

Electronic Supplementary Information

Adsorption Behavior and Residue Degradation of Triazine Herbicides in Soil Amended with Rice Straw Biochar

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1. Characterization of rice biochar

The FTIR spectra of the rice straw biochar prepared at different temperatures (300, 400, 500, 600°C) were in Figure S1 with specific peaks at 3424, 2933, 2370, 1612, 1098, and 796 cm⁻¹.

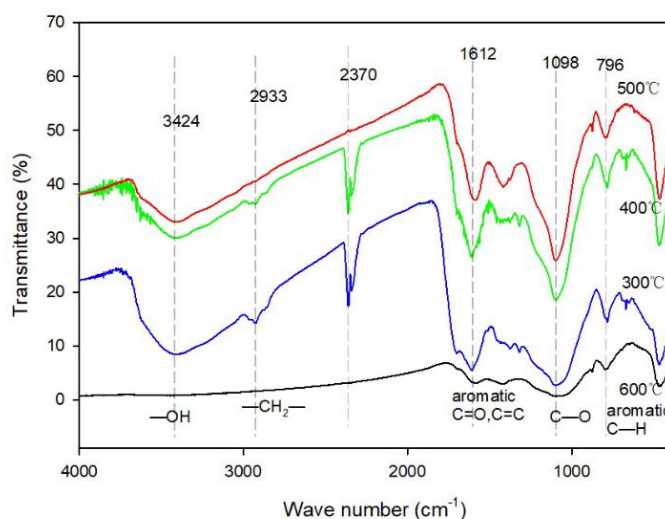


Figure S1 FTIR spectra of rice straw biochar prepared at different temperatures

Scanning electron microscope (SEM) was used to observe the surface structure and micropore distribution of the biochar prepared at different temperatures, as shown in Figure S2.

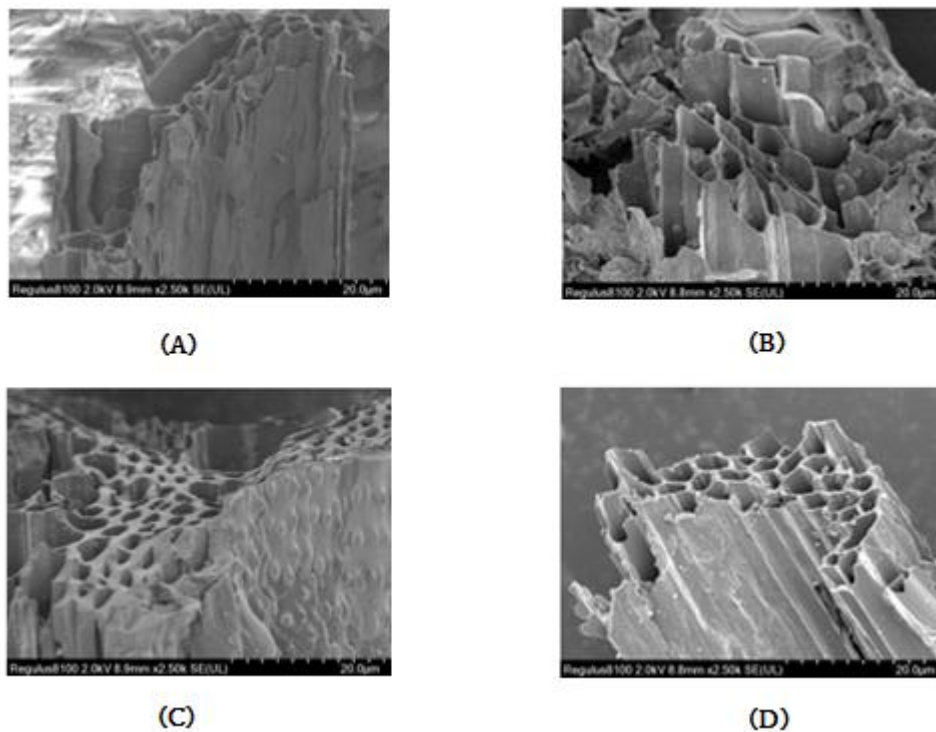


Figure S2 SEM spectra of rice straw biochar prepared at different temperatures (The preparation temperatures were 300°C, 400°C, 500°C, 600°C in order)

2. The physicochemical properties of biochar

The physical and chemical properties of rice straw biochar, such as moisture, ash, carbon content, pH and particle size, were measured (indicated in Table S1).

Table S1 Physicochemical properties of rice straw biochar prepared at different temperatures

Detection parameter	Prepared temperature (°C)			
	300	400	500	600
Moisture (%)	2.5 (±0.1)	2.1 (±0.1)	1.7 (±0.2)	1.2 (±0.1)

Ash (%)	16.23 (± 0.31)	15.47 (± 0.64)	15.20 (± 0.54)	13.75 (± 0.21)
Carbon content (%)	40.286 (± 0.5)	42.386 (± 0.3)	38.819 (± 0.4)	42.081 (± 0.9)
pH	5.98 (± 0.04)	6.69 (± 0.11)	7.64 (± 0.05)	8.70 (± 0.09)
Granularity (μm)	134.2 (± 5.1)	77.2 (± 9.7)	184.1 (± 13.2)	33.48 (± 10.1)

3. Isothermal graphs for the herbicides adsorption on biochar

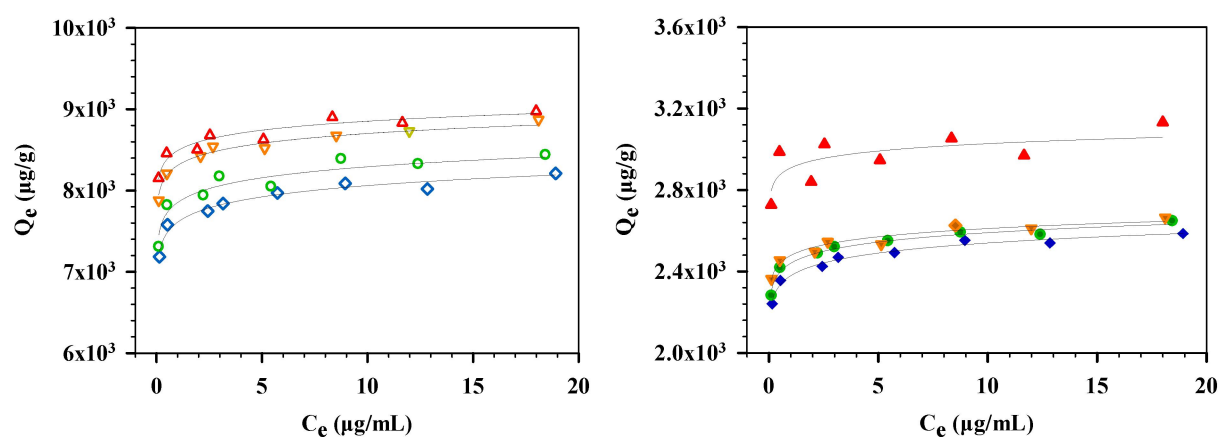


Figure S3 Freundlich isothermal of individual adsorption (open symbols) and competitive adsorption (filled symbols) of prometryn on rice straw biochars. 600°C pyrolysis temperatures ($\blacktriangle$), and 500°C ($\blacktriangledown$), and 400°C ($\bullet$), and 300°C ($\blacklozenge$).

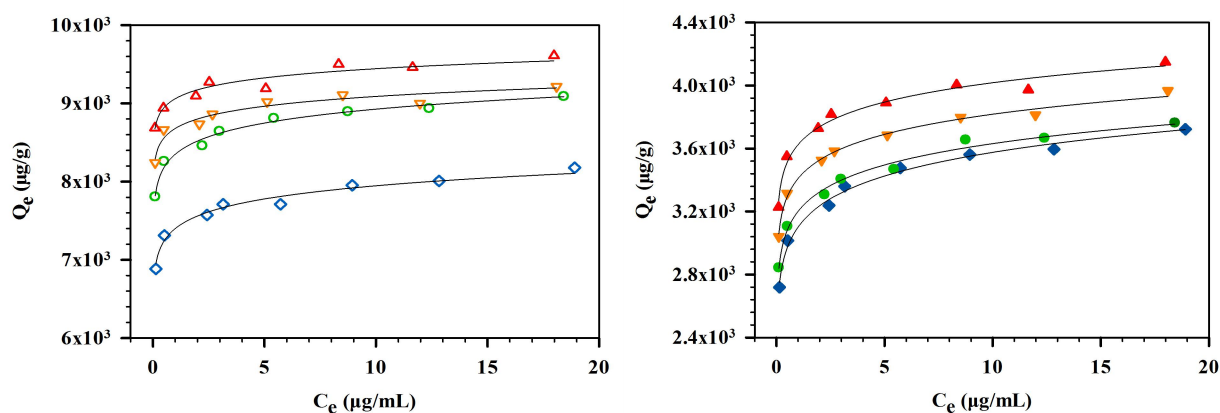


Figure S4 Freundlich isothermal of individual adsorption (open symbols) and competitive adsorption (filled symbols) of atrazine on rice straw biochars. 600°C pyrolysis temperatures (▲), and 500°C (▼), and 400°C (●), and 300°C (◆).

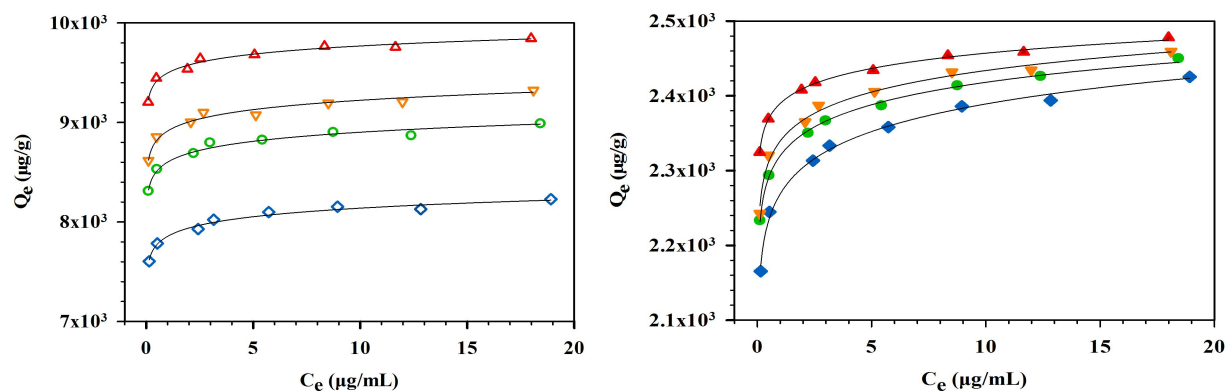


Figure S5 Freundlich isothermal of individual adsorption (open symbols) and competitive adsorption (filled symbols) of simazine on rice straw biochars. 600°C pyrolysis temperatures (▲), and 500°C (▼), and 400°C (●), and 300°C (◆).