

Supplementary material for

Crop residue ashes reduce leaching, persistence and bioavailability of sulfosulfuron and pretilachlor used in the succeeding crop

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Table S1. Leachate parameters and mass balance of sulfosulfuron from control and rice straw ash (RSA)-mixed soil columns

Treatment	Clay loam Soil					Sandy loam Soil				
	Leachate Volume (mL)	pH	Sulfosulfuron recovered (µg)			Leachate Volume (mL)	pH	Sulfosulfuron recovered (µg)		
			Water	Soil	Total			Water	Soil	Total
Control	227.79 ±2.45	7.93 ±0.11	45.47±1.08	40.52±0.31	85.99±0.76	324.67 ±2.66	8.33 ±0.07	50.42±1.21	46.41±2.22	96.83±1.01
0.2% RSA	224.44 ±1.26	8.22 ±0.17	31.46±1.46	50.08±0.19	81.54±1.27	321.86 ±3.18	8.39 ±0.12	47.59±2.03	43.53±1.64	91.12±0.39
0.5% RSA	230.50 ±3.11	8.35 ±0.08	28.70±0.13	61.06±3.36	89.76±3.23	325.18 ±1.56	8.53 ±0.04	33.94±2.17	65.54±3.41	99.48±1.24

Table S2. Persistence of pretilachlor in control and the wheat straw ash (WSA)-mixed soils under flooded moisture regime

Incubation (Days)	Pretilachlor recovered ($\mu\text{g g}^{-1}$)					
	Clay loam soil			Sandy loam soil		
	Control (No RSA)	0.2% RSA	0.5% RSA	Control (No RSA)	0.2% RSA	0.5% RSA
0	4.33±0.10 *(100.00)	6.71±0.15 (100.00)	3.92±0.08 (100.00)	5.07±0.03 (99.99)	6.58±0.37 (100.00)	5.15±0.04 (100.00)
10	3.35±0.19 (77.51)	4.64±0.25 (69.09)	3.45±0.19 (87.93)	3.62±0.18 (68.29)	3.89±0.08 (52.71)	3.24±0.07 (55.23)
20	3.22±0.18 (74.50)	4.06±0.27 (60.53)	2.50±0.05 (63.62)	2.45±0.09 (42.50)	3.52±0.06 (46.37)	1.94±0.17 (24.83)
30	2.81±0.19 (65.01)	2.85±0.10 (42.44)	2.14±0.09 (54.53)	1.72±0.09 (26.64)	2.23±0.15 (23.74)	1.12±0.14 (5.51)
45	2.31±0.16 (53.36)	2.15±0.13 (32.02)	1.75±0.05 (44.53)	1.42±0.04 (19.95)	1.73±0.07 (14.93)	1.12±0.09 (5.65)

*Values in parenthesis are percent pretilachlor recovered

Table S3. Persistence of pretilachlor in control and the wheat straw ash (WSA) mixed soil nonflooded moisture regime

Incubation (Days)	Pretilachlor recovered ($\mu\text{g g}^{-1}$)					
	Clay loam soil			Sandy loam soil		
	Control (No RSA)	0.2% RSA	0.5% RSA	Control (No RSA)	0.2% RSA	0.5% RSA
0	4.57±0.55 *(100.00)	4.49±0.16 (100.00)	4.57±0.36 (100)	4.90±0.09 (100.00)	4.55±0.07 (100.00)	4.90±0.01 (100.00)
2	2.84±0.18 (62.16)	2.14±0.09 (47.69)	2.43±0.08 (53.22)	ND	ND	ND
5	2.58±0.04 (56.33)	1.53±0.30 (34.18)	1.72±0.18 (37.51)	4.52±0.06 (92.29)	3.26±0.17 (71.53)	3.88±0.10 (79.26)
8	1.15±0.11 (25.12)	0.80±0.08 (17.79)	1.13±0.02 (24.75)	ND	ND	ND
12	0.62±0.15 (13.51)	0.49±0.06 (10.92)	0.46±0.03 (10.06)	ND	ND	ND
15	ND	ND	ND	2.12±0.11 (43.34)	0.91±0.08 (19.99)	1.51±0.06 (30.88)
16	0.50±0.05 (10.83)	0.34±0.02 (7.62)	0.34±0.04 (7.42)	ND	ND	ND
20	0.45±0.10 (9.78)	0.15±0.07 (3.22)	0.26±0.04 (5.61)	ND	ND	ND
25	ND	ND	ND	0.60±0.04 (12.25)	0.52±0.02 (11.43)	0.27±0.03 (5.44)
30	ND	ND	ND	0.37±0.06 (7.60)	0.29±0.03 (6.42)	0.17±0.03 (3.50)
35	ND	ND	ND	0.11±0.03 (2.15)	0.12±0.01 (2.57)	0.11±0.01 (2.16)

*Values in parenthesis are percent pretilachlor recovered

ND-Not done

Table S4. Degradation of sulfosulfuron in the rice straw (RSA) and wheat straw (WSA) ash-water suspension

Incubation (Days)	Sulfosulfuron recovered ($\mu\text{g g}^{-1}$)					
	Clay loam soil			Sandy loam soil		
	Control (No RSA)	0.2% RSA	0.5% RSA	Control (No RSA)	0.2% RSA	0.5% RSA
0	2.87±0.01 (100.00)	2.59±0.08 (100.00)	2.87±0.01 (100.00)	2.72±0.16 (100.00)	2.53±0.10 (100.00)	2.72±0.16 (100.00)
2	2.32±0.18 (85.40)	2.40±0.10 (88.42)	2.00±0.12 (73.80)	2.61±0.15 (96.14)	1.91±0.17 (70.31)	1.80±0.08 (66.40)
4	2.08±0.05 (76.73)	1.99±0.17 (73.33)	1.87±0.22 (68.93)	2.49±0.23 (91.90)	1.55±0.08 (57.15)	1.51±0.04 (55.64)
8	1.85±0.11 (68.26)	1.91±0.03 (70.17)	1.65±0.05 (60.90)	2.19±0.17 (80.71)	1.64±0.04 (60.31)	1.43±0.01 (52.68)
12	1.91±0.10 (70.24)	1.97±0.13 (72.50)	1.80±0.27 (66.22)	1.88±0.09 (69.27)	1.68±0.02 (61.90)	1.21±0.06 (44.69)
25	1.75±0.09 (64.58)	1.32±0.060 (48.63)	1.01±0.01 (37.14)	1.11±0.01 (40.96)	0.97±0.06 (35.68)	0.80±0.01 (29.61)
50	1.19±0.07 (43.77)	0.54±0.03 (19.84)	0.35±0.04 (12.81)	0.86±0.04 (31.65)	0.55±0.05 (20.22)	0.45±0.06 (16.65)

*Values in parenthesis are the percent amount recovered