

## BENZOVINDIFLUPYR (261)

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### EXPLANATION

Benzovindiflupyr was scheduled for residue evaluation for new uses and other evaluations by the 2016 JMPR at the 47<sup>th</sup> and 48<sup>th</sup> sessions of the CCPR (2015, 2016). Benzovindiflupyr is a broad-spectrum fungicide first evaluated by JMPR in 2013 (Toxicology) and 2014 (Residues). The toxicological review established an ADI of 0–0.05 mg/kg bw/day and an ARfD of 0.1 mg/kg bw. A residue definition of benzovindiflupyr was recommended for plant and animal commodities, for both compliance with MRLs and estimation of dietary intake. The residue is fat soluble. In 2014, the JMPR evaluated soya bean and livestock feeding studies. An MRL of 0.05 mg/kg for soya bean (dry) was proposed based on supervised field trials in Brazil, supporting the cGAP of Paraguay. MRLs for animal origins were recommended for edible offal (mammalian), eggs, mammalian fats, meat (from mammals other than marine mammals), milks, and poultry products.

The current Meeting received new information on use patterns for benzovindiflupyr in multiple crops (including wheat, barley, grapes, apple, pear, pulses (beans, peas), soya beans (dry), tomato, peppers, cucumber, summer squash, cantaloupe, maize(corn), cotton, peanuts, potatoes, sugarcane, rapeseed, and coffee) supported by additional analytical methods, storage stability data and supervised field trials. Soya bean data from US trials were also received, which contain higher residues than in Brazil trials evaluated by 2014 JMPR.

### RESIDUE ANALYSIS

#### *Analytical methods*

Analytical methods for benzovindiflupyr in food and feedstuffs of plant origin were evaluated by the 2014 JMPR. Other than sugar cane and peanuts, the residues trials were analysed using methods GRM042.03A (JMPR 2014 evaluation report, page 89-91) and GRM042.04A (JMPR 2014 evaluation report, page 91-95). The sugarcane analyses along with its processed products, cereal grains, were conducted with method POPIT MET.125. Peanuts and some other matrices were conducted with method POPIT MET.133. The two methods were shown to be suitable for determination of benzovindiflupyr, with its procedure improved upon method GRM042.03A.

#### *Method POPIT MET.125*

Finely-ground samples by homogenisation are extracted with acetonitrile: water (8:2, v:v) and then centrifuged. For the determination of benzovindiflupyr in sugarcane molasses, bagasse and sugar, an aliquot of the extract is diluted in water and purified by soil-phase extraction (Oasis HLB), eluting in acetonitrile. For the determination of benzovindiflupyr in sugarcane stalks and juice, an aliquot is removed from the extract and evaporated to remove acetonitrile. Further, hydrochloric acid (1M) is added and the aliquot partitioned against cyclohexane. The collected organic phases, either from partition or column elution are evaporated, re-dissolved in acetonitrile: water (1:1, v:v) and centrifuged or filtered (0.22 µm) for LC-MS/MS determination of benzovindiflupyr. Residues are quantified using HPLC separation and triple-quadrupole mass spectrometry (LC-MS/MS) detection. LOQs in various matrices were 0.01mg/kg.

Table 1 Method validation data for method POPIT MET.125 measuring benzovindiflupyr in sugar cane, its processed fractions and cereal grain matrices

Matrix	Fortification Level (mg/kg)	n	Recovery range (%)	Recovery, mean (%)	RSD (%)
Sugar cane	0.01	5	71 - 87	77	7
	0.1	5	72 - 84	77	6
Cane juice	0.01	5	96 - 104	101	3
	0.1	5	95 - 105	101	6
Cane molasses	0.01	5	84 - 100	94	7
	0.1	5	88 - 101	94	5
Cane bagasse	0.01	5	93 - 106	100	5
	0.1	5	78 - 87	84	4
	0.6	5	92 - 97	94	2
Sugar	0.01	5	97 - 109	104	4
	0.1	5	98 - 106	103	3
Wheat	0.01	7	79-90	85	5
	0.1	4	74-94	87	10
	0.3	5	83-85	84	1
Oat	0.01	7	85-93	90	3
	0.1	5	79-93	87	6
	1.5	5	101-109	105	3
Barely	0.01	7	70-84	77	6
	0.1	5	76-82	78	3
	1.5	5	90-95	92	2
Green corn	0.01	7	73-88	82	7
	0.1	5	71-78	75	4
Dried corn	0.01	7	89-110	97	7
	0.1	5	82-107	97	10
Corn plant	0.01	7	89-102	96	5
	0.1	5	95-98	96	2

*Method POPIT MET.133*

Benzovindiflupyr residues are extracted from finely-ground samples by homogenisation with acetonitrile: water (8:2, v:v) and then centrifuged. An aliquot is removed from the extract and evaporated to remove acetonitrile. Hydrochloric acid (1M) is then added and the aliquot partitioned against hexane, collecting both the organic and aqueous phases. The combined organic phases are evaporated, re-dissolved in acetonitrile: water (1:1, v:v) and centrifuged for LC-MS/MS determination of benzovindiflupyr. Residues are quantified using HPLC separation and triple-quadrupole mass spectrometry (LC-MS/MS) detection. LOQs in various matrices were 0.01 mg/kg.

Table 2 Method validation data for measuring benzovindiflupyr in peanut and other matrices

Matrix	Fortification Level (mg/kg)	n	Recovery range (%)	Recovery, mean (%)	RSD (%)
Peanut	0.01	5	89 - 100	96	4
	0.1	5	94 - 104	99	4
Bean	0.01	7	75-90	81	6
	0.1	5	79-85	82	3
Sunflower	0.01	7	78-85	80	3
	0.1	5	76-81	79	2
Cotton	0.01	7	89-102	96	5
	0.1	5	87-96	90	4
Coffee beans	0.01	7	86-101	93	5
	0.1	5	98-103	101	2
Roasted coffee	0.01	7	75-78	77	2
	0.1	5	73-74	73	1
Coffee ground	0.01	7	76-89	81	6
	0.1	5	72-80	76	4
Coffee extract	0.01	7	95-102	98	3
	0.1	5	101-107	104	2

Matrix	Fortification Level (mg/kg)	n	Recovery range (%)	Recovery, mean (%)	RSD (%)
Concentrated coffee	0.01	7	89-110	101	7
	0.1	5	97-101	99	2
Instant coffee	0.01	7	94-100	97	2
	0.1	5	94-100	97	2

### *Stability of pesticides in stored analytical samples*

The storage stability of benzovindiflupyr in raw and processed plant commodities, and in animal commodities was evaluated by the 2014 JMPR. No additional storage stability data were submitted to the Meeting.

Storage stability studies showed that benzovindiflupyr were stable for at least 24 months at -18°C in crop commodities representative of the high water, high acid, high starch, high protein and high oil commodity groups as well as in wheat straw. Benzovindiflupyr residues were stable for at least 24 months at -10 °C in various processed commodities: flour (maize, soya), meal (maize), oil (maize, soya), soymilk, dried fruits (grape, apple) and fruit juice (apple).

### USE PATTERN

Benzovindiflupyr, belonging to the pyrazole carboxamide class, is a broad-spectrum fungicide and is used especially for its effect against rust. Benzovindiflupyr acts as an inhibitor of the fungal complex II respiratory chain, where it inhibits the succinate dehydrogenase enzyme by blocking the ubiquinone-binding sites in the mitochondrial complex.

Benzovindiflupyr is a registered fungicide in several countries including Brazil, Canada, and the USA. The registered labels were submitted in the original language as well as their English translations.

The information available to the Meeting on registered uses of benzovindiflupyr is summarized in Table 3.

Table 3 List of country label uses of benzovindiflupyr

Crop (group/commodity)	Country/Region	Formulation type (benzovindiflupyr guarantee)	Application				
			Method	Max. no.	Min. interval between applications (days)	Max. rate (g ai/ha)	PHI (days)
Pome fruits	Canada	78g/L EC	Foliar	4	7	50	30
	USA	10.27% EC	Foliar	4	7	50	30
Grape and small fruit vine climbing	Canada	100g/L EC 78 g/L EC	Foliar	3 <sup>a</sup> 6	7 7	75 50	21 21
	USA	10.27% EC	Foliar	3	14	75	21
Cucurbits	Canada	78g/L EC	Foliar	4	7	75	1
	USA	10.27% EC	Foliar	4	7	75	0
Fruiting vegetables	Canada	78g/L EC	Foliar	4	7	75	1
	USA	10.27% EC	Foliar	4	7	75	0
Sweet corn	Canada	100g/L EC	Foliar	2	7	75	7
	USA	10.27% EC	Foliar	2	14	75	7
Pulses (except soya bean)	Canada	100g/L EC	Foliar	2	14	75	15
	USA	10.27% EC	Foliar	2	14	62.5	14
Soya bean (dry)	Canada	100g/L EC	Foliar	2	7	75	14; 1d for forage and hay
	USA	150g/kg WG	Foliar	2	14	50	14
Potato	Canada	100g/L EC	Foliar	4	7	75	14
	USA	10.27% EC	In-	1	NA	100	NA

Crop (group/commodity)	Country/ Region	Formulation type (benzovindiflupyr guarantee)	Application				
			Method	Max. no.	Min. interval between applications (days)	Max. rate (g ai/ha)	PHI (days)
			furrow				
Cereals (including wheat, barley, oat, rye and triticale)	Canada	100g/L EC	Foliar	2	14	75	Feekes 10.5.4 7 for forage and hay
	USA	10.27% EC	Foliar	2	14	50	Feekes 10.5
Maize	Canada	100g/L EC	Foliar	2	7	75	7
	USA	10.27% EC	Foliar	2	14	50	7
Sugar cane	Brazil	150g/kg WG	Foliar	5	30	30	30
Cotton	USA	10.27% EC	Foliar	2	14	75	45
Peanut	Brazil	150g/kg WG	Foliar	4	14	45	7
	USA	10.27% EC	Foliar	3	14	75	30
		10.27% EC	Foliar	2	21	100	30
Rape seed	Canada	100g/L EC	Foliar	1	NA	75	30
	USA	10.27% EC	Foliar	1	NA	75	30
Coffee	Brazil	50g/kg EC	Foliar	3	60	60	21

<sup>a</sup> A fourth application is allowed where 12 or more fungicide applications are made.

## RESIDUES RESULTING FROM SUPERVISED TRIALS ON CROPS

Residue levels were reported as measured. Application rates were always reported as benzovindiflupyr equivalents. When residues were not detected they are shown as below the LOQ, e.g., < 0.01 mg/kg. Application rates, spray concentrations and mean residue results have generally been rounded to two significant figures. HR and STMR values from the trials conducted according to maximum GAP have been used for the estimation of maximum residue levels. These results are underlined.

Laboratory reports included method validation including batch recoveries with spiking at residue levels similar to those occurring in samples from the supervised trials. Dates of analyses or duration of residue sample storage were also provided. Field reports provided data on the sprayers used and their calibration, plot size, residue sample size and sampling date. Although trials included control plots, no control data are recorded in the tables except where residues in control samples exceeded the LOQ. Residue data are recorded unadjusted for % recovery.

Commodity	Indoor/Outdoor	Treatment	Countries	Table
Apple	Outdoor	Foliar	Canada, USA	4
Pear	Outdoor	Foliar	Canada, USA	5
Grapes	Outdoor	Foliar	USA	6
Cucumber	Outdoor	Foliar	USA	7
Summer squash	Outdoor	Foliar	USA	8
Cantaloupe	Outdoor	Foliar	USA	9

## Benzovindiflupyr

Commodity	Indoor/Outdoor	Treatment	Countries	Table
Peppers	Outdoor	Foliar	USA	10
Tomato	Outdoor	Foliar	USA	11
Sweet corn	Outdoor	Foliar	USA	12, 26, 27
Pulses (except soya bean)	Outdoor	Foliar	Canada, USA	13, 28, 29
Soya bean (dry)	Outdoor	Foliar	USA	14, 30, 31
Potato	Outdoor	Foliar, Soil, in-furrow	USA	15
Barley	Outdoor	Foliar	USA, Canada	16, 17, 32-35
Maize	Outdoor	Foliar	USA	18, 36, 37
Wheat	Outdoor	Foliar	USA, Canada	19, 20, 38-43
Sugar cane	Outdoor	Foliar	Brazil	21
Cotton seed	Outdoor	Foliar	USA	22, 44
Peanut	Outdoor	Foliar, Soil	Brazil, USA	23, 45
Rape seed	Outdoor	Foliar	Canada	24
Coffee	Outdoor	Foliar	Brazil	25

Table 4 Residues of benzovindiflupyr in apple from field trials in Canada and USA

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCH [last application date]	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 4 × 0.05 kg ai/ha, PHI: 30d									
USA, North Rose, NY 2010, (Cortland)	EC <sup>a</sup>	4 (7)	0.050 0.050 0.050 0.050	0.0054 0.0054 0.0053 0.0054	81 [07/29/10]	Apple	30  60	0.024, 0.036 (0.030) 0.011, < 0.01 (0.01)	TK0025156 E03-0481 (Storage: 1.9 months)
USA, North Rose, NY 2010, (Ida Red)	EC <sup>a</sup>	4 (7)	0.052 0.052 0.052 0.052	0.0085 0.0084 0.0084 0.0085	85 [08/26/10]	Apple	30  60	0.040, 0.037 (0.039) 0.028, 0.015 (0.021)	TK0025156 E03-0482 (Storage: 1.9 months)
USA, Hereford, PA 2010, (Starkrimson)	EC <sup>a</sup>	4 (7)	0.050 0.049 0.049 0.050	0.0038 0.0038 0.0038 0.0038	78	Apple	30  60	0.062, 0.086 (0.074) 0.057, 0.057 (0.057)	TK0025156 E04-0483 (Storage: 1.9 months)

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCB [last application date]	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 4 × 0.05 kg ai/ha, PHI: 30d									
USA, Alto, GA 2010, (Arkansas, Black)	EC <sup>a</sup>	4 (7)	0.050 0.050 0.050 0.050	0.0061 0.0059 0.0059 0.0062	78	Apple	30  60	0.093, 0.041 (0.067) 0.080, 0.055 (0.067)	TK0025156 E12-0484 (Storage: 1.9 months)
USA, Conklin, MI 2010, (Red Delicious)	EC <sup>a</sup>	4 (7)	0.050 0.050 0.050 0.050	0.0032 0.0033 0.0033 0.0032	79	Apple	30  60	0.018, 0.019 (0.019) < 0.01, 0.01 (0.01)	TK0025156 C03-0485 (Storage: 1.9 months)
USA, Conklin, MI 2010, (Golden Delicious)	EC <sup>a</sup>	4 (7)	0.050 0.050 0.050 0.050	0.0033 0.0033 0.0033 0.0032	79	Apple  [08/20/10]	30  60	0.087, 0.051 (0.069) 0.034, 0.043 (0.038)	TK0025156 C03-0486 (Storage: 1.9 months)
USA, Madera, CA 2010, (Fuji)	EC <sup>a</sup>	4 (7)	0.050 0.052 0.050 0.052	0.0053 0.0053 0.0054 0.0054	85	Apple  [08/20/10]	30  60	0.17, 0.15 (0.16) 0.033, 0.027 (0.030)	TK0025156 E19-0487 (Storage: 1.9 months)
USA, Los Molinos, CA 2010, (Summer field)	EC <sup>a</sup>	4 (7)	0.050 0.050 0.050 0.050	0.0047 0.0047 0.0047 0.0047	79	Apple	30  60	0.034, < 0.01 (0.034) 0.012, 0.020 (0.016)	TK0025156 W23-0488 (Storage: 1.9 months)
USA, Ephrata, WA 2010, (Red Delicious)	EC <sup>a</sup>	4 (7)	0.050 0.050 0.050 0.050	0.0053 0.0054 0.0053 0.0053	87	Apple  [09/08/10]	30  60	0.074, 0.081 (0.078) 0.053, 0.061 (0.057)	TK0025156 W18-0489 (Storage: 1.9 months)
USA, Ephrata, WA 2010, (Breabum)	EC <sup>a</sup>	4 (7)  4	0.050 0.050 0.050 0.050 0.052 0.050 0.050	0.0053 0.0053 0.0054 0.0054 0.0055 0.0054 0.0054	87	Apple  [09/14/10]	20, 25 30  35,40 60	0.12, 0.075 0.069, 0.078 ( 0.074)  0.086, 0.067 0.094, 0.097 (0.096)	TK0025156 W18-0490 (Storage: 1.9 months)
USA, Hood River, OR 2010, (Jonagold)	EC <sup>a</sup>	4 (7)	0.050 0.050 0.050 0.050	0.0053 0.0054 0.0053 0.0053	77	Apple  [08/26/10]	20 25 30 30 35 40 60 60	0.071 0.050 0.040 0.048 0.049 0.046 0.033 0.041	TK0025156 W20-0491 (Storage: 1.9 months)
USA, Hood River, OR 2010, (Honey Crisp)	EC <sup>a</sup>	4 (7)	0.050 0.050 0.050 0.050	0.0053 0.0054 0.0054 0.0054	77	Apple  [08/16/10]	30  60	0.065, 0.056 (0.061) 0.019, 0.023	TK0025156 W20-0492

## Benzovindiflupyr

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCH [last application date]	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 4 × 0.05 kg ai/ha, PHI: 30d									
USA, Madera. CA 2010, (Fuji)	EC <sup>a</sup>	4 (7)	0.049	0.053	85	Apple	30	0.058, 0.023	TK0025156 TK0025156-19 (Storage: 1.9 months)
			0.049	0.053			60	(0.041)	
			0.049	0.053				0.013, < 0.01	
			0.049	0.053				(0.012)	
Canada, Berwick, NS 2011, (McIntosh)	EC <sup>b</sup>	4 (7)	0.050	0.0072	77-81	Apple	30	0.038,0.057	CER05906/11 T960 (Storage: 1.9 months)
			0.051	0.0072			59	(0.048)	
			0.052	0.0074				0.029, 0.015	
			0.050	0.0072			(0.022)		
Canada, St. George, ON 2011, (Empire)	EC <sup>b</sup>	4 (7)	0.051	0.0034	76-78	Apple	31	0.036, 0.039	CER05906/11 T961 (Storage: 1.9 months)
			0.049	0.0033			61	(0.038)	
			0.051	0.0034				0.028,0.025	
			0.050	0.0033				(0.027)	
Canada, Branchton, ON 2011, (McIntosh)	EC <sup>b</sup>	4 (7)	0.049	0.0065	77-79 [25 Aug 11]	Apple	29	0.038, 0.038	CER05906/11 T962 (Storage: 1.9 months)
			0.051	0.0068			60	(0.038)	
			0.049	0.0065				0.025, 0.020	
			0.048	0.0065				(0.023)	
Canada, Branchton, ON 2011, (Imperial Gala)	EC <sup>b</sup>	4 (7)	0.050	0.0034	76-78 [25 Aug 11]	Apple	29	0.033, 0.051	CER05906/11 T963 (Storage: 1.9 months)
			0.050	0.0033			60	(0.042)	
			0.051	0.0034				0.026, 0.035	
			0.050	0.0034				(0.031)	
Canada, Okanagan Falls, BC 2011, (McIntosh)	EC <sup>b</sup>	4 (7)	0.053	0.0075	78-81	Apple	30	0.036, 0.026	CER05906/11 T964 (Storage: 1.9 months)
			0.052	0.0075			52	(0.031)	
			0.051	0.0072				0.013, 0.017	
			0.053	0.0075				(0.015)	

<sup>a</sup> EC 150g/L;<sup>b</sup> EC 100g/L

DALA: days after last treatment

Analytical method: GRM042.03A, Benzovindiflupyr.

Mean = 98%, RSD = ± 9.8%, (n = 18 in 0.01 – 0.10 mg/kg range)

Table 5 Residues of benzovindiflupyr in pear from field trials in Canada and USA

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 4 × 0.05 kg ai/ha, PHI: 30d									
USA, Orefield, PA 2010, (Bartlett)	EC <sup>a</sup>	4 (7)	0.050	0.0039	77	Pear	30	0.018, 0.023	TK0025156 E04-0493 (Storage: 1.9 months)
			0.050	0.0038			60	(0.021)	
			0.052	0.0039				< 0.01, < 0.01	
			0.052	0.0038				(0.01)	
USA, Lindsay,	EC <sup>a</sup>	4 (7)	0.050	0.0027	79	Pear	30	0.069, 0.055	TK0025156 W32-0494
			0.050	0.0027				(0.062)	

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 4 × 0.05 kg ai/ha, PHI: 30d									
CA 2010, (Olympic)			0.050 0.050	0.0027 0.0027			60	0.032, 0.038 (0.035)	(Storage: 1.9 months)
USA, Madera. CA 2010, (Asian Pear, Hosui))	EC <sup>a</sup>	4 (7)	0.050 0.050 0.050 0.050	0.0054 0.0053 0.0053 0.0054	85	Pear	30  60	0.077, 0.056 (0.067) 0.011, 0.016 (0.014)	TK0025156 E19-0495 (Storage: 1.9 months)
USA, Ephrata, WA 2010, (Concorde)	EC <sup>a</sup>	4 (7)	0.050 0.050 0.050 0.050	0.0054 0.0053 0.0054 0.0054	84 [08/20/10]	Pear	30  60	0.11, 0.090 (0.10) 0.025, 0.030 (0.028)	TK0025156 W18-0496 (Storage: 1.9 months)
USA, Ephrata, WA 2010, (Bartlett)	EC <sup>a</sup>	4 (7)	0.050 0.050 0.050 0.050	0.0054 0.0054 0.0054 0.0054	80 [08/06/10]	Pear	30  60	0.082, 0.100 (0.091) 0.015, 0.015 (0.015)	TK0025156 W18-0497 (Storage: 1.9 months)
USA, Hood River, OR 2010, (Red d'Anjou)	EC <sup>a</sup>	4 (7)	0.050 0.050 0.050 0.050	0.0053 0.0054 0.0054 0.0054	81	Pear	30  60	0.084, 0.089 (0.087) 0.026, 0.019 (0.023)	TK0025156 W20-0498 (Storage: 1.9 months)
USA, Ephrata, WA 2010, (Concorde)	EC <sup>a</sup>	4 (7)	0.0482 0.0493 0.0504 0.0493	0.053 0.053 0.054 0.053	85 [08/29/11]	Pear	30  60	0.019, 0.033 (0.026) 0.017, 0.014 (0.016)	TK0025156 TK0025156-20 (Storage: 1.9 months)
Canada, Beamsville, ON 2011, (Bosc)	EC <sup>b</sup>	4 (7)	0.054 0.054 0.054 0.053	0.0036 0.0036 0.0036 0.0035	76-78 [17 Aug 11]	Pear	30  59	0.042, 0.038 (0.040) 0.022, 0.015 (0.019)	CER05907/11 T965 (Storage: 1.9 months)
Canada, Simcoe, ON 2011, (Bartlett)	EC <sup>b</sup>	4 (7)	0.051 0.051 0.050 0.052	0.0073 0.0072 0.0071 0.0074	74-75	Pear	30  60	0.064, 0.050 (0.057) 0.030, 0.019 (0.025)	CER05907/11 T966 (Storage: 1.9 months)
Canada, Beamsville, ON 2011, (D'Anjou)	EC <sup>b</sup>	4 (7)	0.049 0.048 0.050 0.049	0.0070 0.0069 0.0071 0.0070	76-77 [17 Aug 11]	Pear	30  59	0.041, 0.030 (0.036) 0.014, 0.011 (0.013)	CER05907/11 T967 (Storage: 1.9 months)
Canada, St. Catharines, ON 2011, (Bartlett)	EC <sup>b</sup>	4 (7)	0.048 0.049 0.048 0.050	0.0032 0.0032 0.0032 0.0033	74-76	Pear	30  60	0.062, 0.055 (0.059) 0.011, 0.011 (0.011)	CER05907/11 T968 (Storage: 1.9 months)
Canada, Okanagan Falls, BC 2011, (Bartlett)	EC <sup>b</sup>	4 (7)	0.051 0.052 0.049 0.050	0.0073 0.0074 0.0070 0.0071	76-78	Pear	31  59	0.036, 0.052 (0.044) 0.019, 0.026 (0.023)	CER05907/11 T969 (Storage: 1.9 months)

<sup>a</sup> EC 150g/L<sup>b</sup> EC 100g/L

DALA: days after last treatment

Analytical method: GRM042.03A, Benzovindiflupyr. Mean = 98%, RSD = ± 9.8, (n = 18 in 0.01 – 0.10 mg/kg range)



Table 6 Residues of benzovindiflupyr in grapes from field trials in USA

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)	
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr		
cGAP: Canada, 3 × 0.075 kg ai/ha, PHI: 21 d										
USA, Dundee, NY 2010, (Concord, )	EC <sup>a</sup>	4 (7)	0.076	0.016	85	Grapes	21	0.21, 0.27 (0.23)	TK0025158 E03-0501 (Storage: 14.9 months)	
			0.077	0.016			[08/31/2010]	45		0.15, 0.17 (0.16)
USA, Dundee, NY 2010, (Vidal,)	EC <sup>a</sup>	4 (7)	0.076	0.016	85	Grapes	21	0.23, 0.48 (0.35)	TK0025158 E03-0502 (Storage: 14.9 months)	
			0.076	0.016			[09/24/2010]	45		0.36, 0.26 (0.31)
USA, Artios, CA 2010, (Rubi Red)	EC <sup>a</sup>	4 (7)	0.075	0.016	83	Grapes	21	0.59, 0.73 (0.66)	TK0025158 W23-0503 (Storage: 14.9 months)	
			0.074, 0.075	0.016				45		0.81, 0.72 (0.77)
USA, Kerman, CA 2010, (Thompson Seedless)	EC <sup>a</sup>	4 (7)	0.077, 0.076	0.009	81	Grapes	21	0.11, 0.11 (0.11)	TK0025158 W28-0504 (Storage: 14.9 months)	
			0.077, 0.077	0.009				45		0.25, 0.21 (0.23)
USA, Hickman, CA 2010, (Chardonnay)	EC <sup>a</sup>	4 (7)	0.075	0.011	85	Grapes	11	0.49	TK0025158 W26-0505 (Storage: 14.9 months)	
			0.076	0.012			16	0.52		
			0.075	0.011			21	0.36, 0.48		
			0.076	0.012			26	0.44		
							31	0.47		
		45	0.45, 0.34							
USA, Delano, CA 2010, (Thompson Seedless)	EC <sup>a</sup>	4 (7)	0.076	0.010	47	Grapes	21	0.09, 0.11 (0.10)	TK0025158 W33-0506 (Storage: 14.9 months)	
			0.076	0.011				45		0.061, 0.042 (0.052)
USA, Madera, CA 2010, (Thompson Seedless)	EC <sup>a</sup>	4 (7)	0.077	0.010	85	Grapes	21	0.14, 0.14 (0.14)	TK0025158 W29-0507 (Storage: 14.9 months)	
			0.078	0.010			[08/09/2010]	45		0.12, 0.10 (0.11)
USA, Lindsay, CA 2010, (Crimson)	EC <sup>a</sup>	4 (7)	0.075	0.010	88	Grapes	21	0.43, 0.38 (0.41)	TK0025158 W32-0508 (Storage: 14.9 months)	
			0.076	0.013				45		0.39, 0.30 (0.35)
USA, Fresno, CA 2010, (Thompson Seedless)	EC <sup>a</sup>	4 (7)	0.077	0.014	83	Grapes	11	0.13	TK0025158 E19-0509 (Storage: 14.9 months)	
			0.077	0.014			[08/13/2010]	16		0.042
			0.077	0.014				21		0.094, 0.083 (0.089)
			0.078	0.014				26		0.041
								31		0.056
			45	0.094, 0.074 (0.084)						
USA, Madera, CA 2010, (Thompson Seedless)	EC <sup>a</sup>	4 (7)	0.077	0.014	85	Grapes	21	0.10, 0.23 (0.17)	TK0025158 E19-0510 (Storage: 14.9 months)	
			0.078	0.014			[08/13/2010]	45		0.12, 0.14 (0.13)
USA, Ephrata, WA 2010, (White Riesling)	EC <sup>a</sup>	4 (7)	0.075	0.009	85	Grapes	21	0.55, 0.55 (0.55)	TK0025158 W18-0511 (Storage: 14.9 months)	
			0.076	0.009			[09/16/2010]	45		0.40, 0.39 (0.40)

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: Canada, 3 × 0.075 kg ai/ha, PHI: 21d									
USA, Ephrata, WA 2010, (Chardon- nay)	EC <sup>a</sup>	4 (7)	0.076	0.009	87 [09/02/2010]	Grapes	21	0.49, 0.35 (0.42)	TK0025158 W18-0512 (Storage: 14.9 months)
			0.076	0.009			45	0.27, 0.25 (0.26)	
USA, Fresno, CA 2010, (Ruby Red)	EC <sup>a</sup>	4 (7)	0.075	0.16	83 [08/25/2011]	Grapes	21	0.038, 0.040 (0.039)	TK0025158 TK0025158- 13 (Storage: 14.9 months)
			0.076	0.16			45	0.043, 0.037 (0.040)	
USA, Fresno, CA 2010, (Thompson Seedless)	EC <sup>a</sup>	4 (7)	0.075	0.16	83 [08/25/2011]	Grapes	21	0.15, 0.16 (0.16)	TK0025158 TK0025158- 14 (Storage: 14.9 months)
			0.075	0.16			45	0.10, 0.086 (0.093)	
USA, Dundee, NY 2011, (Concord)	EC <sup>a</sup>	4 (7)	0.077	0008	83 [08/31/2011]	Grapes	21	0.41, 0.44, 0.31 (0.39)	TK0044874 TK0044874-01 (Storage: 14.9 months)
			0.076	0008			21	0.38, 0.38, 0.34 (0.37)	
USA, Madera, CA 2011, (Thompson Seedless)	EC <sup>a</sup>	4 (7)	0.077	0.010	81 [08/01/2011]	Grapes	21	0.18, 0.17, 0.11 (0.15)	TK0044874 TK0044874-02 (Storage: 14.9 months)
			0.077	0.010			21	0.14, 0.14, 0.15 (0.14)	
USA, Templeton, CA 2011, (Marsanne)	EC <sup>a</sup>	4 (7)	0.080	0.017	81	Grapes	21	0.089, 0.087, 0.062 (0.079)	TK0044874 TK0044874-03 (Storage: 14.9 months)
			0.078	0.016			21	0.13, 0.10, 0.10 (0.11)	

<sup>a</sup> EC 150g/L;

<sup>b</sup> WG 45g/L

DALA: days after last treatment

Analytical method: GRM042.03A, Benzovindiflupyr.

Mean = 103%, RSD = ±12% (n = 16 in 0.01 – 0.10 mg/kg)

Table 7 Residues of benzovindiflupyr in cucumber from field trials in USA

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 4 × 0.075 kg ai/ha, PHI: 0d									
USA, Chula, GA 2011, (Thunder)	EC <sup>a</sup>	4 (7)	0.077 0.077 0.077 0.075	0.034 0.033 0.035 0.036	89	Cucumber	0	0.018, < 0.010, < 0.010 (0.013)	TK0058639 TK0058639-07 (Storage: 9.4 months)
	WG <sup>b</sup>	4 (7)	0.076 0.077 0.076 0.076	0.034 0.033 0.035 0.036			0	< 0.010, 0.012, 0.018 (0.013)	
USA, Suffolk, NC 2011, (Marketer)	EC <sup>a</sup>	4 (7)	0.076 0.076 0.077 0.078	0.065 0.065 0.065 0.061	65	Cucumber	0	< 0.010, 0.010 (0.010)	TK0058639 TK0058639-08 (Storage: 9.4 months)
USA, Hobe Sound, FL 2011, (Impact)	EC <sup>a</sup>	4 (7)	0.076 0.076 0.077 0.077	0.035 0.033 0.034 0.037	71	Cucumber	0	0.025, 0.047, 0.084 (0.052)	TK0058639 TK0058639-09 (Storage: 9.4 months)
	WG <sup>b</sup>	4 (7)	0.077 0.076 0.077 0.077	0.036 0.033 0.034 0.037			0	0.052, 0.039, 0.057 (0.049)	
USA, Northwood, ND 2011, (Marketmore 76)	EC <sup>a</sup>	4 (7)	0.077 0.077 0.075 0.077	0.041 0.041 0.041 0.041	85	Cucumber	0	< 0.010, < 0.010, < 0.010 ( <u>&lt; 0.010</u> )	TK0058639 TK0058639-10 (Storage: 9.4 months)
	WG <sup>b</sup>	4 (7)	0.076 0.074 0.076 0.077	0.041 0.041 0.041 0.041			0	< 0.010, < 0.010, < 0.010 ( <u>&lt; 0.010</u> )	
USA, Campbell, MN 2011, (Speedway)	EC <sup>a</sup>	4 (7)	0.079 0.077 0.077 0.076	0.405 0.404 0.404 0.404	73	Cucumber	0	0.014, 0.022 (0.018)	TK0058639 TK0058639-11 (Storage: 9.4 months)
USA, Hinton, OK 2011, (Calypso)	EC <sup>a</sup>	4 (7)	0.077 0.076 0.073 0.075	0.060 0.060 0.047 0.057	84	Cucumber	0	0.038, 0.028 (0.033)	TK0058639 TK0058639-12 (Storage: 9.4 months)

<sup>a</sup> EC 100g/L;<sup>b</sup> WG 45g/L

DALA: days after last treatment

Analytical method: GRM042.03A, Benzovindiflupyr.

Mean = 103%, RSD = ±12% (n = 16 in 0.01 – 0.10 mg/kg)

Table 8 Residues of benzovindiflupyr in summer squash from field trials in USA

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 4 × 0.075 kg ai/ha, PHI: 0d									
USA, Alton, NY 2011, (Superpik F1)	EC <sup>a</sup>	4 (7)	0.079	0.407	79	Summer Squash	0	0.024, 0.019 (0.022)	TK0058639 TK0058639-13 (Storage: 9.4 months)
			0.078	0.407					
USA, Chula, GA 2011, (Dixie)	EC <sup>a</sup>	4 (7)	0.077	0.033	89	Summer Squash	0	0.013, 0.022, 0.031 (0.022)	TK0058639 TK0058639-14 (Storage: 9.4 months)
			0.076	0.037					
	WG <sup>b</sup>	4 (7)	0.077	0.033			0	0.019, 0.021, 0.023 (0.021)	
			0.076	0.036					
USA, Hobe Sound, FL 2011, (Fortune)	EC <sup>a</sup>	4 (7)	0.076	0.035	75	Summer Squash	0	0.042, 0.072, 0.032 (0.049)	TK0058639 TK0058639-15 (Storage: 9.4 months)
			0.077	0.033					
	WG <sup>b</sup>	4 (7)	0.076	0.036			0	0.028, 0.035, 0.086 (0.050)	
			0.076	0.033					
USA, York, NE 2011, (Black Beauty Zucchini)	EC <sup>a</sup>	4 (7)	0.076	0.041	76	Summer Squash	0	0.014, 0.018, 0.019 (0.017)	TK0058639 TK0058639-16 (Storage: 9.4 months)
			0.075	0.041					
	WG <sup>b</sup>	4 (7)	0.076	0.041			0	< 0.010, 0.017, 0.018 (0.015)	
			0.076	0.041					
USA, Porterville, CA 2011, (Black Beauty)	EC <sup>a</sup>	4 (7)	0.076	0.035	89	Summer Squash	0	0.012, 0.026 (0.019)	TK0058639 TK0058639-17 (Storage: 9.4 months)
			0.076	0.036					
							1	0.023	
							3	0.018	
							7	0.010	
							14	< 0.010	

<sup>a</sup> EC 100g/L;<sup>b</sup> WG 45g/L

DALA: days after last treatment

Analytical method: GRM042.03A, Benzovindiflupyr.

Mean = 103%, RSD = ±12% (n = 16 in 0.01 – 0.10 mg/kg)

Table 9 Residues of benzovindiflupyr in cantaloupe from field trials in USA

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 4 × 0.075 kg ai/ha, PHI: 0d									
USA, Chula, GA 2011, (Athena)	EC <sup>a</sup>	4 (7)	0.075	0.035	89	Cantaloupe	0	0.046, 0.046, 0.051 (0.048)	TK0058639 TK0058639-01 (Storage: 9.7 months)
			0.076	0.036					

## Benzovindiflupyr

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 4 × 0.075 kg ai/ha, PHI: 0d									
	WG <sup>b</sup>	4 (7)	0.077 0.076 0.076 0.077	0.035 0.036 0.033 0.034			0	0.066, 0.045, 0.049 (0.053)	
USA, Rice, MN 2011, (Honey Rock)	EC <sup>a</sup>	4 (7)	0.076 0.078 0.077 0.077	0.041 0.041 0.041 0.041	76	Cantaloupe	0	0.13, 0.12, 0.16 (0.14)	TK0058639 TK0058639-02 (Storage: 9.7 months)
	WG <sup>b</sup>	4 (7)	0.077 0.076 0.076 0.075	0.041 0.041 0.041 0.041			0	0.14, 0.090, 0.062 (0.097)	
USA, Wall, TX 2011, (Jumbo Hales Best)	EC <sup>a</sup>	4 (7)	0.076 0.077 0.078 0.076	0.043 0.042 0.042 0.042	89	Cantaloupe	0	0.029, 0.069 (0.049)	TK0058639 TK0058639-03 (Storage: 9.7 months)
USA, Porterville, CA 2011, (Hales Best Jumbo)	EC <sup>a</sup>	4 (7)	0.076 0.077 0.077 0.077	0.035 0.036 0.036 0.036	89	Cantaloupe	0	0.026, 0.033, 0.018 (0.026)	TK0058639 TK0058639-4 (Storage: 9.7 months)
	WG <sup>b</sup>	4 (7)	0.077 0.077 0.076 0.079	0.035 0.036 0.036 0.036			0	0.016, 0.031, 0.011 (0.019)	
USA, Paso Robles, CA 2011, (Top Mark)	EC <sup>a</sup>	4 (7)	0.078 0.076 0.075 0.077	0.41 0.41 0.41 0.41	82	Cantaloupe	0	< 0.010, < 0.010 (≤ 0.010)	TK0058639 TK0058639-5 (Storage: 9.7 months)
USA, Sanger, CA 2011, (Oro Rico)	EC <sup>a</sup>	4 (7)	0.078 0.078 0.078 0.078	0.018 0.018 0.018 0.018	89	Cantaloupe	0	0.14, 0.096 (0.12)	TK0058639 TK0058639-6 (Storage: 9.7 months)
							1	0.11	
							3	0.12	
							7	0.11	
							14	0.068	

<sup>a</sup> EC 100g/L;<sup>b</sup> WG 45g/L

DALA: days after last treatment

Analytical method: GRM042.03A, Benzovindiflupyr.

Mean = 105%, RSD = ± 13%, (n = 8 in 0.010-0.10 mg/kg)

Table 10 Residues of benzovindiflupyr in peppers from field trials in USA

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 4 × 0.075 kg ai/ha, PHI: 0d									
USA, Athens, GA 2011, (Yolo)	EC <sup>a</sup>	4 (7)	0.077 0.076 0.077 0.078	0.043 0.025 0.023 0.023	79	Bell - Pepper	0	0.081,0.10,0.10 <u>(0.093)</u>	TK0058641 TK0058641- 13 (Storage: 9.5 months)
	WG <sup>b</sup>	4 (7)	0.077 0.075 0.077 0.076	0.043 0.025 0.020 0.023	79	Bell - Pepper	0	0.085,0.11,0.071 (0.089)	
USA, Winter Garden, FL 2011, (Patriot)	EC <sup>a</sup>	4 (7)	0.077 0.076 0.076 0.074	0.027 0.027 0.027 0.027	87	Bell - Pepper	0	0.51,0.72,0.62 <u>(0.62)</u>	TK0058641 TK0058641- 14 (Storage: 5.2- 6.2 months)  Two different brands of crop oil concentrate adjuvants were used.
	WG <sup>b</sup>	4 (7)	0.076 0.077 0.076 0.073	0.027 0.027 0.027 0.027	87	Bell - Pepper	0	0.62,0.51,0.48 (0.54)	
USA, Stafford, KS 2011, (Better Belle)	EC <sup>a</sup>	4 (7)	0.075 0.076 0.076 0.074	0.41 0.41 0.41 0.41	73  [08/15/2011]	Bell - Pepper	0	0.047,0.033 <u>(0.040)</u>	TK0058641 TK0058641- 15 (Storage: 10 months)
USA, Wall, TX 2011, (Camelot)	EC <sup>a</sup>	4 (7)	0.075 0.076 0.076 0.074	0.41 0.41 0.41 0.41	89	Bell - Pepper	0	0.057,0.062 <u>(0.059)</u>	TK0058641 TK0058641- 16 (Storage: 9.4 months)
USA, Arroyo Grande, CA 2011, (Crusader)	EC <sup>a</sup>	4 (7)	0.078 0.086 0.085 0.087	0.041 0.041 0.041 0.041	89	Bell - Pepper	0	0.11,0.085,0.12 <u>(0.10)</u>	TK0058641 TK0058641- 17 (Storage: 6.8 months)
	WG <sup>b</sup>	4 (7)	0.076 0.084 0.084 0.085	0.037 0.041 0.040 0.040	89	Bell - Pepper	0	0.11,0.095,0.082 (0.096)	
USA, Sanger, CA 2011, (Grande Rio)	EC <sup>a</sup>	4 (7)	0.078 0.079 0.078 0.079	0.019 0.018 0.018 0.018	89	Bell - Pepper	1	<u>(0.36)</u>	TK0058641 TK0058641- 18 (Storage: 8.6 months)
USA, Larned, KS 2011, (Tam Hot Jalapeno)	EC <sup>a</sup>	4 (7)	0.077 0.076 0.076 0.076	0.041 0.041 0.041 0.041	74	Non- Bell Pepper	0	0.065,0.043 <u>(0.054)</u>	TK0058641 TK0058641- 19 (Storage: 8.9 months)
USA, Wall, TX 2011, (Grande Jumbo Hybrid, Jalapeno)	EC <sup>a</sup>	4 (7)	0.078 0.077 0.077 0.077	0.051 0.053 0.053 0.056	89  [08/11/2011]	Non- Bell Pepper	0  14	0.029, 0.047  0.066,0.055 <u>(0.061)</u>	TK0058641 TK0058641- 20 (Storage: 9.6 months)

## Benzovindiflupyr

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 4 × 0.075 kg ai/ha, PHI: 0d									
USA, Corning, CA 2011, (Lamuyo #943)	EC <sup>a</sup>	4 (7)	0.078 0.078 0.077 0.077	0.42 0.42 0.42 0.42	89	Non- Bell Pepper	0	0.38,0.32  (0.35)	TK0058641 TK0058641- 21 (Storage: 10.2-11.2 months)

<sup>a</sup> EC 100g/L<sup>b</sup> WG 45g/L

DALA: days after last treatment

\* Analytical Method: GRM042.04A, Benzovindiflupyr.

Bell-Pepper: Mean = 92% RSD = ± 14% (n = 12 in 0.010- 1.0 mg/kg)

Non-Bell Pepper: Mean = 75%, RSD = ± 4.7% (n = 4 in 0.010-0.50 mg/kg)

Table 11 Residues of benzovindiflupyr in tomatoes from field trials in USA

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 4 × 0.075 kg ai/ha, PHI: 0d									
USA, Alton, NY 2011, (POLBIG F1)	EC <sup>a</sup>	4 (7)	0.076 0.076 0.076 0.076	0.027 0.027 0.027 0.027	86	Tomato	0	0.038,0.041 (0.040)	TK0058641 TK0058641-01 (Storage: 8.1 months)
USA, Jeffersonville, GA 2011, (Red Bounty)	EC <sup>a</sup>	4 (7)	0.078 0.078 0.078 0.078	0.028 0.028 0.028 0.028	85	Tomato	0	0.051,0.045,0.064 (0.053)	TK0058641 TK0058641-02 (Storage: 6.9 months)
	WG <sup>b</sup>	4 (7)	0.075 0.075 0.075 0.074	0.027 0.027 0.027 0.027	85	Tomato	0	0.050,0.045,0.039 (0.049)	
USA, Winter Garden, 2011, (Large Cherry)	EC <sup>a</sup>	4 (7)	0.077 0.076 0.076 0.077	0.027 0.027 0.027 0.027	84	Tomato	0	0.40, 0.46 (0.43)	TK0058641 TK0058641-03 (Storage: 5.6 months)
USA, Hobe Sound, FL 2011, (FL47)	EC <sup>a</sup>	4 (7)	0.077 0.075 0.076 0.077	0.104 0.100 0.106 0.101	77	Tomato	0	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0058641 TK0058641-04 (Storage: 4.8 months)
USA, Rice, MN 2011, (Arkansas Traveler)	EC <sup>a</sup>	4 (7)	0.077 0.077 0.077 0.077	0.041 0.041 0.041 0.041	73	Tomato	0	0.046,0.024,0.070 (0.047)	TK0058641 TK0058641-05 (Storage: 9.0 months)
	WG <sup>b</sup>	4 (7)	0.0766 0.0768 0.0763 0.0760	0.041 0.041 0.041 0.041	73	Tomato	0	0.074,0.043,0.065 (0.061)	
USA, Porterville, CA 2011, (Roma VF)	EC <sup>a</sup>	4 (7)	0.077 0.076 0.078 0.080	0.026 0.026 0.027 0.026	89	Tomato	0	0.073,0.078,0.27 (0.14)	TK0058641 TK0058641-06 (Storage: 8.4 months)

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 4 × 0.075 kg ai/ha, PHI: 0d									
	WG <sup>b</sup>	4 (7)	0.079 0.077 0.078 0.076	0.026 0.026 0.027 0.026	89	Tomato	0	0.20,0.086,0.076 (0.12)	
USA, Paso Robles, CA 2011, (Galilea, Roma)	EC <sup>a</sup>	4 (7)	0.076 0.077 0.076 0.077	0.041 0.041 0.041 0.041	86	Tomato	0	0.099,0.071 (0.085)	TK0058641 TK0058641-07 (Storage: 7.7 months)
USA, Kerman, CA 2011, (Roma)	EC <sup>a</sup>	4 (7)	0.077 0.077 0.077 0.077	0.041 0.041 0.041 0.041	85	Tomato	0  14	0.18, 0.18 (0.18) 0.15,0.25 (0.20)	TK0058641 TK0058641-08 (Storage: 9.1 months)
USA, Visalia, CA 2011, (Romas)	EC <sup>a</sup>	4 (7)	0.077 0.074 0.076 0.078	0.027 0.027 0.027 0.027	88	Tomato	0  14	0.083, 0.094 (0.086) 0.11,0.11 (0.11)	TK0058641 TK0058641-09 (Storage: 8.5 months)
USA, Sanger, CA 2011, (Quality 27)	EC <sup>a</sup>	4 (7)	0.077 0.076 0.076 0.076	0.033 0.040 0.035 0.035	85  [08/17/2011]	Tomato	3	0.066	TK0058641 TK0058641-10
USA, Sanger, CA 2011, (Shasta)	EC <sup>a</sup>	4 (7)	0.078 0.081 0.077 0.080	0.041 0.041 0.041 0.041	89  [11/01/2011]	Tomato	0	0.39,0.36 (0.38)	TK0058641 TK0058641-11 (Storage: 6.8-7.8 months)
USA, Sanger, CA 2011, (Shasta)	EC <sup>a</sup> (5X)	4 (7)	0.38 0.38 0.38 0.38	0.204 0.204 0.204 0.204	89	Tomato	0	2.1,1.6	TK0058641 TK0058641-11 (Storage: 6.9-7.1 months)
USA, Kettleman City CA 2011, (8004)	EC <sup>a</sup>	4 (7)	0.076 0.077 0.077 0.077	0.027 0.027 0.027 0.027	89	Tomato	0	0.052,0.036 (0.044)	TK0058641 TK0058641-12 (Storage: 9.6 months)
USA, Kettleman City CA 2011, (8004)	EC <sup>a</sup> (5X)	4 (7)	0.37 0.38 0.38 0.38	0.13 0.14 0.14 0.14	89	Tomato	0	0.41, 0.24	TK0058641 TK0058641-12 (Storage: 9.7-9.9 months)

<sup>a</sup> EC 100g/L

<sup>b</sup> WG 45g/L

DALA: days after last treatment

\* Analytical Method: GRM042.04A. Benzovindiflupyr.

Mean = 95%, RSD = ± 9.0% (n = 16 in 0.010-2.5 mg/kg)



## Benzovindiflupyr

Table 12 Residues of benzovindiflupyr in sweet corn (Ears) from field trials in USA

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: Canada, 2 × 0.075 kg ai/ha, PHI: 7d									
USA, Germansville, PA 2010, (Extra Tender 274A)	EC <sup>a</sup>	4 (7)	0.077 0.076 0.077 0.077	0.030 0.027 0.030 0.030	73	Ears	7	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0002562 E04-0472 (Storage: Ears 7.2 months)
USA, North Rose, NY 2010, (Serendipity)	EC <sup>a</sup>	4 (7)	0.078 0.078 0.080 0.078	0.033 0.033 0.033 0.033	75	Ears	7	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0002562 E04-0473 (Storage: Ears 6.0 months)
USA, Athens, GA 2010, (Silver King)	EC <sup>a</sup>	4 (7)	0.076 0.076 0.077 0.076	0.030 0.030 0.031 0.030	73	Ears	7	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0002562 E04-0474 (Storage: Ears 7.1 months)
USA, Oviedo, FL 2010, (Silver Queen)	EC <sup>a</sup>	4 (7)	0.075 0.077 0.076 0.078	0.027 0.028 0.027 0.028	71	Ears	7	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0002562 E04-0475 (Storage: Ears 8.7 months)
USA, Gardner, ND 2010, (Zea Mays GH4927)	EC <sup>a</sup>	4 (7)	0.077 0.076 0.077 0.076	0.041 0.041 0.041 0.041	75	Ears	7	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0002562 C12-0476 (Storage: Ears 6.4 months)
USA, Bagley, IA 2010, (Not listed)	EC <sup>a</sup>	4 (7)	0.074 0.071 0.077 0.074	0.050 0.042 0.052 0.043	73	Ears	7	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0002562 C30-0477 (Storage: Ears 6.7 months)
USA, Oregon, MO 2010, (Bodacious)	EC <sup>a</sup>	4 (7)	0.078 0.082 0.080 0.082	0.055 0.057 0.054 0.055	73	Ears	7	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0002562 C19-0478 (Storage: Ears 7.3 months)
USA, Centerville, SD 2011, (Kandy Korn)	EC <sup>a</sup>	4 (7)	0.075 0.075 0.078 0.076	0.041 0.042 0.042 0.041	73	Ears	7	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0002562 C16-0479 (Storage: Ears 6.5 months)
USA, Clarence, MO 2010, (Incredible)	EC <sup>a</sup>	4 (7)	0.077 0.077 0.076 0.076	0.041 0.041 0.041 0.040	85	Ears	7	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0002562 C20-0480 (Storage: Ears 7.2 months)
USA, Porterville, CA 2010, (Bodacious)	EC <sup>a</sup>	4 (7)	0.076 0.076 0.076 0.076	0.053 0.053 0.050 0.040	99	Ears	7	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0002562 W32-0481 (Storage: Ears 7.5-8.2 months)

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: Canada, 2 × 0.075 kg ai/ha, PHI: 7d									
USA, Rupert, ID 2010, (Sugarbuns)	EC <sup>a</sup>	4 (7)	0.072 0.076 0.076 0.080	0.044 0.064 0.062 0.070	77	Ears	7	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0002562 W15-0482 (Storage: Ears 6.9 months)
USA, Hillsboro, OR 2010, (Honey and Pearls)	EC <sup>a</sup>	4 (7)	0.076 0.075 0.077 0.077	0.033 0.032 0.033 0.033	79	Ears	7	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0002562 W21-0483 (Storage: Ears 6.0 months)
USA, Wall, TX 2011, (Hybrid 111RM GT/CB/LL/RW)	WG	4 (7)	0.075 0.077 0.075 0.077	0.041 0.041 0.041 0.041	7 days prior to milk stage	Ears	7	< 0.01, < 0.01, < 0.01, ( <u>&lt; 0.01</u> )	TK0002562; 01 (Storage: 5.9 months)
USA, Bagley, IA 2011, (111RM)	EC	4 (7)	0.075 0.075 0.075 0.075	0.041 0.041 0.041 0.041	7 days prior to milk stage	Ears	7	< 0.01, < 0.01, < 0.01, ( <u>&lt; 0.01</u> )	TK0002562; 02 (Storage: 5.3 months)
USA, Rice, MN 2011, (DKC 35-43)	EC	4 (7)	0.075 0.075 0.075 0.075	0.041 0.041 0.041 0.041	7 days prior to milk stage	Ears	7	< 0.01, < 0.01, < 0.01, ( <u>&lt; 0.01</u> )	TK0002562; 03 (Storage: 4.9 months)

<sup>a</sup> EC 150g/L

DALA: days after last treatment

\*Analytical Method: GRM042.03A.

Benzovindiflupyr, Sweet Corn Ears: Mean = 88%, RSD = ± 12% (n = 6 in 0.01- 0.100 mg/kg)

Table 13 Residues of benzovindiflupyr in pulses (peas and beans) in Canada and the USA (Seed)

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
GAP: Canada, 2 × 0.075 kg ai/ha, PHI: 15d									
USA Hinton, OK, 2011, (Alaska)	EC <sup>a</sup>	2 (7)	0.076 0.076	0.056 0.052	73	Dried Pea Seed	14	0.12, 0.10, 0.094 ( <u>0.11</u> )	TK0058625 TK0058625-01 storage interval: 1.8-2.2 months
	WG <sup>a</sup>	2 (7)	0.075 0.076	0.053 0.056	73	Dried Pea Seed	14	0.038, 0.023, 0.021 (0.027)	TK0058625 TK0058625-01 storage interval: 1.8-2.2 months
USA American Falls, ID, 2011, (Little Marvel)	EC <sup>a</sup>	2 (7)	0.072 0.076	0.045 0.038	77	Dried Pea Seed	14	0.022, < 0.01, 0.010 (0.016)	TK0058625 TK0058625-03 storage interval: 4.8 months
	WG <sup>a</sup>	2 (7)	0.077 0.080	0.048 0.043	67	Dried Pea Seed	14	< 0.01, < 0.01, 0.023 ( <u>0.017</u> )	TK0058625 TK0058625-03 storage interval: 4.8 months
USA Jerome,	EC <sup>a</sup>	2	0.078	0.044		Dried	0	< 0.01	TK0058625

## Benzovindiflupyr

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
GAP: Canada, 2 × 0.075 kg ai/ha, PHI: 15d									
ID, 2011, (SNO 112 0490N14) USA,		(7)	0.076	0.043	78	Pea Seed	7 14 21	< 0.01 < 0.01, < 0.01 ( <u>&lt; 0.01</u> ) < 0.01	TK0058625-04 storage interval: 5.8-6.5 months
USA Hillsboro, OR, 2011, (Blue Bird)	EC <sup>a</sup>	2 (7)	0.076 0.076	0.043 0.041	75	Dried Pea Seed	14	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0058625 TTK0058625-05 storage interval: 6.3 months
USA Madera, CA, 2011, (Dundale)	EC <sup>a</sup>	2 (7)	0.076 0.076	0.045 0.045	89	Dried Pea Seed	14	< 0.01, < 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0058625 TK0058625-15 storage interval: 1.5 months
	WG <sup>a</sup>	2 (7)	0.078 0.079	0.045 0.045	45	Dried Pea Seed	14	0.028, 0.017, 0.027 ( <u>0.028</u> )	TK0058625 TK0058625-15 storage interval: 1.5 months
USA Clarence, MO, 2011 (HMS Medalist)	EC <sup>a</sup>	2 (7)	0.075 0.075	0.045 0.045	R8/95	Bean Seed	14	< 0.01, < 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0058625 TK0058625-06 storage interval: 3.9 months
	WG <sup>a</sup>	2 (7)	0.079 0.076	0.045 0.045	R8/95	Bean Seed	14	< 0.01, < 0.01, 0.013 ( <u>0.011</u> )	TK0058625 TK0058625-06 storage interval: 3.9 months
USA Perley, ND 2011, (Navigator)	EC <sup>a</sup>	2 (7)	0.078 0.078	0.054 0.054	91	Dried Beans Seed	14	< 0.01, < 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0058625 TK0058625-07 storage interval: 4.4 months
	WG <sup>a</sup>	2 (7)	0.078 0.078	0.054 0.054	91	Dried Beans Seed	14	< 0.01, < 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0058625 TK0058625-07 storage interval: 4.4 months
USA York, NE, 2011, (Marquis- GT)	EC <sup>a</sup>	2 (7)	0.076 0.076	0.399 0.404	81	Beans Seed	14	0.040, 0.048 ( <u>0.044</u> )	TK0058625 TK0058625-08 storage interval: 4.8 months
USA Campbell, MN, 2011, (HMS Medalist)	EC <sup>a</sup>	2 (7)	0.076 0.076	0.041 0.041	79	Beans Seed	14	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0058625 TK0058625-09 storage interval: 4.7 months
USA Gardner, ND, 2011, (Maverick)	EC <sup>a</sup>	2 (7)	0.078 0.077	0.054 0.054	95	Dried Beans Seed	0 7 14 21	0.019 < 0.01 < 0.01, < 0.01 ( <u>&lt; 0.01</u> ) < 0.01	TK0058625 TK0058625-10 storage interval: 4.3 months ( 14DALA)

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
GAP: Canada, 2 × 0.075 kg ai/ha, PHI: 15d									
USA Hinton, OK, 2011, (Dwarf Horticulture Taylor Bean)	EC <sup>a</sup>	2 (7)	0.075 0.076	0.055 0.052	79	Dried Beans Seed	14	< 0.01, < 0.01, 0.011 (0.010)	TK0058625 TK0058625-11 storage interval: 1.8 months
	WG <sup>a</sup>	2 (7)	0.076 0.077	0.056 0.051	79	Dried Beans Seed	14	< 0.01, < 0.01, < 0.01 (< 0.01)	TK0058625 TK0058625-11 storage interval: 1.8 months
USA Wall, TX, 2011, (Pinto III)	EC <sup>a</sup>	2 (7)	0.076 0.075	0.045 0.043	85	Dried Beans Seed	14	< 0.01, < 0.01 (< 0.01)	TK0058625 TK0058625-12 storage interval: 2.7 months
USA Madera, CA, 2011, (UC-8537)	EC <sup>a</sup>	2 (7)	0.078 0.078	0.413 0.413	79	Dried Beans Seed	14	0.033, 0.056 (0.045)	TK0058625 TK0058625-13 storage interval: 5.6 months
USA American Falls, ID, 2011, (Pinto)	EC <sup>a</sup>	2 (7)	0.076 0.074	0.045 0.044	77	Dried Beans Seed	14	0.018, 0.021 (0.020)	TK0058625 TK0058625-14 storage interval: 4.4 months
Canada St-Marc-Sur- Richelieu, QC, 2011, (Hooter)	EC <sup>a</sup>	2 (7)	0.075 0.074	0.038 0.037	78 [Aug 11,2012]	Dried Beans Seed	3 7 14 21	< 0.01 < 0.01 0.011 , < 0.01 (0.011) 0.01	CER05904/11 T950 storage interval: 5.5-6.1 months
Canada St-Marc-Sur- Richelieu, QC, 2011, (Etna)	EC <sup>a</sup>	2 (7)	0.076 0.074	0.038 0.037	78 [Aug 11,2012]	Dried Beans Seed	14	< 0.01, < 0.01 (< 0.01)	CER05904/11 T951 storage interval: 5.8 months
	WG <sup>b</sup>	2 (7)	0.074 0.078	0.037 0.039	78 [Aug 11,2012]	Dried Beans Seed	14	< 0.01, < 0.01 (< 0.01)	CER05904/11 T951 storage interval: 5.8 months
Canada Vanscoy, SK, 2011, (AC Pintoba)	EC <sup>a</sup>	2 (7)	0.075 0.075	0.167 0.167	81	Dried Beans Seed	15	0.066, 0.089 (0.078)	CER05904/11 T952 storage interval: 4.9-5.2 months
	WG <sup>b</sup>	2 (7)	0.23 0.23	0.166 0.167	81	Dried Beans Seed	15	0.232, 0.235 (0.23)	CER05904/11 T952 storage interval: 4.9-5.2 months
Canada Taber, AB, 2011, (Great Northern)	EC <sup>a</sup>	2 (7)	0.076 0.076	0.169 0.170	88	Dried Beans Seed	15	0.010, < 0.01 (0.010)	CER05904/11 T953 storage interval: 5.1-5.3 months
	WG <sup>b</sup>	2 (7)	0.23 0.23	0.169 0.170	88	Dried Beans	15	0.02, 0.012 (0.016)	CER05904/11 T953

## Benzovindiflupyr

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
GAP: Canada, 2 × 0.075 kg ai/ha, PHI: 15d									
						Seed			storage interval: 5.1-5.3 months
Canada Minto, MB, 2011, (Pintabo)	EC <sup>a</sup>	2 (7)	0.0746 0.0751	0.037 0.038	81	Dried Beans Seed	16	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	CER05904/11 T954 storage interval: 5.6 months
Canada Vanscoy, SK, 2011, (CDC Bronco)	EC <sup>a</sup>	2 (7)	0.075 0.074	0.166 0.165	82	Dried Pea Seed	15	< 0.01, 0.097 ( <u>0.049</u> )	CER05905/11 T955 storage interval: 5.6 months
	WG <sup>b</sup>	2 (7)	0.23 0.23	0.166 0.165	82	Dried Pea Seed	15	0.039, 0.028 (0.034)	CER05904/11 T955 storage interval: 5.6 months
Canada Perdue, SK, 2011, (CDC Bronco)	EC <sup>a</sup>	2 (7)	0.075 0.074	0.167 0.165	79	Dried Pea Seed	15	0.028, 0.038 ( <u>0.033</u> )	CER05905/11 T956 storage interval: 5.3 months
Canada Minto, MB, 2011, (CDC Golden)	EC <sup>a</sup>	2 (7)	0.075 0.075	0.038 0.037	83	Dried Pea Seed	2 6 16 22	0.12 0.023 0.011, < 0.01 ( <u>0.011</u> ) < 0.01	CER05905/11 T957 storage interval: 5.3-6.2 months
Canada Boissevain, MB, 2011, (CDC Meadow)	EC <sup>a</sup>	2 (7)	0.076 0.074	0.038 0.037	81	Dried Pea Seed	16	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	CER05905/11 T958 storage interval: 5.5-5.6 months
	WG <sup>b</sup>	2 (7)	0.23 0.23	0.038 0.036	81	Dried Pea Seed	16	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	CER05905/11 T958 storage interval: 5.5-5.6 months
Canada Rosthern, SK 2011 ( Meadow)	EC <sup>a</sup>	2 (7)	0.073 0.075	0.037 0.038	79	Dried Pea Seed	16	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	Report: CER05905/11 T959 storage interval: 5.6 months
	WG <sup>b</sup>	2 (7)	0.23 0.23	0.037 0.039	79	Dried Pea Seed	16	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	CER05905/11 T959 storage interval: 5.6 months

<sup>a</sup> EC 100 g/L; WG 45 g/L

<sup>b</sup> WG 150 g ai/L

Analytical Method: GRM042.04A, Benzovindiflupyr, LOQ: 0.01 mg/kg

Pea and bean seeds Mean = 112%, RSD = ± 6.9%, (n = 6 in 0.010–0.20 mg/kg)

Table 14 Residues of benzovindiflupyr in soya bean in the USA (seed)

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial;  (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
GAP: Canada, 2 × 0.075 kg ai/ha, PHI: 14d, Soya beans									
USA Elko, SC, 2010, (Asgrow 7502)	EC <sup>a</sup>	2 (7)	0.076 0.076	0.056 0.056	95	Seed	14	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0002561 E11-0421 storage interval: 7.1 months
USA Seven Springs, NC, 2010, (AG5605)	EC <sup>a</sup>	2 (7)	0.076 0.076	0.039 0.038	89	Seed	14	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0002561 E10-0422 storage interval: 7.9 months
USA Cheneyville, LA, 2010, (Pioneer 94M80)	EC <sup>a</sup>	2 (7)	0.075 0.076	0.041 0.039	95  [09/01/2010]	Seed	14	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0002561 E17-0423 storage interval: 9.4 months
USA Cheneyville, LA, 2010, (Asgrow 5335)	EC <sup>a</sup>	2 (7)	0.078 0.075	0.039 0.045	97 [10/04/2010]	Seed	14	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0002561 E17-0424 storage interval: 8.3 months
USA Pollard, AR, 2010, (Pioneer 94M80)	EC <sup>a</sup>	2 (7)	0.076 0.076	0.041 0.041	88	Seed	14	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0002561 C23-0425 storage interval: 8.2 months
USA Northwood, ND, 2010, (90Y41)	EC <sup>a</sup>	2 (7)	0.077 0.077	0.041 0.041	85	Seed	0 7 14 21 28	< 0.01 < 0.01 < 0.01, < 0.01 ( <u>&lt; 0.01</u> ) < 0.01 < 0.01	TK0002561 C13-0426 storage interval: 8.5 months
USA Sharon, ND, 2010, (90Y41)	EC <sup>a</sup>	2 (7)	0.076 0.076	0.041 0.041	85	Seed	14	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0002561 C13-0427 storage interval: 8.6 months
USA Gardner, ND, 2010, (0509239)	EC <sup>a</sup>	2 (7)	0.093 0.094	0.040 0.040	95	Seed	14	< 0.01, 0.026 ( <u>0.018</u> )	TK0002561 C03-0428 storage interval: 8.4 months
	EC <sup>a</sup>	2 (7)	0.38 0.39	0.192 0.199	95	Seed	14	0.059, 0.079 (0.069)	TK0002561 C03-0428 storage interval: 8.4 months; 5X for processing study
USA Dudley, MO, 2010, (Asgrow	EC <sup>a</sup>	2 (7)	0.077 0.077	0.041 0.041	86	Seed	14	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0002561 C23-0429 storage interval: 8.2 months

## Benzovindiflupyr

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
GAP: Canada, 2 × 0.075 kg ai/ha, PHI: 14d, Soya beans									
5403)									
USA Fisk, MO, 2010, (Jake)	EC <sup>a</sup>	2 (7)	0.076 0.077	0.405 0.407	87	Seed	14	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0002561 C23-0430 storage interval: 8.0 months
USA Fitchburg, WI, 2010, (S21-N6)	EC <sup>a</sup>	2 (7)	0.076 0.076	0.042 0.036	95	Seed	14	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0002561 C08-0431 storage interval: 8.7 months
USA Bagley, IA, 2010, (P3Y13- N203)	EC <sup>a</sup>	2 (7)	0.077 0.075	0.040 0.040	93	Seed	14	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0002561 C30-0432 storage interval: 8.5 months
	EC <sup>a</sup>	2 (7)	0.38 0.39	0.201 0.203	93	Seed	14	0.012, < 0.01 (0.012)	TK0002561 C30-0432 storage interval: 8.5 months
USA Oregon, MO, 2010, (Pioneer 93Y70)	EC <sup>a</sup>	2 (7)	0.077 0.081	0.053 0.053	R6-R7	Seed	14	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0002561 C19-0433 storage interval: 8.5 months
USA York, NE, 2010, (93Y12)	EC <sup>a</sup>	2 (7)	0.076 0.076	0.040 0.040	97	Seed	14	< 0.01, .017, < 0.01, 0.012, < 0.01, < 0.01 ( <u>0.012</u> )	TK0002561 C33-0434 storage interval: 8.6-8.8 months
USA Lesterville, SD, 2010, (Latham, L2560R, LS- 0991236)	EC <sup>a</sup>	2 (7)	0.076 0.075	0.040 0.039	81	Seed	14	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0002561 C16-0435 storage interval: 8.8 months
USA Marysville, OH, 2010, (SG-329- RR)	EC <sup>a</sup>	2 (7)	0.077 0.077	0.047 0.047	8 87	Seed	14	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0002561 C01-0436 storage interval: 8.4 months
USA Clarence, MO, 2010, (Asgrow 3803 RR)	EC <sup>a</sup>	2 (7)	0.076 0.077	0.041 0.041	R7	Seed	0 7 14 21 28	0.12 0.032 0.011, 0.011 ( <u>0.011</u> ) < 0.01 < 0.01	TK0002561 C20-0437 storage interval: 8.6 months (14DALA)
USA Richland, IA, 2010,	EC <sup>a</sup>	2 (7)	0.076 0.075	0.051 0.050	81	Seed	14	0.077, 0.051 ( <u>0.064</u> )	TK0002561 C18-0438 storage interval: 8.5 months

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
GAP: Canada, 2 × 0.075 kg ai/ha, PHI: 14d, Soya beans									
(Pioneer 92Y80)									
USA Campbell, MN, 2010, (AG 0808)	EC <sup>a</sup>	2 (7)	0.076 0.076	0.041 0.041	93	Seed	14	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0002561 C11-0439 storage interval: 9.0 months
USA Geneva, MN, 2010, (Pioneer 91Y70)	EC <sup>a</sup>	2 (7)	0.077 0.076	0.046 0.046	85	Seed	14	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0002561 C09-0440 storage interval: 9.2 months

<sup>a</sup> EC 150 g ai/L

Analytical Method: GRM042.04A, Benzovindiflupyr, LOQ: 0.01 mg/kg

**soya bean:** Mean = 94%, SD = ± 14%, (n = 16 in 0.01–0.5 mg/kg)

Table 15 Residues of benzovindiflupyr in potato from field trials in USA

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 4 × 0.075 kg ai/ha, PHI: 14d									
USA, Alton, NY  2011, (Reba)	EC <sup>a</sup>	4 (7)	0.077 0.076 0.076 0.076	0.027 0.027 0.027 0.027	47	Potato	14	< 0.010, < 0.010, < 0.010 ( <u>&lt; 0.010</u> )	TK0058640 ; TK0058640-01 (Storage: 7.1 months)
	WG <sup>b</sup>	4 (7)	0.076 0.076 0.076 0.076	0.027 0.027 0.027 0.027	47	Potato	14	< 0.010, < 0.010, < 0.010 ( <u>&lt; 0.010</u> )	
USA, North Rose, NY  2011, (Genesee)	EC <sup>a</sup>	4 (7)	0.078 0.078 0.078 0.078	0.41 0.41 0.41 0.42	79	Potato	14	< 0.010, < 0.010 ( <u>&lt; 0.010</u> )	TK0058640 ; TK0058640-02 (Storage: 8.5 months)
USA, Jeffersonville,GA 2011, (Red Pontiac)	EC <sup>a</sup>	4 (7)	0.078 0.078 0.077 0.077	0.028 0.028 0.027 0.027	93	Potato	14	< 0.010, < 0.010, < 0.010 ( <u>&lt; 0.010</u> )	TK0058640 ; TK0058640-03 (Storage: 1.7 months)
	EC <sup>a</sup>	4 (7)	0.079 0.077 0.076 0.078	0.027 0.027 0.027 0.027	93	Potato	14	< 0.010, < 0.010 ( <u>&lt; 0.010</u> )	
USA, Oviedo, FL  2011, (Red	EC <sup>a</sup>	4 (7)	0.078 0.077 0.077 0.077	0.027 0.028 0.027 0.027	49	Potato	14	< 0.010, < 0.010 ( <u>&lt; 0.010</u> )	TK0058640 ; TK0058640-04 (Storage: 3.7 months)



## Benzovindiflupyr

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	B BCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 4 × 0.075 kg ai/ha, PHI: 14d									
LaSoda)									
USA, Oregon, MO 2011, (Red Pontiac)	EC <sup>a</sup>	4 (7)	0.079 0.080 0.080 0.079	0.33 0.34 0.33 0.33	49 [08/18/2011]	Potato	14	0.011, 0.017 (0.014)	TK0058640 ; TK0058640-05 (Storage: 8.3 months)
USA, York, NE 2011, (Russet Norkotah)	EC <sup>a</sup>	4 (7)	0.077 0.077 0.077 0.076	0.040 0.040 0.042 0.042	75	Potato	14	< 0.010, 0.010, < 0.010 (0.010)	TK0058640 ; TK0058640-06 (Storage: 7.6 months)
	WG <sup>b</sup>	4 (7)	0.077 0.077 0.077 0.076	0.040 0.040 0.042 0.042	75	Potato	14	< 0.010, < 0.010, 0.010 (0.010)	
USA, Bagley, IA 2011, (Kennebec)	EC <sup>a</sup>	4 (7)	0.077 0.076 0.071 0.076	0.077 0.079 0.060 0.064	75	Potato	14	< 0.010, < 0.010 (< 0.010)	TK0058640 ; TK0058640-07 (Storage: 8.6 months)
	EC <sup>a</sup>	4 (7)	0.074 0.078 0.074 0.078	0.077 0.079 0.060 0.064	75	Potato	14	< 0.010, < 0.010 (< 0.010)	
USA, Oregon, MO 2011, (Yukon Gold)	EC <sup>a</sup>	4 (7)	0.079 0.080 0.080 0.079	0.33 0.34 0.33 0.33	93 [08/04/2011]	Potato	14	0.013, 0.012 (0.012)	TK0058640 ; TK0058640-08 (Storage: 8.8 months)
USA, Jerome, ID 2011, (Ranger Russet)	EC <sup>a</sup>	4 (7)	0.077 0.076 0.077 0.077	0.036 0.033 0.037 0.036	47	Potato	14	< 0.01, < 0.01 (< 0.01)	TK0058640 ; TK0058640-09 (Storage: 8.5 months)
USA, Sanger, CA 2011, (Red La Soda)	EC <sup>a</sup>	4 (7)	0.076 0.077 0.075 0.077	0.032 0.031 0.031 0.032	46	Potato	14	< 0.01, < 0.01 (< 0.01)	TK0058640 ; TK0058640-10 (Storage: 8.8 months)
USA, American Falls, ID 2011, (Russet Burbank)	EC <sup>a</sup>	4 (7)	0.077 0.076 0.076 0.077	0.034 0.036 0.036 0.036	47	Potato	14	0.011, < 0.01, < 0.01 (0.011)	TK0058640 ; TK0058640-11 (Storage: 7.5 months)
	WG <sup>b</sup>	4 (7)	0.076 0.082 0.077 0.078	0.035 0.035 0.036 0.037	47 [09/13/2011]	Potato	14	0.011, 0.012, 0.018 (0.014)	
USA, American Falls, ID 2011, (Dark Red Norland)	EC <sup>a</sup>	4 (7)	0.083 0.077 0.078 0.072	0.30 0.29 0.28 0.29	49 [08/30/2011]	Potato	14	< 0.010, < 0.010 (< 0.010)	TK0058640 ; TK0058640-12 (Storage: 8.0 months)
USA, American	EC <sup>a</sup>	4	0.072	0.038	49	Potato	14	< 0.010, < 0.010	TK0058640 ;

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 4 × 0.075 kg ai/ha, PHI: 14d									
Falls, ID 2011, (Norkotah)		(7)	0.077 0.077 0.075	0.034 0.036 0.036				(< 0.010)	TK0058640-13 (Storage: 7.7 months)
	EC <sup>a</sup>	4 (7)	0.080 0.076 0.082 0.076	0.037 0.034 0.036 0.036	49 [09/06/2011]	Potato	14	0.011, < 0.010 (0.011)	
USA, Ephrata, WA 2011, (Umatilla)	EC <sup>a</sup>	4 (7)	0.076 0.076 0.076 0.076	0.041 0.041 0.041 0.041	47	Potato	14	< 0.010, < 0.010 (< 0.010)	TK0058640 ; TK0058640-14 (Storage: 8.1 months)
USA, Rupert, ID 2011, (Russet Burbank)	EC <sup>a</sup>	4 (7)	0.076 0.074 0.076 0.076	0.049 0.051 0.050 0.049	96 [08/31/2011]	Potato	14 21	<u>0.012, 0.012</u> <u>0.015</u>	TK0058640 ; TK0058640-15 (Storage: 7.7 months)
USA, Rupert, ID 2011, (Russett Burbank)	EC <sup>a</sup>	4 (7)	0.078 0.081 0.077 0.077	0.049 0.049 0.050 0.049	77 [08/31/2011]	Potato	14	< 0.010, < 0.010 (< 0.010)	TK0058640 ; TK0058640-16 (Storage: 7.9- 8.5 months)

<sup>a</sup> EC 100g/L<sup>b</sup> WG 45g/L

DALA: days after last treatment

\* Analytical Method: GRM042.03A, Benzovindiflupyr.

Mean = 100%, RSD = ± 9.5% (n = 16 in 0.010-0.10 mg/kg spiking range)

Table 16 Residues of benzovindiflupyr in barley (grain) from field trials in the USA

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 2 × 0.075 kg ai/ha, PHI: maturity									
USA, Germansville, PA 2010, (Nomini)	EC <sup>a</sup>	2 (14)	0.077 0.076	0.037 0.037	BBCH 71	(Grain)	STM	0.30,0.58,0.65,0.50,0.70,0.51 ( <u>0.54</u> )	TK0002559; E04-0381 (Storage: 9.0- 12.7 months)
USA, Northwood, ND 2010, (Pinneacle)	EC <sup>a</sup>	2 (14)	0.076 0.076	0.041 0.041	Feekes 10.5.2	(Grain)	STM	0.013, 0.015 ( <u>0.014</u> )	TK0002559; C13-0382 (Storage: 6.8-7.1 months)
USA, Richland, IA 2010, (Para- mount 66)	EC <sup>a</sup>	2 (14)	0.076 0.076	0.042 0.044	Feekes 11.1	(Grain)	STM	2.3, 3.1 (2.7)	TK0002559; C18-0383  data not used due to mis- application
USA,	EC <sup>a</sup>	2	0.074	0.040	BBCH				TK0002559;

## Benzovindiflupyr

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 2 × 0.075 kg ai/ha, PHI: maturity									
Clarence, MS 2010, (Lacey)		(14)	0.077	0.041	71	(Grain)	STM	0.45, 0.54, 0.58, 0.62, 0.65, 0.70 (0.59)	C20-0384 (Storage: 8.4- 12.1 months)
USA, Jamestown, ND 2010, (Tradition)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.055 0.055	BBCH 71	(Grain)	STM	0.35, 0.30 (0.32)	TK0002559; C12-0385 (Storage: 7.2 months)
USA, Grand Island, NE 2010, (Baronesse)	EC <sup>a</sup>	2 (14)	0.077 0.076	0.41 0.41	BBCH 71	(Grain)	STM	0.26, 0.27, 0.25, 0.27, 0.24 (0.26)	TK0002559; C33-0386 (Storage: 8.2- 10.3 months)
USA, Carrington, ND 2010, (Baronesse)	EC <sup>a</sup>	2 (14)	0.077 0.076	0.041 0.041	Feekes 10.5.4	(Grain)	STM	0.028, 0.030 (0.029)	TK0002559; C13-0387 (Storage: 7.2 months)
USA, Lake Andes, SD 2010, (Tradition)	EC <sup>a</sup>	2 (14)	0.076 0.077	0.044 0.047	BBCH 73	(Grain)	STM	0.29, 0.31 (0.30)	TK0002559; C16-0388 (Storage: 7.3 months)
USA, Berthoud, CO 2010, (Coors 69)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.064 0.064	Feekes 10.5.4	(Grain)	STM	0.069, 0.088 (0.079)	TK0002559; W12-0389 (Storage: 8.1 months)
USA, Madera, CA 2010, (Recleaned Whole Barley)	EC <sup>a</sup>	2 (14)	0.076 0.077	0.033 0.033	BBCH 71	(Grain)***	STM	0.089, 0.12 (0.10)	TK0002559; W29-0390 *** Residue of 0.047 mg/kg benzovindiflupyr in control sample. (Storage: 8.9 months)
USA, Hermiston, OR 2010, (Radiant)	EC <sup>a</sup>	2 (14)	0.076 0.077	0.040 0.041	BBCH 84	(Grain)	STM	0.35, 0.36 (0.36)	TK0002559; W21-0391 (Storage: 7.4 months)
USA, Jerome, ID 2010, (Foster)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.040 0.042	BBCH 71	(Grain)	STM	0.059, 0.063 (0.061)	TK0002559; W16-0392 (Storage: 7.5 months)

<sup>a</sup> EC 150g/L;

DALA: days after last treatment

\* Analytical Method: GRM042.03A, Benzovindiflupyr.

Grain: Mean = 108%, RSD = ± 9.4% (n = 12 in 0.01 -1.00 mg/kg)

Table 17: Residues of benzovindiflupyr in barley (grain) from field trials in Canada

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
GAP: Canada, 2 × 0.075 kg ai/ha, PHI: maturity									
CANADA Taber, AB 2011, (CDC Earl)	EC <sup>a</sup>	2 (14)	0.079 0.079	0.17 0.17	73	(Grain)	22	0.88, 0.95 (0.92)	CER05902/11; T929 (Storage: 2.8 months)
CANADA Elgin, MB 2011, (AC Metcalfe)	EC <sup>a</sup>	2 (14)	0.074 0.075	0.17 0.17	71 [04-Aug- 11]	(Grain)	41	0.16, 0.13 (0.15)	CER05902/11; T930 (Storage: 2.3 months)
CANADA Minto, MB 2011, (Copeland)	EC <sup>a</sup>	2 (14)	0.075 0.074	0.038 0.038	73 [25-Jul- 11]	(Grain)	25	0.12, 0.11 (0.12)	CER05902/11; T931 (Storage: 3.1 months)
CANADA Elgin, MB 2011, (Tradition)	EC <sup>a</sup>	2 (14)	0.075 0.074	0.038 0.038	75 [04-Aug- 11]	(Grain)	36	0.25, 0.33 (0.29)	CER05902/11; T932 (Storage: 2.4 months)
CANADA Rosthern, SK 2011, (Metcalfe))	EC <sup>a</sup>	2 (14)	0.079 0.076	0.17 0.17	73	(Grain)	35	0.12, 0.12 (0.12)	CER05902/11; T933 (Storage: 2.8 months)
CANADA Duck Lake, SK 2011, (Metcalfe)	EC <sup>a</sup>	2 (14)	0.080 0.077	0.038 0.038	72	(Grain)	44	0.098, 0.093 (0.096)	CER05902/11; T934 (Storage: 2.0 months)
CANADA Fort Sask. AB 2011, (Coalition)	EC <sup>a</sup>	2 (14)	0.075 0.075	0.038 0.038	71	(Grain)	37	0.38, 0.46 (0.42)	CER05902/11; T935 (Storage: 2.0 months)
CANADA Wellwood, MB 2011, (Conlon)	EC <sup>a</sup>	2 (14)	0.072 0.075	0.038 0.038	71	(Grain)	34	0.23, 0.19 (0.21)	CER05902/11; T936 (Storage: 3.0 months)
CANADA Minto, MB 2011, (Legacy)	EC <sup>a</sup>	2 (14)	0.075 0.075	0.038 0.038	73 [21-Jul- 11]	(Grain)	43	(0.17)	CER05902/11; T937 (Storage: 3.0 months)

<sup>a</sup> EC 100g/L: An adjuvant named Agral 90, rate as 0.2%v/v was used in all trials.

DALA: days after last treatment

\* Analytical Method: GRM042.03A, Benzovindiflupyr.

Mean = 86%, RSD = ± 12% (n = 8 in 0.01-1.00 mg/kg/)

## Benzovindiflupyr

Table 18 Residues of benzovindiflupyr in maize (grain and Popcorn Grain) from field trials in USA

Location, Year (variety)	Application					Residues, mg/kg	DALA	Benzovindiflupyr	Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample			
cGAP: Canada, 2 × 0.075 kg ai/ha, PHI: 7 d									
USA, Germansville, PA  2010, (TA 290-11)	EC <sup>a</sup>	4 (14)	0.080 0.078 0.086 0.077	0.030 0.030 0.030 0.030	89	grain	7	< 0.01, < 0.01 ( < 0.01)	TK0002562; E04-0451 (Storage: 5.6 months)
USA, Athens, GA  2010, (32B10)	EC <sup>a</sup>	4 (14)	0.076 0.076 0.075 0.075	0.030 0.030 0.030 0.027	88	grain	7	< 0.01, < 0.01 ( < 0.01)	TK0002562; E12-0452 (Storage: 5.4- 5.9 months)
USA, Gardner, ND 2010, (Int65D85R)	EC <sup>a</sup>	4 (14)	0.076 0.077 0.077 0.076	0.041 0.041 0.041 0.041	96	grain	7	0.014, 0.015 ( 0.014)	TK0002562; C12-0453 (Storage: 4.8 months)
USA, Northwood, ND2010, (DKC35-19/ A1002669)	EC <sup>a</sup>	4 (14)	0.076 0.076 0.076 0.076	0.040 0.040 0.041 0.040	89	grain	7	0.016, 0.018 ( 0.017)	TK0002562; C13-0454 (Storage: 4.3 months)
USA, Fisk, MO  2010, (RL8950HB)	EC <sup>a</sup>	4 (14)	0.076 0.076 0.076 0.077	0.041 0.041 0.041 0.040	95	grain	7	< 0.01, < 0.01 ( < 0.01)	TK0002562; C23-0455 (Storage: 6.3 months)
USA, Oregon , MO 2010, (Pioneer 32T16)	EC <sup>a</sup>	4 (14)	0.078 0.076 0.078 0.075	0.057 0.057 0.056 0.055	89	grain	7	< 0.01, < 0.01 ( < 0.01)	TK0002562; C19-0456 (Storage: 5.6 months)
USA, Fitchburg, WI  2010, (37Y12)	EC <sup>a</sup>	4 (14)	0.076 0.077 0.076 0.075	0.035 0.036 0.036 0.035	96	grain	7	< 0.01, 0.019 ( 0.010)	TK0002562; C08-0457 (Storage: 5.0 months)
USA, Bagley, IA 2010, (33D47)	EC <sup>a</sup>	4 (14)	0.074 0.077 0.080 0.077	0.039 0.040 0.040 0.038	97	grain [10/09/2010]	7	< 0.01, < 0.01 ( < 0.01)	TK0002562; C30-0458 (Storage: 4.8 months)
USA Bolckow, MO 2010, (Mycogen2 K718)	EC <sup>a</sup>	4 (14)	0.077 0.077 0.077 0.076	0.057 0.056 0.056 0.055	89	grain	7	< 0.01, < 0.01 ( < 0.01)	TK0002562; C19-0459 (Storage: 5.7 months)
USA, Sharon, ND  2010, (DKC35-19/ A1002669)	EC <sup>a</sup>	4 (14)	0.077 0.077 0.076 0.076	0.041 0.041 0.041 0.040	89	grain	7	0.014, 0.016 ( 0.015)	TK0002562; C13-0460 (Storage: 4.3 months)

Location, Year (variety)	Application					Residues, mg/kg	DALA	Benzovindiflupyr	Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample			
cGAP: Canada, 2 × 0.075 kg ai/ha, PHI: 7 d									
USA, Lesterville, SD  2010, (Golden Harvest H-8254 3000 GT, var. 162X579 14WP917)	EC <sup>a</sup>	4 (14)	0.076 0.077 0.077 0.077	0.041 0.042 0.041 0.040	92	grain	7	< 0.01, < 0.01 ( < 0.01)	TK0002562; C16-0461 (Storage: 5.2 months)
USA, Richwood, OH  2010, (DKC57-66 VT3/RR2)	EC <sup>a</sup>	4 (14)	0.077 0.077 0.077 0.077	0.046 0.047 0.047 0.046	87	grain	7	< 0.01, < 0.01 ( < 0.01)	TK0002562; C01-0462 (Storage: 4.7 months)
USA, Clarence, MO  2010, (Pioneer 33D49)	EC <sup>a</sup>	4 (14)	0.076 0.077 0.082 0.078	0.041 0.041 0.041 0.041	99	grain	7	< 0.01, < 0.01 ( < 0.01)	TK0002562; C20-0463 (Storage: 5.6 months)
USA, Osceola, NE 2010, (4947RB)	EC <sup>a</sup>	4 (14)	0.077 0.076 0.076 0.077	0.041 0.041 0.041 0.041	89	grain	7	< 0.01, < 0.01 ( < 0.01)	TK0002562; C33-0464 (Storage: 5.1 months)
USA, Campbell, MN  2010, (DKC 38-89)	EC <sup>a</sup>	4 (14)	0.076 0.076 0.076 0.076	0.041 0.041 0.041 0.041	85	grain	7	< 0.01, < 0.01 ( < 0.01)	TK0002562; C11-0465 (Storage: 5.4 months)
USA, Geneva, MN  2010, (Pioneer 38M60)	EC <sup>a</sup>	4 (14)	0.078 0.076 0.075 0.076	0.047 0.048 0.047 0.048	89	grain	7	< 0.01, 0.019 ( <u>0.014</u> )	TK0002562; C09-0466 (Storage: 5.1 months)
USA, Perry, IA  2010, (P1162XR)	EC <sup>a</sup>	4 (14)	0.075 0.078 0.076 0.080	0.039 0.039 0.040 0.037	97	grain	7	< 0.01, < 0.01 ( < 0.01)	TK0002562; C30-0467 (Storage: 4.8 months)
USA, York, NE  2010, (X723 14WP.0)	EC <sup>a</sup>	4 (14)	0.076 0.076 0.076 0.077	0.040 0.040 0.040 0.042	89	grain	7	< 0.01, 0.017 ( <u>0.014</u> )	TK0002562; C33-0468 (Storage: 5.2 months)

## Benzovindiflupyr

Location, Year (variety)	Application					Residues, mg/kg	DALA	Benzovindiflupyr	Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample			
cGAP: Canada, 2 × 0.075 kg ai/ha, PHI: 7 d									
USA, Anabel, MO  2010, (33T57)	EC <sup>a</sup>	4 (14)	0.074 0.075 0.074 0.080	0.041 0.041 0.041 0.041	99	grain	7	< 0.01, < 0.01 ( < 0.01)	TK0002562; C20-0469 (Storage: 5.6 months)
USA, Raymondville, TX  2010, (HG284162)	EC <sup>a</sup>	4 (14)	0.080 0.078 0.078 0.078	0.081 0.082 0.082 0.082	87	Grain	7	< 0.01, < 0.01 ( < 0.01)	TK0002562; W08-0470 (Storage: 7.1 months)
USA, Levelland, TX  2010, (AP2504, Popcorn)	EC <sup>a</sup>	4 (14)	0.076 0.075 0.075 0.077	0.041 0.041 0.041 0.041	99	Grain	7	< 0.01, < 0.01 ( < 0.01)	TK0002562; W39-0471 (Storage: 5.9 months)
USA, Wall, TX 2011, (Hybrid 111RM GT/CB/LL/RW)	EC <sup>a</sup>	4 (14)	0.075 0.075 0.075 0.075	0.041 0.041 0.041 0.041	99	Grain	7	< 0.01, < 0.01 ( < 0.01)	TK0002562; 01 (Storage: 5.9 months)
	WG <sup>b</sup>	4 (14)	0.075 0.077 0.075 0.077	0.041 0.041 0.041 0.041	71	Grain	7	< 0.01, < 0.01 ( < 0.01)	
USA, Bagley, IA 2011, (111RM)	EC <sup>a</sup>	4 (14)	0.075 0.075 0.075 0.075	0.041 0.041 0.041 0.041	99 [10/09/2010]	Grain	7	< 0.01, < 0.01 ( < 0.01)	TK0002562; 02 (Storage: 5.3 months)
	WG <sup>b</sup>	4 (14)	0.077 0.076 0.077 0.074	0.041 0.041 0.041 0.041	73	Grain	7	< 0.01, < 0.01 ( < 0.01)	
USA, Rice, MN 2011, (DKC 35-43)	EC <sup>a</sup>	4 (14)	0.075 0.075 0.075 0.077	0.041 0.041 0.041 0.041	99	Grain	7	< 0.01, < 0.01 ( < 0.01)	TK0002562; 03 (Storage: 4.9 months)
	WG <sup>b</sup>	4 (14)	0.076 0.076 0.077 0.076	0.041 0.041 0.041 0.041	73	Grain	7	< 0.01, < 0.01 ( < 0.01)	

<sup>a</sup> EC 150g/L<sup>b</sup> WG 45g/L

DALA: days after last treatment

\* Analytical Method: GRM042.03A, Benzovindiflupyr

Field Corn Grain: Mean = 89%, RSD = ± 12% (n = 12 in 0.01 - 0.100 mg/kg)

Table 19 Residues of benzovindiflupyr in wheat (grain) from field trials in USA

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks) <sup>c</sup>
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: Canada, 2 × 0.075 kg ai/ha, PHI: Maturity									
USA, Seven Springs, NC  2010, (Pioneer 26R15)	EC <sup>a</sup>	2 (14)	0.076 0.078	0.032 0.029	71	Grain	STM	0.037,0.044 (0.041)	TK0002558 E10-0351 (Storage: 9.6 months)
USA, Fisk, MO  2010, (Beretta)	EC <sup>a</sup>	2 (14)	0.076 0.076	0.041 0.041	73	Grain	STM	0.069,0.013 (0.041)	TK0002558 C23-0352 (Storage: 5.4-8.5 months)
USA, Northwood, ND  2010, (Jerry)	EC <sup>a</sup>	2 (14)	0.077 0.078	0.042 0.042	Feekes 10.5.4	Grain	STM	< 0.01, < 0.01, * < 0.01, * < 0.01 ( < 0.01)	TK0002558 C13-0353 (Storage: 3.7 months)
USA, Shelbyville, MO  2010, (Erine)	EC <sup>a</sup>	2 (14)	0.078 0.077	0.041 0.041	Feekes 10.5	Grain	STM	< 0.01, < 0.01 ( < 0.01)	TK0002558 C20-0354 (Storage: 9.0 months)
USA, Richland, IA  2010, (Wilcross748)	EC <sup>a</sup>	2 (14)	0.076 0.076	0.052 0.050	Feekes 10.5.4	Grain	STM	0.025, 0.044 (0.035)	TK0002558 C18-0355 (Storage: 8.9 months)
USA, Milford Center, OH  2010, (Croplan Genetics 8614)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.045 0.047	Feekes 10.5.4	Grain	STM	0.041,0.050, * < 0.01, * < 0.01 (0.046)	TK0002558 C01-0356 (Storage: 8.8 months)
USA, Macon, MO  2010, (V9710)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.041 0.041	Feekes 10.5.1	Grain	STM	< 0.01, < 0.01 ( < 0.01)	TK0002558 C20-0357 (Storage: 9.1 months)
USA, Raymondville, TX 2010, (Caudillo)	EC <sup>a</sup>	2 (14)	0.078 0.078	0.041 0.041	Feekes 10.5.4	Grain	STM	0.022,0.018 (0.020)	TK0002558 W08-0358 (Storage: 6.1 months)
USA, Carrington, ND 2010, (AP-604-CL)	EC <sup>a</sup>	2 (14)	0.076 0.075	0.041 0.040	Feekes 10.5.4	Grain	STM	< 0.01, < 0.01 ( < 0.01)	TK0002558 C13-0359 (Storage: 7.4 months)



## Benzovindiflupyr

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks) <sup>c</sup>
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: Canada, 2 × 0.075 kg ai/ha, PHI: Maturity									
USA, Jamestown, ND  2010, (Not known)	EC <sup>a</sup>	2 (14)	0.077 0.076	0.055 0.041	71	Grain	7 DBSM  STM  7 DASM  14 DASM	0.016  0.014, 0.017 (0.016)  0.010  <u>0.021</u>	TK0002558 C12-0360 (Storage: 5.8-6.4 months)
	EC <sup>a</sup>	2 (14)	0.077 0.076	0.055 0.041	71	Grain	7 DBSM  STM  7 DASM  14 DASM	* < 0.01  * < 0.01  * < 0.01  * < 0.01, * < 0.01 (* < 0.01)	
USA, Carrington, ND  2010, (Faller)	EC <sup>a</sup>	2 (14)	0.077 0.075	0.041 0.041	Feekes 10.5.4	Grain	STM	< 0.01, < 0.01, * < 0.01, * < 0.01 ( < 0.01)	TK0002558 C13-0361 (Storage: 6.9-7.4 months)
USA, Lake Andes, SD  2010, (Argent)	EC <sup>a</sup>	2 (14)	0.076 0.076	0.044 0.047	73	Grain	STM	0.026, 0.012, * < 0.01 (0.019)	TK0002558 C16-0362 (Storage: 7.5 months)
USA, Grand Island, NE  2010, (NEO1643)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.041 0.040	71	Grain	STM	0.014, 0.015, * < 0.01, * < 0.01 (0.015)	TK0002558 C33-0363 (Storage: 8.6 months)
USA, Johnstown, CO 2010, (Yuma)	EC <sup>a</sup>	2 (14)	0.078 0.077	0.065 0.064	Feekes 10.5.4	Grain	STM	0.046, 0.087 (0.067)	TK0002558 W12-0364 (Storage: 8.4-8.9 months)
USA, Eaton, CO 2010, (Jalgalene)	EC <sup>a</sup>	2 (14)	0.076 0.078	0.065 0.065	Feekes 10.5	Grain	7 DBSM  STM  7 DASM  14 DASM	0.037  0.017, 0.023  <u>0.041</u>  0.040	TK0002558 W12-0365 (Storage: 8.2-8.9 months)
USA, Uvalde, TX  2010, (Tam 203)	EC <sup>a</sup>	2 (14)	0.075 0.075	0.042 0.039	71	Grain	STM	< 0.01, < 0.01 ( < 0.01)	TK0002558 W07-0366 (Storage: 5.5 months)

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks) <sup>c</sup>
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: Canada, 2 × 0.075 kg ai/ha, PHI: Maturity									
USA, Wall, TX  2010, (Coronado)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.043 0.042	Feekes 10.5.4	Grain	STM	0.012,0.012 (0.012)	TK0002558 W40-0367 (Storage: 5.2 months)
USA, Levelland, TX 2010, (Weather master)	EC <sup>a</sup>	2 (14)	0.075 0.075	0.040 0.040	10.5.4	Grain	STM	0.042,0.076 (0.059)	TK0002558 W39-0368 (Storage: 5.3 months)
USA, Milliken, CO  2010, (Bill Brown)	EC <sup>a</sup>	2 (14)	0.078 0.076	0.064 0.065	Feekes 10.5.4	Grain	STM	0.086,0.060 (0.072)	TK0002558 W12-0369 (Storage: 8.9 months)
USA, Rupert, ID  2010, (Klassic)	EC <sup>a</sup>	2 (14)	0.076 0.077	0.047 0.049	71	Grain	STM	< 0.01, < 0.01 (< 0.01)	TK0002558 W15-0370 (Storage: 7.9 months)
USA, Valley City, ND  2011, (Falcon)	EC <sup>a</sup>	2 (14)	0.079 0.076	0.054 0.054	73	Grain	SM	0.026,0.017,0.019 (0.021)	TK0048907 TK048907- 01 (Storage: 5.8-6.4 months)
	WG <sup>b</sup>	2 (14)	0.077 0.077	0.054 0.054	73	Grain	SM	0.024,0.025,0.020 (0.023)	
USA, Jamestown, ND 2011, (Overland)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.054 0.054	73	Grain	SM	0.024,0.021,0.035 (0.027)	TK0048907 TK048907- 02 (Storage: 4.9 months)
	WG <sup>b</sup>	2 (14)	0.077 0.077	0.054 0.054	73	Grain	SM	0.027,0.010,0.011 (0.016)	
USA, Northwood, ND  2011, (Faller)	EC <sup>a</sup>	2 (14)	0.076 0.077	0.041 0.041	71	Grain	SM	< 0.01, < 0.01, < 0.01 (< 0.01)	TK0048907 TK048907- 03 (Storage: 4.2 months)
	WG <sup>b</sup>	2 (14)	0.077 0.076	0.041 0.041	71	Grain	SM	< 0.01, < 0.01, < 0.01 (< 0.01)	

<sup>a</sup> EC 150g/L<sup>b</sup> WG 45g/L

DALA: days after last treatment

\*Trt 2 grain and straw data was from selected trials requested from Syngenta Canada to evaluate residues from early application to normal harvest.

<sup>c</sup> Analytical Method: GRM042.03A, Benzovindiflupyr.

Grain: Mean = 95%, RSD = ± 8.2% (n = 4 in 0.010 – 0.10 mg/kg)

## Benzovindiflupyr

Table 20 Residues of benzovindiflupyr in wheat (grain) from field trials in Canada

Location, Year (variety)	Application					Residues, mg/kg	DALA	Benzovindiflupyr	Report; Trial; (remarks) <sup>b</sup>
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample			
cGAP: Canada, 2 × 0.075 kg ai/ha, PHI: Maturity									
CANADA Vanscoy, SK  2011, (Infinity))	EC <sup>a</sup>	2 (14)	0.074 0.073	0.038 0.038	59	Grain	36	0.023,0.038 (0.031)	CER05901/11; T916 (Storage: 2.3 months)
CANADA Kinley, SK 2011, (Infinity)	EC <sup>a</sup>	2 (14)	0.079 0.075	0.17 0.17	71	Grain	41	0.048,0.036 (0.042)	CER05901/11; T917 (Storage: 1.5 months)
CANADA Taber, AB 2011, (Superb)	EC <sup>a</sup>	2 (14)	0.079 0.078	0.17 0.17	71	Grain	32	0.027,0.027 (0.027)	CER05901/11; T918 (Storage: 2.2 months)
CANADA Boissevain, MB 2011, (Harvest)	EC <sup>a</sup>	2 (14)	0.076 0.075	0.17 0.17	71	Grain	40	0.029, 0.022 (0.026)	CER05901/11; T919 (Storage: 1.8 months)
CANADA Boissevain, MB 2011, (Kane)	EC <sup>a</sup>	2 (14)	0.075 0.075	0.038 0.038	71	Grain	43	< 0.01, 0.014 (0.012)	CER05901/11; T920 (Storage: 1.7 months)
CANADA Rosthern, Sk 2011, (Infinity)	EC <sup>a</sup>	2 (14)	0.071 0.072	0.038 0.038	71	Grain	52	< 0.01, 0.012 (0.011)	CER05901/11; T921 (Storage: 1.7 months)
CANADA Blaine Lake, SK 2011, (Infinity)	EC <sup>a</sup>	2 (14)	0.073 0.076	0.038 0.038	71	Grain	54	< 0.01, < 0.01 (< 0.01)	CER05901/11; T922 (Storage: 1.7 months)
CANADA Duck Lake, SK 2011, (Infinity)	EC <sup>a</sup>	2 (14)	0.080 0.076	0.038 0.038	71	Grain	41	0.026,0.037 (0.032)	CER05901/11; T923 (Storage: 2.0 months)

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks) <sup>b</sup>
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: Canada, 2 × 0.075 kg ai/ha, PHI: Maturity									
CANADA Kipp, AB 2011, (Superb)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.041 0.041	71	Grain	42	0.021, 0.013 (0.017)	CER05901/11; T924 (Storage: 1.3 months)
CANADA Alvena, SK  2011, (Goodeve – Ac Intrepid)	EC <sup>a</sup>	2 (14)	0.078 0.071	0.038 0.038	71	Grain	28	0.025, 0.025* (0.025)	CER05901/11; T925 (Storage: 2.2 months)
CANADA Fort Sask. AB, 2011, (Harvest)	EC <sup>a</sup>	2 (14)	0.076 0.074	0.038 0.038	71	Grain	44	0.027, 0.023 (0.025)	CER05901/11; T926 (Storage: 1.2 months)
CANADA Minto, MB  2011, (Superb)	EC <sup>a</sup>	2 (14)	0.079 0.075	0.038 0.038	73	Grain	48	0.024, 0.022 (0.023)	CER05901/11; T927 (Storage: 2.0 months)
CANADA Minto, MB 2011, (AC Barrie)	EC <sup>a</sup>	2 (14)	0.077 0.076	0.038 0.038	71	Grain	35	0.041, 0.012 (0.026)	CER05901/11; T928 (Storage: 2.0 months)

<sup>a</sup> EC 150g/L;

DALA: days after last treatment

<sup>b</sup> Analytical Method: GRM042.03A, Benzovindiflupyr.

Grain: Mean = 95%, RSD = ± 8.2% (n = 4 in 0.010 – 0.10 mg/kg)

Table 21 Residues of benzovindiflupyr in sugar cane from field trials in Brazil

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: Brazil, 5 × 0.03 kg ai/ha, PHI: 30d									
Mirassol, 2011, (SP 84 2025)	EC <sup>a</sup>	5 (30)	0.030	0.015	42	Sugarcane	20	< 0.01	M11013 M11013-AMA1 (Storage: 5 months)
			0.030	0.015			30	< 0.01	
	0.030		0.015	40			0.02		
	0.030		0.015						
	0.030		0.015						
	WG <sup>b</sup>	5 (30)	0.030	0.015	42	Sugarcane	20	< 0.01	M11019 M11019-AMA1 (Storage: 5 months)
			0.030	0.015			30	< 0.01	
	0.030		0.015	40			0.02		
	0.030		0.015						
	0.030		0.015						
Jaboticabal, 2011,	EC <sup>a</sup>	5 (30)	0.030	0.015	39	Sugarcane	20	< 0.01	M11013
			0.030	0.015			30	< 0.01	M11013-AMA2

## Benzovindiflupyr

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: Brazil, 5× 0.03 kg ai/ha, PHI: 30d									
(RB 5453)			0.030 0.030 0.030	0.015 0.015 0.015			40	< 0.01	(Storage: 5 months)
	WG <sup>b</sup>	5 (30)	0.030 0.030 0.030 0.030 0.030	0.015 0.015 0.015 0.015 0.015	39	Sugarcane	20 30 40	< 0.01 < 0.01 < 0.01	M11019 M11019-AMA2 (Storage: 5 months)
Jaboticabal, 2011, (SP 89-1115)	(A17961) EC <sup>a</sup>	5 (30)	0.090 0.090 0.090 0.090 0.090	0.045 0.045 0.045 0.045 0.045	39	Sugarcane	30 30	0.02, < 0.01 (0.015) 0.07, 0.01 (scaled from proportionality 0.01)	M11007 M11007-AMA2 (Storage: 5 months)
	(A17961) EC <sup>a</sup>	5 (30)	0.150 0.150 0.150 0.150 0.150	0.075 0.075 0.075 0.075 0.075					
Bandeirantes, 2011, (RB 72454)	EC <sup>a</sup>	5 (30)	0.030 0.030 0.030 0.030 0.030	0.015 0.015 0.015 0.015 0.015	39	Sugarcane	20 30 40	0.02 <u>0.02</u> 0.02	M11013 M11013-DMO (Storage: 5 months)
	WG <sup>b</sup>	5 (30)	0.030 0.030 0.030 0.030 0.030	0.015 0.015 0.015 0.015 0.015	39	Sugarcane	20 30 40	0.02 0.02 0.02	M11019 M11019-DMO (Storage: 5 months)
Tupaciguara, 2011, (SP 86155)	EC <sup>a</sup>	5 (30)	0.030 0.030 0.030 0.030 0.030	0.015 0.015 0.015 0.015 0.015	38	Sugarcane	20 30 40	< 0.01 <u>&lt; 0.01</u> < 0.01	M11013 M11013-JJB (Storage: 5 months)
	WG <sup>b</sup>	5 (30)	0.030 0.030 0.030 0.030 0.030	0.015 0.015 0.015 0.015 0.015	38	Sugarcane	20 30 40	< 0.01 < 0.01 < 0.01	M11019 M11019-JJB (Storage: 5 months)
Rio das Pedras, 2011, (RB 85 7515)	EC <sup>a</sup>	5 (30)	0.030 0.030 0.030 0.030 0.030	0.015 0.015 0.015 0.015 0.015	48	Sugarcane	20 30	0.02 < 0.01	M11013 M11013- RWC1 (Storage: 5 months)
	WG <sup>b</sup>	5 (30)	0.030 0.030 0.030 0.030 0.030	0.015 0.015 0.015 0.015 0.015	48	Sugarcane	20 30	0.02 0.02 <u>(0.02)</u>	M11019 M11019- RWC1 (Storage: 5 months)
	(A17961) EC <sup>a</sup>	5 (30)	0.090 0.090 0.090 0.090 0.090	0.045 0.045 0.045 0.045 0.045	39	Sugarcane	30 30	0.03, 0.01 (0.02) 0.05, 0.01 (0.04) Scaled mean:0.014	M11007 M11007- RWC2 (Storage: 5 months)
	(A17961) EC <sup>a</sup>	5 (30)	0.15 0.15 0.15 0.15 0.15	0.075 0.075 0.075 0.075 0.075					
	EC <sup>a</sup>	5 (30)	0.030 0.030 0.030	0.015 0.015 0.015	48	Sugarcane	20 30 40	< 0.01 < 0.01 < 0.01	M11013 M11013- RWC2

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: Brazil, 5× 0.03 kg ai/ha, PHI: 30d									
			0.030 0.030	0.015 0.015					(Storage: 5 months)
	WG <sup>b</sup>	5 (30)	0.030 0.030 0.030 0.030 0.030	0.015 0.015 0.015 0.015 0.015	48	Sugarcane	20 30 40	< 0.01 < 0.01 < 0.01	M11019 M11019- RWC2 (Storage: 5 months)
Santa Lucia, 2011, (SP 81-3250)	(A17961) EC <sup>a</sup>	5 (30)	0.090 0.090 0.090 0.090	0.045 0.045 0.045 0.045	39	Sugarcane	30  30	0.03, 0.01  0.04, < 0.01 (scaled mean: <u>0.01</u> )	M11007 M11007- AMA1 (Storage: 5 months)
	(A17961) EC <sup>a</sup>	5 (30)	0.15 0.15 0.15 0.15 0.15	0.075 0.075 0.075 0.075 0.075					
Holambra, 2011, (RB 85 7515)	(A17961) EC <sup>a</sup>	5 (30)	0.090 0.090 0.090 0.090	0.045 0.045 0.045 0.045	39	Sugarcane	30  30	0.04, 0.01 (0.025) 0.10, 0.02 (scaled from proportionality <u>0.02</u> )	M11007 M11007- RWC1 (Storage: 5 months)
	(A17961) EC <sup>a</sup>	5 (30)	0.15 0.15 0.15 0.15	0.075 0.075 0.075 0.075					

<sup>a</sup> EC 50 g/L benzovindiflupyr and 100 g/L azoxystrobin;

<sup>b</sup> WG 150 g/L benzovindiflupyr and 300 g/L azoxystrobin;

DALA: days after last treatment

Analytical method: GRM042.03A, Benzovindiflupyr.

Mean = 77% RSD = 3% (n = 12) in 0.01-0.10 mg/kg spiking range

Table 22 Residues of benzovindiflupyr in cotton seed from field trials in USA

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 3× 0.075 kg ai/ha, PHI: 45d									
USA, Elko, SC  2010, (Delta Pine-Land 161)	EC <sup>a</sup>	3 (14)	0.075 0.076 0.076	0.057 0.054 0.051	83	Seed	45	0.025,0.035 ( <u>0.030</u> )	TK0025157 E11-0521 (Storage: 7.8 months)
USA, Cheneyville, LA  2010, (Phytogen 375 WRF)	EC <sup>a</sup>	3 (14)	0.077 0.077 0.078	0.044 0.044 0.039	77	Seed	45	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0025157 E17-0522 (Storage: 8.5 months)
USA, Fisk MS 2010, (DP 164 B2RF)	EC <sup>a</sup>	3 (14)	0.077 0.076 0.077	0.041 0.041 0.041	77	Seed	45	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0025157 C23-0523 (Storage: 8.2-8.5 months)
USA, Proctor, AR2010, (DyanGro 2400RF)	EC <sup>a</sup>	3 (14)	0.076 0.076 0.076	0.080 0.080 0.080	85	Seed	45	0.018, 0.028 ( <u>0.023</u> )	TK0025157 C24-0524 (Storage: 8.3 months)

## Benzovindiflupyr

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 3× 0.075 kg ai/ha, PHI: 45d									
USA, Batesville, TX 2010, (DPL0949)	EC <sup>a</sup>	3 (14)	0.075 0.076 0.078	0.052 0.045 0.042	76	Seed	45	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0025157 W07-0525 (Storage: 9.6 months)
USA, Uvalde, TX 2010, (Stoneville 5458B2RF)	EC <sup>a</sup>	3 (14)	0.076 0.076 0.074	0.052 0.043 0.044	78	Seed	45	0.019, 0.024 ( <u>0.022</u> )	TK0025157 W07-0526 (Storage: 9.6 months)
USA, Wall, TX 2010, (Fibermax 1740 B2F)	EC <sup>a</sup>	3 (14)	0.076 0.076 0.075	0.053 0.054 0.054	84	Seed	45	0.028, 0.032 ( <u>0.030</u> )	TK0025157 W40-0527 (Storage: Seed 13.1 months)
USA, Wolfforth, TX 2010, (FM9058)	EC <sup>a</sup>	3 (14)	0.078 0.077 0.075	0.082 0.082 0.082	89	Seed	45	0.070, 0.086 ( <u>0.078</u> )	TK0025157 W39-0528 (Storage: Seed 7.8 months)
USA, Levelland, TX 2010, (FM9180B2F)	EC <sup>a</sup>	3 (14)	0.078 0.076 0.076	0.082 0.081 0.082	89	Seed	45	0.081, 0.069 ( <u>0.075</u> )	TK0025157 W39-0529 (Storage: Seed 4.7-7.9 months)
USA, Fresno, CA 2010, (PHY775WRF ACALA)	EC <sup>a</sup>	3 (14)	0.076 0.077 0.076	0.027 0.027 0.027	67	Seed	45	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0025157 W19-0530 (Storage: 8.6 months)
USA, Madera, CA 2010, (Acala RiataRR)	EC <sup>a</sup>	3 (14)	0.078 0.077 0.077	0.409 0.407 0.407	72	Seed	45	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0025157 W29-0531 (Storage: 8.3 months)
USA, Stratford, CA 2010, (DP 949B2RF)	EC <sup>a</sup>	3 (14)	0.075 0.075 0.076	0.040 0.040 0.041	81	Seed	45	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0025157 W33-0532 (Storage: 8.5 months)
USA, Fisk, MO 2011, (DP 0912 B2RF)	EC <sup>a</sup>	3 (14)	0.077 0.076 0.077	0.041 0.041 0.041	80	Seed	45	< 0.01, < 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0058642 TK0058642-01 (Storage: 4.7 months)
	WG <sup>b</sup>	3 (14)	0.077 0.076 0.076	0.041 0.041 0.041	80	Seed	45	< 0.01, < 0.01, < 0.01 ( <u>&lt; 0.01</u> )	
USA, Greenville, MS 2011, (ST 5458 B2RF)	EC <sup>a</sup>	3 (14)	0.077 0.078 0.075	0.053 0.051 0.051	77	Seed	45	< 0.01, < 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0058642 TK0058642-02 (Storage: 5.1 months)
	WG <sup>b</sup>	3 (14)	0.078 0.077 0.077	0.054 0.051 0.052	77	Seed	45	< 0.01, < 0.01, < 0.01 ( <u>&lt; 0.01</u> )	
USA, Uvalde, TX 2011, (DPL 0935)	EC <sup>a</sup>	3 (14)	0.075 0.076 0.075	0.062 0.052 0.063	77	Seed	45	< 0.01, < 0.01, < 0.01 ( <u>&lt; 0.01</u> )	TK0058642 TK0058642-03 (Storage: Seed 6.6 months)
	WG <sup>b</sup>	3 (14)	0.076 0.077 0.076	0.063 0.052 0.063	77	Seed	45	< 0.01, < 0.01, < 0.01 ( <u>&lt; 0.01</u> )	
USA, Levelland, TX 2011, (FM9180 B2F)	EC <sup>a</sup>	3 (14)	0.075 0.077 0.077	0.041 0.041 0.041	81	Seed	45	0.044, 0.047, 0.033 ( <u>0.041</u> )	TK0058642 TK0058642-04 (Storage: Seed 4.0 months)
	WG <sup>b</sup>	3 (14)	0.076 0.077 0.077	0.041 0.041 0.041	81	Seed	45	0.030, 0.031, 0.029 ( <u>0.030</u> )	

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 3× 0.075 kg ai/ha, PHI: 45d									
			0.076	0.041					

<sup>a</sup> EC 150g/L

<sup>b</sup> WG 45g/L

DALA: days after last treatment

\* Analytical Method: GRM042.04A, Benzovindiflupyr.

Seed: Mean = 80%, RSD = ± 2.6% (n = 8 in 0.010 - 0.10 mg/kg)

Table 23 Residues of benzovindiflupyr in peanut (nut) from field trials in Brazil and the USA

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 3× 0.075 kg ai/ha, PHI: 30d, application interval 14d									
Brazil, Jaboticabal - SP 2010-2011, (Runner IAC 886)	EC <sup>a</sup>	4 (14)	0.050 0.050 0.050 0.050	0.11	76	Nut	7	<u>0.02</u>	A17961A M11082-AMA1
	EC <sup>a</sup>	(14)	0.050 0.050 0.050 0.050	0.11	76	Nut	7	< 0.01	
Brazil, Matão - SP 2010-2011, (Runner IAC 886)	EC <sup>a</sup>	4 (14)	0.050 0.050 0.050 0.050	0.11	76	Nut	7 14	< 0.01 <u>0.02</u>	A181826B M11093-AMA2
	EC <sup>a</sup>	(14)	0.050 0.050 0.050 0.050	0.11	77	Nut	7	< 0.01	
Brazil, Bálsamo- SP 2010-2011, (Runner IAC 886)	EC <sup>a</sup>	4 (14)	0.050 0.050 0.050 0.050	0.11	77	Nut	7	< 0.01	A17961A M11082-AMA3
	EC <sup>a</sup>	(14)	0.050 0.050 0.050 0.050	0.11	77	Nut	7	< 0.01	
Brazil, Engenheiro Coelho - SP 2010-2011, (Tatu Vermelho)	EC <sup>a</sup>	4 (14)	0.050 0.050 0.050 0.050	0.11	71	Nut	7	< 0.01	A17961A M11082-AMA4
	EC <sup>a</sup>	(14)	0.050 0.050 0.050 0.050	0.11	71	Nut	7	< 0.01	
Brazil, Bandeirantes - PR 2010-2011, (Tatu)	EC <sup>a</sup>	4 (14)	0.050 0.050 0.050 0.050	0.11	85	Nut	7	< 0.01	A17961A M11082-DMO
	EC <sup>a</sup>	(14)	0.050 0.050 0.050 0.050	0.11	85	Nut	7	< 0.01	
Brazil, Uberlândia - MG 2010-2011, (Tatu)	EC <sup>a</sup>	4 (14)	0.050 0.050 0.050 0.050	0.11	88	Nut	7	< 0.01	A17961A M11082-JJB
	EC <sup>a</sup>	(14)	0.050 0.050 0.050 0.050	0.11	88	Nut	7	< 0.01	
USA,	EC <sup>a</sup>	3	0.10	0.22	79	Nutmeat	30	< 0.01, < 0.01	TK0002560



## Benzovindiflupyr

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCB	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 3× 0.075 kg ai/ha, PHI: 30d, application interval 14d									
Elko, SC 2010, (Gregory)		(14)	0.10 0.10					(< 0.01)	E11-0401 (Storage: 8.2 months)
USA, Seven Springs, NC 2010, (Perry)	EC <sup>a</sup>	3 (14)	0.10 0.10 0.10	0.22	69	Nutmeat	30	< 0.01, < 0.01 (< 0.01)	TK0002560 E10-0402 (Storage: 8.4 months)
USA, Hawkinsville, GA 2010, (Georgia 06-G)	EC <sup>a</sup>	3 (14)	0.10 0.10 0.10	0.22	79	Nutmeat	30	< 0.01, < 0.01 (< 0.01)	TK0002560 E12-0403 (Storage: 9.6 months)
USA, Suffolk, VA 2010, (Champs)	EC <sup>a</sup>	3 (14)	0.10 0.10 0.10	0.22	75	Nutmeat	30	< 0.01, < 0.01 (< 0.01)	TK0002560 E07-0404 (Storage: 7.3 months)
USA, Suffolk, VA 2010, (Champs)	EC <sup>a</sup>	3 (14)	0.10 0.10 0.10	0.22	75	Nutmeat	30	< 0.01, < 0.01 (< 0.01)	TK0002560 E07-0405 (Storage: 7.4 months)
USA, Pikeville, NC 2010, (Gregory)	EC <sup>a</sup>	3 (14)	0.10 0.10 0.10	0.22	79	Nutmeat	30	< 0.01, < 0.01 (< 0.01)	TK0002560 E10-0406 (Storage: 7.1- 8.0 months)
USA, Suffolk, VA, 2010, (Georgia 6G)	EC <sup>a</sup>	3 (14)	0.10 0.10 0.10	0.22	79	Nutmeat	30	< 0.01, < 0.01 (< 0.01)	TK0002560 E11-0407 (Storage: 8.2 months)
USA, Unadilla, GA 2010, (Georgia 6G)	EC <sup>a</sup>	3 (14)	0.10 0.10 0.10	0.22	79	Nutmeat	30	< 0.01, < 0.01 (< 0.01)	TK0002560 E12-0408 (Storage: 9.6 months)
USA, Malone, FL 2010, (Georgia Greene)	EC <sup>a</sup>	3 (14)	0.10 0.10 0.10	0.22	Pod Fill	Nutmeat	30	< 0.01, < 0.01 (< 0.01)	TK0002560 E14-0409 (Storage: 8.9 months)
USA, Charlotte, TX 2010, (Florida Runner 07)	EC <sup>a</sup>	3 (14)	0.10 0.10 0.10	0.22	86	Nutmeat	30	< 0.01, < 0.01 (< 0.01)	TK0002560 W07-0410 (Storage: 7.1 months)
USA, Dilley, TX 2010, (TamRum OL- 1)	EC <sup>a</sup>	3 (14)	0.1008 0.0997 0.1008	0.22	86	Nutmeat	30	< 0.01, < 0.01 (< 0.01)	TK0002560 W07-0411 (Storage: 7.1 months)
USA, Levelland, TX 2010, (Tamspan 90)	EC <sup>a</sup>	3 (14)	0.10 0.099 0.10	0.22	Maturing nuts	Nutmeat	30	< 0.01, < 0.01 (< 0.01)	TK0002560 W39-0412 (Storage: 8.7 months)
USA, Pineview, GA 2011, (Georgia 06-G)	EC <sup>a</sup>	3 (14)	0.098 0.098 0.099	0.22	79	Nutmeat	30	< 0.01, < 0.01, < 0.01 (< 0.01)	TK0047558 TK0047558-01 (Storage: 3.0 months)
	EC <sup>a</sup>	3 (14)	0.10 0.099 0.100	0.22	79	Nutmeat	30	< 0.01, < 0.01, < 0.01 (< 0.01)	
USA, Charlotte, TX 2011, (Georgia 09)	EC <sup>a</sup>	3 (14)	0.099 0.10 0.10	0.22	84	Nutmeat	30	< 0.01, < 0.01, < 0.01 (< 0.01)	TK0047558 TK0047558-02 (Storage: 6.7 months)
	EC <sup>a</sup>	3	0.10	0.22	84	Nutmeat	30	< 0.01,	

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 3 × 0.075 kg ai/ha, PHI: 30d, application interval 14d									
		(14)	0.10 0.10					< 0.01, < 0.01 (< 0.01)	
USA, Hinton, OK 2011, (Tamnut OL06)	EC <sup>a</sup>	3 (14)	0.10 0.10 0.098	0.22	79	Nutmeat	30	< 0.01, < 0.01, < 0.01 (< 0.01)	TK0047558 TK0047558-03 (Storage: 2.1 months)
	EC <sup>a</sup>	3 (14)	0.10 0.10 0.10	0.22	79	Nutmeat	30	< 0.01, < 0.01, < 0.01 (< 0.01)	

<sup>a</sup> EC 150 g ai/L

DALA: days after last treatment

A17961A is a EC fungicide, its active ingredients are SYN545192 and azoxystrobin at nominal concentration of 50 g/L and 100 g/L, respectively.

A18126 is a product formulated as water dispersible granules (WG) and its active ingredients are SYN545192 and azoxystrobin at nominal concentration of 150 g/kg and 300 g/kg, respectively.

\* Analytical Method: GRM042.04A, Benzovindiflupyr

Nutmeat: Mean = 79%, RSD = ± 11% (n = 6 in 0.01 – 0.10 mg/kg)

Table 24 Residues of benzovindiflupyr on rapeseed in Canada

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
GAP: Canada, 1 × 0.075 kg ai/ha, PHI: 30d, Rape									
CANADA Elm Creek, MB, 2011, (1841 RR)	EC <sup>a</sup>	1	0.081	0.18	73	Seed	29	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	CER05903/11 T938 storage interval: 86 days
CANADA Morden, MB, 2011, (1841 RR)	EC <sup>a</sup>	1	0.082	0.18	69	Seed	30	0.054, 0.070 ( <u>0.062</u> )	CER05903/11 T938C storage interval: 90 days
CANADA Kinley, SK, 2011, (1841 RR)	EC <sup>a</sup>	1	0.076	0.17	71	Seed	30	0.021, 0.024 ( <u>0.023</u> )	CER05903/11 T939 storage interval: 80 days
CANADA Kinley, SK, 2011, (72-55RR)	EC <sup>a</sup>	1	0.076	0.038	73	Seed	29	< 0.01, < 0.01 (< 0.01)	CER05903/11 T940 storage interval: 67 days
CANADA Elgin, MB, 2011, (72-55RR)	EC <sup>a</sup>	1	0.076	0.17	68	Seed	30	0.11, 0.094 ( <u>0.10</u> )	CER05903/11 T941 storage interval: 93 days
CANADA Blaine Lake, SK, 2011, (72-55RR)	EC <sup>a</sup>	1	0.074	0.037	79	Seed	30	0.011, < 0.01 ( <u>0.011</u> )	CER05903/11 T942 storage interval: 67 days
CANADA Rosthern, SK, 2011,	EC <sup>a</sup>	1	0.076	0.038	76	Seed	31	0.013, < 0.01 (0.012)	CER05903/11 T943 storage interval:

## Benzovindiflupyr

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
GAP: Canada, 1× 0.075 kg ai/ha, PHI: 30d, Rape									
(1841 RR)									75 days
CANADA Minto, MB, 2011, (72-55RR)	EC <sup>a</sup>	1	0.067	0.034	67	Seed	35	< 0.01, < 0.01 (< 0.01)	CER05903/11 T944 storage interval: 88 days
CANADA Alvena, SK, 2011, (1841 RR)	EC <sup>a</sup>	1	0.070	0.035	66	Seed	31	< 0.01, < 0.01 (< 0.01)	CER05903/11 T945 storage interval: 75 days
CANADA Fort Sask. AB, 2011, (72-55RR)	EC <sup>a</sup>	1	0.077	0.038	71	Seed	32	0.051, 0.039 (0.045)	CER05903/11 T946 storage interval: 61 days
CANADA Minto, MB, 2011, (1841 RR)	EC <sup>a</sup>	1	0.074	0.037	67	Seed Seed Seed Seed	25 30 35 40	0.046 0.033, 0.029 (0.031) 0.023 0.021	CER05903/11 T947 storage interval: 88- 92 days
CANADA Elgin, MB, 2011, (1841 RR)	EC <sup>a</sup>	1	0.074	0.037	68	Seed	31	0.027, 0.028, (0.028)	CER05903/11 T948 storage interval: 96 days
CANADA Rosthern, SK, 2011, (72-55RR)	EC <sup>a</sup>	1	0.075	0.037	76	Seed	31	0.023, 0.014 (0.019)	CER05903/11 T949 storage interval: 78 days

<sup>a</sup> EC 100 g ai/L

Analytical Method: GRM042.04A, Benzovindiflupyr, LOQ: 0.01 mg/kg

Mean = 87%, RSD = ± 15%, (n = 11 in 0.01-0.20 mg/kg/)

Table 25 Residues of benzovindiflupyr in coffee in Brazil

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
GAP: Brazil, 0.060 kg ai/ha, 3 time with interval 60d, PHI: 21 d, Foliar									
Brazil Indianopolis, MG 2010, (Mundo Novo)	A18126	3 (60)	0.060 0.060 0.060	0.13	83	coffee bean	21 28 35	< 0.01 < 0.01 < 0.01 (< 0.01)	M11085 M11085-JJB1 (Storage: 1.6-2.1 months)
	A17961	3 (60)	0.050 0.050 0.050	0.11	83	coffee bean	21 28 35	0.02 < 0.01 < 0.01 (0.02)	
Brazil Araguari, MG 2010, (Mundo Novo)	A18126	3 (60)	0.060 0.060 0.060	0.13	83	coffee bean	21 28 35	< 0.01 < 0.01 < 0.01 (< 0.01)	M11085 M11085-JJB2 (Storage: 1.6-2.1 months)
	A17961	3	0.050	0.11	83	coffee	21	< 0.01	

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
GAP: Brazil, 0.060 kg ai/ha, 3 time with interval 60d, PHI: 21 d, Foliar									
		(60)	0.050 0.050			bean	28 35	< 0.01 < 0.01 ( <u>&lt; 0.01</u> )	
Brazil Sao Goncalo do Sapucaí, MG 2010, (Mundo Novo)	A18126	1	0.060 0.060 0.060	0.13	81	coffee bean	21 28 35	0.02 < 0.01 < 0.01 (0.02)	M11085 M11085-RWC1 (Storage: 2.0-2.5 months)
	A17961	3 (60)	0.050 0.050 0.050	0.11	81	coffee bean	21 28 35	0.02 < 0.01 < 0.01 (0.02)	
Brazil Campinas, SP 2010, (Catuai Vermelho IAC 144)	A18126	3 (60)	0.060 0.060 0.060	0.13	79	coffee bean	21 28 35	< 0.01 < 0.01 < 0.01 ( <u>&lt; 0.01</u> )	M11085 M11085-RWC2 (Storage: 1.9-2.4 months)
	A17961	3 (60)	0.050	109.8	79	coffee bean	21 28 35	< 0.01 < 0.01 < 0.01 ( <u>&lt; 0.01</u> )	
Brazil Linhares, ES 2010, (Conilon)	A18126	3 (60)	0.060 0.060 0.060	0.13	78	coffee bean	21 28 35	0.02 0.02 0.02 (0.02)	M11085 M11085-RWC3 (Storage: 1.9-2.3 months)
	A17961	3 (60)	0.050 0.050 0.050	0.11	78	coffee bean	21 28 35	0.07 0.05 0.05 (0.07)	
Brazil Taiuva, SP 2010, (Catuai Amarelo)	A18126	3 (60)	0.060 0.060 0.060	0.13	81	coffee bean	21 28 35	< 0.01 < 0.01 < 0.01 ( <u>&lt; 0.01</u> )	M11085 M11085-AMA (Storage: 2.3-2.7 months)
	A17961	3 (60)	0.050 0.050 0.050	0.11	81	coffee bean	21 28 35	< 0.01 < 0.01 < 0.01 ( <u>&lt; 0.01</u> )	

\*residues expressed as 'not detected' (ND) in the study report have been expressed as < 0.01 mg/kg (LOQ) in this table. The limit of detection is cited as 0.0015-0.0028 mg/kg in the study report).

WG formulation: A18126

EC formulation: A17961

Analytical Method: GRM042.04A, Benzovindiflupyr

Coffee beans (green): Mean = 96% RSD = 4% (n = 12) in 0.01-0.10 mg/kg spiking range

### *Supervised trials for feed commodities*

The current meeting received several field trial data on benzovindiflupyr residue, which produce feed commodities. The residue data on these raw commodities were summarized in below Tables 26- 44.

Table 26 Residues of benzovindiflupyr in sweet corn forage from field trials in USA

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 4 × 0.075 kg ai/ha, PHI: 7d									
USA, Germansville, PA 2010, (Extra Tender 274A)	EC <sup>a</sup>	4 (7)	0.077 0.076 0.077 0.077	0.030 0.027 0.030 0.030	73	Forage	7	2.6, 2.6 ( <u>2.6</u> )	TK0002562 E04-0472 (Storage: Forage 7.2 months)
USA, North Rose, NY 2010, (Serendipity)	EC <sup>a</sup>	4 (7)	0.078 0.078 0.080 0.078	0.033 0.033 0.033 0.033	75	Forage	7	1.3, 1.2 ( <u>1.3</u> )	TK0002562 E04-0473 (Storage: Forage 6.0 months)
USA, Athens, GA 2010, (Silver King)	EC <sup>a</sup>	4 (7)	0.076 0.076 0.077 0.076	0.030 0.030 0.031 0.030	73	Forage	7	1.9,1.5 ( <u>1.7</u> )	TK0002562 E04-0474 (Storage: Forage 7.1 months)
USA, Oviedo, FL 2010, (Silver Queen)	EC <sup>a</sup>	4 (7)	0.075 0.077 0.076 0.078	0.027 0.028 0.027 0.028	71	Forage	7	0.34,0.15 ( <u>0.25</u> )	TK0002562 E04-0475 (Storage: Forage 8.6-20.3 months)
USA, Gardner, ND 2010, (Zea Mays GH4927)	EC <sup>a</sup>	4 (7)	0.077 0.076 0.077 0.076	0.041 0.041 0.041 0.041	75	Forage	7	0.79,1.1 ( <u>0.95</u> )	TK0002562 C12-0476 (Storage: Forage 6.4 months)
USA, Bagley, IA 2010, (Not listed)	EC <sup>a</sup>	4 (7)	0.074 0.071 0.077 0.074	0.050 0.042 0.052 0.043	73	Forage	7	2.2,1.2 ( <u>1.7</u> )	TK0002562 C30-0477 (Storage: Forage 6.7 months)
USA, Oregon, MO 2010, (Bodacious)	EC <sup>a</sup>	4 (7)	0.078 0.082 0.080 0.082	0.055 0.057 0.054 0.055	73	Forage	7	0.97,1.1 ( <u>1.0</u> )	TK0002562 C19-0478 (Storage: Forage 7.3 months)
USA, Centerville, SD 2011, (Kandy Korn)	EC <sup>a</sup>	4 (7)	0.075 0.075 0.078 0.076	0.041 0.042 0.042 0.041	73	Forage	7	0.75,0.58 ( <u>0.67</u> )	TK0002562 C16-0479 (Storage: Forage 6.6 months)
USA, Clarence, MO 2010, (Incredible)	EC <sup>a</sup>	4 (7)	0.077 0.077 0.076 0.076	0.041 0.041 0.041 0.040	85	Forage	7	0.97,1.2 ( <u>1.1</u> )	TK0002562 C20-0480 (Storage: Forage 7.2 months)
USA, Porterville, CA 2010, (Bodacious)	EC <sup>a</sup>	4 (7)	0.076 0.076 0.076 0.076	0.053 0.053 0.050 0.040	99	Forage	7	2.0,1.7 ( <u>1.9</u> )	TK0002562 W32-0481 (Storage: Forage 7.5-8.2 months)
USA, Rupert, ID 2010, (Sugarbuns)	EC <sup>a</sup>	4 (7)	0.072 0.076 0.076 0.080	0.044 0.064 0.062 0.070	77	Forage	7	0.23,0.24 ( <u>0.24</u> )	TK0002562 W15-0482 (Storage: Forage 6.9 months)
USA, Hillsboro, OR 2010, (Honey and Pearls)	EC <sup>a</sup>	4 (7)	0.076 0.075 0.077 0.077	0.033 0.032 0.033 0.033	79	Forage	7	0.25,0.67 ( <u>0.46</u> )	TK0002562 W21-0483 (Storage: Forage 5.9 months)

<sup>a</sup> EC 150g/L

DALA: days after last treatment

\*Analytical Method: GRM042.03A. Benzovindiflupyr,

Sweet Corn Forage: Mean = 87%, RSD = ± 17% (n = 10 in 0.01- 5.0 mg/kg)

Table 27 Residues of benzovindiflupyr in sweet corn stover from field trials in USA

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 4 × 0.075 kg ai/ha, PHI: 7d									
USA, Germansville, PA 2010, (Extra Tender 274A)	EC <sup>a</sup>	4 (7)	0.077 0.076 0.077 0.077	0.030 0.027 0.030 0.030	73	Stover	7	1.2,0.91 ( <u>1.1</u> )	TK0002562 E04-0472 (Storage: Stover 6.9 months)
USA, North Rose, NY 2010, (Serendipity)	EC <sup>a</sup>	4 (7)	0.078 0.078 0.080 0.078	0.033 0.033 0.033 0.033	75	Stover	7	1.4,1.6 ( <u>1.5</u> )	TK0002562 E04-0473 (Storage: Stover 5.7 months)
USA, Athens, GA 2010, (Silver King)	EC <sup>a</sup>	4 (7)	0.076 0.076 0.077 0.076	0.030 0.030 0.031 0.030	73	Stover	7	2.5,2.5 ( <u>2.5</u> )	TK0002562 E04-0474 (Storage: Stover 7.0 months)
USA, Oviedo, FL 2010, (Silver Queen)	EC <sup>a</sup>	4 (7)	0.075 0.077 0.076 0.078	0.027 0.028 0.027 0.028	71	Stover	7	0.13,0.11 ( <u>0.12</u> )	TK0002562 E04-0475 (Storage: Stover 6.8-7.2 months)
USA, Gardner, ND 2010, (Zea Mays GH4927)	EC <sup>a</sup>	4 (7)	0.077 0.076 0.077 0.076	0.041 0.041 0.041 0.041	75	Stover	7	0.31,0.20 ( <u>0.26</u> )	TK0002562 C12-0476 (Storage: Stover 4.6 months)
USA, Bagley, IA 2010, (Not listed)	EC <sup>a</sup>	4 (7)	0.074 0.071 0.077 0.074	0.050 0.042 0.052 0.043	73	Stover	7	1.3,1.4 ( <u>1.4</u> )	TK0002562 C30-0477 (Storage: Stover 10.6 months)
USA, Oregon, MO 2010, (Bodacious)	EC <sup>a</sup>	4 (7)	0.078 0.082 0.080 0.082	0.055 0.057 0.054 0.055	73	Stover	7	0.31,0.39 ( <u>0.35</u> )	TK0002562 C19-0478 (Storage: Stover 6.2 months)
USA, Centerville, SD 2011, (Kandy Korn)	EC <sup>a</sup>	4 (7)	0.075 0.075 0.078 0.076	0.041 0.042 0.042 0.041	73	Stover	7	0.21,0.23 ( <u>0.22</u> )	TK0002562 C16-0479 (Storage: Stover 5.1 months)
USA, Clarence, MO 2010, (Incredible)	EC <sup>a</sup>	4 (7)	0.077 0.077 0.076 0.076	0.041 0.041 0.041 0.040	85	Stover	7	3.2,2.8 ( <u>3.0</u> )	TK0002562 C20-0480 (Storage: Stover 6.7 months)
USA, Porterville, CA 2010, (Bodacious)	EC <sup>a</sup>	4 (7)	0.076 0.076 0.076 0.076	0.053 0.053 0.050 0.040	99	Stover	46	1.8,1.8 ( <u>1.8</u> )	TK0002562 W32-0481 (Storage: Stover 6.3-6.9 months)

## Benzovindiflupyr

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 4 × 0.075 kg ai/ha, PHI: 7d									
USA, Rupert, ID 2010, (Sugarbuns)	EC <sup>a</sup>	4 (7)	0.072 0.076 0.076 0.080	0.044 0.064 0.062 0.070	77	Stover	7	0.18,0.27 (0.23)	TK0002562 W15-0482 (Storage: Stover 5.2 months)
USA, Hillsboro, OR 2010, (Honey and Pearls)	EC <sup>a</sup>	4 (7)	0.076 0.075 0.077 0.077	0.033 0.032 0.033 0.033	79	Stover	7	0.48,0.58 (0.53)	TK0002562 W21-0483 (Storage: Stover 5.8 months)

<sup>a</sup> EC 150g/L

DALA: days after last treatment

\*Analytical Method: GRM042.03A. Benzovindiflupyr, Stover: Mean = 89%, RSD = ± 14% (n = 18 in 0.01- 9.97 mg/kg)

Table 28 Residues of benzovindiflupyr to pulses (peas hay) in Canada and USA

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
GAP: Canada, 2 × 0.075 kg ai/ha, PHI: 14-15d									
USA Hinton, OK, 2011, (Alaska)	EC <sup>a</sup>	2 (7)	0.076 0.076	0.056 0.052	73	Pea Hay	14	1.2, 1.8, 1.9 ( 1.6)	TK0058625 TK0058625-01 storage interval: 3.4 months
	WG <sub>a</sub>	2 (7)	0.075 0.076	0.053 0.056	73	Pea Hay	14	2.1, 1.8, 2.3 ( 2.2)	TK0058625 TK0058625-01 storage interval: 3.4 months
USA American Falls, ID, 2011, (Little Marvel)	EC <sup>a</sup>	2 (7)	0.072 0.076	0.045 0.038	77	Pea Hay	14	1.5, 0.81, 1.0 (1.25)	TK0058625 TK0058625-03 storage interval: 5.7 months
	WG <sub>a</sub>	2 (7)	0.077 0.080	0.048 0.043	67	Pea Hay	14	0.92, 0.49, 0.88 (0.90)	TK0058625 TK0058625-03 storage interval: 5.7 months
USA Jerome, ID, 2011, (SNO 112 0490N14) USA,	EC <sup>a</sup>	2 (7)	0.078 0.076	0.044 0.043	78	Pea Hay	0 7 14 21	23 7.5 1.7, 1.9 ( 1.8) 0.25	TK0058625 TK0058625-04 storage interval: 7.4 months ( 14DALA)
USA Hillsboro, OR, 2011, (Blue Bird)	EC <sup>a</sup>	2 (7)	0.076 0.076	0.043 0.041	75	Pea Hay	14	2.3, 3.9 (3.1)	TK0058625 TK0058625-05 storage interval: 6.4 months
USA Madera, CA, 2011, (Dundale)	EC <sup>a</sup>	2 (7)	0.076	0.045	89	Pea Hay	14	2.8, 2.9, 2.6 (2.7)	TK0058625 TK0058625-15 storage interval: 2.6 months
	WG <sub>a</sub>	2 (7)	0.078 0.079	0.045 0.045	45	Pea Hay	14	3.9, 3.2, 3.8 (3.8)	TK0058625 TK0058625-15 storage interval: 2.6 months

<sup>a</sup> EC 100 g/L; WG 45 g/L; b WG 150 g ai/L

Analytical Method: GRM042.04A, Benzovindiflupyr, LOQ: 0.01 mg/kg; Hay: Mean = 98%, RSD = ± 13%, (n = 8 in 0.010 –33.9 mg/kg)

Table 29 Residues of benzovindiflupyr in pulses (peas vines) in Canada and USA

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
GAP: Canada, 2 × 0.075 kg ai/ha, PHI: 14-15d									
USA Hinton, OK, 2011, (Alaska)	EC <sup>a</sup>	2 (7)	0.076 0.076	0.056 0.052	73	Pea Vines	14	0.35, 0.64, 0.30 (0.33)	TK0058625 TK0058625-01 storage interval: 3.7 months
	WG <sup>a</sup>	2 (7)	0.075 0.076	0.053 0.056	73	Pea Vines	14	0.37, 0.43, 0.48 (0.43)	TK0058625 TK0058625-01 storage interval: 3.7 months
USA American Falls, ID, 2011, (Little Marvel)	EC <sup>a</sup>	2 (7)	0.072 0.076	0.045 0.038	77	Pea Vines	14	0.34, 0.28, 0.26 (0.29)	TK0058625 TK0058625-03 storage interval: 5.6 months
	WG <sup>a</sup>	2 (7)	0.077 0.080	0.048 0.043	67	Pea Vines	14	0.27, 0.22, 0.19 (0.23)	TK0058625 TK0058625-03 storage interval: 5.6 months
USA Jerome, ID, 2011, (SNO 112 0490N14) USA,	EC <sup>a</sup>	2 (7)	0.078 0.076	0.044 0.043	78  33	Pea Vines	0 7 14 21	3.9 1.2 0.27, 0.28 (0.28) 0.17	TK0058625 TK0058625-04 storage interval: 7.3 months ( 14DALA)
	EC <sup>a</sup>	2 (7)	0.076 0.076	0.043 0.041	75	Pea Vines	14	0.58, 0.64 (0.61)	TK0058625 TK0058625-05 storage interval: 6.3 months
USA Madera, CA, 2011, (Dundale)	EC <sup>a</sup>	2 (7)	0.076 0.076 0	0.045 0.045	89	Pea Vines	14	0.44,0.61,0.40 (0.51)	TK0058625 TK0058625-15 storage interval: 2.5 months
	WG <sup>a</sup>	2 (7)	0.078 0.079	0.045 0.045	45	Pea Vines	14	0.97,0.88,0.94 (0.96)	TK0058625 TK0058625-15 storage interval: 2.5 months

<sup>a</sup> EC 100 g/L; WG 45 g/L;

<sup>b</sup> WG 150 g ai/L

Analytical Method: GRM042.04A, Benzovindiflupyr, LOQ: 0.01 mg/kg; Hay: Mean = 98%, RSD = ± 13%, (n = 8 in 0.010 –33.9 mg/kg); Vines: Mean = 106%, RSD = ± 11%, (n = 8 in 0.010 –10.0 mg/kg)

Table 30 Residues of benzovindiflupyr in soya bean forage in the USA

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
GAP: Canada, 2 × 0.075 kg ai/ha, PHI: 14d, Soya beans									
USA Elko, SC,	EC <sup>a</sup>	2 (7)	0.076 0.076	0.058 0.057	69	Forage	0	4.0, 2.4 (3.2)	TK0002561 E11-0421



## Benzovindiflupyr

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
GAP: Canada, 2 × 0.075 kg ai/ha, PHI: 14d, Soya beans									
2010, (Asgrow 7502)									storage interval: 9.7 months (Forage)
USA Seven Springs, NC, 2010, (AG5605)	EC <sup>a</sup>	2 (7)	0.077 0.077	0.034 0.035	68	Forage	0	6.1, 5.2 (5.7)	TK0002561 E10-0422 storage interval: 10.0 months (Forage)
USA Cheneyville, LA, 2010, (Pioneer 94M80)	EC <sup>a</sup>	2 (7)	0.075 0.077	0.045 0.036	75 [09/01/2010]	Forage	0	2.9, 2.8 (2.9)	TK0002561 E17-0423 storage interval: 11.3 months (Forage)
USA Cheneyville, LA, 2010, (Asgrow 5335)	EC <sup>a</sup>	2 (7)	0.078 0.079	0.043 0.045	75 [10/04/2010]	Forage	0	3.1, 2.1 (2.6)	TK0002561 E17-0424 storage interval: 10.0 months (Forage)
USA Pollard, AR, 2010, (Pioneer 94M80)	EC <sup>a</sup>	2 (7)	0.077 0.076	0.041 0.041	69	Forage	0	5.8 5.1 (5.5)	TK0002561 C23-0425 storage interval: 10.3 months (Forage)
USA Northwood, ND, 2010, (90Y41)	EC <sup>a</sup>	2 (7)	0.076 0.076	0.041 0.041	40% PD	Forage	0 0 3 7 14	4.2 3.8 2.1 1.7 0.88	TK0002561 C13-0426 storage interval: 10.2 months (Forage, 14DALA)
USA Sharon, ND, 2010, (90Y41)	EC <sup>a</sup>	2 (7)	0.077 0.077	0.041 0.041	30% PD	Forage	0	4.4, 4.2 (4.3)	TK0002561 C13-0427 storage interval: 10.7-10.8 months (Forage)
USA Gardner, ND, 2010, (0509239)	EC <sup>a</sup>	2 (7)	0.075 0.077	0.055 0.055	72	Forage	0	4.6, 4.6 (4.6)	TK0002561 C03-0428 storage interval: 10.0 months (Forage)
USA Dudley, MO, 2010, (Asgrow 5403)	EC <sup>a</sup>	2 (7)	0.076 0.076	0.041 0.041	69	Forage	0	3.1, 3.4 (3.3)	TK0002561 C23-0429 storage interval: 10.7 months (Forage)
USA Fisk, MO, 2010, (Jake)	EC <sup>a</sup>	2 (7)	0.076 0.077	0.407 0.407	69	Forage	0	3.4, 3.9 (3.7)	TK0002561 C23-0430 storage interval: 10.3 months (Forage)

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
GAP: Canada, 2 × 0.075 kg ai/ha, PHI: 14d, Soya beans									
USA Fitchburg, WI, 2010, (S21-N6)	EC <sup>a</sup>	2 (7)	0.075 0.075	0.041 0.042	75	Forage	0 0	2.1, 1.8 <u>(2.0)</u>	TK0002561 C08-0431 storage interval: 10.5-11.9 months (Forage)
USA Bagley, IA, 2010, (P3Y13- N203)	EC <sup>a</sup>		0.077 0.077	0.052 0.041	75	Forage	0	2.9, 2.7 <u>(2.8)</u>	TK0002561 C30-0432 storage interval: 9.9 months (Forage)
USA Oregon, MO, 2010, (Pioneer 93Y70)	EC <sup>a</sup>	2 (7)	0.075 0.076	0.054 0.052	R3-R4	Forage	0	2.8, 2.3 <u>(2.6)</u>	TK0002561 C19-0433 storage interval: 10.2 months (Forage)
USA York, NE, 2010, (93Y12)	EC <sup>a</sup>	2 (7)	0.076 0.076	0.041 0.040	73	Forage	0	3.4, 3.7 <u>(3.6)</u>	TK0002561 C33-0434 storage interval: 11.0 months (Forage)
USA Lesterville, SD, 2010, (Latham, L2560R, LS-0991236)	EC <sup>a</sup>	2 (7)	0.075 0.076	0.043 0.032	71	Forage	0	3.2, 2.9 <u>(3.1)</u>	TK0002561 C16-0435 storage interval: 10.5 months (Forage)
USA Marysville, OH, 2010, (SG-329-RR)	EC <sup>a</sup>	2 (7)	0.026 0.077	0.015 0.047	75	Forage	0	2.6, 2.9 <u>(2.8)</u>	TK0002561 C01-0436 TK0002561 C01-0436 storage interval: 9.9 months (Forage)
USA Clarence, MO, 2010, (Asgrow 3803 RR)	EC <sup>a</sup>	2 (7)	0.075 0.076	0.041 0.041	R2	Forage Forage Forage Forage	0 3 7 14	4.9,5.1 <u>(5.0)</u> 1.0 0.78 0.21	TK0002561 C20-0437 storage interval: 10.8 months (Forage)
USA Richland, IA, 2010, (Pioneer 92Y80)	EC <sup>a</sup>	2 (7)	0.077 0.077	0.043 0.044	70	Forage	0	2.2, 3.5 <u>(2.8)</u>	TK0002561 C18-0438 storage interval: 10.3 months (Forage)
USA Campbell, MN, 2010, (AG 0808)	EC <sup>a</sup>	2 (7)	0.076 0.076	0.041 0.041	69	Forage	0	4.4, 3.9 <u>(4.2)</u>	TK0002561 C11-0439 storage interval: 10.8 months (Forage)
USA	EC <sup>a</sup>	2	0.077	0.041	69	Forage	0	5.4, 5.1	TK0002561

## Benzovindiflupyr

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
GAP: Canada, 2 × 0.075 kg ai/ha, PHI: 14d, Soya beans									
Geneva, MN, 2010, (Pioneer 91Y70)		(7)	0.075	0.045				(5.3)	C09-0440 storage interval: 10.7 months (Forage)

<sup>a</sup> EC 150 g ai/L

Analytical Method: GRM042.04A, Benzovindiflupyr, LOQ: 0.01 mg/kg

**Forage:** Mean = 96%, SD = ± 13%, (n = 12 in 0.01 - 7.5 mg/kg)

Table 31 Residues of benzovindiflupyr in soya bean hay in the USA

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
GAP: Canada, 2 × 0.075 kg ai/ha, PHI: 14d, Soya beans									
USA Elko, SC, 2010, (Asgrow 7502)	EC <sup>a</sup>	2 (7)	0.076 0.076	0.058 0.057	69	Hay	0	15, 17 (16)	TK0002561 E11-0421 storage interval: 9.5 months (Hay)
USA Seven Springs, NC, 2010, (AG5605)	EC <sup>a</sup>	2 (7)	0.077 0.077	0.034 0.035	68	Hay	0	16, 17 (17)	TK0002561 E10-0422 storage interval: 9.8 months (Hay)
USA Cheneyville, LA, 2010, (Pioneer 94M80)	EC <sup>a</sup>	2 (7)	0.075 0.077	0.045 0.036	75 [09/01/2010]	Hay	0	7.1,8.7 (7.9)	TK0002561 E17-0423 storage interval: 11.1 months (Hay)
USA Cheneyville, LA, 2010, (Asgrow 5335)	EC <sup>a</sup>	2 (7)	0.078 0.079	0.043 0.045	75 [10/04/2010]	Hay	0	12,12 (12)	TK0002561 E17-0424 storage interval: 9.9 months (Hay)
USA Pollard, AR, 2010, (Pioneer 94M80)	EC <sup>a</sup>	2 (7)	0.077 0.076	0.041 0.041	69	Hay	0	36,36 (36)	TK0002561 C23-0425 storage interval: 10.1-10.2 months (Hay)
USA Northwood, ND, 2010, (90Y41)	EC <sup>a</sup>	2 (7)	0.076 0.076	0.041 0.041	40% PD	Hay	0 3 7 14	13 13 5.0 3.6	TK0002561 C13-0426 storage interval: 10.2 months (Hay,14DALA)
USA Sharon, ND, 2010, (90Y41)	EC <sup>a</sup>	2 (7)	0.077 0.077	0.041 0.041	30% PD	Hay	0	20,21 (21)	TK0002561 C13-0427 storage interval: 10.7 months (Hay)

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
GAP: Canada, 2 × 0.075 kg ai/ha, PHI: 14d, Soya beans									
USA Gardner, ND, 2010, (0509239)	EC <sup>a</sup>	2 (7)	0.075 0.077	0.055 0.055	72	Hay	0	11,12 (12)	TK0002561 C03-0428 storage interval: 8.5-8.6 months (Hay)
USA Dudley, MO, 2010, (Asgrow 5403)	EC <sup>a</sup>	2 (7)	0.076 0.076	0.041 0.041	69	Hay	0	12,12 (12)	TK0002561 C23-0429 storage interval: 10.3 months (Hay)
USA Fisk, MO, 2010, (Jake)	EC <sup>a</sup>	2 (7)	0.076 0.077	0.407 0.407	69	Hay	0	16,17 (17)	TK0002561 C23-0430 storage interval: 10.2 months (Hay)
USA Fitchburg, WI, 2010, (S21-N6)	EC <sup>a</sup>	2 (7)	0.075 0.075	0.041 0.042	75	Hay	0	9.1,7.9,9.5 (8.8)	TK0002561 C08-0431 storage interval: 10.4-12.9 months (Hay)
USA Bagley, IA, 2010, (P3Y13- N203)	EC <sup>a</sup>	2 (7)	0.077 0.077	0.052 0.041	75	Hay	0	11,10 (11)	TK0002561 C30-0432 storage interval: 9.7 months (Hay)
USA Oregon, MO, 2010, (Pioneer 93Y70)	EC <sup>a</sup>	2 (7)	0.075 0.076	0.054 0.052	R3-R4	Hay	0	7.0,9.0 (8.0)	TK0002561 C19-0433 storage interval: 10.0 months (Hay)
USA York, NE, 2010, (93Y12)	EC <sup>a</sup>	2 (7)	0.076 0.076	0.041 0.040	73	Hay	0	19,18 (19)	TK0002561 C33-0434 storage interval: 10.8 months (Hay)
USA Lesterville, SD, 2010, (Latham, L2560R, LS-0991236)	EC <sup>a</sup>	2 (7)	0.075 0.076	0.043 0.032	71	Hay	0	13,16 (15)	TK0002561 C16-0435 storage interval: 10.0-10.3 months (Hay)
USA Marysville, OH, 2010, (SG-329-RR)	EC <sup>a</sup>	2 (7)	0.026 0.077	0.015 0.047	75	Hay	0	10,9.5 (10)	TK0002561 C01-0436 TK0002561 C01-0436 storage interval: 9.7 months (Hay)
USA Clarence, MO, 2010, (Asgrow 3803 RR)	EC <sup>a</sup>	2 (7)	0.075 0.076	0.041 0.041	R2	Hay Hay Hay Hay	0 3 7 14	17,11 (14) 3.7 1.4 0.36	TK0002561 C20-0437 storage interval: 10.6 months (Hay)
USA Richland, IA,	EC <sup>a</sup>	2 (7)	0.077 0.077	0.043 0.044	69	Hay	0	10,6.4 (8.2)	TK0002561 C18-0438

## Benzovindiflupyr

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
GAP: Canada, 2 × 0.075 kg ai/ha, PHI: 14d, Soya beans									
2010, (Pioneer 92Y80)									storage interval: 10.1 months (Hay)
USA Campbell, MN, 2010, (AG 0808)	EC <sup>a</sup>	2 (7)	0.076 0.076	0.041 0.041	69	Hay	0	15,13 (14)	TK0002561 C11-0439 storage interval: 10.6 months (Hay)
USA Geneva, MN, 2010, (Pioneer 91Y70)	EC <sup>a</sup>	2 (7)	0.077 0.075	0.041 0.045	72	Hay	0	17,16 (17)	TK0002561 C09-0440 storage interval: 10.5 months (Hay)

<sup>a</sup> EC 150 g ai/L

Analytical Method: GRM042.04A, Benzovindiflupyr, LOQ: 0.01 mg/kg

Hay: Mean = 104%, SD = ± 9%, (n = 12 in 0.01 - 49.2 mg/kg)

Table 32 Residues of benzovindiflupyr in barley hay from field trials in USA

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 2 × 0.075 kg ai/ha, 7d PHI for hay									
USA, Germansville, PA 2010, (Nomini)	EC <sup>a</sup>	2 (14)	0.077 0.076	0.037 0.037	BBCH 71	(Hay)	7	2.7, 1.9 (2.3)	TK0002559; E04-0381 (Storage: Hay 9.8 months)
USA, Northwood, ND 2010, (Pinneacle)	EC <sup>a</sup>	2 (14)	0.076 0.076	0.041 0.041	Feekes 10.5.2	(Hay)	7	4.0, 4.0 (4.0)	TK0002559; C13-0382 (Storage: Hay 8.1-21.9 months)
USA, Richland, IA  2010, (Para- mount 66)	EC <sup>a</sup>	2 (14)	0.076 0.076	0.042 0.044	Feekes 11.1	(Hay)	7	8.4, 10.1 (9.2)	TK0002559; C18-0383  Data not used due to mis- application
USA, Clarence, MS 2010, (Lacey)	EC <sup>a</sup>	2 (14)	0.074 0.077	0.040 0.041	BBCH 71	(Hay)	7	4.6, 3.4 (4.0)	TK0002559; C20-0384 (Storage: Hay 8.8 months)
USA, Jamestown, ND 2010, (Tradition)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.055 0.055	BBCH 71	(Hay)	7  10	6.3, 3.2  <u>5.2</u>	TK0002559; C12-0385 (Storage: Hay 8.7-9.0 months)
USA, Grand Island, NE 2010, (Baronesse)	EC <sup>a</sup>	2 (14)	0.077 0.076	0.41 0.41	BBCH 71	(Hay)	7	2.4, 2.4 (2.4)	TK0002559; C33-0386 (Storage: Hay 8.5 months)

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 2 × 0.075 kg ai/ha, 7d PHI for hay									
USA, Carrington, ND  2010, (Baronesse)	EC <sup>a</sup>	2 (14)	0.077 0.076	0.041 0.041	Feekes 10.5.4	(Hay)	7	1.7, 1.6 ( <u>1.6</u> )	TK0002559; C13-0387 (Storage: Hay 9.4 months)
USA, Lake Andes, SD  2010, (Tradition)	EC <sup>a</sup>	2 (14)	0.076 0.077	0.044 0.047	BBCH 73	(Hay)	7	4.8, 5.4 (5.1)	TK0002559; C16-0388 (Storage: Hay 8.2 months)
USA, Berthoud, CO  2010, (Coors 69)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.064 0.064	Feekes 10.5.4	(Hay)	7	1.5, 1.5 ( <u>1.5</u> )	TK0002559; W12-0389 (Storage: Hay 8.7 months)
USA, Madera, CA  2010, (Recleaned Whole Barley)	EC <sup>a</sup>	2 (14)	0.076 0.077	0.033 0.033	BBCH 71	(Hay)	7	2.8, 2.4 ( <u>2.6</u> )	TK0002559; W29-0390 (Storage: Hay 9.4 months)
USA, Hermiston, OR  2010, (Radiant)	EC <sup>a</sup>	2 (14)	0.076 0.077	0.040 0.041	BBCH 84	(Hay)	7	2.4, 2.5 (2.4)	TK0002559; W21-0391 (Storage: Hay 8.0 months)
USA, Jerome, ID  2010, (Foster)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.040 0.042	BBCH 71	(Hay)	7	5.5, 3.9 ( <u>4.7</u> )	TK0002559; W16-0392 (Storage: Hay 8.6 months)

<sup>a</sup> EC 150g/L;

DALA: days after last treatment, STM = Standard Maturity, DASM = Days After Standard Maturity.

\* Analytical Method: GRM042.03A, Benzovindiflupyr.

Hay: Mean = 106%, RSD = ± 10% (n = 15 in 0.01 -15 mg/kg)

Table 33 Residues of benzovindiflupyr in barley straw from field trials in USA

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 2 × 0.075 kg ai/ha, PHI: maturity									
USA, Germansville, PA  2010, (Nomini)	EC <sup>a</sup>	2 (14)	0.077 0.076	0.037 0.037	BBCH 71	(Straw)	STM	2.0, 1.8 ( <u>1.9</u> )	TK0002559; E04-0381 (Storage: Straw 9.0 months)
USA, Northwood, ND  2010, (Pinneacle)	EC <sup>a</sup>	2 (14)	0.076 0.076	0.041 0.041	Feekes 10.5.2	(Straw)	STM	0.53, 0.27 ( <u>0.40</u> )	TK0002559; C13-0382 (Storage: Straw 7.1 months)
USA,	EC <sup>a</sup>	2	0.076	0.042	Feekes			12.1, 10.6	TK0002559;

## Benzovindiflupyr

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 2 × 0.075 kg ai/ha, PHI: maturity									
Richland, IA 2010, (Paramount 66)		(14)	0.076	0.044	11.1	(Straw)	STM	(11.4)	C18-0383  Data not used due to mis-application
USA, Clarence, MS 2010, (Lacey)	EC <sup>a</sup>	2 (14)	0.074 0.077	0.040 0.041	BBCH 71	(Straw)	STM	2.1, 1.6 (1.8)	TK0002559; C20-0384 (Storage: Straw 8.4 months)
USA, Jamestown, ND 2010, (Tradition)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.055 0.055	BBCH 71	(Straw)	STM  7DASM	2.0, 2.3  <u>3.2</u>	TK0002559; C12-0385 (Storage: Straw 6.7-7.2 months)
USA, Grand Island, NE 2010, (Baronesse)	EC <sup>a</sup>	2 (14)	0.077 0.076	0.41 0.41	BBCH 71	(Straw)	STM	3.5, 3.0 ( <u>3.2</u> )	TK0002559; C33-0386 (Storage: Straw 8.2 months)
USA, Carrington, ND 2010, (Baronesse)	EC <sup>a</sup>	2 (14)	0.077 0.076	0.041 0.041	Feekes 10.5.4	(Straw)	STM	0.20, 0.22 ( <u>0.21</u> )	TK0002559; C13-0387 (Storage: Straw 7.2 months)
USA, Lake Andes, SD 2010, (Tradition)	EC <sup>a</sup>	2 (14)	0.076 0.077	0.044 0.047	BBCH 73	(Straw)	STM	5.01, 4.01 ( <u>4.5</u> )	TK0002559; C16-0388 (Storage: Straw 7.3 months)
USA, Berthoud, CO 2010, (Coors 69)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.064 0.064	Feekes 10.5.4	(Straw)	STM	0.70, 0.96 ( <u>0.83</u> )	TK0002559; W12-0389 (Storage: Straw 8.1 months)
USA, Madera, CA 2010, (Recleaned Whole Barley)	EC <sup>a</sup>	2 (14)	0.076 0.077	0.033 0.033	71	(Straw)	STM	2.1, 2.2 ( <u>2.2</u> )	TK0002559; W29-0390 (Storage: Straw 8.9 months)
USA, Hermiston, OR 2010, (Radiant)	EC <sup>a</sup>	2 (14)	0.076 0.077	0.040 0.041	84	(Straw)	STM	2.7, 2.9 ( <u>2.8</u> )	TK0002559; W21-0391 (Storage: Straw 7.4 months)
USA, Jerome, ID 2010, (Foster)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.040 0.042	71	(Straw)	STM	1.6, 1.5 ( <u>1.6</u> )	TK0002559; W16-0392 (Storage: Straw 7.5- 20.9 months)

<sup>a</sup> EC 150g/L;

DALA: days after last treatment, STM = Standard Maturity, DASM = Days After Standard Maturity.

\* Analytical Method: GRM042.03A, Benzovindiflupyr.

Straw: Mean = 97%, RSD = ± 11% (n = 12 in 0.01 -15 mg/kg)

Table 34 Residues of benzovindiflupyr in barley hay from field trials in Canada

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
GAP: Canada, 2 × 0.075 kg ai/ha, PHI: maturity									
CANADA Taber, AB 2011, (CDC Earl)	EC <sup>a</sup>	2 (14)	0.079 0.079	0.17 0.17	73	Hay	7	4.4, 5.5 (5.0)	CER05902/11; T929 (Storage: 6.3 months)
CANADA Elgin, MB 2011, (AC Metcalf)	EC <sup>a</sup>	2 (14)	0.074 0.075	0.17 0.17	71 [04- Aug- 11]	Hay	7	5.4, 6.8 (6.1)	CER05902/11; T930 (Storage: 6.4 months)
CANADA Minto, MB 2011, (Copeland)	EC <sup>a</sup>	2 (14)	0.075 0.074	0.038 0.038	73 [25- Jul-11]	Hay	7	6.3, 6.3 (6.3)	CER05902/11; T931 (Storage: 3.2 months)
CANADA Elgin, MB 2011, (Tradition)	EC <sup>a</sup>	2 (14)	0.075 0.074	0.038 0.038	75 [04- Aug- 11]	Hay	7	4.9, 5.2 (5.1)	CER05902/11; T932 (Storage: 6.4 months)
CANADA Rosthern, SK 2011, (Metcalf)	EC <sup>a</sup>	2 (14)	0.079 0.076	0.17 0.17	73	Hay	8	3.4, 4.2 (3.8)	CER05902/11; T933 (Storage: 2.8 months)
CANADA Duck Lake, SK 2011, (Metcalf)	EC <sup>a</sup>	2 (14)	0.080 0.077	0.038 0.038	72	Hay	7	1.7, 1.5 (1.6)	CER05902/11; T934 (Storage: 6.3 months)
CANADA Fort Sask. AB 2011, (Coalition)	EC <sup>a</sup>	2 (14)	0.075 0.075	0.038 0.038	71	Hay	7	5.2, 5.8 (5.4)	CER05902/11; T935 (Storage: 2.0 months)
CANADA Wellwood, MB 2011, (Conlon)	EC <sup>a</sup>	2 (14)	0.072 0.075	0.038 0.038	71	Hay	7	9.3, 6.4 (7.9)	CER05902/11; T936 (Storage: 6.6 months)
CANADA Minto, MB 2011, (Legacy)	EC <sup>a</sup>	2 (14)	0.075 0.075	0.038 0.038	73 [21- Jul-11]	Hay	7	5.9, 5.5 (5.7)	CER05902/11; T937 (Storage: 3.0 months)

<sup>a</sup> EC 100g/L; An adjuvant rated as 0.2%v/v was used in all trials.

DALA: days after last treatment

\* Analytical Method: GRM042.03A, Benzovindiflupyr, Barley Hay: Mean = 101%, RSD = ± 14% (n = 10 in 0.01-10.0 mg/kg/)



Table 35 Residues of benzovindiflupyr in barley straw from field trials in Canada

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DAT	Benzovindiflupyr	
GAP: Canada, 2 × 0.075 kg ai/ha, PHI: maturity									
CANADA Taber, AB 2011, (CDC Earl)	EC <sup>a</sup>	2 (14)	0.079 0.079	0.17 0.17	73	Straw	22	3.3, 5.9 (3.6)	CER05902/11; T929 (Storage: 6.3 months)
CANADA Elgin, MB 2011, (AC Metcalf)	EC <sup>a</sup>	2 (14)	0.074 0.075	0.17 0.17	71	Straw	41	10.0, 5.5 (7.8)	CER05902/11; T930 (Storage: 6.4 months)
CANADA Minto, MB 2011, (Copeland)	EC <sup>a</sup>	2 (14)	0.075 0.074	0.038 0.038	73	Straw	25	4.2, 3.2 (3.7)	CER05902/11; T931 (Storage: 3.2 months)
CANADA Elgin, MB 2011, (Tradition)	EC <sup>a</sup>	2 (14)	0.075 0.074	0.038 0.038	75	Straw	36	6.0, 5.5 (5.8)	CER05902/11; T932 (Storage: 6.4 months)
CANADA Rosthern, SK 2011, (Metcalf)	EC <sup>a</sup>	2 (14)	0.079 0.076	0.17 0.17	73	Straw	8 35	1.8, 1.8 (1.8)	CER05902/11; T933 (Storage: 2.8 months)
CANADA Duck Lake, SK 2011, (Metcalf)	EC <sup>a</sup>	2 (14)	0.080 0.077	0.038 0.038	72	Straw	44	3.3, 1.5 (2.4)	CER05902/11; T934 (Storage: 6.3 months)
CANADA Fort Sask. AB 2011, (Coalition)	EC <sup>a</sup>	2 (14)	0.075 0.075	0.038 0.038	71	Straw	37	3.6, 3.3 (5.0)	CER05902/11; T935 (Storage: 2.0 months)
CANADA Wellwood, MB 2011, (Conlon)	EC <sup>a</sup>	2 (14)	0.072 0.075	0.038 0.038	71	Straw	34	9.0, 5.1 (7.1)	CER05902/11; T936 (Storage: 6.6 months)
CANADA Minto, MB 2011, (Legacy)	EC <sup>a</sup>	2 (14)	0.075 0.075	0.038 0.038	73	Straw	29	0.90, 0.82 (0.86)	CER05902/11; T937 (Storage: 3.0 months)

<sup>a</sup> EC 100g/L; An adjuvant rated as 0.2%v/v was used in all trials.

DALA: days after last treatment

\* Analytical Method: GRM042.03A, Benzovindiflupyr

Barley Straw: Mean = 88%, RSD = ± 7.3% (n = 10 in 0.01-10.0 mg/kg)

Table 36 Residues of benzovindiflupyr in maize (Forage) from field trials in USA

Location, Year (variety)	Application					Residues, mg/kg	DALA	Benzovindiflupyr	Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample			
cGAP: USA, 4 × 0.075 kg ai/ha, PHI: 7 d									
USA, Germansville, PA  2010, (TA 290-11)	EC <sup>a</sup>	4 (7)	0.078 0.078 0.075 0.077	0.040 0.041 0.041 0.041	75	Forage	7	0.68, 0.74 (0.71)	TK0002562; E04-0451 (Storage: 7.0 months)
USA, Athens, GA  2010, (32B10)	EC <sup>a</sup>	4 (7)	0.076 0.076 0.076 0.076	0.031 0.034 0.034 0.033	39	Forage	7	0.43, 0.23 (0.33)	TK0002562; E12-0452 (Storage: 7.7 months)
USA, Gardner, ND 2010, (Int65D85R)	EC <sup>a</sup>	4 (7)	0.077 0.077 0.077 0.077	0.041 0.041 0.041 0.041	65	Forage	7 7 10	0.83, 0.63, 0.82 (0.76)	TK0002562; C12-0453 (Storage: 6.0-6.1 months)
USA, Northwood, ND2010, (DKC35-19/ A1002669)	EC <sup>a</sup>	4 (7)	0.078 0.075 0.076 0.076	0.040 0.040 0.040 0.040	83	Forage	7	0.57, 0.66 (0.62)	TK0002562; C13-0454 (Storage: 6.1 months)
USA, Fisk, MO  2010, (RL8950HB)	EC <sup>a</sup>	4 (7)	0.076 0.077 0.076 0.076	0.041 0.041 0.041 0.041	85	Forage	7	0.78, 1.2 (0.99)	TK0002562; C23-0455 (Storage: 6.6-6.8 months)
USA, Oregon , MO 2010, (Pioneer 32T16)	EC <sup>a</sup>	4 (7)	0.078 0.078 0.080 0.080	0.054 0.056 0.056 0.056	89	Forage	7	0.39, 0.45 (0.42)	TK0002562; C19-0456 (Storage: 6.6 months)
USA, Fitchburg, WI  2010, (37Y12)	EC <sup>a</sup>	4 (7)	0.077 0.076 0.076 0.076	0.034 0.036 0.034 0.035	85	Forage	7	0.44,0.61 (0.52)	TK0002562; C08-0457 (Storage: 6.0 months)
USA, Bagley, IA 2010, (33D47)	EC <sup>a</sup>	4 (7)	0.076 0.077 0.078 0.073	0.060 0.060 0.056 0.048	71	Forage	7	0.30,0.34 (0.32)	TK0002562; C30-0458 (Storage: 7.1 months)
USA, Bolckow, MO  2010, (Mycogen2 K718)	EC <sup>a</sup>	4 (7)	0.076 0.077 0.076 0.076	0.055 0.056 0.057 0.056	83	Forage	7	0.74,0.67 (0.70)	TK0002562; C19-0459 (Storage: 6.6 months)
USA, Sharon, ND  2010, (DKC35-19/ A1002669)	EC <sup>a</sup>	4 (7)	0.077 0.076 0.077 0.078	0.041 0.041 0.040 0.041	83	Forage	7	0.84,0.53 (0.68)	TK0002562; C13-0460 (Storage: 6.1 months)
USA, Lesterville, SD  2010, (Golden Harvest H-8254	EC <sup>a</sup>	4 (7)	0.074 0.076 0.076 0.076	0.044 0.033 0.045 0.044	79	Forage	7	0.29,0.37 (0.33)	TK0002562; C16-0461 (Storage: 6.3 months)

## Benzovindiflupyr

Location, Year (variety)	Application					Residues, mg/kg	DALA	Benzovindiflupyr	Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample			
cGAP: USA, 4 × 0.075 kg ai/ha, PHI: 7 d									
3000 GT, var. 162X579 14WP917)									
USA, Richwood, OH  2010, (DKC57-66 VT3/RR2)	EC <sup>a</sup>	4 (7)	0.077 0.077 0.077 0.077	0.046 0.047 0.047 0.047	60	Forage	7	0.32, 0.22 (0.27)	TK0002562; C01-0462 (Storage: 5.6 months)
USA, Clarence, MO  2010, (Pioneer 33D49)	EC <sup>a</sup>	4 (7)	0.078 0.075 0.075 0.076	0.041 0.040 0.041 0.041	85	Forage	7	0.53, 1.0 (0.76)	TK0002562; C20-0463 (Storage: 6.7 months)
USA, Osceola, NE 2010, (4947RB)	EC <sup>a</sup>	4 (7)	0.076 0.075 0.076 0.076	0.040 0.040 0.041 0.041	85	Forage	7	0.70, 0.50 (0.60)	TK0002562; C33-0464 (Storage: 6.2 months)
USA, Campbell, MN  2010, (DKC 38-89)	EC <sup>a</sup>	4 (7)	0.076 0.076 0.076 0.076	0.041 0.041 0.041 0.040	83	Forage	7	0.38, 0.18 (0.28)	TK0002562; C11-0465 (Storage: 6.1 months)
USA, Geneva, MN  2010, (Pioneer 38M60)	EC <sup>a</sup>	4 (7)	0.076 0.077 0.075 0.076	0.041 0.046 0.049 0.049	75	Forage	7	0.22, 0.16 (0.19)	TK0002562; C09-0466 (Storage: 6.6 months)
USA, Perry, IA  2010, (P1162XR)	EC <sup>a</sup>	4 (7)	0.077 0.077 0.075 0.075	0.060 0.060 0.057 0.045	71	Forage	7	0.24, 0.17 (0.20)	TK0002562; C30-0467 (Storage: 7.1 months)
USA, York, NE  2010, (X723 14WP.0)	EC <sup>a</sup>	4 (7)	0.076 0.075 0.076 0.076	0.040 0.040 0.040 0.041	85	Forage	7	0.51, 0.54 (0.52)	TK0002562; C33-0468 (Storage: 6.2 months)
USA, Anabel, MO  2010, (33T57)	EC <sup>a</sup>	4 (7)	0.077 0.076 0.075 0.075	0.041 0.040 0.040 0.041	83	Forage	7	0.91, 1.4 (1.2)	TK0002562; C20-0469 (Storage: 6.6- 12.5 months)
USA, Raymondville, TX  2010, (HG284162)	EC <sup>a</sup>	4 (7)	0.077 0.077 0.078 0.080	0.082 0.082 0.082 0.082	85	Forage	7	1.2, 1.2 (1.2)	TK0002562; W08-0470 (Storage: 8.4 months)
USA, Wall, TX 2011, (Hybrid 111RM GT/CB/LL/RW)	EC <sup>a</sup>	4 (7)	0.078 0.078 0.078 0.079	0.041 0.041 0.041 0.041	71	Forage	7	1.3, 2.1, 1.2 (1.5)	TK0002562; 01 (Storage: 5.9 months)
	WG <sup>b</sup>	4 (7)	0.075 0.077	0.041 0.041	71	Forage	7	1.4, 2.4, 2.2 (2.0)	

Location,	Application					Residues, mg/kg			Report; Trial; (remarks)*
Year (variety)	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 4 × 0.075 kg ai/ha, PHI: 7 d									
			0.075 0.077	0.041 0.041					
USA, Bagley, IA 2011, (111RM)	EC <sup>a</sup>	4 (7)	0.075 0.073 0.076 0.080	0.041 0.041 0.041 0.041	73	Forage	7	0.64, 0.64, 0.72 (0.67)	TK0002562; 02 (Storage: 5.3 months)
	WG <sup>b</sup>	4 (7)	0.077 0.077 0.076 0.078	0.041 0.041 0.041 0.041	73	Forage	7	1.1, 0.84, 0.80 (0.91)	
USA, Rice, MN 2011, (DKC 35-43)	EC <sup>a</sup>	4 (7)	0.076 0.076 0.076 0.076	0.041 0.041 0.041 0.041	73	Forage	7	0.48, 0.34, 0.53 (0.45)	TK0002562; 03 (Storage: 4.9 months)
	WG <sup>b</sup>	4 (7)	0.076 0.076 0.077 0.076	0.041 0.041 0.041 0.041	73	Forage	7	0.55, 0.40, 0.51 (0.49) < 0.01, < 0.01, < 0.01 (< 0.01)	

<sup>a</sup> EC 150g/L;

<sup>b</sup> WG 45g/L

DALA: days after last treatment

\* Analytical Method: GRM042.03A, Benzovindiflupyr

Field Corn Forage: Mean = 96%, RSD = ± 16% (n = 12 in 0.01-5.0 mg/kg)

Table 37 Residues of benzovindiflupyr in maize (stover) from field trials in USA

Location,	Application					Residues, mg/kg			Report; Trial; (remarks)*
Year (variety)	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 4 × 0.075 kg ai/ha, PHI: 7 d									
USA, Germansville, PA  2010, (TA 290-11)	EC <sup>a</sup>	4 (7)	0.080 0.078 0.086 0.077	0.030 0.030 0.030 0.030	89	Stover	7	5.6, 6.5 (6.1)	TK0002562; E04-0451 (Storage: 5.7-9.7 months)
USA, Athens, GA  2010, (32B10)	EC <sup>a</sup>	4 (7)	0.076 0.076 0.075 0.075	0.030 0.030 0.030 0.027	88	Stover	7	2.5, 1.7 (2.1)	TK0002562; E12-0452 (Storage: 5.8-9.9 months)
USA, Gardner, ND 2010, (Int65D85R)	EC <sup>a</sup>	4 (7)	0.076 0.077 0.077 0.076	0.041 0.041 0.041 0.041	96	Stover	7 7 12 17	2.1, 2.2, 3.2, 3.1 (2.6)	TK0002562; C12-0453 (Storage: 4.5-5.1 months)
USA, Northwood, ND2010, (DKC35-19/ A1002669)	EC <sup>a</sup>	4 (7)	0.076 0.076 0.076 0.076	0.040 0.040 0.041 0.040	89	Stover	7 7 12	2.9, 3.0, 3.1 (3.0)	TK0002562; C13-0454 (Storage: 4.3 months)
USA, Fisk, MO  2010, (RL8950HB)	EC <sup>a</sup>	4 (7)	0.076 0.076 0.076 0.077	0.041 0.041 0.041 0.040	95	Stover	7	4.3, 8.1 (6.2)	TK0002562; C23-0455 (Storage: 10.3 months)
USA, Oregon ,	EC <sup>a</sup>	4	0.078	0.057	89	Stover	7	2.6, 2.8	TK0002562;

## Benzovindiflupyr

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
Form.	no	kg ai/ha	kg ai/hL	BBCB	Sample	DALA	Benzovindiflupyr		
cGAP: USA, 4 × 0.075 kg ai/ha, PHI: 7 d									
MO 2010, (Pioneer 32T16)		(7)	0.076 0.078 0.075	0.057 0.056 0.055				( <u>2.7</u> )	C19-0456 (Storage: 5.6 months)
USA, Fitchburg, WI  2010, (37Y12)	EC <sup>a</sup>	4 (7)	0.076 0.077 0.076 0.075	0.035 0.036 0.036 0.035	96	Stover	7	2.2, 1.1 ( <u>1.7</u> )	TK0002562; C08-0457 (Storage: 5.0 months)
USA, Bagley, IA 2010, (33D47)	EC <sup>a</sup>	4 (7)	0.074 0.077 0.080 0.077	0.039 0.040 0.040 0.038	97	Stover	7	4.8, 5.7 ( <u>5.3</u> )	TK0002562; C30-0458 (Storage: 8.8 months)
USA, Bolckow, MO  2010, (Mycogen2 K718)	EC <sup>a</sup>	4 (7)	0.077 0.077 0.077 0.076	0.057 0.056 0.056 0.055	89	Stover	7	1.9, 2.0 ( <u>2.0</u> )	TK0002562; C19-0459 (Storage: 5.7 months)
USA, Sharon, ND  2010, (DKC35-19/ A1002669)	EC <sup>a</sup>	4 (7)	0.077 0.077 0.076 0.076	0.041 0.041 0.041 0.040	89	Stover	7	2.3, 3.4 ( <u>2.9</u> )	TK0002562; C13-0460 (Storage: 4.3 months)
USA, Lesterville, SD  2010, (Golden Harvest H-8254 3000 GT, var. 162X579 14WP917)	EC <sup>a</sup>	4 (7)	0.076 0.077 0.077 0.077	0.041 0.042 0.041 0.040	92	Stover	7	2.2, 2.6 ( <u>2.4</u> )	TK0002562; C16-0461 (Storage: 5.2 months)
USA, Richwood, OH  2010, (DKC57-66 VT3/RR2)	EC <sup>a</sup>	4 (7)	0.077 0.077 0.077 0.077	0.046 0.047 0.047 0.046	87	Stover	7	2.1, 3.3 ( <u>2.7</u> )	TK0002562; C01-0462 (Storage: 4.7 months)
USA, Clarence, MO  2010, (Pioneer 33D49)	EC <sup>a</sup>	4 (7)	0.076 0.077 0.082 0.078	0.041 0.041 0.041 0.041	99	Stover	7	4.3, 5.4 ( <u>4.9</u> )	TK0002562; C20-0463 (Storage: 5.6 months)
USA, Osceola, NE 2010, (4947RB)	EC <sup>a</sup>	4 (7)	0.077 0.076 0.076 0.077	0.041 0.041 0.041 0.041	89	Stover	7	6.6, 7.1 ( <u>6.9</u> )	TK0002562; C33-0464 (Storage: 9.1 months)
USA, Campbell, MN  2010, (DKC 38-89)	EC <sup>a</sup>	4 (7)	0.076 0.076 0.076 0.076	0.041 0.041 0.041 0.041	85	Stover	7	1.5, 1.4 ( <u>1.4</u> )	TK0002562; C11-0465 (Storage: 5.4 months)
USA, Geneva, MN	EC <sup>a</sup>	4 (7)	0.078 0.076	0.047 0.048	89	Stover	7	3.3, 4.0 ( <u>3.7</u> )	TK0002562; C09-0466

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCB	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 4 × 0.075 kg ai/ha, PHI: 7 d									
2010, (Pioneer 38M60)			0.075 0.076	0.047 0.048					(Storage: 5.2 months)
USA, Perry, IA  2010, (P1162XR)	EC <sup>a</sup>	4 (7)	0.075 0.078 0.076 0.080	0.039 0.039 0.040 0.037	97	Stover	7	6.3, 2.6 (4.5)	TK0002562; C30-0467 (Storage: 4.9 months)
USA, York, NE  2010, (X723 14WP.0)	EC <sup>a</sup>	4 (7)	0.076 0.076 0.076 0.077	0.040 0.040 0.040 0.042	89	Stover	7	4.6, 2.5 (3.6)	TK0002562; C33-0468 (Storage: 5.2 months)
USA, Anabel, MO  2010, (33T57)	EC <sup>a</sup>	4 (7)	0.074 0.075 0.074 0.080	0.041 0.041 0.041 0.041	99	Stover	7	3.5, 2.7 (3.1)	TK0002562; C20-0469 (Storage: 5.7 months)
USA, Raymondville, TX  2010, (HG284162)	EC <sup>a</sup>	4 (7)	0.080 0.078 0.078 0.078	0.081 0.082 0.082 0.082	87	Stover	7	2.5, 3.7 (3.1)	TK0002562; W08-0470 (Storage: 7.1 months)
USA, Levelland, TX  2010, (AP2504)	EC <sup>a</sup>	4 (7)	0.076 0.075 0.075 0.077	0.041 0.041 0.041 0.041	99	Stover	7	4.0, 3.6 (3.8)	TK0002562; W39-0471 (Storage: 5.9 months)
USA, Wall, TX 2011, (Hybrid 111RM GT/CB/LL/RW)	EC <sup>a</sup>	4 (7)	0.077 0.075 0.077 0.077	0.041 0.041 0.041 0.041	89	Stover	7	4.3, 5.3, 4.6 (4.7)	TK0002562; 01 (Storage: 5.9 months)
	WG <sup>b</sup>	4 (7)	0.076 0.077 0.077 0.078	0.041 0.041 0.041 0.041	89	Stover	7	4.6, 4.3, 3.7 (4.2)	
USA, Bagley, IA 2011, (111RM)	EC <sup>a</sup>	4 (7)	0.074 0.075 0.079 0.089	0.041 0.041 0.041 0.041	95	Stover	7	8.9, 9.4, 8.4 (8.9)	TK0002562; 02 (Storage: 5.3 months)
	WG <sup>b</sup>	4 (7)	0.077 0.076 0.077 0.074	0.041 0.041 0.041 0.041	73	Stover	7	13, 8.8, 11 (11.0)	
USA, Rice, MN 2011, (DKC 35-43)	EC <sup>a</sup>	4 (7)	0.076 0.076 0.077 0.077	0.041 0.041 0.041 0.041	96	Stover	7	6.6, 7.0, 11.4 (8.3)	TK0002562; 03 (Storage: 4.9 months)
	WG <sup>b</sup>	4 (7)	0.077 0.076 0.077 0.076	0.041 0.041 0.041 0.041	96	Stover	7	6.3, 7.3, 7.1 (6.9)	

<sup>a</sup> EC 150g/L<sup>b</sup> WG 45g/L

DALA: days after last treatment

Fld: Field

## Benzovindiflupyr

\* Analytical Method: GRM042.03A, Benzovindiflupyr

Field Corn Stover: Mean = 89%, RSD = ± 14% (n = 18 in 0.01-9.97 mg/kg)

Table 38 Residues of benzovindiflupyr in wheat forage from field trials in USA

Location, Year (variety)	Application					Residues, mg/kg	DALA	Benzovindiflupyr	Report; Trial; (remarks) <sup>c</sup>
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample			
cGAP: USA, 2 × 0.075 kg ai/ha, PHI: Maturity									
USA, Seven Springs, NC  2010, (Pioneer 26R15)	EC <sup>a</sup>	2 (14)	0.077 0.078	0.037 0.032	67	Forage	7	0.93,1.2 (1.06)	TK0002558 E10-0351 (Storage: Forage 10.6 months)
USA, Fisk, MO  2010, (Beretta)	EC <sup>a</sup>	2 (14)	0.076 0.076	0.041 0.041	37	Forage	7	0.61,0.64 (0.63)	TK0002558 C23-0352 (Storage: Forage 3.6 months)
USA, Northwood, ND  2010, (Jerry)	EC <sup>a</sup>	2 (14)	0.081 0.078	0.042 0.042	33	Forage	7	1.5,1.2 (1.4)	TK0002558 C13-0353 (Storage: Forage 2.1 months)
USA, Shelbyville, MO  2010, (Erine)	EC <sup>a</sup>	2 (14)	0.075 0.078	0.041 0.041	31	Forage	7	0.47,0.43 (0.45)	TK0002558 C20-0354 (Storage: Forage 10.4 months)
USA, Richland, IA  2010, (Wilcross748)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.045 0.044	Feekes 5	Forage	7	0.42,0.34 (0.38)	TK0002558 C18-0355 (Storage: Forage 10.4 months)
USA, Milford Center, OH  2010, (Croplan Genetics 8614)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.047 0.047	Feekes 5	Forage	7	0.80, 0.83 (0.82)	TK0002558 C01-0356 (Storage: Forage 9.8 months)
USA, Macon, MO  2010, (V9710)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.041 0.041	Feekes 10.51	Forage	7	NC	TK0002558 C20-0357 (Storage: Forage NA;)
USA, Raymondville, TX 2010, (Caudillo)	EC <sup>a</sup>	2 (14)	0.076 0.077	0.041 0.041	32	Forage	7	3.0, 3.7 (3.4)	TK0002558 W08-0358 (Storage: Forage 5.1 months)
USA, Carrington, ND 2010, (AP-604-CL)	EC <sup>a</sup>	2 (14)	0.077 0.076	0.041 0.040	45 [07/06/2010]	Forage	7	0.67, 0.66 (0.67)	TK0002558 C13-0359 (Storage: Forage 8.9 months)
USA,	EC <sup>a</sup>	2	0.077	0.055	33	Forage	7	1.2, 1.3	TK0002558

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks) <sup>c</sup>
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 2 × 0.075 kg ai/ha, PHI: Maturity									
Jamestown, ND  2010,		(14)	0.077	0.055				(1.25)	C12-0360 (Storage: Forage 7.3- 7.8 months)
USA, Carrington, ND  2010, (Faller)	EC <sup>a</sup>	2 (14)	0.077 0.076	0.041 0.040	45 [07/06/2010]	Forage	7	0.33,0.33 (0.33)	TK0002558 C13-0361 (Storage: Forage 8.9 months)
USA, Lake Andes, SD  2010, (Argent)	EC <sup>a</sup>	2 (14)	0.076 0.075	0.042 0.041	63	Forage	7	1.6,1.3 (1.5)	TK0002558 C16-0362 (Storage: Forage 8.8 months)
USA, Grand Island, NE  2010, (NEO1643)	EC <sup>a</sup>	2 (14)	0.076 0.077	0.041 0.041	30	Forage	7	1.3, 0.49 (0.90)	TK0002558 C33-0363 (Storage: Forage 10.3 months)
USA, Johnstown, CO 2010, (Yuma)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.066 0.064	Feekes 9	Forage	7	1.2,1.4 (1.3)	TK0002558 W12-0364 (Storage: Forage 10.1 months)
USA, Eaton, CO 2010, (Jalgalene)	EC <sup>a</sup>	2 (14)	0.077 0.076	0.066 0.067	Feekes 9	Forage	7  10	1.5,1.5 (1.5)  1.8	TK0002558 W12-0365 (Storage: Forage 9.9- 10.0 months)
USA, Uvalde, TX  2010, (Tam 203)	EC <sup>a</sup>	2 (14)	0.076 0.077	0.046 0.047	45	Forage	7	1.2,1.1 (1.2)	TK0002558 W07-0366 (Storage: Forage 3.5 months)
USA, Wall, TX  2010, (Coronado)	EC <sup>a</sup>	2 (14)	0.077 0.078	0.042 0.043	33	Forage	7	2.3,2.1 (2.2)	TK0002558 W40-0367 (Storage: Forage 3.3 months)
USA, Levelland, TX 2010, (Weather master)	EC <sup>a</sup>	2 (14)	0.073 0.073	0.040 0.040	32	Forage	7	1.4,2.7 (2.1)	TK0002558 W39-0368 (Storage: Forage 3.8 months)
USA, Milliken, CO  2010, (Bill Brown)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.067 0.064	Boot Feekes	Forage	7	1.2,1.4 (1.3)	TK0002558 W12-0369 (Storage: Forage 10.1 months)
USA, Rupert, ID  2010, (Klassic)	EC <sup>a</sup>	2 (14)	0.078 0.087	0.088 0.051	41	Forage	7	0.69,0.73 (0.71)	TK0002558 W15-0370 (Storage: Forage 9.3 months)



## Benzovindiflupyr

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks) <sup>c</sup>
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 2 × 0.075 kg ai/ha, PHI: Maturity									
USA, Valley City, ND	EC <sup>a</sup>	2 (14)	0.077 0.078	0.054 0.054	49	Forage	7	0.24,0.26,0.11 (0.20)	TK0048907 TK048907-01
2011, (Falcon)	WG <sup>b</sup>	2 (14)	0.076 0.078	0.054 0.054	49	Forage	7	0.37,0.43,0.63 (0.48)	(Storage: Forage 5.9 months)
USA, Jamestown, ND	EC <sup>a</sup>	2 (14)	0.077 0.078	0.054 0.054	40	Forage	7	0.58,0.67,0.94 (0.73)	TK0048907 TK048907-02
2011, (Overland)	WG <sup>b</sup>	2 (14)	0.077 0.078	0.054 0.054	40	Forage	7	0.73,0.72,0.68 (0.71)	(Storage: Forage 6.2 months)
USA, Northwood, ND	EC <sup>a</sup>	2 (14)	0.079 0.077	0.041 0.041	69	Forage	7	0.63,0.47,0.54 (0.55)	TK0048907 TK048907-03
2011, (Faller)	WG <sup>b</sup>	2 (14)	0.078 0.078	0.041 0.041	69	Forage	7	0.36,0.36,0.51 (0.41)	(Storage: Forage 5.3 months)

<sup>a</sup> EC 150g/L<sup>b</sup> WG 45g/L

DALA: days after last treatment

\*Trt 2 grain and straw data was from select trials requested from Syngenta Canada to evaluate residues from early application to normal harvest.

\*\*Samples were outside standard curve- re-extracted and diluted

<sup>c</sup> Analytical Method: GRM042.03A, Benzovindiflupyr

Forage: Mean = 87%, RSD = ± 13% (n = 12 in 0.01 - 7.5 mg/kg)

Table 39 Residues of benzovindiflupyr in wheat hay from field trials in USA

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks) <sup>c</sup>
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 2 × 0.075 kg ai/ha, PHI: Maturity									
USA, Seven Springs, NC	EC <sup>a</sup>	2 (14)	0.077 0.078	0.037 0.032	67	Hay	7	1.3,1.6 (1.45)	TK0002558 E10-0351 (Storage: Hay 10.7 months)
2010, (Pioneer 26R15)									
USA, Fisk, MO	EC <sup>a</sup>	2 (14)	0.076 0.076	0.041 0.041	37	Hay	7	3.1,2.7 (2.9)	TK0002558 C23-0352 (Storage: Hay 6.2 months)
2010, (Beretta)									
USA, Northwood, ND	EC <sup>a</sup>	2 (14)	0.081 0.078	0.042 0.042	33	Hay	7	2.2,2.1 (2.2)	TK0002558 C13-0353 (Storage: Hay 4.7 months)
2010, (Jerry)									
USA, Shelbyville, MO	EC <sup>a</sup>	2 (14)	0.075 0.078	0.041 0.041	31	Hay	7	2.0,1.9 (2.0)	TK0002558 C20-0354 (Storage:

Location, Year (variety)	Application					Residues, mg/kg	Sample	DALA	Benzovindiflupyr	Report; Trial; (remarks) <sup>c</sup>
	Form.	no	kg ai/ha	kg ai/hL	BBCH					
cGAP: USA, 2 × 0.075 kg ai/ha, PHI: Maturity										
2010, (Erine)										Hay 10.5 months)
USA, Richland, IA  2010, (Wilcross748)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.045 0.044	Feekes 10	Hay	7	0.49,1.5 (1.1)		TK0002558 C18-0355 (Storage: Hay 10.5 months)
USA, Milford Center, OH  2010, (Croplan Genetics 8614)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.047 0.047	Feekes 5+14	Hay	7	0.40, 0.67 (0.54)		TK0002558 C01-0356 (Storage: Hay 9.9 months;)
USA, Macon, MO  2010, (V9710)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.041 0.041	Feekes 10.51	Hay	7	1.5, 1.8 (1.65)		TK0002558 C20-0357 (Storage: Hay 10.4 months)
USA, Raymondville, TX 2010, (Caudillo)	EC <sup>a</sup>	2 (14)	0.076 0.077	0.041 0.041	32	Hay	7	12, 11 (11.5)		TK0002558 W08-0358 (Storage: Hay 5.2 months)
USA, Carrington, ND 2010, (AP-604-CL)	EC <sup>a</sup>	2 (14)	0.077 0.076	0.041 0.040	45 [07/06/2010]	Hay	7	0.52, 0.92 (0.72)		TK0002558 C13-0359 (Storage: Hay 9.0 months)
USA, Jamestown, ND  2010,	EC <sup>a</sup>	2 (14)	0.077 0.077	0.055 0.055	33	Hay	7	1.2, 2.1 (1.65)		TK0002558 C12-0360 (Storage: Hay 7.3-7.9 months)
USA, Carrington, ND  2010, (Faller)	EC <sup>a</sup>	2 (14)	0.077 0.076	0.041 0.040	45 [07/06/2010]	Hay	7	0.52,0.61 (0.57)		TK0002558 C13-0361 (Storage: Hay 9.0 months)
USA, Lake Andes, SD  2010, (Argent)	EC <sup>a</sup>	2 (14)	0.076 0.075	0.042 0.041	63	Hay	7	1.9,2.5 (2.2)		TK0002558 C16-0362 (Storage: Hay 8.9 months)
USA, Grand Island, NE  2010, (NEO1643)	EC <sup>a</sup>	2 (14)	0.076 0.077	0.041 0.041	30	Hay	7	2.6, 2.7 (2.7)		TK0002558 C33-0363 (Storage: Hay 10.4 months)
USA, Johnstown, CO 2010, (Yuma)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.066 0.064	Feekes 9	Hay	7	3.0,2.7 (2.9)		TK0002558 W12-0364 (Storage: Hay 10.2 months)
USA, Eaton,	EC <sup>a</sup>	2	0.077	0.066	Feekes 9	Hay		1.6,1.7		TK0002558

## Benzovindiflupyr

Location, Year (variety)	Application					Residues, mg/kg	Sample	DALA	Benzovindiflupyr	Report; Trial; (remarks) <sup>c</sup>
	Form.	no	kg ai/ha	kg ai/hL	BBCH					
cGAP: USA, 2 × 0.075 kg ai/ha, PHI: Maturity										
CO 2010, (Jalgalene)		(14)	0.076	0.067			7	(1.6)		W12-0365 (Storage: Hay 10.2 months)
USA, Uvalde, TX  2010, (Tam 203)	EC <sup>a</sup>	2 (14)	0.076 0.077	0.046 0.047	45	Hay	7	6.8,5.5 (6.2)		TK0002558 W07-0366 (Storage: Hay 3.5 months)
USA, Wall, TX  2010, (Coronado)	EC <sup>a</sup>	2 (14)	0.077 0.078	0.042 0.043	33	Hay	7	9.1,8.0 (8.6)		TK0002558 W40-0367 (Storage: Hay 3.3 months)
USA, Levelland, TX 2010, (Weather master)	EC <sup>a</sup>	2 (14)	0.073 0.073	0.040 0.040	32	Hay	7	5.7,8.6 (7.2)		TK0002558 W39-0368 (Storage: Hay 6.4 months)
USA, Milliken, CO  2010, (Bill Brown)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.067 0.064	Boot Feekes	Hay	7	2.5,1.2 (1.9)		TK0002558 W12-0369 (Storage: Hay 10.3 months)
USA, Rupert, ID  2010, (Klassic)	EC <sup>a</sup>	2 (14)	0.078 0.087	0.088 0.051	41	Hay	7	4.2,3.4 (3.8)		TK0002558 W15-0370 (Storage: Hay 9.5 months)
USA, Valley City, ND  2011, (Falcon)	EC <sup>a</sup>	2 (14)	0.077 0.078	0.054 0.054	49	Hay	7	2.4,2.0,1.6 (2.0)		TK0048907 TK048907- 01 (Storage: Hay 6.8 months)
	WG <sup>b</sup>	2 (14)	0.076 0.078	0.054 0.054	49	Hay	7	1.4,2.0,1.5 (1.6)		
USA, Jamestown, ND 2011, (Overland)	EC <sup>a</sup>	2 (14)	0.077 0.078	0.054 0.054	40	Hay	7	3.6,3.8,2.9 (3.4)		TK0048907 TK048907- 02 (Storage: Hay 7.0 months)
	WG <sup>b</sup>	2 (14)	0.077 0.078	0.054 0.054	40	Hay	7	2.3,2.5,2.7 (2.5)		
USA, Northwood, ND  2011, (Faller)	EC <sup>a</sup>	2 (14)	0.079 0.077	0.041 0.041	69	Hay	7	0.65,0.79,0.89 (0.78)		TK0048907 TK048907- 03 (Storage: Hay 6.1 months)
	WG <sup>b</sup>	2 (14)	0.078 0.078	0.041 0.041	69	Hay	7	0.68,0.91,0.76 (0.78)		

<sup>a</sup> EC 150g/L

<sup>b</sup> WG 45g/L

DALA: days after last treatment

\*T<sub>1</sub> 2 grain and straw data was from select trials to evaluate residues from early application to normal harvest.

\*\*Samples were outside standard curve- re-extracted and diluted

<sup>c</sup> Analytical Method: GRM042.03A, Benzovindiflupyr, Hay: Mean = 99%, RSD = ± 13% (n = 12 in 0.01 - 20 mg/kg)

Table 40 Residues of benzovindiflupyr in wheat straw from field trials in USA and Canada

Location, Year (variety)	Application					Residues, mg/kg	Sample	DALA	Benzovindiflupyr	Report; Trial; (remarks) <sup>c</sup>
	Form.	no	kg ai/ha	kg ai/hL	BBCH					
cGAP: USA, 2 × 0.075 kg ai/ha, PHI: Maturity										
USA, Seven Springs, NC  2010, (Pioneer 26R15)	EC <sup>a</sup>	2 (14)	0.076 0.078	0.032 0.029	71	Straw	STM	3.8,4.3 (4.0)	TK0002558 E10-0351 (Storage: Straw 9.9 months)	
USA, Fisk, MO  2010, (Beretta)	EC <sup>a</sup>	2 (14)	0.076 0.076	0.041 0.041	73	Straw	STM	5.5,5.7 (5.6)	TK0002558 C23-0352 (Storage: Straw 5.4 months)	
USA, Northwood, ND  2010, (Jerry)	EC <sup>a</sup>	2 (14)	0.077 0.078	0.042 0.042	Feekes 10.54	Straw	STM	0.26,0.25,*0.14,*0.017 (0.17)	TK0002558 C13-0353 (Storage: Straw 3.7 months)	
USA, Shelbyville, MO  2010, (Erine)	EC <sup>a</sup>	2 (14)	0.078 0.077	0.041 0.041	Feekes 10.5	Straw	STM	0.76,0.67 (0.72)	TK0002558 C20-0354 (Storage: Straw 9.2 months)	
USA, Richland, IA  2010, (Wilcross748)	EC <sup>a</sup>	2 (14)	0.076 0.076	0.052 0.050	Feekes 10.54	Straw	STM	0.83,1.2 (1.0)	TK0002558 C18-0355 (Storage: Straw 9.1 months)	
USA, Milford Center, OH  2010, (Croplan Genetics 8614)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.045 0.047	Feekes 10.54	Straw	STM	0.044,1.9,*0.11,*0.104 (0.54)	TK0002558 C01-0356 (Storage: Straw 9.1 months)	
USA, Macon, MO  2010, (V9710)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.041 0.041	Feekes 10.51	Straw	STM	0.38, < 0.01 (0.38)	TK0002558 C20-0357 (Storage: Straw 9.4 months)	
USA, Raymondville, TX 2010, (Caudillo)	EC <sup>a</sup>	2 (14)	0.078 0.078	0.041 0.041	Feekes 10.54	Straw	STM	6.7,7.0 (6.8)	TK0002558 W08-0358 (Storage: Straw 6.1 months)	
USA, Carrington, ND 2010,	EC <sup>a</sup>	2 (14)	0.076 0.075	0.041 0.040	Feekes 10.5.4 [07/06/2010]	Straw	STM	0.23, 0.23 (0.23)	TK0002558 C13-0359 (Storage: Straw 7.6	

## Benzovindiflupyr

Location, Year (variety)	Application					Residues, mg/kg	Sample	DALA	Benzovindiflupyr	Report; Trial; (remarks) <sup>c</sup>
	Form.	no	kg ai/ha	kg ai/hL	B BCH					
cGAP: USA, 2 × 0.075 kg ai/ha, PHI: Maturity										
(AP-604-CL)	EC <sup>a</sup>	2 (14)	0.076 0.075	0.041 0.040	Feekes 10.5.4	Straw	STM	*0.052,*0.064,*< 0.01,*0.015 (0.044)	months)	
USA, Jamestown, ND  2010,	EC <sup>a</sup>	2 (14)	0.077 0.076	0.055 0.041	71	Straw	7 DBSM  STM  7 DASM  14 DASM	1.1  0.84, 0.88 (0.86)  0.74  <u>2.2</u>	TK0002558 C12-0360 (Storage: Straw 5.6- 6.2 months)	
	EC <sup>a</sup>	2 (14)	0.077 0.076	0.055 0.041	71	Straw	7 DBSM  STM  7 DASM 14 DASM	0.055  *0.051,*0.058 (0.055)  *0.034 *0.078		
USA, Carrington, ND  2010, (Faller)	EC <sup>a</sup>	2 (14)	0.077 0.075	0.041 0.041	Feekes 10.5.4 [07/06/2010]	Straw	STM	0.14,0.13,*0.033,*0.035 (0.085)	TK0002558 C13-0361 (Storage: Straw 6.9- 7.6 months)	
USA, Lake Andes, SD  2010, (Argent)	EC <sup>a</sup>	2 (14)	0.076 0.076	0.044 0.047	73	Straw	STM	3.6,3.1,*1.2,*1.1 (2.3)	TK0002558 C16-0362 (Storage: Forage 8.8 months; Hay 8.9 months; Straw 7.8 months)	
USA, Grand Island, NE  2010, (NEO1643)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.041 0.040	71	Straw	STM	1.8,1.7,*0.14,*0.19 (0.96)	TK0002558 C33-0363 (Storage: Straw 8.9 months)	
USA, Johnstown, CO 2010, (Yuma)	EC <sup>a</sup>	2 (14)	0.078 0.077	0.065 0.064	Feekes 10.5.4	Straw	STM	3.9,4.9 (4.4)	TK0002558 W12-0364 (Storage: Straw 8.7 months)	
USA, Eaton, CO 2010,	EC <sup>a</sup>	2 (14)	0.076 0.078	0.065 0.065	Feekes 10.5	Straw	7 DBSM	2.3  2.2,2.4	TK0002558 W12-0365 (Storage:	

Location, Year (variety)	Application					Residues, mg/kg	Sample	DALA	Benzovindiflupyr	Report; Trial; (remarks) <sup>c</sup>
	Form.	no	kg ai/ha	kg ai/hL	BBCB					
cGAP: USA, 2 × 0.075 kg ai/ha, PHI: Maturity										
(Jalgalene)								STM 7 DASM 14 DASM	<u>3.7</u> 3.5	Straw 8.0- 8.7 months)
USA, Uvalde, TX 2010, (Tam 203)	EC <sup>a</sup>	2 (14)	0.075 0.075	0.042 0.039	71	Straw	STM	< 0.01,< 0.01 ( <u>&lt; 0.01</u> )	TK0002558 W07-0366 (Storage: Straw 5.6 months)	
USA, Wall, TX 2010, (Coronado)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.043 0.042	Feekes 10.5.4	Straw	STM	**,**,8.0,8.7 ( <u>8.4</u> )	TK0002558 W40-0367 (Storage: Straw 5.2- 9.1 months)	
USA, Levelland, TX 2010, (Weather master)	EC <sup>a</sup>	2 (14)	0.075 0.075	0.040 0.040	Feekes 10.5.4	Straw	STM	4.9,4.5 ( <u>4.7</u> )	TK0002558 W39-0368 (Storage: Straw 5.3 months)	
USA, Milliken, CO 2010, (Bill Brown)	EC <sup>a</sup>	2 (14)	0.078 0.076	0.064 0.065	Feekes 10.5.4	Straw	STM	6.0,6.4 ( <u>6.2</u> )	TK0002558 W12-0369 (Storage: Forage 10.1 months; Hay 10.3 months; Straw 8.7 months)	
USA, Rupert, ID 2010, (Klassic)	EC <sup>a</sup>	2 (14)	0.076 0.077	0.047 0.049	71	Straw	STM	0.13,0.098 ( <u>0.11</u> )	TK0002558 W15-0370 (Storage: Straw 7.7 months)	
USA, Valley City, ND 2011, (Falcon)	EC <sup>a</sup>	2 (14)	0.079 0.076	0.054 0.054	73	Straw	SM	0.92,0.98,2.1,2.7,2.4 (1.8)	TK0048907 TK048907- 01 (Storage: Straw 5.7- 6.9 months)	
	WG <sup>b</sup>	2 (14)	0.077 0.077	0.054 0.054	73	Straw	SM	0.79,0.69,0.85 (0.78)		
USA, Jamestown, ND 2011, (Overland)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.054 0.054	73	Straw	SM	0.96,1.2,0.82 (0.99)	TK0048907 TK048907- 02 (Storage: Straw 5.7- 7.0 months)	
	WG <sup>b</sup>	2 (14)	0.077 0.077	0.054 0.054	73	Straw	SM	1.1,0.93,0.61 (0.88)		
USA, Northwood, ND	EC <sup>a</sup>	2 (14)	0.076 0.077	0.041 0.041	71	Straw	SM	2.2,1.8,1.9 ( <u>2.0</u> )	TK0048907 TK048907- 03 (Storage:	
	WG <sup>b</sup>	2	0.077	0.041	71	Straw	<u>SM</u>	1.2,1.2,1.2		

## Benzovindiflupyr

Location, Year (variety)	Application					Residues, mg/kg	Sample	DALA	Benzovindiflupyr	Report; Trial; (remarks) <sup>c</sup>
	Form.	no	kg ai/ha	kg ai/hL	BBCH					
cGAP: USA, 2 × 0.075 kg ai/ha, PHI: Maturity										
2011, (Faller)		(14)	0.076	0.041					(1.2)	Straw 5.1 months)

<sup>a</sup> EC 150g/L

<sup>b</sup> WG 45g/L

DALA: days after last treatment

\*Trt 2 grain and straw data was from select trials requested from Syngenta Canada to evaluate residues from early application to normal harvest.

\*\*Samples were outside standard curve- re-extracted and diluted

<sup>c</sup> Analytical Method: GRM042.03A, Benzovindiflupyr, Straw: Mean = 102%, RSD = ± 18% (n = 16 in 0.01–15 mg/kg)

Table 41 Residues of benzovindiflupyr in wheat forage from field trials in Canada

Location, Year (variety)	Application					Residues, mg/kg	Sample	DALA	Benzovindiflupyr	Report; Trial; (remarks) <sup>c</sup>
	Form.	no	kg ai/ha	kg ai/hL	BBCH					
cGAP: Canada, 2 × 0.075 kg ai/ha, PHI: Maturity										
CANADA Vanscoy, SK  2011, (Infinity))	EC <sup>a</sup>	2 (14)	0.074 0.073	0.038 0.038	59	Forage	7	0.59,1.5 (1.05)	CER05901/11; T916 (Storage: 3.1 months)	
CANADA Kinley, SK 2011, (Infinity)	EC <sup>a</sup>	2 (14)	0.079 0.075	0.17 0.17	71	Forage	7	1.8,1.8 (1.8)	CER05901/11; T917 (Storage: 2.8 months)	
CANADA Taber, AB 2011, (Superb)	EC <sup>a</sup>	2(14)	0.079 0.078	0.17 0.17	71	Forage	7	1.6,1.3 (1.5)	CER05901/11; T918 (Storage: 3.2 months)	
CANADA Boissevain, MB 2011, (Harvest)	EC <sup>a</sup>	2 (14)	0.076 0.075	0.17 0.17	71 [04- Aug- 11]	Forage	6	2.0,1.7 (1.9)	CER05901/11; T919 (Storage: 7.2 months)	
CANADA Boissevain, MB 2011, (Kane)	EC <sup>a</sup>	2 (14)	0.075 0.075	0.038 0.038	71 [04- Aug- 11]	Forage	7	1.8,1.3 (1.6)	CER05901/11; T920 (Storage: 5.1 months)	

Location, Year (variety)	Application					Residues, mg/kg Sample	DALA	Benzovindiflupyr	Report; Trial; (remarks) <sup>c</sup>
	Form.	no	kg ai/ha	kg ai/hL	BBCH				
cGAP: Canada, 2 × 0.075 kg ai/ha, PHI: Maturity									
CANADA Rosthern, Sk 2011, (Infinity)	EC <sup>a</sup>	2 (14)	0.071 0.072	0.038 0.038	71	Forage	7	0.35,0.44 ( <u>0.40</u> )	CER05901/11; T921 (Storage: 3.0 months)
CANADA Blaine Lake, SK 2011, (Infinity)	EC <sup>a</sup>	2 (14)	0.073 0.076	0.038 0.038	71	Forage	7	< 0.01, < 0.01 ( <u>&lt; 0.01</u> )	CER05901/11; T922 (Storage: 6.5 months)
CANADA Duck Lake, SK 2011, (Infinity)	EC <sup>a</sup>	2 (14)	0.080 0.076	0.038 0.038	71	Forage	7	0.79, 1.1 ( <u>0.95</u> )	CER05901/11; T923 (Storage: 2.6 months)
CANADA Kipp, AB 2011, (Superb)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.041 0.041	71	Forage	6	1.9, 1.9 ( <u>1.9</u> )	CER05901/11; T924 (Storage: 2.8 months)
CANADA Alvena, SK  2011, (Goodeve – Ac Intrepid)	EC <sup>a</sup>	2 (14)	0.078 0.071	0.038 0.038	71	Forage	7	1.5, 1.0 ( <u>1.3</u> )	CER05901/11; T925 (Storage: 2.8 months)
CANADA Fort Sask. AB, 2011, (Harvest)	EC <sup>a</sup>	2 (14)	0.076 0.074	0.038 0.038	71	Forage	7	0.44, 0.68 ( <u>0.55</u> )	CER05901/11; T926 (Storage: 2.8 months)
CANADA Minto, MB  2011, (Superb)	EC <sup>a</sup>	2 (14)	0.079 0.075	0.038 0.038	73 [02- Aug- 11]	Forage	7	0.90, 0.58 ( <u>0.74</u> )	CER05901/11; T927 (Storage: 3.2 months)
CANADA Minto, MB 2011, (AC Barrie)	EC <sup>a</sup>	2 (14)	0.077 0.076	0.038 0.038	71 [02- Aug- 11]	Forage	7	0.73, 0.68 ( <u>0.71</u> )	CER05901/11; T928 (Storage: 5.7 months)

<sup>a</sup> EC 150g/L An adjuvant rated as 0.2%v/v was used in all trials.

DALA: days after last treatment

\* The residue levels detected in wheat forage samples from site T922 (samples T922-02 and T922-03) appear to be unexpectedly low (< 0.01 ppm); samples were analysed to confirm below LOQ values. These duplicate samples may have been collected from the check plot but it cannot be confirmed.

<sup>c</sup> Analytical Method: GRM042.03A, Benzovindiflupyr. Grain: Mean = 95%, RSD = ± 8.2% (n = 4 in 0.010 – 0.10 mg/kg)



## Benzovindiflupyr

Table 42 Residues of benzovindiflupyr in wheat hay from field trials in Canada

Location, Year (variety)	Application					Residues, mg/kg Sample	DALA	Benzovindiflupyr	Report; Trial; (remarks) <sup>c</sup>
	Form.	no	kg ai/ha	kg ai/hL	BBCH				
cGAP: Canada, 2 × 0.075 kg ai/ha, PHI: Maturity									
CANADA Vanscoy, SK  2011, (Infinity))	EC <sup>a</sup>	2 (14)	0.074 0.073	0.038 0.038	59	Hay	7	4.0, 4.2 (4.1)	CER05901/11; T916 (Storage: 3.1 months)
CANADA Kinley, SK 2011, (Infinity)	EC <sup>a</sup>	2 (14)	0.079 0.075	0.17 0.17	71	Hay	7	8.3, 8.7 (8.5)	CER05901/11; T917 (Storage: 2.8 months)
CANADA Taber, AB 2011, (Superb)	EC <sup>a</sup>	2 (14)	0.079 0.078	0.17 0.17	71	Hay	7	5.7, 6.3 (6.0)	CER05901/11; T918 (Storage: 3.2 months)
CANADA Boissevain, MB 2011, (Harvest)	EC <sup>a</sup>	2 (14)	0.076 0.075	0.17 0.17	71 [ 04- Aug- 11]	Hay	6	7.4, 6.2, 6.1, 7.0, 6.0, 6.6 (6.6)	CER05901/11; T919 (Storage: 7.2 months)
CANADA Boissevain, MB 2011, (Kane)	EC <sup>a</sup>	2 (14)	0.075 0.075	0.038 0.038	71 [04- Aug- 11]	Hay	7	6.3, 4.5, 4.6, 6.9, 5.5, 5.9 (5.6)	CER05901/11; T920 (Storage: 5.1 months)
CANADA Rosthern, Sk 2011, (Infinity)	EC <sup>a</sup>	2 (14)	0.071 0.072	0.038 0.038	71	Hay	8	4.1, 3.6 (3.9)	CER05901/11; T921 (Storage: 3.0 months)
CANADA Blaine Lake, SK 2011, (Infinity)	EC <sup>a</sup>	2 (14)	0.073 0.076	0.038 0.038	71	Hay	6  54	4.3, 3.5 (3.9)	CER05901/11; T922 (Storage: 6.5 months)
CANADA Duck Lake, SK 2011, (Infinity)	EC <sup>a</sup>	2 (14)	0.080 0.076	0.038 0.038	71	Hay	7	6.9, 7.3 (7.1)	CER05901/11; T923 (Storage: 2.6 months)
CANADA Kipp, AB 2011, (Superb)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.041 0.041	71	Hay	6	7.4, 6.4 (6.9)	CER05901/11; T924 (Storage: 2.8 months)
CANADA Alvena, SK  2011, (Goodeve – Ac Intrepid)	EC <sup>a</sup>	2 (14)	0.078 0.071	0.038 0.038	71	Hay	7	6.1, 4.3 (5.2)	CER05901/11; T925 (Storage: 2.8 months)

Location, Year (variety)	Application					Residues, mg/kg	DALA	Benzovindiflupyr	Report; Trial; (remarks) <sup>c</sup>
	Form.	no	kg ai/ha	kg ai/hL	BBCH				
cGAP: Canada, 2 × 0.075 kg ai/ha, PHI: Maturity									
CANADA Fort Sask. AB, 2011, (Harvest)	EC <sup>a</sup>	2 (14)	0.076 0.074	0.038 0.038	71	Hay	7	2.7, 2.3 (2.5)	CER05901/11; T926 (Storage: 2.8 months)
CANADA Minto, MB 2011, (Superb)	EC <sup>a</sup>	2 (14)	0.079 0.075	0.038 0.038	73 [02- Aug- 11]	Hay	7	4.8, 4.4 (4.6)	CER05901/11; T927 (Storage: 3.2 months)
CANADA Minto, MB 2011, (AC Barrie)	EC <sup>a</sup>	2 (14)	0.077 0.076	0.038 0.038	71 [Aug- 11]	Hay	7	5.2, 5.6 (5.4)	CER05901/11; T928 (Storage: 5.7 months)

<sup>a</sup> EC 150g/L;

DALA: days after last treatment

\* The residue levels detected in wheat forage samples from site T922 (samples T922-02 and T922-03) appear to be unexpectedly low (< 0.01 ppm); samples were analysed to confirm below LOQ values. These duplicate samples may have been collected from the check plot but it cannot be confirmed.

<sup>c</sup> Analytical Method: GRM042.03A, Benzovindiflupyr. Grain: Mean = 95%, RSD = ± 8.2% (n = 4 in 0.010 – 0.10 mg/kg)

Table 43 Residues of benzovindiflupyr in wheat straw from field trials in Canada

Location, Year (variety)	Application					Residues, mg/kg	DALA	Benzovindiflupyr	Report; Trial; (remarks) <sup>c</sup>
	Form.	no	kg ai/ha	kg ai/hL	BBCH				
cGAP: Canada, 2 × 0.075 kg ai/ha, PHI: Maturity									
CANADA Vanscoy, SK 2011, (Infinity))	EC <sup>a</sup>	2 (14)	0.074 0.073	0.038 0.038	59	Straw	36	4.6, 3.2 (3.9)	CER05901/11; T916 (Storage: 3.1 months)
CANADA Kinley, SK 2011, (Infinity)	EC <sup>a</sup>	2 (14)	0.079 0.075	0.17 0.17	71	Straw	41	3.5, 2.5 (3.0)	CER05901/11; T917 (Storage: 2.8 months)
CANADA Taber, AB 2011, (Superb)	EC <sup>a</sup>	2 (14)	0.079 0.078	0.17 0.17	71	Straw	32	4.6, 4.8 (4.7)	CER05901/11; T918 (Storage: 3.2 months)
CANADA Boissevain, MB 2011, (Harvest)	EC <sup>a</sup>	2 (14)	0.076 0.075	0.17 0.17	71 [04- Aug- 11]	Straw	40	0.75, 0.74 (0.75)	CER05901/11; T919 (Storage: 7.2 months)
CANADA Boissevain, MB 2011, (Kane)	EC <sup>a</sup>	2 (14)	0.075 0.075	0.038 0.038	71 [04- Aug- 11]	Straw	43	1.6, 2.9 (2.3)	CER05901/11; T920 (Storage: 5.1 months)

## Benzovindiflupyr

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks) <sup>c</sup>
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: Canada, 2 × 0.075 kg ai/ha, PHI: Maturity									
CANADA Rosthern, Sk 2011, (Infinity)	EC <sup>a</sup>	2 (14)	0.071 0.072	0.038 0.038	71	Straw	52	1.6, 0.94 (1.3)	CER05901/11; T921 (Storage: 3.0 months)
CANADA Blaine Lake, SK 2011, (Infinity)	EC <sup>a</sup>	2 (14)	0.073 0.076	0.038 0.038	71	Straw	54	0.43, 0.42 (0.41)	CER05901/11; T922 (Storage: 6.5 months)
CANADA Duck Lake, SK 2011, (Infinity)	EC <sup>a</sup>	2 (14)	0.080 0.076	0.038 0.038	71	Straw	41	1.2, 1.3 (1.3)	CER05901/11; T923 (Storage: 2.6 months)
CANADA Kipp, AB 2011, (Superb)	EC <sup>a</sup>	2 (14)	0.077 0.077	0.041 0.041	71	Straw	42	2.2, 2.3 (2.3)	CER05901/11; T924 (Storage: 2.8 months)
CANADA Alvena, SK  2011, (Goodeve – Ac Intrepid)	EC <sup>a</sup>	2 (14)	0.078 0.071	0.038 0.038	71	Straw	28	2.5, 3.3 (2.9)	CER05901/11; T925 (Storage: 2.8 months)
CANADA Fort Sask. AB, 2011, (Harvest)	EC <sup>a</sup>	2 (14)	0.076 0.074	0.038 0.038	71	Straw	44	3.6, 5.1 (4.4)	CER05901/11; T926 (Storage: 2.8 months)
CANADA Minto, MB  2011, (Superb)	EC <sup>a</sup>	2 (14)	0.079 0.075	0.038 0.038	73 [02- Aug- 11]	Straw	35	3.3, 4.5 (3.9)	CER05901/11; T927 (Storage: 3.2 months)
CANADA Minto, MB 2011, (AC Barrie)	EC <sup>a</sup>	2 (14)	0.077 0.076	0.038 0.038	71 [02- Aug- 11]	Straw	35	1.1, 1.4 (1.3)	CER05901/11; T928 (Storage: 5.7 months)

<sup>a</sup> EC 150g/L An adjuvant rated as 0.2% v/v was used in all trials.

DALA: days after last treatment

\* The residue levels detected in wheat forage samples from site T922 (samples T922-02 and T922-03) appear to be unexpectedly low (< 0.01 ppm); samples were analysed to confirm below LOQ values. These duplicate samples may have been collected from the check plot but it cannot be confirmed.

<sup>c</sup> Analytical Method: GRM042.03A, Benzovindiflupyr. Grain: Mean = 95%, RSD = ± 8.2% (n = 4 in 0.010 – 0.10 mg/kg)

Table 44 Residues of benzovindiflupyr in cotton seed (gin trash) from field trials in the USA

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 3× 0.075 kg ai/ha, PHI: 45d									
USA, Wall, TX 2010, (Fibermax 1740 B2F)	EC <sup>a</sup>	3 (14)	0.076 0.076 0.075	0.053 0.054 0.054	84	Gin trash	45	0.23,0.099 (0.061)	TK0025157 W40-0527 (Storage: 21.5 months)
USA, Wolfforth, TX 2010, (FM9058)	EC <sup>a</sup>	3 (14)	0.078 0.077 0.075	0.082 0.082 0.082	89	Gin trash	45	0.61,0.36 (0.49)	TK0025157 W39-0528 (Storage: Gin trash 21.2 months)
USA, Levelland, TX 2010, (FM9180B2F)	EC <sup>a</sup>	3 (14)	0.078 0.076 0.076	0.082 0.081 0.082	89	Gin trash	45	0.50,0.76 (0.63)	TK0025157 W39-0529 (Storage: Gin trash 13.1 months)
USA, Uvalde, TX 2011, (DPL 0935)	EC <sup>a</sup>	3 (14)	0.075 0.076 0.075	0.062 0.052 0.063	77	Gin trash	45	0.18,0.46,0.19 (0.28)	TK0058642 TK0058642-03 (Storage: Gin trash 6.8-9.8 months)
	WG <sup>b</sup>	3 (14)	0.076 0.077 0.076	0.063 0.052 0.063	77	Gin trash	45	0.46,0.63,0.59 (0.56)	
USA, Levelland, TX 2011, (FM9180 B2F)	EC <sup>a</sup>	3 (14)	0.075 0.077 0.077	0.041 0.041 0.041	81	Gin trash	45	1.5,1.4,1.6 (1.5)	TK0058642 TK0058642-04 (Storage: Gin trash 4.1-5.4 months)
	WG <sup>b</sup>	3 (14)	0.076 0.077 0.076	0.041 0.041 0.041	81	Gin trash	45	1.1,1.1,1.2 (1.1)	

<sup>a</sup> EC 150g/L;<sup>b</sup> WG 45g/L

DALA: days after last treatment

\* Analytical Method: GRM042.04A, Benzovindiflupyr. Gin trash: Mean = 83%, RSD = ± 17% (n = 6 in 0.010–3.0 mg/kg)

Table 45 Residues of benzovindiflupyr in peanut (hay) from field trials in Brazil and the USA

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 3× 0.075 kg ai/ha, PHI: 30d;									
USA, Elko, SC 2010, (Gregory)	EC <sup>a</sup>	3 (14)	0.10 0.10 0.10	0.11	79	Hay	30	3.1,2.6 (2.9) Scaled mean using proportionality: 2.1	TK0002560 E11-0401 (Storage: 7.7 months)
USA, Seven Springs, NC 2010, (Perry)	EC <sup>a</sup>	3 (14)	0.10 0.10 0.10	0.11	69	Hay	30	2.7,3.2 (3.0) Scaled mean using proportionality: 2.2	TK0002560 E10-0402 (Storage: 8.0 months)
USA,	EC <sup>a</sup>	3	0.10	0.11	79	Hay	30	8.2,7.1	TK0002560

## Benzovindiflupyr

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 3× 0.075 kg ai/ha, PHI: 30d;									
Hawkinsville, GA 2010, (Georgia 06-G)		(14)	0.10 0.10					(7.7) Scaled mean using proportionality: 5.7	E12-0403 (Storage: 9.2 months)
USA, Suffolk, VA 2010, (Champs)	EC <sup>a</sup>	3 (14)	0.10 0.10 0.10	0.11	75 [09/22/2010]	Hay	30	2.4,2.5 (2.5) Scaled mean using proportionality: 1.8	TK0002560 E07-0404 (Storage: 6.9 months)
USA, Suffolk, VA 2010, (Champs)	EC <sup>a</sup>	3 (14)	0.10 0.10 0.10	0.11	75 [09/22/2010]	Hay	30	3.1,3.1 (3.1) Scaled mean using proportionality: 2.3	TK0002560 E07-0405 (Storage: 6.9 months)
USA, Pikeville, NC 2010, (Gregory)	EC <sup>a</sup>	3 (14)	0.10 0.10 0.10	0.11	79	Hay	30	1.7,1.8 (1.8) Scaled mean using proportionality: 1.3	TK0002560 E10-0406 (Storage: 7.1- 7.5 months)
USA, Suffolk, VA, 2010, (Georgia 6G)	EC <sup>a</sup>	3 (14)	0.10 0.10 0.10	0.11	79 [09/15/2010]	Hay	30	4.1,3.3 (3.7) Scaled mean using proportionality: 2.8	TK0002560 E11-0407 (Storage: 7.7 months)
USA, Unadilla, GA 2010, (Georgia 6G)	EC <sup>a</sup>	3 (14)	0.10 0.10 0.10	0.11	79	Hay	30 30	6.2,6.3 (6.3) Scaled mean using proportionality: 4.7	TK0002560 E12-0408 (Storage: 9.2 months)
USA, Malone, FL 2010, (Georgia Greene)	EC <sup>a</sup>	3 (14)	0.10 0.10 0.10	0.11	Pod Fill	Hay	30	10.2,7.8 (9.0) Scaled mean using proportionality: 6.8	TK0002560 E14-0409 (Storage: 8.5 months)
USA, Charlotte, TX 2010, (Florida Runner 07)	EC <sup>a</sup>	3 (14)	0.10 0.10 0.10	0.11	86	Hay	30	2.8,2.9 (2.9) Scaled mean using proportionality: 2.1	TK0002560 W07-0410 (Storage: 6.6 months)
USA, Dilley, TX 2010, (TamRum OL- 1)	EC <sup>a</sup>	3 (14)	0.1008 0.0997 0.1008	0.11	86	Hay	30	9.1,7.4, 8.2, 5.1, 6.7, 6.4 (7.1) Scaled mean using proportionality: 5.3	TK0002560 W07-0411 (Storage: 6.6- 20.3 months)
USA, Levelland, TX 2010, (Tamspan 90)	EC <sup>a</sup>	3 (14)	0.10 0.099 0.10	0.22	Maturing nuts	Hay	30	2.8,2.7 (2.8) Scaled mean using proportionality: 2.1	TK0002560 W39-0412 (Storage: 8.2 months)
USA, Pineview, GA 2011,	EC <sup>a</sup>	3 (14)	0.098 0.098 0.099	0.22	79	Hay	30	6.7,7.4,7.0 (7.0) Scaled mean using	TK0047558 TK0047558-01 (Storage: 5.3

Location, Year (variety)	Application					Residues, mg/kg			Report; Trial; (remarks)*
	Form.	no	kg ai/ha	kg ai/hL	BBCH	Sample	DALA	Benzovindiflupyr	
cGAP: USA, 3× 0.075 kg ai/ha, PHI: 30d;									
(Georgia 06-G)								proportionality: 5.3	months)
	EC <sup>a</sup>	3 (14)	0.10 0.099 0.100	0.22	79	Hay	30	5.4,7.2,4.4 (5.7)	
USA, Charlotte, TX 2011, (Georgia 09)	EC <sup>a</sup>	3 (14)	0.099 0.10 0.10	0.22	84	Hay	30	0.51,0.53,0.24 (0.43) Scaled mean using proportionality: 0.32	TK0047558 TK0047558-02 (Storage: 5.5 months)
	EC <sup>a</sup>	3 (14)	0.10 0.10 0.10	0.22	84	Hay	30	0.19,0.22,0.16 (0.19)	
USA, Hinton, OK 2011, (Tamnut OL06)	EC <sup>a</sup>	3 (14)	0.10 0.10 0.098	0.22	79	Hay	30	2.3,2.7,3.2 (2.7) Scaled mean using proportionality: 2.1	TK0047558 TK0047558-03 (Storage: 4.4 months)
	EC <sup>a</sup>	3 (14)	0.10 0.10 0.10	0.22	79	Hay	30	1.5,1.5,2.0 (1.7)	

<sup>a</sup> EC 150 g ai/L, other trials used the WG formulation (benzovindiflupyr and azoxystrobin at nominal concentration of 150 g/kg and 300 g/kg.)

DALA: days after last treatment

\* Analytical Method: GRM042.04A, Benzovindiflupyr, Hay: Mean = 109%, RSD = ± 7.6% (n = 4 in 0.010 - 10.0 mg/kg)

## Fate of Residues in Storage and Processing

### *In storage*

Benzovindiflupyr is not intended for use in stored products.

### *Processing Studies*

The effect of processing on benzovindiflupyr residues was investigated in apple, grape, potato, tomato, cotton seed, peanut, rapeseed, soya bean, barley, corn, wheat, coffee and sugarcane. Processing factors have been calculated from residue data uncorrected for procedural recoveries. When residues in the processed commodity were < LOQ the calculated processing factor (PF) (LOQ ÷ residue level in raw commodity) is reported with a "less than" (<) symbol. In case that residue levels in the RAC were below the LOQ, no processing factor was calculated.

### *Apple*

Two trials were conducted on apple in Italy and Germany during 2010. Four applications of an EC formulation of benzovindiflupyr (containing 150 g benzovindiflupyr/L) were applied at a rate of 250 g ai/ha separated by intervals of six to eight days. Samples of fruit were harvested at crop maturity 30 days after the final application and were analysed for residues of benzovindiflupyr by method GRM042.03A.

Apple fruit from both trials was processed to juice, sauce, canned fruit, dried fruit and jelly using equipment designed to mimic standard commercial practice. Samples of pre-processing whole

fruit and processed commodities were analysed for residues of benzovindiflupyr. The results are shown on Table 46. Table 47 summarizes the PFs and their best estimates for apple commercial products.

Table 46 Benzovindiflupyr residues in apple fruit and processed products (Italy, Germany and USA study) with corresponding processing factors

Trials details Trial, Location, year, (variety), dosage rate	Commodity	Residue mg/kg	PF
S10-02876-01, Bologna, Italy 2010, (variety: Idared), 250 g ai/ha	Apple (RAC) wet pomace	0.20, 0.15 0.83, 0.44	- 4.2, 2.9
	dry pomace Juice	4.2, 2.2 < 0.01, < 0.01	20.8, 15.0 < 0.05, < 0.07
S10-02876-02, Bernau-Lindow, Germany 2010, (variety: Imperatore), 250 g ai/ha	Apple (RAC) Sauce	0.32, 0.17 0.07, 0.02	- 0.22, 0.12
	Apple (RAC) Canned fruit	0.29, 0.16 < 0.01, < 0.01	- < 0.03, < 0.06
	Apple(RAC) Dried fruit	0.25, 0.17 1.7, 1.1	- 6.8, 6.6
	Apple (RAC) wet pomace dry pomace Jelly	0.27, 0.20 0.17, 0.10 4.3, 2.3 0.01, < 0.01	- 0.63, 0.50 15.9, 11.4 0.04, < 0.01
	Apple (RAC) wet pomace Juice Sauce Dried fruit Jelly Canned fruit	0.18 0.18, 0.38 < 0.01, < 0.01 0.12, 0.11 3.4, 2.7 < 0.01, < 0.01 0.014, 0.012	- 2.1 < 0.06 0.67 18.9 < 0.06 0.08
W18-0489P Washington (WA), USA 2010, (variety: Red Delicious), 250 g ai/ha	Apple (RAC) wet pomace Juice Sauce Dried fruit Jelly Canned fruit	0.18 0.72, 0.51 < 0.01, < 0.01 0.18, 0.18 4.0, 3.2 0.023, 0.016 < 0.01, < 0.01	- 4.0 < 0.06 1.0 22.2 0.13 < 0.06

Table 47 Processing factors of benzovindiflupyr in apple processed products

Commodity	Processing Factors				
	Experiment 1 (USA)	Experiment 2 (USA)	Experiment 3 (Italy)	Experiment 4 (Germany)	Best estimate
Wet pomace	2.1	4.0	4.2	2.9	3.5
Dry pomace	--	--	20.8, 15.9	15.0, 11.4	13.6
Juice	< 0.06	< 0.06	< 0.05	< 0.07	< 0.06
Sauce	0.67	1.0	0.22	0.12	0.17
Dried fruit	18.9	22.2	6.8	6.6	12.9
Jelly	< 0.06	0.13	0.04	< 0.01	0.025
Canned fruit	< 0.08	< 0.06	< 0.03	< 0.06	< 0.06

### Grapes

Data from four studies (Spain 1, Greece 1, USA 2) on grape processing were received. In the two processing studies carried out on grapes in Spain and Greece during 2010, four applications of an emulsifiable concentrate formulation of benzovindiflupyr (containing 150 g benzovindiflupyr/L) were applied at a rate of 375 g ai/ha separated by intervals of 7 days. Two trials were carried out on grape in the USA during 2010. Four applications of an emulsifiable concentrate formulation of benzovindiflupyr (containing 150 g benzovindiflupyr/L) were applied at a rate of 76 g ai/ha separated by an interval of 7 days. Samples of grapes were harvested at normal commercial harvest 21 days

after the final application and were analysed for residues of benzovindiflupyr by method GRM042.03A.

Grapes from both trials were processed to white wine, grape juice, red wine, grape seed oil and raisins using equipment designed to mimic standard commercial practice. Samples of pre-processing grapes and processed commodities were analysed for residues of benzovindiflupyr. Residues of benzovindiflupyr and SYN546039 were < 0.01 mg/kg in all untreated field samples and untreated processed commodities. The results are shown on Table 48. Table 49 summarized the PFs and their best estimates for grape commercial products.

Table 48 Benzovindiflupyr residues in grape fruit and processed products (Spain, Greece and USA study) with corresponding processing factors

Trials details Trial, Location, year, (variety), dosage rate	Commodity	Residue mg/kg	PF		
S10-02877-01, Zaragoza, Spain 2010, (variety: Garnacha), 375 g ai/ha	Grape (RAC)	1.7, 5.8	-	White wine production	
	wet pomace	1.9, 10.8	1.1, 1.9		
	dry pomace	5.4, 25.6	3.2, 4.4		
	Must	1.1, 1.1	0.62, 0.18		
	White wine	0.01, 0.12	0.04, 0.02		
S10-02877-02, Melissohori, Greece 2010, (variety: Merlot), 350 g ai/ha	White wine (six months stored)	0.01, 0.14	0.05, 0.02	Juice production	
	Grape (RAC)	1.2, 7.6	-		
	wet pomace	14.4, 14.8	3.6, 2.0		
	dry pomace	14.4, 26.2	11.7, 3.5		
	Juice	0.07, 0.60	0.06, 0.08		
	Grape (RAC)	1.3, 13.0	-		Red wine and grape seed oil production
	wet pomace	5.8, 32.0	4.3, 2.5		
	dry pomace	23.0, 76.9	17.2, 5.9		
	Must	1.5, 6.5	1.1, 0.50		
	Red wine	0.62, 0.5	0.46, 0.04		
	Red wine (six months stored)	0.11, 0.44	0.08, 0.03		
Grape seed oil	38.8, 29.1	29.0, 2.2	Raisins production		
Grape (RAC)	0.96, 6.9	-			
Raisins	2.4, 13.4	2.5, 1.9			
S10-02877-01, Zaragoza, Spain 2010, (variety: Garnacha), 375 g ai/ha	Grape (RAC)	1.1, 4.8	-	White wine production	
	wet pomace	2.6, 15.1	2.4, 3.1		
	dry pomace	5.1, 33.9	4.9, 7.1		
	Must	0.73, 2.4	0.70, 0.49		
	Red wine (six months stored)	0.07, 0.14	0.07, 0.14		
S10-02877-02, Melissohori, Greece 2010, (variety: Merlot), 375 g ai/ha	Grape (RAC)	1.1, 11.1	-	Juice production	
	wet pomace	2.2, 21.3	2.0, 1.9		
	dry pomace	7.3, 57.9	6.8, 5.2		
	Juice	0.11, 0.80	0.10, 0.07	Red wine and grape seed oil production	
	Grape (RAC)	1.2, 6.4	-		
	wet pomace	5.1, 26.5	4.4, 4.2		
	dry pomace	23.1, 73.6	19.7, 11.6		
	Must	1.8	1.6		
	Red wine (six months stored)	0.15, 0.48	0.13, 0.08		
	Grape seed oil	47.6, 39.1	40.7, 6.1	Raisins production	
	Grape (RAC)	1.0, 9.7	-		
Raisins	2.3, 13.9	2.2, 1.4			
W33-0506P California (CA), USA 2010, (variety: Thompson seedless), 76 g ai/ha	Grape (RAC)	0.83	-		
	Wet pomace	2.0, 2.0	2.4		
	Juice	0.039, 0.047	0.06		
	Raisins	3.1, 3.3	4.0		
W29-0507P California (CA), USA 2010, (variety: Thompson seedless), 76 g ai/ha	Grape (RAC)	0.083	-		
	Wet pomace	2.0, 1.9	3.0		
	Juice	0.12, 0.13	0.19		
	Raisins	2.1, 2.0	3.1		



Table 49 Processing factors of benzovindiflupyr in grape processed products

Process	Commodity	Processing Factors						Best estimate
		Experiment 1 (USA)	Experiment 2 (USA)	Experiment 3 (Spain)		Experiment 4 (Greece)		
				Balance	Follow-up	Balance	Follow-up	
White wine	Must	--	--	0.62	0.70	0.18	0.49	0.56
	Wet pomace	--	--	1.1	2.4	1.9	3.1	2.2
	Dry pomace	--	--	3.2	4.9	4.4	7.1	4.7
	White wine (stored for six months)	--	--	0.05	0.07	0.02	0.03	0.04
Grape Juice	Wet pomace	2.4	3.0	3.6	2.0	2.0	1.9	2.2
	Dry pomace	--	--	11.7	6.8	3.5	5.2	6.0
	Grape Juice	0.06	0.19	0.06	0.10	0.08	0.07	0.075
Red wine	Must	--	--	1.1	1.6	0.5	1.5	1.3
	Wet pomace	--	--	4.3	4.4	2.5	4.2	4.3
	Dry pomace	--	--	17.2	19.7	5.9	11.6	14.4
	Red wine (stored for six months)	--	--	0.08	0.13	0.03	0.08	0.08
Grape seed oil	Raw oil	--	--	30.7	42.7	2.1	6.0	18.4
	Refined oil	--	--	29.0	40.7	2.2	6.1	17.6
Raisins	Raisins	4.0	3.1	2.5	2.2	1.9	1.4	2.4

### Potatoes

One trial was conducted on potato in the USA during 2011. One in-furrow treatment at a nominal rate of 500 g ai/ha followed by four foliar applications at a nominal rate of 381 g ai/ha with a 7 day interval. Samples of tubers were harvested at crop maturity 14 days after the final application and were analysed for residues of benzovindiflupyr by method GRM042.04A.

Tubers were processed to wet peel, peeled tubers, baked tubers, boiled/peeled tubers, boiled/unpeeled tubers, ensiled tubers, flakes, starch, dried pulp, protein chips and fried potato using equipment designed to mimic standard commercial practice. Samples of pre-processing tubers and processed commodities were analysed for residues of benzovindiflupyr. The results are shown on Table 50. Table 51 summarized the PFs and their best estimates for potato commercial products.

Table 50 Benzovindiflupyr residues in potato and processed products (USA) with corresponding processing factors

Trials details Trial, Location, year, (variety), dosage rate	Commodity	Residue mg/kg	PF
TK0058640-16 Idaho (ID), USA 2011, (variety: Russett Burbank) 500 g ai/ha	Potato tubers (RAC)	0.04	-
	Wet peel	0.18, 0.19	4.8
	Baked tubers	0.083, 0.086	2.2
	Ensiled tubers	0.036, 0.034	1.0
	Flakes	0.016, 0.017	0.5
	Starch	< 0.01, < 0.01	< 0.25
	Dried pulp	< 0.01, < 0.01	< 0.25
	Protein	0.057, 0.051	1.5
	Chips	< 0.01, < 0.01	< 0.25
	Fried potatoes	< 0.01, < 0.01	< 0.25

Table 51 Processing factors of benzovindiflupyr in potato processed products

Commodity	Processing Factor
Wet peel	4.8
Peeled tubers	0.25
Baked tubers	2.2

Commodity	Processing Factor
Boiled/peeled tubers	0.25
Boiled/unpeeled tubers	0.50
Ensiled tubers	1.0
Flakes	0.50
Starch	< 0.25
Dried pulp	< 0.25
Protein	1.5
Chips	< 0.25
Fried potatoes	< 0.25

### Tomato

Two trials were conducted on tomato in USA during 2011. Four foliar broadcast applications of an EC formulation of benzovindiflupyr (containing 150 g benzovindiflupyr/L) were applied at a rate of 381 g ai/ha separated by an interval of seven days. Samples of tomatoes were harvested at crop maturity on the day of the final application and were analysed for residues of benzovindiflupyr by method GRM042.04A.

Raw tomatoes were processed into paste, puree, washed and peeled fruit, canned fruit, wet pomace, sun-dried fruit, juice, pasteurised juice and dry pomace using equipment designed to mimic standard commercial practice. Samples of raw tomatoes and processed commodities were analysed for residues of benzovindiflupyr. The results are shown on Table 52. Table 53 summarized the PFs and their best estimates for tomato commercial products.

Table 52 Benzovindiflupyr residues in tomato and processed products (USA) with corresponding processing factors

Trials details Trial, Location, year, (variety), dosage rate	Commodity	Residue mg/kg	PF
TK0058641-11 California (CA), USA 2011, (variety: Shasta and Roma) 381 g ai/ha	Tomato (RAC)	1.3	-
	Paste	0.42,0.41	0.33
	Puree	0.19, 0.19	0.15
	Washed/peeled fruit	0.027, 0.048	0.04
	Canned fruit	0.027, 0.027	0.02
	Wet pomace	3.1, 3.0	2.4
	Sun-dried fruit	8.1, 6.8	6.28
	Juice	0.072, 0.072	0.05
	Pasteurised juice	0.06, 0.082	0.06
Dried pomace	22, 20	17.0	
TK0058641-12 California (CA), USA 2011, (variety: Shasta and Roma) 381 g ai/ha	Tomato (RAC)	0.28	-
	Paste	0.14, 0.14	0.50
	Puree	0.23, 0.046	0.18
	Washed/peeled fruit	< 0.01, < 0.01	< 0.04
	Canned fruit	< 0.01, < 0.01	< 0.04
	Wet pomace	3.5, 2.5	12.5
	Sun-dried fruit	3.2, 2.3	11.43
	Juice	0.013, 0.017	0.07
	Pasteurised juice	0.023, 0.027	0.11
Dried pomace	15, 14	53.6	

Table 53 Processing factors of benzovindiflupyr in tomato processed products

Commodity	Processing Factors		
	Experiment 1 (USA)	Experiment 2 (USA)	Best estimate
Paste	0.33	0.50	0.42
Puree	0.15	0.18	0.17
Washed/peeled fruit	< 0.04	< 0.04	< 0.04
Canned fruit	0.02	0.04	0.03
Wet pomace	2.4	12.5	12.5

Commodity	Processing Factors		
	Experiment 1 (USA)	Experiment 2 (USA)	Best estimate
Sun-dried fruit	6.3	11.4	8.9
Juice	0.05	0.07	0.06
Pasteurised juice	0.06	0.11	0.09
Dried pomace	17.0	53.6	35.3

### Cotton seed

Two trials were conducted on cotton in USA during 2010. Three foliar broadcast applications of an EC formulation of benzovindiflupyr (containing 150 g benzovindiflupyr/L) were applied at a rate of 381 g ai/ha separated by an interval of 10 days. Samples of seed were harvested at crop maturity 45 days after the final application.

Cotton seeds were processed to meal, hulls and refined oil fractions using equipment designed to mimic standard commercial practice. Cotton seeds and corresponding processed fractions were analysed for residues of benzovindiflupyr using analytical method GRM042.04A. The results are shown on Table 54. Table 55 summarized the PFs and their best estimates for cottonseed commercial products.

Table 54: Benzovindiflupyr residues in cotton seed and processed products (USA) with corresponding processing factors

Trials details Trial, Location, year, (variety), dosage rate	Commodity	Residue mg/kg	PF
TK0025157-W07-0526 Texas (TX), USA 2010, (variety: Stoneville 5458B2RF) 381 g ai/ha	Cottonseed (RAC)	0.07	-
	Meal	< 0.01, < 0.01	< 0.14
	Hulls	0.016, 0.017	0.29
	Refined oil	< 0.01, < 0.01	< 0.14
TK0025157W39-0529 Texas (TX), USA 2010, (variety: FM9180B2F) 381 g ai/ha	Cottonseed (RAC)	0.72	-
	Meal	0.017, 0.020	0.03
	Hulls	0.13, 0.14	0.19
	Refined oil	0.025, 0.020	0.03

Table 55 Processing factors of benzovindiflupyr in cottonseed processed products

Commodity	Processing Factor		
	Experiment 1 (USA)	Experiment 2 (USA)	Best estimate
Meal	< 0.14	0.03	< 0.14
Hulls	0.29	0.19	0.24
Refined oil	< 0.14	0.03	< 0.14

### Peanut

Two processing studies were carried out on peanuts in Greece during 2010. Three applications of an emulsifiable concentrate formulation of benzovindiflupyr (containing 150 g benzovindiflupyr/L) were applied at a target rate of 500 g ai/ha separated by an interval of 14 days. Samples of peanuts were harvested at normal commercial harvest 30-32 days after the final application and were analysed for residues of benzovindiflupyr by method GRM042.04A.

Two crop processing trials were conducted on peanuts in the USA during 2010. Three foliar broadcast applications of an emulsifiable concentrate formulation of benzovindiflupyr (containing 150 g benzovindiflupyr/L) were applied at a rate of 300 g ai/ha separated by an interval of 14 day.

Samples of mature peanuts were taken for processing at harvest 30 days after the final spray and were analysed for residues of benzovindiflupyr by method GRM042.04A.

Peanuts from both trials were processed to peanut oil and peanut butter in Greece. Peanuts were processed to nutmeat, meal, butter and refined oil using equipment designed to mimic standard commercial practice in the USA. Samples of pre-processing peanut kernels and processed commodities were analysed for residues of benzovindiflupyr. The results are shown on Table 56. Table 57 summarized the PFs and their best estimates for peanut commercial products.

Table 56 Benzovindiflupyr residues in peanut and processed products (Greece and USA) with corresponding processing factors

Trials details Trial, Location, year, (variety), dosage rate	Commodity	Residue mg/kg	PF	
S10-02878-01 Kalamata, Messinia, Greece 2010, (variety: Virginia NC7) 500 g ai/ha	Peanut (RAC) Shells and skins Kernels Refined oil	0.06, 0.19 0.28, 0.66 < 0.01, < 0.01 < 0.01, < 0.01	- 4.7, 3.5 < 0.17, < 0.053 < 0.17, < 0.053	Peanut oil
S10-02878-02 Kalamata, Messinia, Greece 2010, (variety: Messinia) 500 g ai/ha	Peanut (RAC) Shells and skins Kernels Roasted kernels Peanut Butter	0.07, 0.20 0.32, 0.46 < 0.01, < 0.01 < 0.01, < 0.01 < 0.01, < 0.01	- 4.6, 2.3 < 0.14, < 0.05 < 0.14, < 0.05 < 0.14, < 0.05	Peanut butter
TK0002560-E07- 0404 Virginia (VA), USA 2010, (variety: Champs) 300 g ai/ha	Nutmeat pre-process (RAC) Meal Refined oil Butter	< 0.01 0.019 0.038 < 0.01	- - - -	
TK0002560-E10- 0406 North Carolina (NC), USA 2010, (variety: Gregory) 300 g ai/ha	Nutmeat pre-process (RAC) Meal Refined oil Butter	< 0.01 0.013 0.030 < 0.01	- - - -	

Table 57 Processing factors of benzovindiflupyr in peanut processed products

Commodity		Processing Factors				
		Experiment 1 (Greece)	Experiment 2 (Greece)	Experiment 3 (USA)	Experiment 4 (USA)	Best estimate
Peanut oil	Shells and skins	4.7	3.5	-	-	4.1
	Kernels	0.17	0.053	-	-	0.11
	Pressed meal	< 0.17	< 0.053	1.9	1.3	1.6
	Refined oil	< 0.17	< 0.053	3.8	3.0	3.4
Peanut Butter	Shells and skins	4.6	2.3	-	-	3.5
	Kernels	< 0.14	< 0.050	-	-	< 0.095
	Roasted kernels	< 0.14	< 0.050	-	-	< 0.095
	Peanut Butter	< 0.14	< 0.050	1.0	1.0	< 0.57

### Rape seed

Two crop processing trials were conducted on rape seed (canola) in Canada during 2011. One foliar broadcast application of an emulsifiable concentrate formulation (containing 100 g

benzovindiflupyr/L) was applied to the crop at a rate of 225 g ai/ha. Samples of seed were harvested at normal commercial harvest (PHI targeted to 30 days).

Rape seed were processed to meal and refined oil fractions using equipment designed to mimic standard commercial practice. Meal and refined oil samples were analysed for residues of benzovindiflupyr using analytical method GRM042.04A. The results are shown on Table 58. Table 59 summarized the PFs and their best estimates for rapeseed commercial products.

Table 58 Benzovindiflupyr residues in rape seed and processed products (Canada) with corresponding processing factors

Trials details Trial, Location, Year, (variety), dosage rate	Commodity	Residue mg/kg	PF
CER 05903/11 T948 Manitoba (MB), Canada 2011, (variety: 1841 RR) 225 g ai/ha	Seed pre-process (RAC)	0.06	-
	Meal	0.05	0.42
	Refined oil	0.076	0.63
CER 05903/11 T949 Manitoba (MB), Canada 2011, (variety: 72-55RR) 225 g ai/ha	Seed pre-process (RAC)	0.56	-
	Meal	0.093	0.72
	Refined oil	0.16	1.2

Table 59 Processing factors of benzovindiflupyr in rapeseed seed processed products

Commodity	Processing Factors		
	Experiment 1 (Canada)	Experiment 2 (Canada)	Best estimate
Meal	0.42	0.63	0.53
Refined oil	0.72	1.2	0.98

### Soya bean

Two crop processing trials were conducted on soya beans in the USA during 2011. Two foliar broadcast applications of an emulsifiable concentrate formulation of benzovindiflupyr (containing 150 g/L benzovindiflupyr) were applied at a rate of 381 g ai/ha separated by an interval of 7 days. Samples of beans were harvested at crop maturity 14 days after the final application.

Soya beans were processed to meal, hulls, oil (refined), flour, soy milk, tofu, soy sauce, miso, pollard, oil (crude) and aspirated grain processed fractions using equipment designed to mimic standard commercial practice. Soya bean seeds and corresponding processed fractions were analysed for residues of benzovindiflupyr using analytical method GRM042.04A. The results are shown on Table 60. Table 61 summarized the PFs and their best estimates for soya bean commercial products.

Table 60 Benzovindiflupyr residues in soy bean and processed products (USA) with corresponding processing factors

Trials details Trial, Location, Year, (variety), dosage rate	Commodity	Residue mg/kg	PF
TK0002561-C03-0428 North Dakota (ND) USA 2011, (variety: 0509239) 381 g ai/ha	Seed pre-process (RAC)	0.08	-
	Meal	0.013	0.13
	Hulls	0.20	2.50
	Flour	0.01	0.13
	Soy Milk	< 0.01	< 0.13

Trials details Trial, Location, Year, (variety), dosage rate	Commodity	Residue mg/kg	PF
	Tofu	< 0.01	< 0.13
	Soy sauce	< 0.01	< 0.13
	Miso	< 0.01	< 0.13
	Pollard	0.17	2.25
	Crude oil	0.13	2.0
	Refined oil	0.030	0.38
	Aspirated grain	13	191
TK0002561-C30-0432 Iowa (IA), USA 2011, (variety: P3Y13-N203) 381 g ai/ha	Seed pre-process (RAC)	0.08	-
	Meal	0.01	0.13
	Hulls	0.088	1.13
	Flour	< 0.01	< 0.13
	Soy Milk	< 0.01	< 0.13
	Tofu	< 0.01	< 0.13
	Soy sauce	< 0.01	< 0.13
	Miso	< 0.01	< 0.13
	Pollard	0.12	1.8
	Crude oil	0.050	0.063
	Refined oil	0.039	0.63

Table 61 Processing factors of benzovindiflupyr in soya bean processed products

Commodity	Processing Factors		
	Experiment 1 (USA)	Experiment 2 (USA)	Best estimate
Meal	0.13	0.13	0.13
Hulls	2.5	1.1	1.8
Flour/fat soy flour	0.13	< 0.13	< 0.13
Soy milk	< 0.13	< 0.13	< 0.13
Tofu	< 0.13	< 0.13	< 0.13
Soy sauce	< 0.13	< 0.13	< 0.13
Miso	< 0.13	< 0.13	< 0.13
Pollard	2.2	1.8	2.0
Crude oil	2.00	0.63	1.3
Refined oil	0.38	0.63	0.51
Aspirated grain	191	--	191

The 2014 JMPR evaluated the processing factors for soya bean processed products. With those results reported in 2014 JMPR report, the following processing factors were derived.

Table 62 Processing factors of benzovindiflupyr in soya bean processed products reported by the 2014 JMPR

Commodity	Processing factors	Best estimate or median
Meal	< 0.13, < 0.13, < 0.38, < 0.40	< 0.26
Hulls	1.1, 2.5, 10, 11	6.3
fat flour	< 0.13, 0.13, < 0.34, < 0.44	< 0.24
Soy milk	< 0.13, < 0.13, < 0.32, < 0.44	< 0.23
Tofu	< 0.13, < 0.13, 0.52, 0.58	0.33
Soy sauce	< 0.13, < 0.13, < 0.34, < 0.36	< 0.23
Crude oil	0.63, 2.0, 0.77, 0.96	0.86
Refined oil	0.38, 0.63, 0.65, 0.68	0.64
Aspirated grain	7.4, 7.6, 7.7, 7.9, 8.3, 9.6, 11, 14, 191	8.3

### Barley

Two crop processing trials were carried out on barley in the USA during 2010. Two applications of an emulsifiable concentrate formulation of benzovindiflupyr (containing 150 g benzovindiflupyr/L) were

applied at a rate of 381 g ai/ha separated by an interval of 14-15 days. Samples of grain were harvested at crop maturity 26 or 47 days after the final application and were analysed for residues of benzovindiflupyr by method GRM042.03A.

Grain from both trials was processed to pearl barley, flour and bran using equipment designed to mimic standard commercial practice. Samples of pre-processing grain and processed commodities were analysed for residues of benzovindiflupyr. The results are shown on Table 63. Table 64 summarized the PFs and their best estimates for barley commercial products.

Table 63 Benzovindiflupyr residues in barley grain and processed products (USA) with corresponding processing factors

Trial details Trial, Location, Year, (variety), dosage rate	Commodity	Residue mg/kg	PF
C13-0382 North Dakota (ND), USA 2010, (variety: Pinneacle) 381 g ai/ha	Grain (RAC)	0.11	-
	Pearl barley	0.069	0.64
	Flour	0.056	0.55
	Bran	0.046	0.45
C18-0383 Iowa (IA), USA 2010, (variety: Paramount 66) 381 g ai/ha	Grain (RAC)	0.74	-
	Pearl barley	0.20	0.27
	Flour	0.18	0.24
	Bran	0.24	0.32

Table 64 Processing factors of benzovindiflupyr in barley grain processed products

Commodity	Processing Factors		
	Experiment 1 (USA)	Experiment 2 (USA)	Best estimate
Pearl barley	0.64	0.27	0.46
Barley flour	0.55	0.24	0.40
Bran	0.45	0.32	0.39

### Corn/Maize

Two crop processing trials were conducted on maize in the USA during 2010. Four foliar broadcast applications of an emulsifiable concentrate formulation of benzovindiflupyr (containing 150 g benzovindiflupyr/L) were applied at a rate of 1524 g ai/ha separated by an interval of 7 days. All applications included a crop-oil concentrate or a non-ionic surfactant adjuvant at recommended use rates. Samples of mature grain were taken for processing at harvest 7 days after the final spray.

The grain was processed to meal, flour, grits, refined oil (dry milling), refined oil (wet milling), starch, gluten, bran and milled by-products using equipment designed to mimic standard commercial practice. Grain and corresponding processed fractions (except oil) were analysed for residues of benzovindiflupyr using analytical method GRM042.03A. Maize oil samples were analysed for residues of benzovindiflupyr using analytical method GRM042.04A. The results are shown on Table 65-66.

Table 65 Benzovindiflupyr residues in maize grain and processed products with processing factors

Trial details Trial, Location, Year, (variety), dosage rate	Commodity	Residue mg/kg	PF
C19-0456 Missouri (MO), USA 2010, (variety: Pioneer 32T16) 1524 g ai/ha	Grain pre-process (RAC)	< 0.01	-
	Meal	0.013	
	Flour	< 0.01	
	Grits	< 0.01	
	Refined oil (dry)	< 0.01	
	Refined oil (wet)	0.016	

Trials details Trial, Location, Year, (variety), dosage rate	Commodity	Residue mg/kg	PF
	Starch	< 0.01	
	Gluten	0.028	
	Bran	0.023	
	Milled by-product	< 0.01	
C33-0468 Nebraska (NE), USA 2010, (variety: X72314WP.0) 1524 g ai/ha	Grain pre-process (RAC)	0.04	-
	Meal	< 0.01	< 0.25
	Flour	0.012	0.25
	Grits	< 0.01	< 0.25
	Refined oil (dry)	< 0.01	< 0.25
	Refined oil (wet)	0.021	0.5
	Starch	< 0.01	< 0.25
	Gluten	0.023	0.75
	Bran	0.021	0.50
	Milled by-product	< 0.01	< 0.25

Table 66 Benzovindiflupyr processing factors for corn/maize processing

Commodity	Processing Factor		
	MKI Ag Research, Inc. 2916 Angelique St. Joseph, MO 64501	Midwest Research, York, Nebraska (NE), USA	Best estimate
Meal		< 0.25	< 0.25
Flour		0.25	0.25
Grits		< 0.25	< 0.25
Refined oil (dry)		< 0.25	< 0.25
Refined oil (wet)		0.50	0.50
Starch		< 0.25	< 0.25
Gluten		0.75	0.75
Bran		0.50	0.50
Milled by-product		< 0.25	< 0.25

### Wheat

Two crop processing trials were carried out on wheat in the USA during 2010. Two applications of an emulsifiable concentrate formulation of benzovindiflupyr (containing 150 g benzovindiflupyr/L) were applied at a rate of 381 g ai/ha separated by an interval of 14 days. Samples of grain were harvested at normal crop maturity and were analysed for residues of benzovindiflupyr by method GRM042.03A.

Grain from both trials was processed to wheat to aspirated grain, bran, flour, middlings, shorts and germ using equipment designed to mimic standard commercial practice. Samples of pre-processing grain and processed commodities were analysed for residues of benzovindiflupyr. The results are shown on Tables 67 and 68.

Table 67 Benzovindiflupyr residues in grain and processed products with corresponding processing factors

Trials details Trial, Location, Year, (variety), dosage rate	Commodity	Residue mg/kg	PF
C13-0353 North Dakota (ND), USA 2010, (variety: Jerry) 381 g ai/ha	Grain (RAC)	0.06	-
	Aspirated grain	1.4	22.7
	Bran	0.024	0.5
	Flour	< 0.01	< 0.17
	Middlings	< 0.01	< 0.17
	Shorts	0.01	0.17
	Germ	< 0.01	< 0.17
W07-0366	Grain (RAC)	0.31	-



## Benzovindiflupyr

Trials details Trial, Location, Year, (variety), dosage rate	Commodity	Residue mg/kg	PF
Texas (TX), USA 2010, (variety: TAM 203) 381 g ai/ha	Aspirated grain	36	233
	Bran	0.23	0.74
	Flour	0.03	0.1
	Middlings	0.043	0.16
	Shorts	0.037	0.13
	Germ	0.21	0.74

Table 68 Benzovindiflupyr processing factors for wheat processing

Commodity	Experiment 1 Jerry	Experiment 2 Tam 203	Experiment 3 Agvise Research, Northwood, North Dakota (ND), USA		Experiment 4 South Texas Ag Research, Uvalde, Texas (TX), USA		Best estimate
			Balance	Follow-up	Balance	Follow-up	
Coarse bran	--	--	3.3	4.0	1.0	1.3	2.3
Fine bran	--	--	1.3	1.5	0.33	0.33	0.82
White flour (Type 550)	--	--	0.33	0.50	0.33	0.33	0.33
Wholemeal flour	--	--	1.0	1.5	0.33	0.33	0.67
Wholemeal bread	--	--	0.67	1.0	0.33	0.33	0.50
Wheat germs	--	--	1.0	1.0	1.0	1.0	1.0
Dried starch	--	--	0.33	0.50	0.33	0.33	0.33
Dried gluten	--	--	0.67	1.00	0.33	0.33	0.50
Gluten feed meal	--	--	4.0	5.5	1.7	1.3	2.9
Aspirated grain	22.7	121.6	--	--	--	--	121.6
Bran	0.50	0.74	--	--	--	--	0.62
Flour	< 0.17	0.10	--	--	--	--	< 0.14
Middlings	< 0.17	0.16	--	--	--	--	< 0.17
Shorts	0.17	0.13	--	--	--	--	0.15
Germ	< 0.17	0.74	--	--	--	--	0.74

*Coffee*

Two crop processing field trials on coffee were conducted at Monte Carmelo and Japoti in Brazil. Each field trial had an untreated plot and two treated plots. In the treated plots coffee plants three foliar applications of EC formulation containing a nominal concentration of 50 g benzovindiflupyr/L and 100 g azoxystrobin/L were made at a rate of 150 g benzovindiflupyr/ha or 250 g benzovindiflupyr/ha with a 30 day interval between them. In all applications Nimbus adjuvant was added to the spray volume at 1L/ha. The rates used represented respectively 3 and 5 times the proposed use rate for benzovindiflupyr on coffee.

Coffee cherries were collected at 21 days after the last application and dried to obtain coffee green beans. The beans were packed and shipped frozen for processing. During processing the following samples were produced: roasted beans, slurry, concentrated coffee and instant coffee. These fractions were analysed for residues of benzovindiflupyr by POPIT MET.133. R The results are shown on Table 69-70.

Table 69 Benzovindiflupyr residues in coffee beans and processed products with corresponding processing factors

Trial details Trial, Location, Year, (variety), dosage rate	Commodity	Residue mg/kg	PF
M11173-JJB Monte Carmelo, MG, Brazil 2011, (variety: Catuai) 150 g ai/ha	Coffee beans (RAC) Roasted beans Slurry Instant coffee	0.015 < 0.01 < 0.01 < 0.01	- < 0.5 < 0.5 < 0.50
M11173-RWC Jaboti, PR, Brazil 2011, (variety: Mundo Novo) 250 g ai/ha	Coffee beans (RAC) Roasted beans Slurry Instant coffee	0.02 < 0.01 < 0.01 < 0.01	- < 0.33 < 0.33 < 0.33

Table 70 Benzovindiflupyr processing factors for coffee processing

Commodity	Processing Factor		
	Monte Carmelo, MG, Brazil	Jaboti, PR, Brazil	Best estimate
Roasted beans	< 0.50	< 0.33	< 0.42
Instant coffee	< 0.50	-	< 0.50

### Sugar cane

Four crop processing trials were conducted in Brazil in 2010 in which sugar cane plants were treated with an EC formulation containing a nominal concentration of benzovindiflupyr at 50 g/L and azoxystrobin at 100 /L at rates equivalent to 90 and 150 g benzovindiflupyr/ha. Sugarcane stalk samples were collected 20, 30 and 40 days after last application.

The 30 days after last application samples were processed into crystal sugar, very high polarisation sugar, sugarcane juice, molasses and bagasse using methods designed to simulate commercial production. Samples were analysed for benzovindiflupyr using method POPIT MET.125. The results are shown on Tables 71 and 72.

Table 71 Benzovindiflupyr residues in sugar cane stems and processed products (Brazil, 2010) with corresponding processing factors (application at 90 g as/ha and 150 g as/ha )

Trial details Trial, Location, Year, (variety), dosage rate	Commodity	Residue mg/kg	PF
M11007-AMA1 Santa Lucia, São Paulo, Brazil 2010, (variety: SP 81-3250) 90 g ai/ha	Stalks (RAC) Bagasses Juice Crystal sugar VHP sugar Molasses	0.03, 0.04 0.36, 0.33 < 0.01, ND < 0.01, < 0.01 < 0.01, < 0.01 < 0.01, < 0.01	- 12.0, 8.2 0.33 < 0.33, < 0.25 < 0.33, < 0.25 < 0.33, < 0.25
M11007-AMA2 Jaboticabal, São Paulo, Brazil 2010, (variety: SP 89-1115) 150 g ai/ha	Stalks (RAC) Bagasses Juice Crystal sugar VHP sugar Molasses	0.02, 0.07 0.19, 0.39 < 0.01, < 0.01 < 0.01, < 0.01 < 0.01, < 0.01 < 0.01, 0.02	- 9.5, 5.6 < 0.5, < 0.14 < 0.5, < 0.14 < 0.5, < 0.14 < 0.5, 0.29
M11007-RWC1 Holambra, São Paulo, Brazil 2010, (variety: RB 857515) 90 g ai/ha	Stalks (RAC) Bagasses Juice Crystal sugar VHP sugar Molasses	0.04, 0.10 0.29, 0.49 < 0.01, < 0.01 < 0.01, < 0.01 < 0.01, < 0.01 0.02, 0.03	- 7.3, 4.9 < 0.25, < 0.1 < 0.25, < 0.1 < 0.25, < 0.1 0.5, 0.3

Trials details Trial, Location, Year, (variety), dosage rate	Commodity	Residue mg/kg	PF
M11007-RWC2 Rio das Pedras, São Paulo, Brazil 2010, (variety: RB85 7515) 150 g ai/ha	Stalks (RAC) Bagasses Juice Crystal sugar VHP sugar Molasses	0.03, 0.05 0.33, 0.52 < 0.01, < 0.01 < 0.01, < 0.01 < 0.01, < 0.01 < 0.01, 0.02	- 11.0, 10.4 < 0.33, < 0.2 < 0.33, < 0.2 < 0.33, < 0.2 < 0.33, < 0.4

Table 72 Benzovindiflupyr-summary of individual and mean processing factors for sugar cane

Commodity	Individual Processing Factors		Best estimate
	Application at 90 g a.s./ha	Application at 150 g a.s./ha	
Bagasse	12, 9.5, 7.3, 11	8.25, 5.6, 4.9, 10.4	8.9
Juice	< 0.33, < 0.5, < 0.25, 0.33	< 0.14, < 0.1, < 0.2	< 0.25
Crystal sugar	< 0.33, < 0.5, < 0.25, < 0.33	< 0.25, < 0.14, < 0.1, < 0.2	< 0.25
VHP sugar	< 0.33, < 0.5, < 0.25, < 0.33	< 0.25, < 0.14, < 0.1, < 0.2	< 0.25
Molasses	< 0.33, < 0.5, 0.5, < 0.33	< 0.25, 0.29, 0.3, < 0.4	< 0.33

### *Farm animal feeding studies*

The 2014 JMPR evaluated and reported the farm animal feeding studies on dairy cows (see also JMPR 2014 evaluations, pp 118-120). The Meeting received no further information on feeding studies.

### *National Residue Definition*

The 2014 JMPR Meeting recommended that the residue definition for plant and animal commodities (for compliance with MRLs and for estimation of dietary intake) should be: *benzovindiflupyr*. The residue is fat soluble.

## APPRAISAL

Benzovindiflupyr is a broad-spectrum fungicide first evaluated by JMPR in 2013 (Toxicology) and 2014 (Residue). For the parent compound, an ADI of 0–0.05 mg/kg bw and an ARfD of 0.1 mg/kg bw were established.

The 2014 JMPR Meeting recommended that the residue definition for plant and animal commodities (for compliance with MRLs and for estimation of dietary intake) is: *benzovindiflupyr*. The residue is fat soluble.

In 2014 the JMPR evaluated uses for benzovindiflupyr in soya beans and livestock feeding studies.

The current Meeting received information on use patterns for benzovindiflupyr in multiple crops (including wheat, barley, grapes, apple, pear, pulses (peas and beans), soya bean, tomato, peppers, cucumber, summer squash, melons (cantaloupe), sweet corn, maize, cotton, peanuts, potatoes, sugarcane, rapeseed and coffee) and additional analytical methods and supervised field trials on these crops.

### *Methods of analysis*

Analytical methods for benzovindiflupyr in food-feedstuffs of plant origin were evaluated by the 2014 JMPR. The Meeting received two new analytical methods for benzovindiflupyr, with its

procedure improved upon method GRM042.03A. These methods were used in the supervised field trials on sugarcane and peanuts .

Method POPIT MET.125, applicable to sugarcane, cereal grains and their processed products, used homogenization with acetonitrile and water (80:20, v/v). Following solid phase extraction (SPE) clean-up or liquid-liquid partition clean-up, benzovindiflupyr was analysed by high-performance liquid chromatography separation and triple-quadrupole mass spectrometry (LC-MS/MS). The method was successfully validated (70-110% recovery, RSD < 20%, typical LOQs at 0.01mg/kg) for sugarcane and its processed products, including cane juice, cane molasses, bagasse and sugar.

The second method POPIT MET.133 is applicable to peanuts and other matrices including beans, sunflower, cotton, coffee and its processed products, and used homogenization with acetonitrile and water (80:20 v/v). Following liquid-liquid partition clean-up, benzovindiflupyr was analysed by high-performance liquid chromatography separation and triple-quadrupole mass spectrometry (LC-MS/MS). The method was successfully validated (70-110% recovery, RSD < 20%, typical LOQs at 0.01mg/kg) for peanuts.

### ***Stability of residues in stored analytical samples***

The storage stability of benzovindiflupyr in raw and processed plant commodities and in animal commodities was evaluated by the 2014 JMPR. No additional storage stability data was submitted to the Meeting.

Storage stability studies showed that benzovindiflupyr, when stored at -18 °C was stable for at least 24 months in crop commodities representative of the high water, high acid, high starch, high protein and high oil commodity groups as well as in wheat straw. Benzovindiflupyr was stable for at least 24 months at -10 °C in various processed commodities: flour (maize, soya), meal (maize), oil (maize, soya), soymilk, dried fruits (grape, apple) and fruit juice (apple).

### ***Results of supervised residue trials on crops***

The Meeting received supervised trial data for applications of benzovindiflupyr on various fruit and vegetable crops, cereal grains, oil crops and coffee conducted in Brazil, Canada and the USA.

#### ***Pome fruits***

Benzovindiflupyr is registered in Canada and USA on pome fruits with a rate of 4 × 0.05 kg ai/ha with a PHI of 30 days. Supervised field trials on apples from Canada and USA (13 trials) matching this GAP were submitted to the Meeting. Nine residue trials on pears from Canada and USA matching the GAP were submitted.

Residues of benzovindiflupyr in apple from trials following treatment according to Canada and USA GAP were (n = 13): 0.031, 0.034, 0.038, 0.039, 0.041, 0.042, 0.048, 0.061, 0.067, 0.069, 0.074, 0.096 and 0.16 mg/kg.

Residues of benzovindiflupyr in pear from trials following treatment according to Canada and USA GAP were (n = 9): 0.021, 0.040, 0.044, 0.057, 0.059, 0.062, 0.067, 0.087 and 0.10 mg/kg.

The Meeting noted that the median residues in apple and pear from the field trials were within a 5-fold range (0.048 vs 0.059). From the Mann-Whitney U-test statistical evaluation, it was found that the two residue data populations were not from different resources. A combined residue data set on pome fruit is: 0.021, 0.031, 0.034, 0.038, 0.039, 0.040, 0.041, 0.042, 0.044, 0.048, 0.057, 0.059, 0.061, 0.062, 0.067(2), 0.069, 0.074, 0.087, 0.096, 0.10 and 0.16 mg/kg.

The Meeting estimated a maximum residue level of 0.2 mg/kg, an HR of 0.17 mg/kg (individual highest residue) and an STMR of 0.058 mg/kg for benzovindiflupyr in pome fruits.

*Small fruit vine climbing**Grapes*

In Canada, the GAPs for benzovindiflupyr in grapes is for a maximum application rate of 0.075 kg ai/ha, a maximum of 4 applications with a spray interval of 7 days and a 21 day PHI. Twelve trials conducted in the USA matches the Canada cGAP.

Residues at 21 days PHI were: 0.10, 0.11, 0.15, 0.16, 0.17, 0.23, 0.35, 0.39, 0.41, 0.47, 0.55, and 0.77 mg/kg.

The Meeting estimated a maximum residue level of 1 mg/kg, an HR of 0.81 mg/kg (highest residue of replicate samples) and an STMR of 0.29 mg/kg for benzovindiflupyr in grapes.

*Fruiting vegetable, Cucurbits*

Benzovindiflupyr is registered in the USA and Canada in cucurbits at 4 × 0.075 kg ai/ha with 7 days application interval and a 0-1 day PHI respectively.

*Cucumber*

Six trials conducted in the USA on cucumber according to the USA GAP gave residues of < 0.01, 0.01, 0.013, 0.018, 0.033 and 0.052 mg/kg.

*Summer squash*

Five trials were conducted in the USA on summer squash according to USA GAP gave residues of 0.017, 0.022(2), 0.023 and 0.050mg/kg.

*Melons*

Six trials were conducted in the USA according to USA GAP on melons (cantaloupe). The trials conducted in the USA on melons (cantaloupe) gave residues of < 0.01, 0.026, 0.049, 0.053, 0.12 and 0.14mg/kg.

The Meeting noted that the GAP covered the whole cucurbit crop group and decided to explore a group MRL for cucurbits.

The Meeting further noted that the median residues in cucumber, summer squash and melons from the field trials were within a 5-fold range (0.016–0.051). From the Kruskal-Wallis statistical evaluation, it was found that the three data population on cucumber, summer squash and melons could be combined to represent the whole cucurbits vegetable group. Therefore, a combined residue data set is: < 0.01, < 0.01, 0.01, 0.013, 0.017, 0.018, 0.022, 0.022, 0.023, 0.026, 0.033, 0.049, 0.05, 0.052, 0.053, 0.12 and 0.14 mg/kg.

The Meeting estimated a maximum residue level of 0.2 mg/kg, an HR of 0.16 mg/kg (highest individual residue) and an STMR of 0.023 mg/kg for benzovindiflupyr in the cucurbit crop group.

*Fruiting vegetables other than Cucurbits*

Benzovindiflupyr is registered in Canada and USA in fruiting vegetables other than cucurbits at 4 × 0.075 kg ai/ha with 7 day application interval, and a PHI of 1 day for Canada,; the PHI is 0 days for the USA.

*Peppers*

Nine supervised field trials on peppers from the USA matching the GAP were submitted to the Meeting. In peppers following treatment with benzovindiflupyr according to USA GAP, residues were (n = 9): 0.04,0.054, 0.059, 0.061,0.093, 0.10, 0.35, 0.36,0.62 mg/kg.

*Tomatoes*

Eleven trials were conducted in the USA according to this GAP. In tomatoes following treatment according to USA GAP, benzovindiflupyr residues were < 0.01, 0.040, 0.044, 0.053, 0.061, 0.085, 0.11, 0.14, 0.20, 0.38 and 0.43 mg/kg.

The GAP in the US is for the fruiting vegetables crop group; the median residues in peppers and tomatoes from the field trials were within a 5-fold range (0.093 mg/kg vs 0.085 mg/kg) and the Kruskal-Wallis test indicated that the residues from field trials were not from different populations. The Meeting decided to estimate a group maximum residue level. The residues were combined as: < 0.01, 0.04, 0.04, 0.044, 0.053, 0.054, 0.059, 0.061, 0.061, 0.085, 0.093, 0.1, 0.11, 0.14, 0.2, 0.35, 0.36, 0.38, 0.43 and 0.62 mg/kg.

The Meeting estimated a maximum residue level of 0.9 mg/kg, an HR of 0.62 mg/kg (highest residue of replicate samples) and an STMR of 0.089 mg/kg for benzovindiflupyr in fruiting vegetables other than cucurbits (except sweet corn and mushrooms). The Meeting also agreed to recommend a maximum residue level, an HR and STMR of 9 mg/kg, 6.2 mg/kg and 0.89 mg/kg respectively for chili pepper dried, based a default processing factor of 10.

*Sweet corn*

Benzovindiflupyr is registered in Canada and USA in sweet corn at 2 × 0.075 kg ai/ha foliar application with 7 day interval for Canada and 14 day interval for the USA; the PHI is a 7 days. The Canadian GAP was considered as cGAP because of the shorter interval time. Fifteen trials were conducted in USA with 4 × 0.075 kg ai/ha foliar application with 7 day interval and a 7 day PHI.

In sweet corn, residue data from 15 trials in USA were: ≤ 0.01 (15) mg/kg.

These trials were conducted with 4 applications of 0.075 kg ai/ha dose rather than 2 in Canada cGAP. Considering the residues were all below 0.01 mg/kg, the Meeting estimated a maximum residue level of (\*) 0.01 mg/kg, an HR of 0.01 mg/kg and an STMR of 0.01 mg/kg for benzovindiflupyr in sweet corn (corn-on-the-cob).

*Pulses**Dry beans and dry peas*

Benzovindiflupyr is registered in Canada in pulses (not including soya beans) at 2 × 0.075 kg ai/ha foliar application with a 7 day interval and a 15 day PHI. Thirteen trials were conducted in Canada and USA matching the GAP for dry beans. Eleven trials were conducted in Canada and USA matching the GAP for dry peas.

In thirteen trials conducted in Canada and USA for beans (dry seeds), residues at 14 day PHI were: < 0.01(6), 0.011, 0.011, 0.016, 0.020, 0.044, 0.045 and 0.078mg/kg.

In 11 trials conducted in Canada and USA for peas (dry seeds), residues at mature stages were: < 0.01 (5), 0.011, 0.017, 0.028, 0.033, 0.049 and 0.11 mg/kg.

The Meeting estimated a maximum residue level of 0.15 mg/kg and an STMR of 0.011 mg/kg for benzovindiflupyr in beans (dry).

The Meeting estimated a maximum residue level of 0.2 mg/kg and an STMR of 0.011 mg/kg for benzovindiflupyr in peas (dry).

*Soya beans (dry)*

Six residue trials in Brazil were evaluated by 2014 JMPR. The Brazil trials (3× 0.045 kg ai/ha, interval 19-59 and 14 days, DALA 21-28 days, with adjuvant added), matched the critical GAP of Paraguay (three foliar applications without adjuvant at 0.045 kg ai/ha at 14 day intervals with a PHI of 21 days). Benzovindiflupyr residues were: < 0.01, < 0.01, < 0.01, < 0.01, 0.01, 0.03 mg/kg (n = 6).

The current Meeting received 18 trials from USA. The USA GAP for benzovindiflupyr is  $2 \times 0.050$  kg ai/ha, 14 day interval and a PHI of 14 days. The Canada GAP is also available, which is  $2 \times 0.075$  kg ai/ha, 7 day interval and a PHI of 14 days. Considering a higher application rate and same PHIs, the Canada GAP was selected as the critical GAP.

Eighteen trials from USA matching Canada GAP gave residues at 14 days PHI:  $< 0.01$  (n = 15), 0.012, 0.018 and 0.064 mg/kg.

The Meeting estimated a maximum residue level of 0.08 mg/kg to replace its previous recommendation (0.05 mg/kg) and an STMR of 0.01 mg/kg for benzovindiflupyr in soya beans (dry).

#### *Potatoes*

The USA GAP for benzovindiflupyr on potatoes is in-furrow use at planting at  $1 \times 0.10$  kg ai/ha, and a PHI of 14 days. The Canada GAP is for foliar use, which is  $4 \times 0.075$  kg ai/ha, 7 day interval and a PHI of 15 days. The Canada GAP was selected as the critical GAP. Twelve trials were conducted in the USA matching the cGAP with less than 25% deviation. Several trials were conducted with <sup>EC</sup> and WG formulations for residue comparison. Only the highest residue was selected from these trials at one site.

Benzovindiflupyr residues at 14 days PHI were:  $< 0.01$  (n = 8), 0.01, 0.014 (2) and 0.015 mg/kg.

The Meeting estimated a maximum residue level of 0.02 mg/kg, an HR of 0.015 mg/kg and an STMR of 0.01 mg/kg for benzovindiflupyr in potatoes.

#### *Barley*

Benzovindiflupyr is registered in Canada for use on cereals at  $2 \times 0.075$  kg ai/ha (interval 14 days, not later than Feekes 10.5.4). In the USA, the WG formulation was registered on cereals for foliar use, with  $2 \times 0.050$  kg ai/ha (not later than Feekes 10.5 full flower). Several trials from Canada and the USA on barley were received. One trial was not considered in the evaluation as benzovindiflupyr residues above the LOQ were detected in the control sample. Trials conducted with the last application after BBCH 71 were considered as not matching the cGAP.

In three trials conducted in Canada and nine trials conducted in USA according to Canada GAPs, benzovindiflupyr residues in barley were: 0.014, 0.029, 0.061, 0.079, 0.096, 0.14, 0.21, 0.26, 0.32, 0.42, 0.54 and 0.59 mg/kg.

Based on the trials matching the critical GAP (Canada), the Meeting estimated a maximum residue level of 1 mg/kg, an STMR of 0.175 mg/kg for benzovindiflupyr in barley. The Meeting agreed to extrapolate these estimations to oats.

#### *Maize (corn)*

Benzovindiflupyr is registered in Canada at GAP of  $2 \times 0.075$  kg ai/ha (interval 14 days), and a 7 day PHI. In 2010, 19 trials (two of which were also decline studies) were conducted in the USA for field maize, using  $4 \times 0.075$  kg ai/ha (interval 14 days), and a 7 day PHI.

None of the trials matched the critical GAP.

#### *Wheat*

Benzovindiflupyr is registered in Canada on cereals at GAP of  $2 \times 0.075$  kg ai/ha (interval 14 days, not later than FK 10.5.4). In USA, the WG formulation was registered on cereals for foliar use, with  $2 \times 0.050$  kg ai/ha (not later than FK 10.5 full flower). Trials from Canada and USA on wheat were received. Trials conducted at the last application after BBCH 71 were considered as not matching the cGAP.

In 12 trials conducted in Canada and 18 trials conducted in USA matching Canada cGAP, benzovindiflupyr residues in wheat were: < 0.01 (9), 0.012(2), 0.015, 0.017, 0.020, 0.021, 0.025 (2), 0.026(2), 0.027(1), 0.031, 0.032, 0.035, 0.041(2), 0.042, 0.046, 0.059, 0.067 and 0.072 mg/kg.

Based on the trials matching the critical GAP (Canada), the Meeting estimated a maximum residue level of 0.1 mg/kg, and an STMR of 0.023 mg/kg for benzovindiflupyr in wheat grain. The Meeting agreed to extrapolate these estimations to rye and triticale.

#### *Sugar cane*

Benzovindiflupyr was registered in Brazil on sugar cane, with a GAP of 5×0.030 kg ai/ha, 30 day spray interval and a 30 day PHI. In 2010-2011, trials were conducted in seven sites in Brazil. Among them, four trials on processing were also conducted. Three trials were with 3-5 times exaggerated rates and were given consideration in this evaluation using proportionality principles.

Benzovindiflupyr residues in the seven Brazilian trials matching the critical GAP and scaled to the GAP rate were: < 0.01(3), 0.02 (4) mg/kg.

The Meeting estimated a maximum residue level of 0.04 mg/kg, an HR of 0.02 mg/kg and an STMR of 0.02 mg/kg for benzovindiflupyr in sugar cane.

#### *Cotton seed*

Benzovindiflupyr was registered in the USA on cotton, with a GAP of 2×0.075 kg ai/ha, 14 day spray interval and a 45 day PHI as the cGAP. In 2010-2011, 16 trials were conducted in USA, with 3×0.075 kg ai/ha application rate, 14 day spray interval and a 45 day PHI.

No trials matched the critical GAP.

#### *Peanut*

Benzovindiflupyr was registered in Brazil on peanut, with a GAP of 4×0.045 kg ai/ha, 14 day spray interval and a 7 day PHI.

Six trials conducted in Brazil matched this cGAP within 25% (based on rates). Benzovindiflupyr residues in the 6 trials were: < 0.01 (4), 0.02, 0.02 mg/kg.

The Meeting estimated a maximum residue level of 0.04 mg/kg, and an STMR of 0.01 mg/kg for benzovindiflupyr in peanut.

#### *Rape seed*

Benzovindiflupyr was registered in Canada and the USA on rape seed, with foliar application of 1×0.075 kg ai/ha and a 30 day PHI. In 2011, nine independent residue trials matching the GAP were conducted in Canada.

Benzovindiflupyr residues in the nine trials matching the critical GAP were: < 0.01 (2), 0.011, 0.019, 0.023, 0.031, 0.045, 0.062 and 0.10 mg/kg.

The Meeting estimated a maximum residue level of 0.2 mg/kg, and an STMR of 0.023 mg/kg for benzovindiflupyr in rape seed.

#### *Coffee beans*

Benzovindiflupyr was registered in Brazil on coffee, with foliar application of 3 × 0.060 kg ai/ha, spray interval of 60 days and a 21 day PHI. In 2010, six trials were conducted in Brazil.

Benzovindiflupyr residues in the six trials matching the critical GAP were: < 0.01 (3), 0.02 (2), and 0.07 mg/kg.

The Meeting estimated a maximum residue level of 0.15 mg/kg, and an STMR of 0.015 mg/kg for benzovindiflupyr in coffee beans.



*Animal feed commodities*

Feed commodities were analysed in the studies described previously for the edible commodities. Only the trials conducted according to GAP as described before were summarized herein. Maximum residue levels were not estimated for forage. Highest and/or medium residues were estimated for commodities listed in the OECD feeding table for dietary burden calculation purposes.

*Forage*

In the trials, the forage samples (described as forage, green material or rest of the plant) were harvested at different PHIs. Whenever data was available, the residues at cGAP PHI (or any day later that gave a higher residue) were chosen to represent the level of residues to which animals would be exposed. In cases where this data point was not available, the highest value from any PHI available (up to the grain PHI) would be taken, including from 0 day PHI.

*Maize forage*

Twenty trials were conducted on maize in Canada and USA according to  $4 \times 0.075$  kg ai/ha foliar application with 7 days interval and a 7 day DALA. The Canada cGAP is  $2 \times 0.075$  kg ai/ha rate, with a 7 day PHI.

The Meeting considered the trials did not match the cGAP.

*Pea vines*

In five trials conducted in peas in the USA according to GAP (2 applications at 0.075 kg ai/ha, 7 day interval and a 15 day PHI), benzovindiflupyr residues in pea vines were: 0.28, 0.29, 0.43, 0.51 and 0.96 mg/kg.

The Meeting estimated a median and a highest residue of 0.43 mg/kg (as received) and 0.96 mg/kg (as received), respectively, for benzovindiflupyr in pea vines.

*Wheat, barley, oat, rye and triticale forage*

Thirty two trials conducted on maize in Canada and USA matching Canada cGAP on cereals (2 applications at 0.075 kg ai/ha foliar application with 14 day spray interval, 7 day PHI for forage), gave benzovindiflupyr residues in wheat forage (n = 32) : < 0.01, 0.38, 0.40, 0.45, 0.48, 0.55 (2), 0.63, 0.67, 0.71, 0.73, 0.74, 0.82, 0.90, 0.95, 1.0, 1.1, 1.2 (2), 1.3(3), 1.4, 1.5(3), 1.8(1), 1.9(2), 2.1, 2.2 and 3.4 mg/kg.

The Meeting estimated a median and a highest residue of 1.1 mg/kg (as received) and 3.7 mg/kg (as received; based on the highest individual residue), respectively, for benzovindiflupyr in wheat forage. The Meeting agreed to extrapolate these estimations to barley, oat, rye and triticale.

*Soya beans forage*

According to the Canadian label, soya bean forage may be fed or harvested 1 day after the last application. No residue trials data were available to support a 1 day PHI.

*Sweetcorn forage*

Twelve trials in sweet corn were conducted in Canada and the USA according to  $4 \times 0.075$  kg ai/ha foliar application with 7 day interval and forage samples were collected at 7-14 day DALA. The cGAP is  $2 \times 0.075$  kg ai/ha rate, with a 7 days PHI.

No trials matched the cGAP.

*Cotton gin trash*

Five trials on cotton were conducted in the USA according to USA GAP  $3 \times 0.075$  kg ai/ha, 14 days interval and a 45 days DALA). The cGAP is  $2 \times 0.075$  kg ai/ha rate, with a 45 days PHI.

No trials matched the cGAP.

*Straw, hay and/or fodder, stover*

*Barley and wheat*

Trials conducted in barley in Canada and the USA according to Canada GAP ( $2 \times 0.075$  kg ai/ha, a 14 day interval, not later than BBCH 71 and 7 days PHI for hay), gave benzovindiflupyr residues in barley hay (n = 20) : 1.5, 1.6, 1.7, 2.3, 2.5, 2.6, 3.8, 4.0, 4.0, 4.7, 5.0, 5.1, 5.2, 5.4, 5.5, 6.1(2), 6.3, 7.9(2) mg/kg; and benzovindiflupyr residues in barley straw (as received, n = 18): 0.21, 0.40, 0.83, 1.6, 1.8, 1.9(2), 2.2, 2.4, 3.2, 3.3, 3.5, 3.7, 4.6, 5.0, 7.1, 7.8(2) mg/kg.

In 33 trials conducted in wheat in the Canada and the USA according to Canada GAP ( $2 \times 0.075$  kg ai/ha, a 14 days interval), benzovindiflupyr residues in wheat hay were: 0.54, 0.72, 0.78, 1.1, 1.5, 1.6, 1.7(2), 1.9, 2.0(2), 2.2(2), 2.5, 2.7, 2.9(2), 3.4, 3.8, 3.9(2), 4.1, 5.2, 5.4, 6.0, 6.2, 6.6, 6.9, 7.1, 7.2, 8.5, 8.6, 12 mg/kg and 28 trials on benzovindiflupyr residues in wheat straw were: < 0.01, 0.11, 0.17, 0.23, 0.38, 0.41, 0.54, 0.72, 0.96, 1.0, 1.3(2), 2.0, 2.2, 2.3(2), 2.9, 3.0, 3.7, 3.9, 4.1, 4.4(2), 4.7(2), 6.2, 6.9, 8.4 mg/kg.

The medians for the residue data of wheat and barley hay and those for wheat and barley straw are within 5-fold range, and the Mann-Whitney U-test results also indicated they both came from the same population, the data sets for barley and wheat hay (as received) can be combined: 0.54, 0.72, 0.78, 1.1, 1.45, 1.5, 1.6(2), 1.65(2), 1.7, 1.9, 2.2(3), 2.3, 2.5(2), 2.6, 2.7, 2.9(2), 3.4, 3.8(2), 3.9(2), 4 (2), 4.1, 4.7, 5, 5.1, 5.2 (2), 5.4(2), 5.5, 6, 6.1(2), 6.2, 6.3, 6.6, 6.9, 7.1, 7.2, 7.9(2), 8.5, 8.6, and 12 mg/kg.

Similarly, the combined data set for wheat and barley straw (fresh weight) are: 0.01, 0.11, 0.17, 0.21, 0.23, 0.38, 0.4, 0.41, 0.54, 0.72, 0.83, 0.96, 1, 1.3(2), 1.6, 1.8, 1.9(2), 2, 2.2(2), 2.3(2), 2.4, 2.9, 3, 3.2, 3.3, 3.5, 3.7(2), 3.9, 4.05, 4.4(2), 4.6, 4.7(2), 5, 6.2, 6.85, 7.1, 7.8(2) and 8.4 mg/kg.

The Meeting noted that it is hard to distinguish straw and fodder of barley and wheat moving in trade due to their similarity in appearance. It also noted that there are common or similar GAPs existing for wheat and barley in Canada and the USA. The Meeting decided to recommend the maximum residue level, STMR and HR for barley straw and fodder based on the higher residue in hay. The Meeting then agreed to estimate median and highest residue for barley/wheat straw and fodder, dry at 3.9, 12 mg/kg for animal dietary burden evaluation. The Meeting agreed to recommend maximum residue level for barley/wheat straw and fodder, dry at 15 mg/kg (based on dry matter). The Meeting also agreed to extrapolate these estimates to oat, rye, and triticale.

*Maize stover*

Maize GAP in USA was available as  $2 \times 0.075$  kg ai/ha, with 7 days PHI and 7 days application interval. 20 trials on maize were conducted in Canada and the USA according to  $4 \times 0.075$  kg ai/ha and a 7 day PHI).

No trials matched the cGAP.

*Peanut fodder*

The USA registered use was  $3 \times 0.075$  kg ai/ spray and a 30 day PHI with 14 day spray interval, or 2 applications at 0.1 kg ai/ha rate with 21 day interval and 30 days PHI. The 3 times application at 0.075 mg/kg dose from USA was used as cGAP. Fifteen trials conducted in the USA could not match this cGAP due to higher spray rates. The Meeting decided to use proportionality to scale the residues. A proportionality factor of 0.75 was applied to scale down terminal residues in peanut fodder. In 13 trials conducted in peanut in the USA according to 3 applications at 0.1 kg ai/ha, 14 days interval and a 30 day PHI, unscaled residues were: 0.43, 1.8, 2.7, 2.8, 2.9, 2.9, 3.0, 3.7, 6.3, 7.0, 7.1, 7.7 and 9.0 mg/kg; scaled benzovindiflupyr residues in peanut hay (n = 13) were: 0.32, 1.3, 2.1, 2.1, 2.1, 2.1, 2.2, 2.8, 4.7, 5.3, 5.3, 5.7 and 6.8 mg/kg.

The Meeting estimated a maximum residue level, a median and a highest residue of 15 mg/kg, 2.2 mg/kg (as received) and 7.6 mg/kg (as received, highest individual residue), respectively, for benzovindiflupyr in peanut fodder.

#### *Pea hay*

In 5 trials conducted in peas in the USA according to GAP (2 applications at 0.075 kg ai/ha, 7 day interval and a 15 day PHI), benzovindiflupyr residues in pea hay at DALA 14 days were: 1.2, 1.8, 2.2, 3.1 and 3.8 mg/kg.

The Meeting estimated maximum residue level, a median and a highest residue of 8 mg/kg, 2.2 mg/kg and 3.8 mg/kg, respectively, for benzovindiflupyr in pea hay or fodder, dry.

#### *Soya beans hay*

According to the Canadian label, soya bean hay may be fed or harvested 1 day after the last application. As no residue trial data are available to support a 1 day PHI, the Meeting made no recommendations.

#### *Sweetcorn stover*

Twelve trials in sweet corn were conducted in Canada and USA with 4 × 0.075 kg ai/ha foliar applications, with a 7 day interval and 7-14 day DALA. The Canada cGAP is : 2 × 0.075 kg ai/ha and 7 day PHI. The Meeting agreed that the trials don't match the cGAP.

#### ***Fate of residues during processing***

In 2014 the JMPR Meeting concluded that benzovindiflupyr is stable under the conditions simulating pasteurization, baking/brewing/boiling and sterilization. 2014 JMPR also estimated the processing factors for soy beans products. The current Meeting received processing studies on apple, grape, potato, tomato, cotton seed, peanut, rapeseed, soya bean, barley, corn, wheat, coffee and sugarcane. Processing factors based on the residue for parent only are listed in the table below. Using the STMRS for raw agricultural commodities evaluated by the Current Meeting and considering 2014 JMPR evaluation results on soya bean processing factors, the Meeting estimated STMRS for processed commodities to be used in the livestock dietary burden calculations and/or dietary risk assessment.

Raw Commodity STMRRAC, HRRAC mg/kg	Processed Commodity	Individual processing factors	Mean or best estimated processing factor (PF)	STMRS-P = STMRRAC × PF (mg/kg)	HRRAC-P = HRRAC × PF (mg/kg)
Apple	Wet pomace	2.1,2.9, 4.0, 4.2	3.5	0.20	
	Dry pomace	11.4, 15.0, 15.9, 20.8	15.5	0.90	
	Juice	< 0.05, < 0.06, < 0.06, < 0.07	< 0.06	0.003	
	Sauce	0.12, 0.22, 0.67, 1.0	0.45	0.026	
	Dried fruit	6.6, 6.8, 18.9, 22.2	12.9	0.75	2.19
	Jelly	0.04, 0.13	0.09	0.005	
	Canned fruit	< 0.03, < 0.06, < 0.06, 0.08	< 0.06	0.003	
Grape	Must	0.18, 0.49, 0.50, 0.62, 0.70, 1.1, 1.5, 1.6	0.66	0.38	
	Wet pomace	1.1, 1.9, 1.9, 2.2, 2.4, 2.4, 2.5, 3, 3.1, 3.6, 4.2, 4.3, 4.4	2.5	1.20	
	Dry pomace	3.2, 3.5, 4.4, 4.9, 5.2, 5.9, 6.8, 7.1, 11.6, 11.7, 17.2, 19.7	6.4	4.2	
	Grape juice	0.06, 0.06, 0.07, 0.08, 0.10, 0.19	0.075	0.022	
	White wine	0.02, 0.03, 0.05, 0.07	0.04	0.012	
	Red wine	0.03, 0.08, 0.08, 0.13	0.08	0.023	
	Dried grapes (Raisins)	4.0, 3.1, 2.5, 2.2, 1.9, 1.4	2.4	0.70	1.9
Potato	Peel	4.8	4.8	0.048	

Raw Commodity STMRRAC, HRRAC mg/kg	Processed Commodity	Individual processing factors	Mean or best estimated processing factor (PF)	STMR-P = STMRRAC × PF (mg/kg)	HR-P = HRRAC × PF (mg/kg)
	Peeled tubers	0.25	0.25	0.003	0.004
	Baked tubers	2.2	2.2	0.022	0.033
	Boiled/peeled tubers	0.25	0.25	0.003	0.004
	Flakes	0.50	0.50	0.005	
	Chips	< 0.25	< 0.25	0.003	
	Fried potatoes	< 0.25	< 0.25	0.003	0.004
Tomato	Paste	0.33, 0.50	0.42	0.037	
	Puree	0.15, 0.18	0.17	0.015	
	Canned fruit	0.02, 0.04	0.03	0.003	0.019
	Wet pomace	2.4, 12.5	7.5	0.67	
	Dried fruit	6.3, 11.4	8.9	0.79	5.52
	Juice	0.06, 0.11	0.09	0.008	
	Dried pomace	17.0, 53.6	35.3	3.14	
Peanut	Pressed meal	< 0.053, < 0.17, 1.3, 1.9	0.74	0.007	
	Refined oil	< 0.053, < 0.17, 3.0, 3.8	1.6	0.016	
	Peanut Butter	< 0.05, < 0.14, 1.0, 1.0	< 0.57	0.006	
Rapeseed (canola), seed	Meal	0.42, 0.63	0.53	0.012	
	Refined oil	0.72, 1.2	0.98	0.023	
Soya bean, seed	Meal	< 0.13, < 0.13, < 0.38, < 0.40	< 0.26	0.0026	
	Hulls	1.1, 2.5, 10, 11	6.3	0.0063	
	fat flour	< 0.13, 0.13, < 0.34, < 0.44	< 0.24	0.0024	
	Soy milk	< 0.13, < 0.13, < 0.32, < 0.44	< 0.23	0.0023	
	Tofu	< 0.13, < 0.13, 0.52, 0.58	0.33	0.0033	
	Soy sauce	< 0.13, < 0.13, < 0.34, < 0.36	< 0.23	0.0023	
	Crude oil	0.63, 0.77, 0.96, 2.0,	0.86	0.0086	
	Refined oil	0.38, 0.63, 0.65, 0.68	0.64	0.0064	
	Aspirated grain	7.4, 7.6, 7.7, 7.9, 8.3, 9.6, 11, 14, 191	8.3	0.083	
Barley, grain	Pearl barley	0.27, 0.64	0.46	0.083	
	Barley flour	0.24, 0.55	0.40	0.072	
	Bran	0.32, 0.45	0.39	0.070	
Wheat, grain	Bran, unprocessed	1.0, 1.3, 3.3, 4.0,	2.3	0.053	
	White flour	0.33, 0.33, 0.33, 0.50,	0.33	0.008	
	Wholemeal flour	0.33, 0.33, 1.0, 1.5,	0.67	0.015	
	Wholemeal bread	0.33, 0.33, 0.67, 1.0	0.50	0.012	
	Wheat germs	1.0, 1.0, 1.0, 1.0	1.0	0.023	
	Aspirated grain	22.7, 121.6	72	1.66	
	Flour	0.10, < 0.17	< 0.14	0.003	
	Middlings	0.16, < 0.17	< 0.17	0.004	
	Shorts	0.13, 0.17	0.15	0.003	
	Germ	< 0.17, 0.74	0.74	0.017	
Coffee, green beans	Roasted beans	< 0.33, < 0.50	< 0.42	0.006	
	Instant coffee	< 0.50	< 0.50	0.008	
Sugarcane, stalk	Bagasse	4.9, 5.6, 7.3, 8.25, 9.5, 10.4, 11, 12	8.9	0.18	
	Crystal sugar	0.1, 0.14, 0.2, 0.25, 0.25, 0.33, 0.33, 0.5	< 0.25	0.005	
	Molasses	< 0.25, < 0.29, 0.3, < 0.33, < 0.33, < 0.4, < 0.5, 0.5	< 0.33	0.007	

For dried grape (raisins), a maximum residue level, an STMR and HR of 3 mg/kg, 0.7 mg/kg, 1.9mg/kg, respectively is recommended by the Meeting.

**Residues in animal commodities**

The current Meeting received several field trial studies on benzovindiflupyr residues including those on feed commodities of sweet corn (forage and stover), pulses including peas and beans (hay and vines), soy bean (forage and hay), barley (hay and straw), maize (corn forage and stover), wheat (forage, hay and straw), peanut (hay).

The Meeting estimated the dietary burden of benzovindiflupyr residues on the basis of the livestock diets listed in the FAO manual appendix IX (OECD feedstuff table). For bulk commodities, calculation from STMR provides the levels in feed suitable for estimating maximum residue levels as well as STMR values for animal commodities. Commodities used in the dietary burden calculation are soya bean hay and hulls, wheat forage, barley grain and processed products, corn grain and corn gluten, pea seed, canola, rapeseed and peanut meal, and bean seed.

Dietary burden calculations for beef cattle, dairy cattle, broilers and laying poultry are provided in Annex 6 to the 2016 Report. A mean and maximum dietary burden for livestock, based on benzovindiflupyr use, is shown in the table below.

Livestock dietary burden for benzovindiflupyr residues, expressed as ppm of dry matter diet

		Animal dietary burden, benzovindiflupyr residues, ppm of dry matter diet			
		US-Canada	EU	Australia	Japan
Beef cattle	max	2.38	5.54	14.8 <sup>a</sup>	0.15
	mean	1.00	2.10	5.15 <sup>c</sup>	0.15
Dairy cattle	max	5.78	5.72	13.8 <sup>b</sup>	0.09
	mean	1.85	2.18	5.12 <sup>d</sup>	0.09
Poultry - broiler	max	0.16	0.15	0.04	0.02
	mean	0.16	0.15	0.04	0.02
Poultry - layer	max	0.16	2.1 <sup>e</sup>	0.04	0.01
	mean	0.16	0.85 <sup>f</sup>	0.04	0.01

<sup>a</sup> Highest maximum beef or dairy cattle dietary burden suitable for maximum residue level estimates for mammalian tissues

<sup>b</sup> Highest maximum dairy cattle dietary burden suitable for maximum residue level estimates for mammalian milk

<sup>c</sup> Highest mean beef or dairy cattle dietary burden suitable for STMR estimates for mammalian tissues.

<sup>d</sup> Highest mean dairy cattle dietary burden suitable for STMR estimates for milk.

<sup>e</sup> Highest maximum poultry dietary burden suitable for maximum residue level estimates for poultry tissues and eggs.

<sup>f</sup> Highest mean poultry dietary burden suitable for STMR estimates for poultry tissues and eggs.

**Farm animal feeding studies**

The 2014 JMPR evaluated and reported the farm animal feeding studies on dairy cows. The Meeting received no further information on feeding studies. Animal dietary burden were calculated using median and highest residue of related commodities estimated by the 2014 and current Meeting..

**Animal commodities maximum residue levels**

For MRL estimation in animal commodities, the residue definition is benzovindiflupyr, the residue is fat soluble.

Estimated residues in tissues and milk at the dietary burden are shown in the table below.

	Feed level (ppm) for milk residues	Residues (mg/kg) in milk	Feed level (ppm) for tissue residues	Residues (mg/kg) in			
				Muscle	Liver	Kidney	Fat
MRL beef or dairy cattle							
Feeding study <sup>A</sup>	3.5	< 0.01	3.5	< 0.01	< 0.01	< 0.01	< 0.01
	16	< 0.01	16	< 0.01	0.07	0.01	0.02
Dietary burden and high residue	13.77	0.01	14.80	0.01	0.064	0.010	0.019

	Feed level (ppm) for milk residues	Residues (mg/kg) in milk	Feed level (ppm) for tissue residues	Residues (mg/kg) in			
				Muscle	Liver	Kidney	Fat
STMR beef or dairy cattle							
Feeding study <sup>B</sup>	3.5	< 0.01	3.5	< 0.01	< 0.01	< 0.01	< 0.01
	16	< 0.01	16	< 0.01	0.037	0.01	0.013
Dietary burden and median residue estimate	5.12	< 0.01	5.15	0.01	0.014	0.01	0.010

<sup>A</sup> highest residues for tissues and mean residues for milk

<sup>B</sup> mean residues for tissues and mean residues for milk

The Meeting estimated maximum residue levels of 0.03 (fat), 0.1, 0.03, and 0.01 \* mg/kg in mammalian meat, mammalian edible offal, mammalian fat, and milk, respectively.

The Meeting estimated an STMR of 0 mg/kg in milk, as no residues from any milk samples at any experimental dose levels were found above the LOQ of 0.01 mg/kg. The Meeting estimated an STMR and HR of 0.01, 0.01 mg/kg, respectively, in mammalian muscle; 0.01 and 0.019 mg/kg, respectively, in mammalian fats; and 0.014 and 0.064 mg/kg, respectively, in mammalian edible offal. The residue in animal commodities is considered fat soluble.

The Meeting noted that no feeding study was conducted on poultry. From the metabolism study results on laying hens according to 2014 JMPR evaluation, at 17–20 ppm in the diets, benzovindiflupyr residues were found in egg yolk (0.0224 mg/kg), egg white (0.00374 mg/kg), poultry fat (0.00125–0.0189 mg/kg), poultry muscle (0.0008–0.0012 mg/kg) and poultry liver (0.0004–0.0005 mg/kg). At the maximum and mean dietary burden of 2.1 ppm and 0.85 ppm, residues of benzovindiflupyr were calculated using division factors of 8 and 20, to be all below 0.001 mg/kg. From these findings, the Meeting concluded that no potential residues are expected in poultry commodities.

The Meeting estimated maximum residue levels of 0.01 \* for eggs, poultry fat, poultry meat and poultry edible offal. The Meeting recommended an STMR and HR of 0 and 0 for eggs, poultry fat, poultry meat and poultry edible offal.

## 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 and IESTI assessments.

Definition of the residue for compliance with the MRL and for dietary risk assessment for plant and animal commodities: *benzovindiflupyr*.

The residue is fat soluble.

CCN	Commodity	Recommended Maximum residue level (mg/kg)		STMR or STMR-P mg/kg	HR or HR-P mg/kg
		New	Previous		
FP 0009	Pome fruits	0.2		0.058	0.17
FB 0269	Grapes	1		0.29	0.81
VC 0045	Fruiting vegetables, Cucurbits	0.2		0.023	0.16
VO 0050	Fruiting vegetables other than cucurbits (except sweet corn and mushrooms)	0.9		0.089	0.62
VO 0447	Sweet corn (corn-on-the-cob)	0.01 *		0.01	0.01
VD 0072	Peas (dry)	0.2		0.011	
VD 0071	Beans (dry)	0.15		0.011	

## Benzovindiflupyr

CCN	Commodity	Recommended Maximum residue level (mg/kg)		STMR or STMR-P mg/kg	HR or HR-P mg/kg
		New	Previous		
VD 0541	Soya bean (dry)	0.08	0.05	0.01	
VR 0589	Potato	0.02		0.01	0.015
GC 0640	Barley	1		0.175	
GC 0647	Oats	1		0.175	
GC 0654	Wheat	0.1		0.023	
GC 0650	Rye	0.1		0.023	
GC 0653	Triticale	0.1		0.023	
GS 0659	Sugar cane	0.04		0.02	0.02
SO 0697	Peanut	0.04		0.01	
SO 0495	Rape seed	0.2		0.023	
SB 0716	Coffee beans	0.15		0.015	
DF 0269	Dried grapes (=currants, raisins and sultanas)	3		0.70	1.9
HS 0444	Peppers Chili, dried	9		0.89	6.2
AS 0640	Barley straw and fodder, Dry	15 (dw)		3.9 (ar)	12 (ar)
AS 0647	Oat straw and fodder, Dry	15 (dw)		3.9 (ar)	12 (ar)
AS 0650	Rye straw and fodder, Dry	15 (dw)		3.9 (ar)	12 (ar)
AS 0653	Triticale straw and fodder, Dry	15 (dw)		3.9 (ar)	12 (ar)
AS 0654	Wheat straw and fodder, Dry	15 (dw)		3.9 (ar)	12 (ar)
AL 0072	Pea hay or fodder, dry	8 (dw)		2.2 (ar)	3.8 (ar)
AL 0697	Peanut fodder	15 (dw)		2.2 (ar)	7.6 (a)
MO0105	Edible offal (mammalian)	0.1	0.01	0.014	0.064
PE0112	Eggs	0.01 *	0.01	0	0
MF0100	Mammalian fats (except milk fats)	0.03	0.01	0.01	0.019
MM0095	Meat (from mammals other than marine mammals)	0.03 (fat)	0.01	0.01 muscle 0.01 fat	0.01 muscle 0.019 fat
ML0106	Milks	0.01 *	0.01	0	
PF 0111	Poultry fats	0.01 *	0.01	0	0
PM 0110	Poultry meat	0.01 *	0.01	0	0
PO 0111	Poultry, Edible offal of	0.01 *	0.01	0	0
	Apple jelly			0.005	
JF 0226	Apple juice			0.003	
	Apple sauce			0.026	
	Apple, canned fruit			0.003	
	Baked potatoes			0.022	0.033
	Barley bran			0.07	
	Barley flour			0.072	
	Boiled potatoes			0.005	0.044
	Canned tomato			0.003	0.019
SM 0716	Coffee beans, roasted			0.006	
	Crystal sugar			0.005	
	Dried tomato			0.79	5.52
	Fried potatoes			0.003	0.004
JF 0269	Grape juice			0.022	
	Instant coffee			0.008	
	Peanut butter			0.023	
	Pearl barley			0.083	
	Potato chips			0.003	
	Red wine			0.023	
	Soy sauce			0.0023	
	Soya milk			0.0023	
	Tofu			0.0033	
	Tomato juice			0.008	
VW 0448	Tomato paste			0.037	
	Tomato purée			0.015	
CM 0654	Wheat bran, unprocessed			0.053	
CF 1211	Wheat flour			0.003	
CF 1210	Wheat germ			0.023	

CCN	Commodity	Recommended Maximum residue level (mg/kg)		STMR or STMR-P mg/kg	HR or HR-P mg/kg
		New	Previous		
	White flour			0.008	
	White wine			0.012	
CP 1212	Wholemeal bread			0.012	
	Wholemeal flour			0.015	

For animal feed burden only

Commodity		Median, mg/kg	Highest residue, mg/kg
CCN	Name		
-	Peas vines	0.43 (as received)	0.96 (as received)
-	Wheat forage	1.1 (as received)	3.7 (as received)
-	Rye forage	1.1 (as received)	3.7 (as received)
-	Triticale forage	1.1 (as received)	3.7 (as received)
-	Oat forage	1.1 (as received)	3.7 (as received)
-	Barley forage	1.1 (as received)	3.7 (as received)

## DIETARY RISK ASSESSMENT

### *Long-term intake*

The International Estimated Daily Intakes (IEDI) for benzovindiflupyr were calculated using STMRs estimated by the current and the 2014 Meeting, in combination with consumption data for corresponding food commodities. The results are shown in Annex 3 to the 2016 Report.

The IEDI of the 17 GEMS/Food cluster diets, represented 0–2 % of the maximum ADI of 0.05 mg/kg bw.

The Meeting concluded that the long-term exposure to residues of benzovindiflupyr from uses considered by the Meeting is unlikely to present a public health concern.

### *Short-term intake*

2013 JMPR established an ARfD of 0.1 mg/kg bw. The International Estimated Short Term Intake (IESTI) for benzovindiflupyr were calculated using STMRs/HRs estimated by the current and the 2014 Meeting, in combination with consumption data for corresponding food commodities. The results are shown in Annex 4 to the 2016 Report.

The calculated IESTI represented 0–70% of the ARfD (0.1 mg/kg bw) for the general population, and for children 0–60% of the ARfD. The Meeting concluded that the short-term intake of residues of benzovindiflupyr from uses considered by the Meeting is unlikely to present a public health concern.



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## Benzovindiflupyr

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SYN545192_1060 2	Syngenta Crop Protection AG	2015b	BENZOINDIFLUPYR Residue JMPR 2016 Tier I Tables final Syngenta, SYN545192_10602 Not GLP, not published
A18126B_10040	Casallanovo F.	2011	A18126 - Magnitude of residues of SYN545192, SYN546039, Azoxystrobin and R230310 in sugarcane - Brazil, 2010-11 Syngenta Proteção de Cultivos Ltd.a, São Paulo, Brazil Syngenta Proteção de Cultivos Ltd.a, São Paulo, Brazil, M11019 GLP not published
A17961A_10054	Casallanovo F.	2011a	A17961 - Magnitude of residues of SYN545192, SYN546039, Azoxystrobin and R230310 in sugarcane - Brazil, 2010-11 Syngenta Proteção de Cultivos Ltd.a, São Paulo, Brazil Syngenta Proteção de Cultivos Ltd.a, São Paulo, Brazil, M11013 GLP not published
A17961A_10063	Casallanovo F.	2012	A17961 - Magnitude of Residues of SYN545192 and Metabolites, Azoxystrobin and R230310 in Sugarcane and its Processed Derivatives - Brazil, 2010-11 Syngenta Proteção de Cultivos Ltd.a, São Paulo, Brazil Syngenta Proteção de Cultivos Ltd.a, São Paulo, Brazil, M11007 GLP not published
A17961A_50005	Casallanovo Fabio	2012	A17961A - Magnitude of Residues of SYN545192 and Metabolites, Azoxystrobin and R230310 in Coffee Beans and its Derivatives - Brazil, 2011-12 Syngenta Syngenta Proteção de Cultivos Ltd.a, São Paulo, Brazil, M11173 GLP not published
A17961A_10025	de Gois F.	2011	A17961 - Magnitude of residues of SYN545192 and metabolites, Azoxystrobin and R230310 in peanuts - Brazil, 2010-11 Syngenta Proteção de Cultivos Ltd.a, São Paulo, Brazil Syngenta Proteção de Cultivos Ltd.a, São Paulo, Brazil, M11082 GLP not published
A18126B_10034	de Gois F.	2011a	A18126 - Magnitude of residues of SYN545192 and metabolites, Azoxystrobin and R230310 in peanuts - Brazil, 2010-11 Syngenta Proteção de Cultivos Ltd.a, São Paulo, Brazil Syngenta Proteção de Cultivos Ltd.a, São Paulo, Brazil, M11093 GLP not published
SYN546039_1000 7	Doi R.	2012	Determination of SYN545192 residues and its metabolites SYN546039 and SYN545720 in vegetable samples by LC/MS/MS Syngenta Syngenta Proteção de Cultivos Ltd.a, São Paulo, Brazil, MET.133.Rev06 Not GLP not published
A17056D_10017	Ellis C.	2012	SYN545192 - Residue Study on Peanuts and Processed Products in Greece in 2010 Syngenta Eurofins Agroscience Services Ltd, Wilson, UK, S10-02878-REG GLP not published
A17056D_10008	Eversfield S.	2012	SYN545192 - Residue Study on Apples and Processed Products in Germany and Italy in 2010 Syngenta Eurofins Agroscience Services Ltd, Wilson, UK, S10-02876-REG GLP not published

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<b>Code</b>	<b>Author</b>	<b>Year</b>	<b>Title, Institute, Report reference</b>
A17056D_10009	Eversfield S.	2012a	SYN545192 - Residue Study on Grapes and Processed Products in Spain and Greece in 2010 Syngenta Eurofins Agrosience Services Ltd, Wilson, UK, S10-02877-REG GLP not published
A17056D_50001	Mayer T.	2012	SYN545192 150EC (A17056D) - Magnitude of the Residues in or on Apple and Pear (Representative Commodities of Crop Group 11) Syngenta Syngenta Crop Protection, LLC, Greensboro, NC, USA, ALS Laboratory Group, Edmonton, Alberta, Canada, ACDS Research, Inc., North Rose, USA, 11SYN293.REP GLP not published
A17056D_50003	Mayer T.	2012a	SYN545192 150EC (A17056D) - Magnitude of the Residues in or on Grape Syngenta Syngenta Crop Protection, LLC, Greensboro, NC, USA, ACDS Research, Inc., North Rose, USA, ALS Laboratory Group, Edmonton, Alberta, Canada, 11SYN294.REP GLP not published
A17056D_50013	Mayer T.	2012b	SYN545192 (A17056D) and SYN545192 + Azoxystrobin (A18126B) - Magnitude of SYN545192 Residues in or on Grape From Side-by-Side Bridging Trials Comparing <sup>EC</sup> and WG Formulations USA 2011 Syngenta Syngenta Crop Protection, LLC, Greensboro, NC, USA, ALS Laboratory Group, Edmonton, Alberta, Canada, 12SYN304.REP GLP not published
A15457B_50049	Mayer T.	2012c	SYN545192 (A15457B) and SYN545192 + Azoxystrobin (A18126B) - Magnitude of the Residues of SYN545192 in or on Cantaloupe, Cucumber, and Summer Squash (Representative Commodities of Crop Group 9) Following Foliar Applications USA 2011 Syngenta Syngenta Crop Protection, LLC, Greensboro, NC, USA, ALS Laboratory Group, Edmonton, Alberta, Canada, TK0058639, 12SYN320.REP GLP not published
A15457B_50059	Mayer T.	2012d	SYN545192 (A15457B) and SYN545192 + Azoxystrobin (A18126B) - Magnitude of the Residues of SYN545192 in or on Tomatoes and Peppers (Representative Commodities of Crop Group 8) Following Foliar Applications USA 2011 Syngenta Syngenta Crop Protection, LLC, Greensboro, NC, USA, ALS Laboratory Group, Edmonton, Alberta, Canada, GLP Technologies, Navasota, TX, USA, TK0058641, 12SYN322.REP GLP not published
A17056D_50024	Mayer T.	2012e	SYN545192 150EC (A17056D) - Magnitude of the Residues in or on Corn Syngenta Syngenta Crop Protection, LLC, Greensboro, NC, USA, ALS Laboratory Group, Edmonton, Alberta, Canada, GLP Technologies, Navasota, TX, USA, TK0002562, 12SYN317.REP GLP not published
A17056D_50018	Mayer T.	2012f	SYN545192 (A17056D) and SYN545192 + Azoxystrobin (A18126B) - Magnitude of SYN545192 Residues in or on Field Corn from Side-by-Side Bridging Trials Comparing <sup>EC</sup> and WG Formulations USA 2011 Syngenta Syngenta Crop Protection, LLC, Greensboro, NC, USA, ALS Laboratory Group, Edmonton, Alberta, Canada, TK0058623, 12SYN314.REP GLP

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			not published
A15457B_50056	Mayer T.	2012g	SYN545192 100EC (A15457B) and SYN545192 + Azoxystrobin 45WG (A18126B) - Magnitude of the Residues of SYN545192 in or on Beans and Peas (Representative Commodities for Crop Group 6C) Following Foliar Applications USA 2011 Syngenta Syngenta Crop Protection, LLC, Greensboro, NC, USA, ALS Laboratory Group, Edmonton, Alberta, Canada, TK0058625, 12SYN311.REP GLP not published
A17056D_50011	Mayer T.	2012h	SYN545192 150EC (A17056D) - Magnitude of the Residues in or on Soya beans Syngenta Syngenta Crop Protection, LLC, Greensboro, NC, USA, ALS Laboratory Group, Edmonton, Alberta, Canada, GLP Technologies, Navasota, TX, USA, TK0002561 GLP not published
A15457B_50051	Mayer T.	2012i	SYN545192 (A15457B) and SYN545192 + Azoxystrobin (A18126B) - Magnitude of the Residues of SYN545192 in or on Potatoes (Representative Commodity of Crop Group 1C - Tuberous and Corm Vegetables) Following In-Furrow and Foliar Applications USA 2011 Syngenta Syngenta Crop Protection, LLC, Greensboro, NC, USA, ALS Laboratory Group, Edmonton, Alberta, Canada, GLP Technologies, Navasota, TX, USA, TK0058640, 12SYN321.REP GLP not published
A17056D_50007	Mayer T.	2012j	SYN545192 150EC (A17056D) - Magnitude of the Residues in or on Barley Syngenta Syngenta Crop Protection, LLC, Greensboro, NC, USA, ALS Laboratory Group, Edmonton, Alberta, Canada, GLP Technologies, Navasota, TX, USA, TK0002559 GLP not published
A17056D_50005	Mayer T.	2012k	SYN545192 150 EC (A17056D) - Magnitude of the Residues in or on Wheat Syngenta Syngenta Crop Protection, LLC, Greensboro, NC, USA, ALS Laboratory Group, Edmonton, Alberta, Canada, GLP Technologies, Navasota, TX, USA, TK0002558, 11SYN298.REP GLP not published
A17056D_50015	Mayer T.	2012l	SYN545192 (A17056D) and SYN545192 + Azoxystrobin (A18126B) - Magnitude of SYN545192 Residues in or on Wheat from Side-by-Side Bridging Trials Comparing <sup>EC</sup> 3 <sup>rd</sup> WG Formulations USA 2011 Syngenta Syngenta Crop Protection, LLC, Greensboro, NC, USA, ALS Laboratory Group, Edmonton, Alberta, Canada, TK0048907, 12SYN308.REP GLP not published
A17056D_50034	Mayer T.	2012m	SYN545192 150EC (A17056D) - Magnitude of the Residues in or on Cotton Syngenta Syngenta Crop Protection, LLC, Greensboro, NC, USA, ALS Laboratory Group, Edmonton, Alberta, Canada, GLP Technologies, Navasota, TX, USA, TK0025157, 11SYN300.REP GLP not published
A17056D_50021	Mayer T.	2012n	SYN545192 (A17056D) and SYN545192 + Azoxystrobin (A18126B) - Magnitude of SYN545192 Residues in or on Cotton From Side-by-Side Bridging Trials Comparing <sup>EC</sup> 3 <sup>rd</sup> WG Formulations USA 2011 Syngenta Syngenta Crop Protection, LLC, Greensboro, NC, USA, ALS Laboratory Group,

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			Edmonton, Alberta, Canada, GLP Technologies, Navasota, TX, USA, TK0058642, 12SYN318.REP GLP not published
A17056D_50009	Mayer T.	2012o	SYN545192 150EC (A17056D) - Magnitude of the Residues in or on Peanuts Syngenta Syngenta Crop Protection, LLC, Greensboro, NC, USA, ALS Laboratory Group, Edmonton, Alberta, Canada, GLP Technologies, Navasota, TX, USA, 12SYN305.REP GLP not published
A17056D_50027	Mayer T.	2012p	SYN545192 (A17056D) and SYN545192 + Azoxystrobin (A18126B) - Magnitude of SYN545192 Residues in or on Peanut from Side-by-Side Bridging Trials Comparing <sup>EC</sup> and WG Formulations USA 2011 Syngenta Syngenta Crop Protection, LLC, Greensboro, NC, USA, ALS Laboratory Group, Edmonton, Alberta, Canada, TK0047558, 12SYN315.REP GLP not published
A15457B_50063	Sagan K.	2012	SYN545192 EC (A15457B) - Residue Levels on Apples from Trials Conducted in Canada During 2011 Syngenta Syngenta Canada Inc., Guelph, ON, Canada, CER 05906/11, 11SYN299.REP GLP not published
A15457B_50064	Sagan K.	2012a	SYN545192 EC (A15457B) - Residue Levels on Pears from Trials Conducted in Canada During 2011 Syngenta Syngenta Canada Inc., Guelph, ON, Canada, CER 05907/11, 11SYN297.REP GLP not published
A15457B_50065	Sagan K.	2012b	SYN545192 EC (A15457B) and SYN545192/Azoxystrobin WG (A18126B) - Residue Levels on Dry Beans (Seed) from Trials Conducted in Canada During 2011 Syngenta Syngenta Canada Inc., Guelph, ON, Canada, CER 05904/11, 12SYN306.REP GLP not published
A15457B_50066	Sagan K.	2012c	SYN545192 EC (A15457B) and SYN545192/Azoxystrobin WG (A18126B) - Residue Levels on Dry Peas (Seed) from Trials Conducted in Canada During 2011 Syngenta Syngenta Canada Inc., Guelph, ON, Canada, CER 05905/11, 12SYN307.REP GLP not published
A15457B_50062	Sagan K.	2012d	SYN545192 EC (A15457B) - Residue Levels on Barley (Hay, Grain, and Straw) in Canada During 2011 Syngenta Syngenta Canada Inc., Guelph, ON, Canada, CER 05902/11, 11SYN303.REP GLP not published
A15457B_50061	Sagan K.	2012e	SYN545192 EC (A15457B) - Residue Levels on Wheat (Forage, Hay, Grain, and Straw) in Canada During 2011 Syngenta Syngenta Canada Inc., Guelph, ON, Canada, CER 05901/11, 11SYN302.REP GLP not published
A15457B_50038	Sagan K.	2012f	SYN545192 EC (A15457B), Difenconazole EC (A7402T), Propiconazole EC (A6097AC) and Propiconazole/Azoxystrobin SU (A13705V) ? Residue Levels on Canola Seed and Processed Fractions (Meal and Refined Oil) in Canada During 2011

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			Syngenta Syngenta Canada Inc., Guelph, ON, Canada, CER 05903/11, 12SYN312.REP GLP not published
SYN545192_1059 6	Syngenta Crop Protection AG	2015	BENZOVINDIFLUPYR Residue JMPR 2016 Working Paper Final Syngenta , SYN545192_10596 Not GLP not published
SYN545192_1059 7	Syngenta Crop Protection AG	2015a	BENZOVINDIFLUPYR Residue JMPR 2016 Draft Reference List 30102015 Syngenta Crop Protection AG, Basel, Switzerland , SYN545192_10597 Not GLP not published
SYN545192_1060 2	Syngenta Crop Protection AG	2015b	BENZOVINDIFLUPYR Residue JMPR 2016 Tier I Tables final Syngenta , SYN545192_10602 Not GLP not published
SYN545192_1032 0	Volpi R.	2012	Determination of solatenol residues and its metabolite SYN546039 in vegetable samples by LC/MS/MS Syngenta Syngenta Proteção de Cultivos Ltd.a, São Paulo, Brazil, MET.125.Rev10 Not GLP not published