Table S1. Biochar species and abbreviations.

Biochar	Abbreviation	Source
Phellinus linteus spent mushroom substrate biochar	PLSB	the experimental field of Jilin Agricultural University
Arachis hypogaea Linn. shell biochar	AHSB	farmland in Pingdingshan (city in Henan Province)
Glycine max (L.) Merr. pod biochar	GMPB	the experimental field of Jilin Agricultural University
Citrus maxima (Burm) Merr. peel biochar	CMPB	the experimental field of Jilin Agricultural University
Castanea mollissima BL. nutshell biochar	CMNB	farmland in Dandong (city in Liaoning Province)
AcerL. samara biochar	ALSB	the experimental field of Jilin Agricultural University
AcerL. nut biochar	ALNB	the experimental field of Jilin Agricultural University
Juglans regia L. shell biochar	JRSB	farmland of Zhoujiazhuang Township, Jinzhou (city in Hebei Province)
Auricularia auricula spent mushroom substrate biochar	AAMB	the experimental field of Jilin Agricultural University
Coffee arabica grounds biochar	CAGB	a Coffee factory in Changzhou (city in Jiangsu Province)
Pinus koraiensis Siebold et Zuccarini pinecone biochar	PKPB	the experimental field of Jilin Agricultural University
Saccharum officinarum L. bagasse biochar	SOBB	farmland in Nanning (city in Guangxi Province)
Oryza sativa L. husk biochar	OSHB	the experimental field of Jilin Agricultural University
Zea mays L. stalk biochar	ZMSB	the experimental field of Jilin Agricultural University
Nelumbo nucifera Gaertn torus biochar	NNTB	the experimental field of Jilin Agricultural University
Cedrus deodara G. Don pinecone biochar	CDPB	the experimental field of Jilin Agricultural University
Helianthus annuus L. seed husk biochar	HAHB	the experimental field of Jilin Agricultural University
Pinus koraiensis Siebold et Zuccarini nut shell biochar	PKNB	the experimental field of Jilin Agricultural University
Citrus reticulata Blanco peel biochar	CRPB	the College Student Life Service Center of Jilin Agricultural University
Pistacia vera L. shell biochar	PVSB	a nut shop in Hangzhou (city in Zhejiang Province)

Gossypium spp fiber biochar	GSFB	Yuanqing Medical Materials Co., LTD., Shangqiu (city in Henan Province)
Zea mays L. cob biochar	ZMCB	the experimental field of Jilin Agricultural University
Luffa aegyptiaca Miller sponge biochar	LASB	farmland in Nanning (city in Guangxi Province)
Dimocarpus longan Lour. shell biochar	DLSB	farmland in Bozhou (city in Anhui Province)
Litchi chinensis Sonn. shell biochar	LCSB	farmland in Zhangzhou (city in Fujian Province)
Carya cathayensis Sarg. shell biochar	CCSB	the experimental field of Jilin Agricultural University
Rosa chinensis Jacq. petal biochar	RCPB	the experimental field of Jilin Agricultural University
Corylus heterophylla Fisch. ex Trautv. shell biochar	CFSB	the experimental field of Jilin Agricultural University
Quercus palustris Münchh. fruit cap biochar	QPFB	farmland of Handan City (city in Hebei Province)

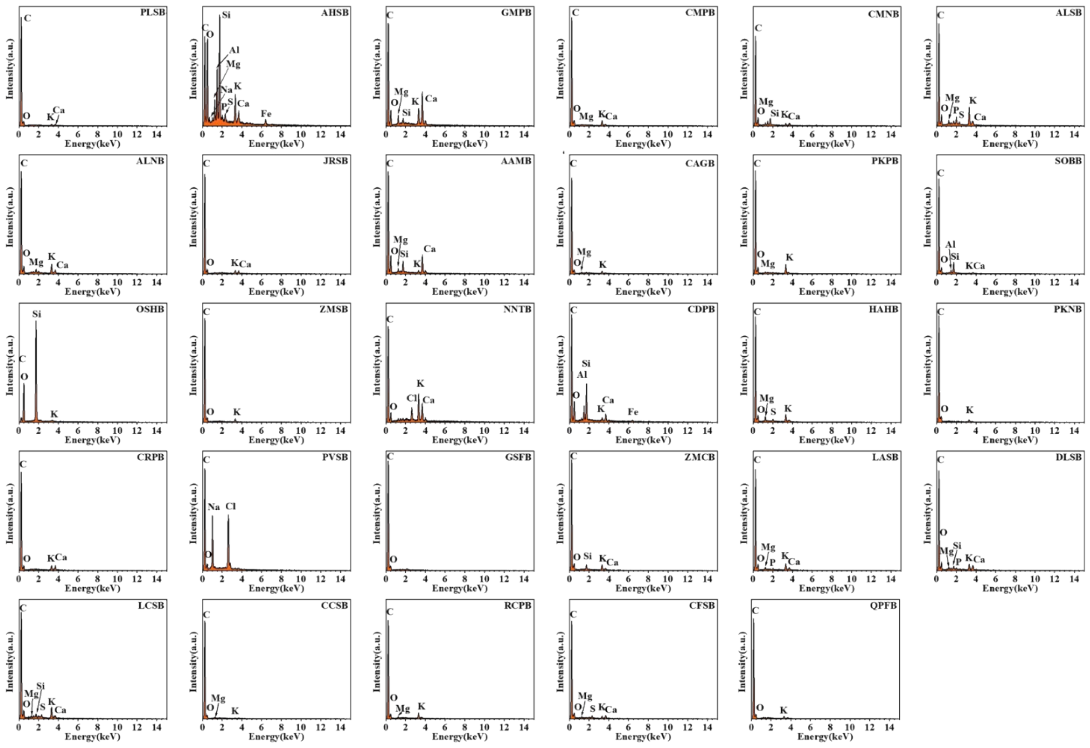

Figure S1. EDS analysis for produced biochars.

Table S2. Multi-point EDS data ststistics.

Type	Multi-point EDS data statistics											
	C	O	Na	Mg	Al	Si	P	S	Cl	K	Ca	Fe
PLSB	73.923	23.333	-	-	-	-	-	-	0.574	1.031	1.139	-
AHSB	30.209	41.111	0.541	2.153	4.648	9.459	0.598	0.909	-	4.774	2.179	3.419
GMPB	46.746	28.843	-	2.054	-	1.225	-	-	-	6.394	14.738	-
CMPB	70.406	24.136	-	0.279	-	-	-	-	0.627	3.844	0.708	-
CMNB	67.430	25.215	-	0.702	1.438	2.512	-	-	-	1.092	1.611	-
ALSB	59.536	24.809	0.368	1.181	0.520	0.831	2.368	0.870	-	8.490	1.027	-
ALNB	65.813	23.313	-	0.482	0.517	1.119	0.712	-	-	5.737	2.307	-
JRSB	72.588	21.886	-	-	-	-	-	-	-	2.884	2.642	-
AAMB	52.722	33.195	-	0.946	0.515	2.677	-	-	-	1.050	8.895	-
CAGB	76.199	20.677	-	0.616	-	0.383	-	-	-	2.125	-	-
PKPB	68.022	24.430	-	0.619	0.447	-	-	-	-	6.482	-	-
SOBB	70.730	22.248	0.262	0.286	1.106	3.591	0.305	-	0.679	0.329	0.464	-
OSHB	11.023	54.189	-	-	0.359	32.437	-	0.510	0.750	0.732	-	-
ZMSB	73.165	24.215	-	-	-	-	-	-	-	2.620	-	-
NNTB	54.481	20.564	-	0.350	0.382	-	0.299	-	4.163	11.510	8.251	-
CDPB	56.579	29.065	-	0.424	2.605	6.505	-	-	-	1.132	2.173	1.517
HAHB	68.394	23.975	-	1.704	-	-	1.021	-	-	4.906	-	-
PKNB	71.018	27.180	-	-	-	-	-	-	-	1.802	-	-
CRPB	70.570	21.402	-	-	-	-	-	-	-	3.822	4.206	-
PVSB	67.819	10.536	8.850	0.385	-	-	-	0.264	12.146	-	-	-

GSFB	76.559	23.441		-	-	-	-	-	-	-	-	-
ZMCB	68.697	24.891	-	-	-	1.627	-	-	-	3.700	1.085	-
LASB	69.311	22.225	-	1.011	-	-	0.674	-	-	4.711	2.068	-
DLSB	63.939	25.868	-	0.878	0.472	1.105	0.793	-	-	3.732	3.213	-
LCSB	64.808	24.475	-	0.559	0.553	1.042	-	1.122	-	6.278	1.163	-
CCSB	77.335	21.699	-	0.515	-	-	-	-	-	0.451	-	-
RCPB	72.774	21.772	-	0.720	-	-	-	-	-	4.734	-	-
CFSB	70.003	24.336	-	-	-	-	-	1.237	-	1.703	2.721	-
QPFB	73.478	24.814	-	-	-	-	-	-	-	1.708	-	-

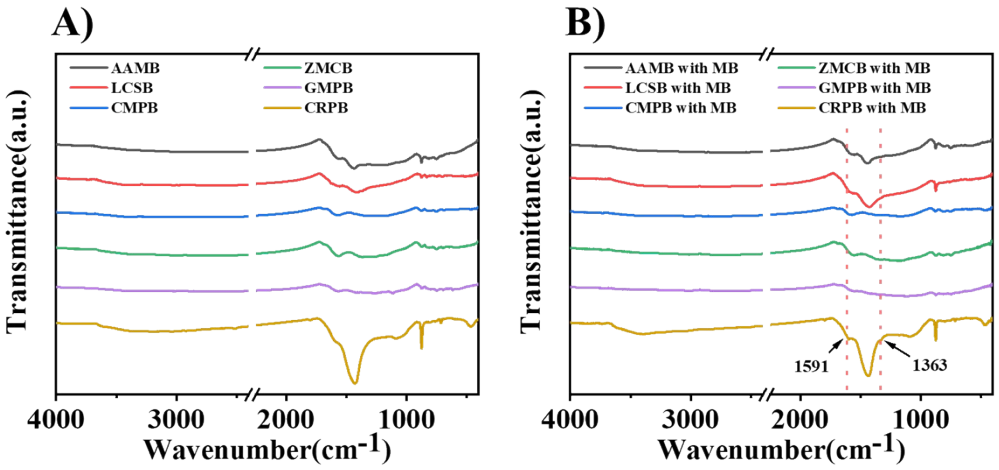

Figure S2. FTIR spectra of (A) AAMB, ZMCB, LCSB, GMPB, CMPB and CRPB in comparison with (B) AAMB, ZMCB, LCSB, GMPB, CMPB and CRPB after adsorption of methylene blue dye (50 mg/L) using 0.01 g of ciochars at 25°C.

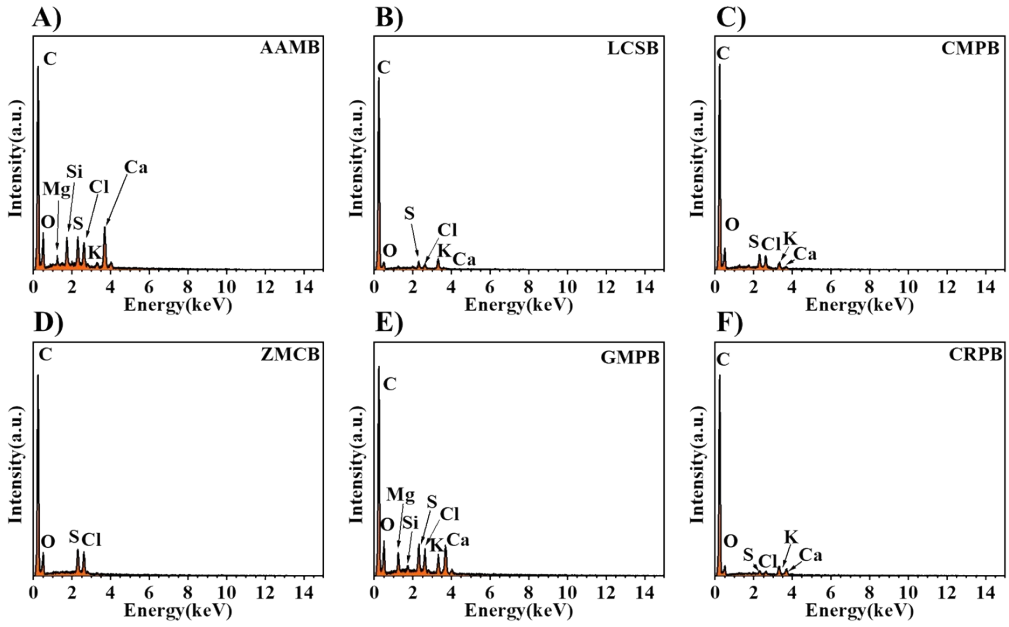

Figure S3. EDS analysis for AAMB, ZMCB, LCSB, GMPB, CMPB and CRPB after adsorption of methylene blue dye (50 mg/L) using 0.01 g of ciochars at 25°C.