

Supplementary material

***In-vitro* evaluation of rice and wheat straw biochars' effect on pyrazosulfuron-ethyl degradation and microbial activity in rice-planted soil**

Suman Manna^A, Neera Singh^{A,B}, Shashi Bala Singh^A

^ADivision of Agricultural Chemicals, ICAR-Indian Agricultural Research Institute, New Delhi – 110 012, India.

^BCorresponding author. Email: drneerasingh@yahoo.com

Table S1. Persistence of PYRAZO in rice soil/water system amended with 0.5% WBC600 and RBC600 biochars

Days after application	Pyrazosulfuron-ethyl (μg)								
	Control (No biochar)			0.5% WBC600			0.5%RBC600		
	Water	Soil	Total	Water	Soil	Total	Water	Soil	Total
0	188.5	5.05	193.5	186.0	6.40	192.4	178.98	14.82	193.8
	$\pm 9.76^*$	± 0.51	± 10.4	± 10.7	± 0.76	± 10.5	± 11.6	± 0.42	± 11.7
2	76.68	16.65	93.33	68.05	79.65	147.7	56.02	100.5	156.5
	± 7.46	± 1.76	± 9.84	± 6.89	± 5.46	± 10.56	± 6.21	± 8.57	± 12.76
5	51.76	15.31	67.07	42.17	59.24	81.41	30.08	60.72	100.8
	± 4.88	± 0.98	± 5.23	± 3.87	± 5.21	± 8.23	± 2.65	± 4.88	± 7.11
10	20.15	14.73	34.88	16.29	39.81	56.10	27.54	40.46	68.00
	± 1.89	± 0.99	± 2.16	± 1.11	± 2.54	± 2.76	± 1.09	± 2.56	± 3.27
15	11.46	14.69	26.15	11.76	26.36	38.12	8.93	41.85	50.78
	± 0.79	± 1.12	± 2.01	± 1.02	± 1.34	± 2.54	± 0.76	± 3.42	± 3.99
25	3.05	10.90	13.95	4.64	20.27	24.91	5.34	27.56	32.90
	± 0.63	± 1.67	± 2.17	± 0.37	± 1.56	± 1.99	± 0.45	± 2.01	± 2.32

*Mean \pm Standard deviation.

Table S2. Rate constant (K_{obs}), coefficient of correlation (r) and half-life ($t_{1/2}$) of pyrazosulfuron-ethyl residues dissipation in rice soil/water system amended with 0.5% WBC600 and RBC600 biochars

Treatment	K_{obs}		r		$t_{1/2}$ (Days)	
	Phase I	Phase II	Phase I	Phase II	Phase I	Phase II
Control	-0.0638	-0.0329	0.969	0.979	4.7	9.2
WBC 600	-0.0515	-0.0238	0.983	0.998	5.8	12.6
RBC 600	-0.0436	-0.0207	0.990	0.999	7.0	14.5

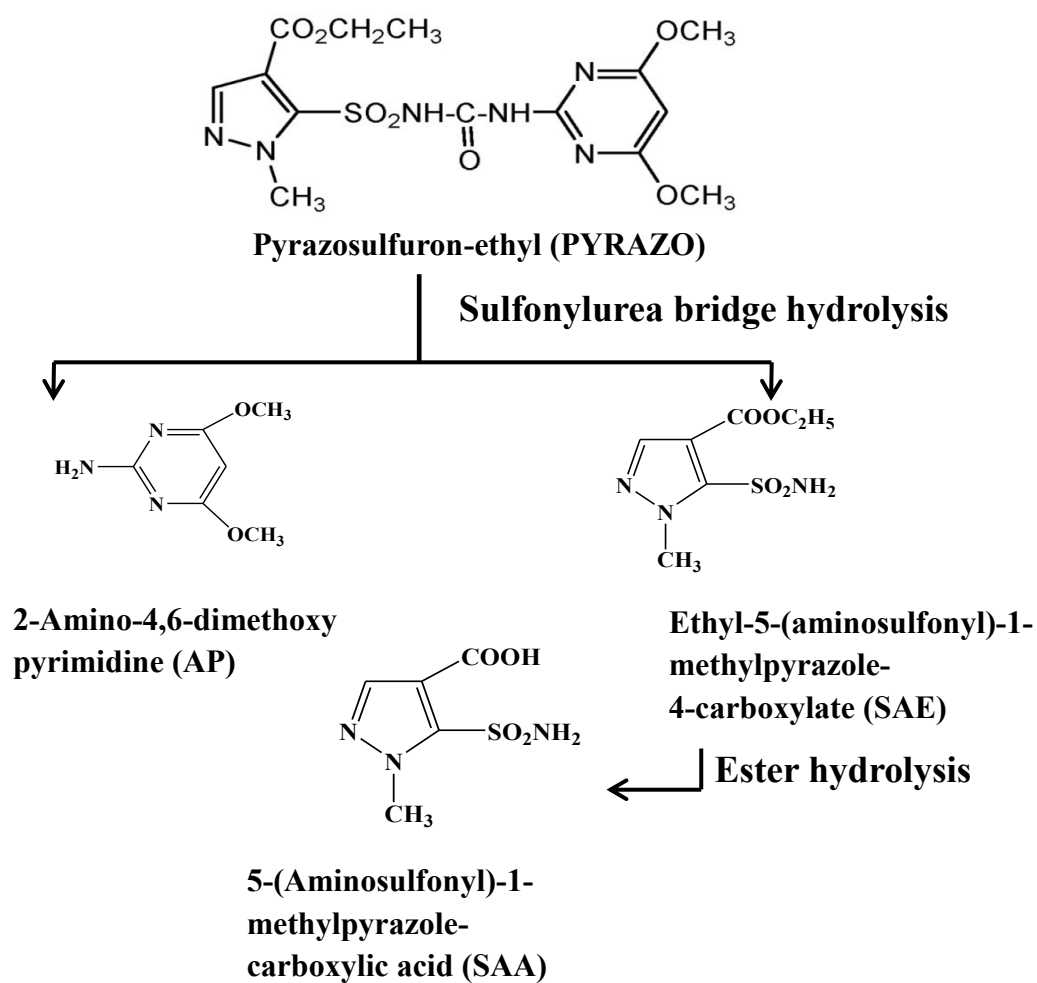


Fig. S1. Proposed pathways for pyrazosulfuron-ethyl degradation in soil

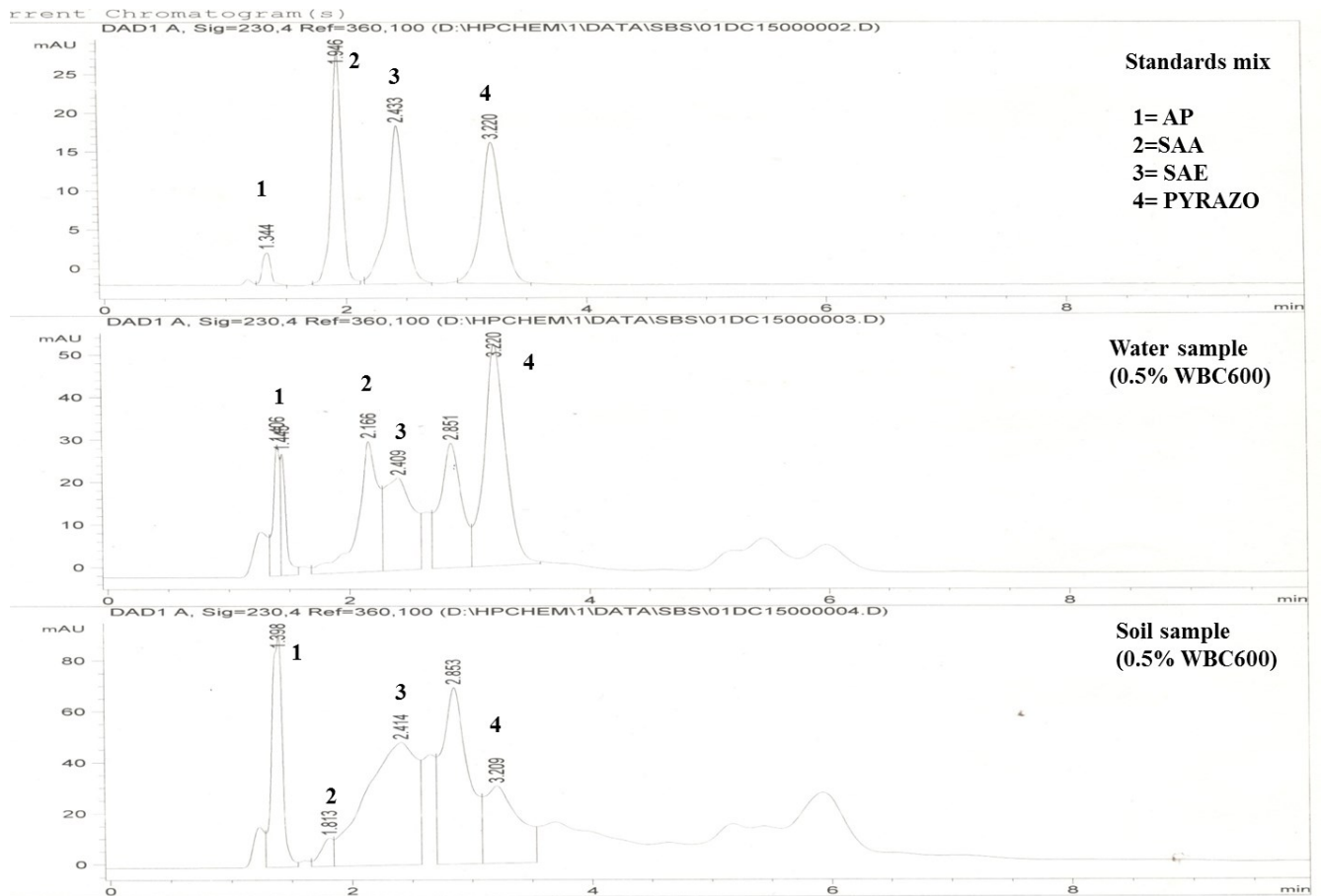


Fig. S2. Chromatogram of showing pyrazosulfuron-ethyl (PYRAZO) and its metabolites in water and soil samples during pot culture study at 15th day. (PSE=pyrazosulfuron-ethyl; SAA= 5-(aminosulfonyl)-1-methyl-1 *H*-pyrazole-4-carboxylic acid; SAE= ethyl 5-(aminosulfonyl)-1-methyl-1 *H*-pyrazol-4-carboxylate.