8	< 0.01	56.5	0.29	0.051
	62.5	< 0.01	62.5	< 0.01	45.6	0.81	0.027
Dietary burden and high residue	30	< 0.01	30	< 0.01	54	0.43	0.044
STMR beef or dairy cattle							
Feeding study [B]	5	< 0.01	5	< 0.01	15	0.081	< 0.01
	17.8	< 0.01	17.8	< 0.01	38	0.26	0.039
Dietary burden and residue estimate	14	< 0.01	14	< 0.01	31	0.21	0.03

[A] Highest residues for tissues and mean residues for milk

[B] Mean residues for tissues and mean residues for milk

[C] Based on residue in perirenal fat

The 2011 Meeting recommended maximum residue levels of 0.3 mg/kg in mammalian edible offal and 0.01 mg/kg in each of mammalian fats (except milk fats), meat (from mammals other than marine mammals), and milks. The 2016 Meeting confirms its previous recommendations of 0.01 mg/kg for meat (from mammals other than marine mammals) and 0.01 mg/kg for milks.

The Meeting estimated new maximum residue levels for edible offal, mammalian except marine mammals of 60 mg/kg and for mammalian fats (except milk fats) of 0.05 mg/kg. The Meeting withdrew its previous recommendations for these commodities.

Furthermore, the Meeting estimated STMRs of 31 mg/kg for mammalian edible offal and 0.03 mg/kg for mammalian fat.

In the poultry feeding study, residues in samples from the 49-ppm feeding level were < 0.01 in eggs, fat, and muscle; and < 0.01 to 0.019 mg/kg (mean = 0.016 mg/kg) in liver. Based on an estimated maximum dietary burden for poultry of 3.3 ppm, the Meeting estimated maximum residue levels and STMRs of 0.01* mg/kg and 0 mg/kg, respectively, for poultry meats, fats, and eggs. The Meeting estimated a maximum residue level and STMR of 0.01* mg/kg and 0.01 mg/kg, respectively, for edible offal of poultry.

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 and for IEDI assessment.

Definition of the residue (for compliance with the MRL and for estimation of dietary intake) for plant and animal commodities: *saflufenacil*.

The residue is not fat soluble.

		MRL, mg/kg			
CCN	Crop/Commodity	New	Previous	STMR	Highest Residue
FI 0355	Pomegranate	0.01*		0	
GC 0640	Barley	1		0.33	
CM 0640	Barley bran (unprocessed)	3		0.96	
GC 0653	Triticale	0.7		0.03	
GC 0654	Wheat, grain	0.7		0.03	
GS 0659	Sugar cane	0.03		0.01	0.02
DM 0659	Sugar cane molasses	1		0.03	
SO 0697	Peanut	0.01*		0	
SO 0702	Sunflower seed	0.7	0.7	0.12	
AL 1020	Alfalfa fodder, dry	0.06		0.025 (ar)	0.025 (ar)
AS 0162	Hay or fodder (dry) of grasses	30		5.3 (ar)	
AS 0640	Barley, straw and fodder, dry	10		1.85 (ar)	
AS 0653	Triticale, straw and fodder, dry	10		1.85 (ar)	
AS 0654	Wheat, straw and fodder, dry	10		1.85 (ar)	
MO 0105	Edible offal (Mammalian)	60	0.3	31	
MF 0100	Mammalian fats (except milk fats)	0.05	0.01	0.01	
MM 0095	Meat (from mammals other than marine mammals)	0.01	0.01	0.01	
ML 0106	Milks	0.01	0.01	0.01	
PE 0112	Eggs	0.01*		0	
PF 0111	Poultry fats	0.01*		0	
PM 0110	Poultry meat	0.01*		0	
PO 0111	Poultry, edible offal of	0.01*		0.01	

For calculating dietary exposure and animal dietary burdens

CCN	Commodity	STMR/Median residue mg/kg	HR/Highest residue mg/kg
AL 1021	Alfalfa forage (green)	0.025	0.025
	Bagasse	0.025	
	Barley, pearled	0.03	
	Barley, bran	0.96	--
	Barley, flour	0.032	--
	Barely, beer	0.032	--
	Barley, malt	0.019	--
	Grass forage, fresh	3.6	7.5
	Sugar cane, white sugar	0.005	--
DM 0659	Sugar cane, molasses	0.03	--
CF 0654	Wheat bran, unprocessed	0.038	--
CF 1211	Wheat flour	0.0048	--
CF 1210	Wheat germ	0.033	--
CP 1212	Wheat, whole-grain bread	0.012	--

DIETARY RISK ASSESSMENT

Long-term dietary exposure

The International Estimated Daily Intakes (IEDIs) of saflufenacil were calculated for the 17 GEMS/Food cluster diets using STMRs/STMR-Ps estimated by the current and previous Meetings. The ADI is 0–0.05 mg/kg bw and the calculated IEDIs were 2–20% of the maximum ADI (0.05 mg/kg bw). The Meeting concluded that the long-term exposure to residues of saflufenacil, when used in ways that have been considered by the JMPR, are unlikely to present a public health concern.

Short-term dietary exposure

The 2011 Meeting determined that establishment of an acute reference dose is not necessary for saflufenacil. The Meeting therefore concluded that the short-term dietary exposure to residues of

saflufenacil, resulting from uses that have been considered by the JMPR, is unlikely to present a public health concern.

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