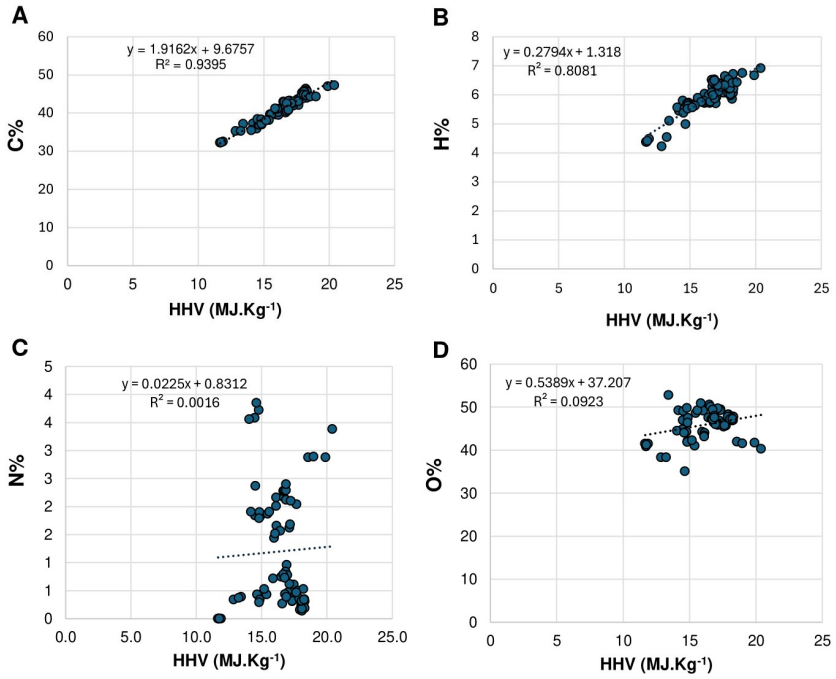


Supplementary Figure S1. Correlation analysis of elemental composition and high heating value (HHV). A. Carbon percentage correlation with HHV. B. Hydrogen correlation with HHV. C. Nitrogen correlation with HHV. D. Oxygen correlation with HHV.

Supplementary Table S1. Cell wall extractive composition of agro-wastes. Data represented by percentage average ± std error (n=5). Different letters are statistically significant among biomasses by ANOVA-one way with Tukey's test ($p<0.05$) in each cell wall class (pectins; pectins + soluble hemicelluloses; hemicelluloses, cellulose, and lignin).

		Pectins (%)	Pectins + Soluble Hemicelluloses (%)	Hemicelluloses (%)	Cellulose (%)	Lignin (%)
Non-grasses	**Soybean residues**	10.28 ± 0.32 ^{cde}	20.78 ± 0.22 ^{def}	17.36 ± 0.56 ^{bcd}	33.08 ± 0.89 ^{fgh}	18.51 ± 0.22 ^{def}
	Soybean husk	16.67 ± 0.59 ^{fg}	17.80 ± 1.36 ^{ce}	21.40 ± 0.68 ^{defg}	38.85 ± 1.02 ^{ij}	5.28 ± 1.09 ^{a}
	Soybean straw	18.17 ± 1.20 ^{g}	19.01 ± 0.70 ^{ce}	21.26 ± 1.06 ^{def}	28.75 ± 1.07 ^{deg}	12.80 ± 0.46 ^{bcd}
	Coffee husk	14.15 ± 0.65 ^{eg}	20.21 ± 0.81 ^{def}	28.91 ± 2.04 ^{hi}	23.44 ± 0.34 ^{cd}	13.29 ± 1.00 ^{cd}
	Bean straw	18.70 ± 0.92 ^{g}	21.65 ± 0.73 ^{ef}	24.63 ± 1.53 ^{eh}	27.49 ± 1.05 ^{de}	7.52 ± 1.05 ^{ab}
	Duckweed	26.25 ± 1.50 ^{h}	30.48 ± 2.20 ^{gh}	7.91 ± 0.80 ^{a}	28.88 ± 2.03 ^{deg}	6.48 ± 0.59 ^{a}
	Pruning tree residues	10.74 ± 0.75 ^{cde}	12.95 ± 0.44 ^{bc}	23.55 ± 0.50 ^{deh}	33.08 ± 0.46 ^{fgh}	19.68 ± 0.71 ^{ef}
	Eucalyptus chip	7.37 ± 0.38 ^{ac}	8.70 ± 0.54 ^{b}	26.63 ± 0.73 ^{fhi}	40.88 ± 0.66 ^{jk}	16.42 ± 0.91 ^{def}
	Industry paper residues	4.67 ± 0.49 ^{ac}	1.64 ± 0.18 ^{a}	41.75 ± 0.79 ^{j}	46.32 ± 1.58 ^{k}	5.61 ± 1.57 ^{a}
Grasses	**Barley bagasse**	5.41 ± 0.38 ^{ab}	39.89 ± 1.67 ^{i}	21.18 ± 1.47 ^{def}	17.71 ± 0.36 ^{ab}	15.80 ± 1.31 ^{ce}
	Sorghum residues	11.60 ± 0.70 ^{cde}	13.05 ± 0.73 ^{bc}	28.03 ± 0.93 ^{hi}	27.88 ± 0.60 ^{def}	19.44 ± 0.85 ^{ef}
	Corn cob	9.85 ± 1.65 ^{bcde}	30.79 ± 1.35 ^{gh}	24.70 ± 2.06 ^{eh}	21.78 ± 0.87 ^{bc}	12.89 ± 0.82 ^{bcd}
	Corn straw	3.96 ± 0.18 ^{bcde}	25.33 ± 1.56 ^{fg}	27.84 ± 1.57 ^{ghi}	27.05 ± 0.89 ^{ce}	15.81 ± 1.66 ^{de}
	Wheat bran	12.32 ± 1.07 ^{def}	32.47 ± 2.84 ^{h}	32.64 ± 2.53 ^{i}	12.53 ± 1.00 ^{ab}	10.05 ± 1.59 ^{ac}
	Rice husk	5.16 ± 0.46 ^{ab}	14.75 ± 0.44 ^{bcd}	33.04 ± 0.87 ^{i}	31.39 ± 1.56 ^{egh}	15.67 ± 2.16 ^{ce}
	Sugarcane	14.50 ± 1.67 ^{eg}	25.35 ± 0.61 ^{fg}	12.47 ± 0.58 ^{ab}	27.04 ± 0.74 ^{ce}	20.64 ± 0.90 ^{ef}
	Energy cane V2	7.65 ± 1.44 ^{ad}	25.66 ± 0.76 ^{fg}	13.60 ± 0.56 ^{ac}	34.97 ± 0.78 ^{hi}	18.13 ± 0.88 ^{def}
	Energy cane V3	10.98 ± 0.82 ^{cde}	25.37 ± 0.86 ^{fg}	14.30 ± 0.89 ^{ac}	28.77 ± 1.63 ^{deg}	20.58 ± 1.18 ^{ef}
	Sugarcane bagasse	3.40 ± 0.25 ^{a}	22.08 ± 0.75 ^{ef}	19.04 ± 0.97 ^{ce}	33.55 ± 0.82 ^{gi}	21.93 ± 0.25 ^{f}
	p-value	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
	Average	11.15	21.47	23.17	29.66	14.55

Supplementary Table S2. Non-cellulosic monosaccharides composition from the intact cell wall. Data represented average ± std error (n=5). Different letters are statistically significant among biomasses compared according to ANOVA-one way with Tukey's post-hoc ($p<0.05$). Dash represents monosaccharides not detected.

	Monosaccharide (µg.mg^{-1})							
	Fucose	**Arabinose**	**Galactose**	**Rhamnose**	**Glucose**	**Xylose**	**Mannose**	**Apiose**
Soybean residues	1.86 ± 0.09 ^{f}	10.96 ± 0.52 ^{bcd}	8.31 ± 0.38 ^{cd}	3.05 ± 0.17 ^{be}	5.28 ± 0.34 ^{a}	40.40 ± 1.34 ^{ab}	6.74 ± 0.19 ^{fh}	-
Soybean husk	2.79 ± 0.13 ^{g}	26.54 ± 0.85 ^{fg}	19.13 ± 0.87 ^{hi}	3.78 ± 0.16 ^{de}	10.34 ± 1.12 ^{a}	60.21 ± 2.58 ^{bd}	7.27 ± 0.31 ^{gh}	-
Soybean straw	0.47 ± 0.21 ^{ae}	1.86 ± 0.63 ^{a}	2.00 ± 0.70 ^{ab}	1.05 ± 0.46 ^{a}	6.43 ± 1.97 ^{a}	36.04 ± 12.54 ^{ab}	2.11 ± 0.68 ^{ab}	-
Coffee husk	0.28 ± 0.07 ^{ac}	28.72 ± 0.63 ^{fh}	14.22 ± 0.39 ^{efg}	3.18 ± 0.06 ^{cde}	9.68 ± 0.30 ^{a}	59.50 ± 1.49 ^{bd}	5.38 ± 0.22 ^{efg}	-
Bean straw	1.86 ± 0.04 ^{f}	28.42 ± 2.27 ^{fh}	21.13 ± 0.86 ^{i}	4.00 ± 0.13 ^{e}	173.80 ± 18.91 ^{b}	56.04 ± 2.69 ^{bc}	7.74 ± 0.24 ^{h}	-
Duckweed	0.97 ± 0.22 ^{e}	3.21 ± 0.59 ^{ab}	8.21 ± 1.38 ^{cd}	2.15 ± 0.39 ^{bd}	4.66 ± 0.80 ^{a}	14.31 ± 2.49 ^{a}	2.35 ± 0.50 ^{abc}	28.98 ± 1.58
Pruning tree residues	0.87 ± 0.11 ^{de}	8.96 ± 1.27 ^{acd}	7.68 ± 0.92 ^{bcd}	2.27 ± 0.21 ^{bc}	11.45 ± 5.33 ^{a}	35.70 ± 8.05 ^{ab}	3.45 ± 0.85 ^{bd}	-
Eucalyptus chip	0.73 ± 0.20 ^{ce}	7.65 ± 1.57 ^{ac}	14.41 ± 2.59 ^{efg}	3.13 ± 0.49 ^{be}	7.62 ± 1.26 ^{a}	83.05 ± 12.71 ^{cde}	2.72 ± 0.45 ^{abc}	-
Industry paper residues	0.01 ± 0.01 ^{a}	0.23 ± 0.21 ^{a}	0.98 ± 0.16 ^{ab}	0.68 ± 0.03 ^{a}	21.83 ± 1.69 ^{a}	33.32 ± 2.84 ^{ab}	0.97 ± 0.06 ^{a}	-
Barley bagasse	0.32 ± 0.05 ^{acd}	100.14 ± 3.50 ^{j}	14.85 ± 0.60 ^{fh}	2.87 ± 0.10 ^{bd}	35.63 ± 1.50 ^{a}	200.93 ± 15.07 ^{ij}	5.32 ± 0.18 ^{df}	-
Sorghum residues	0.90 ± 0.18 ^{e}	31.60 ± 3.50 ^{gh}	10.60 ± 1.31 ^{df}	1.08 ± 0.10 ^{a}	15.86 ± 2.15 ^{a}	99.31 ± 14.39 ^{df}	4.25 ± 0.58 ^{cde}	-
Corn cob	0.27 ± 0.03 ^{ac}	37.20 ± 1.15 ^{h}	15.29 ± 0.63 ^{gh}	0.99 ± 0.02 ^{a}	31.46 ± 1.53 ^{a}	216.10 ± 6.86 ^{j}	1.25 ± 0.53 ^{a}	-
Corn straw	0.03 ± 0.01 ^{a}	36.09 ± 1.11 ^{h}	10.23 ± 0.44 ^{de}	0.89 ± 0.02 ^{a}	14.81 ± 0.48 ^{a}	198.74 ± 3.24 ^{ij}	1.79 ± 0.10 ^{ab}	-
Wheat bran	0.05 ± 0.02 ^{a}	80.00 ± 3.65 ^{i}	7.99 ± 0.35 ^{cd}	0.85 ± 0.02 ^{a}	208.70 ± 35.00 ^{b}	131.87 ± 7.95 ^{fh}	3.51 ± 0.22 ^{bde}	-
Rice husk	0.29 ± 0.05 ^{ac}	17.35 ± 0.79 ^{de}	7.49 ± 0.22 ^{bcd}	0.98 ± 0.01 ^{a}	21.82 ± 5.07 ^{a}	101.20 ± 3.40 ^{ef}	1.40 ± 0.04 ^{a}	-
Sugarcane	0.82 ± 0.02 ^{ce}	16.23 ± 1.12 ^{ce}	4.44 ± 0.29 ^{ac}	0.72 ± 0.02 ^{a}	6.31 ± 1.21 ^{a}	145.93 ± 5.98 ^{gh}	1.51 ± 0.08 ^{a}	-
Energy cane V2	0.90 ± 0.09 ^{e}	14.86 ± 1.30 ^{ce}	3.42 ± 0.24 ^{ab}	0.61 ± 0.02 ^{a}	3.88 ± 0.51 ^{a}	120.59 ± 10.37 ^{efg}	1.15 ± 0.07 ^{a}	-
Energy cane V3	0.62 ± 0.03 ^{bce}	13.76 ± 0.56 ^{ce}	3.13 ± 0.13 ^{ab}	0.52 ± 0.01 ^{a}	5.59 ± 0.51 ^{a}	127.03 ± 4.23 ^{fg}	0.94 ± 0.04 ^{a}	-
Sugarcane bagasse	0.11 ± 0.07 ^{ab}	19.93 ± 0.88 ^{ef}	4.89 ± 0.26 ^{ac}	1.10 ± 0.05 ^{a}	11.35 ± 1.18 ^{a}	169.57 ± 6.10 ^{hi}	2.60 ± 0.20 ^{abc}	-
p-value	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	-
Average	0.74	25.46	9.39	1.78	31.92	101.57	3.29	1.53

Supplementary Table S3. Monosaccharides composition of cell wall fractions. Data represented average ± std error (n=5). Different letters are statistically significant among agro-wastes compared according to ANOVA-one way with Tukey's post-hoc ($p<0.05$). Dash represents monosaccharides not detected.

		Monosaccharide in µg.mg^{-1} cell wall							
		Fucose	Arabinose	Galactose	Rhamnose	Glucose	Xylose	Mannose	Apiose
Ammonium oxalate	Soybean residues	2.10 ± 0.26 ^{ef}	10.10 ± 0.96 ^{ad}	7.72 ± 0.73 ^{bcd}	5.07 ± 0.40 ^{fg}	3.49 ± 0.12 ^{a}	4.81 ± 0.37 ^{a}	1.23 ± 0.12 ^{a}	-
	Soybean husk	2.89 ± 0.22 ^{f}	13.37 ± 0.55 ^{bdf}	12.56 ± 0.63 ^{d}	6.03 ± 0.50 ^{g}	2.84 ± 0.17 ^{a}	7.20 ± 0.33 ^{ac}	1.87 ± 0.20 ^{a}	-
	Soybean straw	1.08 ± 0.21 ^{bd}	3.73 ± 0.53 ^{ad}	4.36 ± 0.63 ^{ac}	2.65 ± 0.39 ^{bce}	7.70 ± 0.95 ^{ab}	6.70 ± 1.05 ^{ab}	4.28 ± 0.55 ^{ab}	-
	Coffee husk	0.69 ± 0.03 ^{abc}	17.57 ± 1.03 ^{dg}	10.72 ± 0.68 ^{cd}	3.99 ± 0.25 ^{def}	7.58 ± 0.31 ^{ab}	7.06 ± 1.10 ^{ac}	4.30 ± 0.21 ^{ab}	-
	Bean straw	1.04 ± 0.11 ^{ad}	11.99 ± 1.11 ^{bde}	10.27 ± 1.00 ^{cd}	4.62 ± 0.46 ^{eg}	37.22 ± 3.46 ^{d}	6.10 ± 1.01 ^{a}	2.38 ± 0.39 ^{a}	-
	Duckweed	1.64 ± 0.15 ^{de}	6.63 ± 0.66 ^{ad}	12.41 ± 1.17 ^{d}	4.05 ± 0.48 ^{deg}	3.94 ± 0.56 ^{a}	8.18 ± 0.81 ^{ac}	1.40 ± 0.88 ^{a}	46.79 ± 2.72
	Pruning tree residues	0.47 ± 0.05 ^{abc}	2.99 ± 0.55 ^{ab}	2.83 ± 0.52 ^{ab}	1.64 ± 0.29 ^{ac}	3.47 ± 0.60 ^{a}	2.11 ± 0.62 ^{a}	1.28 ± 0.37 ^{a}	-
	Eucalyptus chip	1.13 ± 0.62 ^{cd}	13.22 ± 7.63 ^{bdf}	10.13 ± 4.82 ^{cd}	4.07 ± 1.57 ^{deg}	4.90 ± 1.23 ^{ab}	10.42 ± 5.13 ^{ad}	2.54 ± 0.87 ^{a}	-
	Industry paper residues	0.17 ± 0.07 ^{ab}	0.48 ± 0.09 ^{a}	0.84 ± 0.04 ^{a}	0.00 ± 0.00 ^{a}	6.90 ± 0.49 ^{ab}	11.51 ± 1.10 ^{ad}	0.54 ± 0.05 ^{a}	-
	Barley bagasse	0.92 ± 0.04 ^{ad}	40.50 ± 1.16 ^{h}	8.42 ± 0.27 ^{bcd}	3.06 ± 0.12 ^{cef}	19.91 ± 0.70 ^{ad}	47.47 ± 1.66 ^{df}	2.10 ± 0.10 ^{a}	-
	Sorghum residues	0.41 ± 0.02 ^{abc}	6.61 ± 0.59 ^{ad}	4.24 ± 0.45 ^{ac}	0.74 ± 0.09 ^{ab}	4.84 ± 0.59 ^{ab}	10.72 ± 0.67 ^{ad}	0.60 ± 0.14 ^{a}	-
	Corn cob	0.51 ± 0.05 ^{abc}	23.66 ± 1.82 ^{fg}	10.88 ± 0.88 ^{cd}	0.76 ± 0.06 ^{ac}	26.93 ± 2.90 ^{bd}	68.59 ± 4.35 ^{f}	0.90 ± 0.07 ^{a}	-
	Corn straw	0.57 ± 0.02 ^{abc}	21.37 ± 1.44 ^{efg}	8.35 ± 0.47 ^{bcd}	1.38 ± 0.06 ^{ac}	10.36 ± 0.67 ^{ab}	66.07 ± 3.66 ^{f}	1.00 ± 0.04 ^{a}	-
	Wheat bran	0.49 ± 0.05 ^{abc}	26.69 ± 1.70 ^{g}	4.48 ± 0.38 ^{ac}	0.45 ± 0.02 ^{ab}	35.18 ± 4.40 ^{cd}	44.33 ± 3.28 ^{cdf}	1.22 ± 0.10 ^{a}	-
	Sugarcane	0.81 ± 0.17 ^{ad}	10.13 ± 1.19 ^{ad}	5.93 ± 0.46 ^{ad}	0.36 ± 0.17 ^{ab}	64.04 ± 14.91 ^{e}	43.85 ± 10.22 ^{bcdf}	9.48 ± 4.12 ^{b}	-
	Energy cane V2	0.31 ± 0.02 ^{abc}	8.96 ± 1.17 ^{ad}	6.86 ± 1.18 ^{ad}	0.53 ± 0.08 ^{ab}	9.61 ± 1.44 ^{ab}	22.38 ± 5.38 ^{ade}	0.66 ± 0.05 ^{a}	-
	Energy cane V3	0.13 ± 0.08 ^{a}	15.93 ± 3.24 ^{cdg}	5.88 ± 1.00 ^{ad}	0.63 ± 0.09 ^{ab}	24.40 ± 6.62 ^{ad}	76.17 ± 27.19 ^{f}	0.78 ± 0.08 ^{a}	-
	Sugarcane bagasse	1.00 ± 0.09 ^{ad}	10.32 ± 0.93 ^{ad}	7.12 ± 0.84 ^{ad}	2.24 ± 0.33 ^{acd}	13.36 ± 1.22 ^{abc}	52.87 ± 7.00 ^{a}	8.18 ± 1.06 ^{a}	-
	Rice husk	0.62 ± 0.06 ^{abc}	5.67 ± 0.38 ^{abc}	5.87 ± 0.54 ^{ad}	1.04 ± 0.10 ^{ac}	62.81 ± 6.72 ^{e}	13.66 ± 1.01 ^{ad}	2.16 ± 0.20 ^{a}	-
	p-value	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**-**
Sodium chlorite	Soybean residues	3.24 ± 0.65 ^{d}	38.10 ± 6.05 ^{fgh}	15.02 ± 2.76 ^{def}	7.16 ± 1.39 ^{hi}	7.60 ± 1.55 ^{ab}	47.74 ± 7.07 ^{ac}	3.58 ± 0.58 ^{cde}	-
	Soybean husk	3.20 ± 0.28 ^{d}	43.19 ± 1.17 ^{d}	24.27 ± 2.07 ^{g}	8.51 ± 0.94 ^{i}	5.71 ± 0.32 ^{a}	25.88 ± 1.53 ^{a}	3.99 ± 0.09 ^{df}	-
	Soybean straw	0.69 ± 0.10 ^{ab}	11.52 ± 1.05 ^{ac}	8.47 ± 0.82 ^{acd}	5.28 ± 0.51 ^{fg}	16.15 ± 1.81 ^{acd}	88.90 ± 9.18 ^{acd}	6.45 ± 0.53 ^{g}	-
	Coffee husk	1.00 ± 0.12 ^{ab}	47.55 ± 4.82 ^{h}	14.78 ± 1.74 ^{g}	3.01 ± 0.36 ^{cdf}	9.24 ± 1.06 ^{ab}	21.60 ± 2.68 ^{a}	5.50 ± 0.59 ^{fg}	-
	Bean straw	1.39 ± 0.12 ^{bc}	31.39 ± 4.21 ^{eg}	19.65 ± 2.76 ^{fg}	4.47 ± 0.62 ^{fg}	44.75 ± 6.79 ^{f}	22.78 ± 1.87 ^{a}	6.80 ± 0.78 ^{g}	-
	Duckweed	1.29 ± 0.06 ^{bc}	29.60 ± 0.74 ^{dfg}	11.10 ± 0.29 ^{ce}	3.44 ± 0.08 ^{ef}	6.98 ± 0.60 ^{ab}	20.63 ± 0.67 ^{a}	4.38 ± 0.19 ^{ef}	55.70 ± 8.18
	Pruning tree residues	2.02 ± 0.19 ^{cd}	5.99 ± 0.49 ^{ab}	9.09 ± 0.94 ^{bcd}	3.00 ± 0.37 ^{bcdf}	4.31 ± 0.67 ^{a}	30.25 ± 3.91 ^{ab}	1.80 ± 0.32 ^{ab}	-
	Eucalyptus chip	1.02 ± 0.04 ^{ab}	16.18 ± 1.12 ^{ade}	18.05 ± 2.00 ^{eg}	6.03 ± 0.55 ^{ac}	9.49 ± 0.75 ^{ab}	44.92 ± 5.74 ^{ac}	4.62 ± 0.25 ^{ef}	-
	Industry paper residues	0.30 ± 0.02 ^{a}	0.79 ± 0.04 ^{a}	1.53 ± 0.13 ^{a}	0.44 ± 0.05 ^{a}	13.90 ± 0.84 ^{ac}	43.80 ± 3.16 ^{ac}	0.99 ± 0.10 ^{ab}	-
	Barley bagasse	0.65 ± 0.05 ^{ab}	83.03 ± 2.81 ^{i}	9.22 ± 0.40 ^{bcd}	3.12 ± 0.16 ^{df}	11.80 ± 0.52 ^{ab}	142.64 ± 4.44 ^{ef}	2.38 ± 0.12 ^{ad}	-
	Sorghum residues	0.83 ± 0.09 ^{ab}	39.76 ± 6.10 ^{fgh}	11.46 ± 2.12 ^{ce}	1.05 ± 0.18 ^{ade}	19.27 ± 3.30 ^{ce}	112.82 ± 16.03 ^{de}	2.60 ± 0.44 ^{bd}	-
	Corn cob	0.76 ± 0.09 ^{ab}	36.03 ± 3.26 ^{gh}	12.36 ± 1.21 ^{ce}	0.91 ± 0.08 ^{ade}	25.60 ± 2.59 ^{ce}	189.74 ± 14.80 ^{f}	1.38 ± 0.16 ^{ab}	-
	Corn straw	0.17 ± 0.11 ^{a}	43.50 ± 0.97 ^{fgh}	10.07 ± 0.30 ^{bcd}	0.84 ± 0.03 ^{ad}	12.43 ± 0.58 ^{ac}	179.55 ± 4.17 ^{f}	1.52 ± 0.15 ^{ab}	-
	Wheat bran	0.67 ± 0.07 ^{ab}	76.68 ± 3.72 ^{i}	6.78 ± 0.30 ^{ac}	0.61 ± 0.04 ^{ab}	37.16 ± 1.63 ^{ef}	116.71 ± 3.96 ^{de}	1.86 ± 0.06 ^{abc}	-
	Rice husk	0.88 ± 0.05 ^{ab}	18.42 ± 0.75 ^{bcde}	7.61 ± 0.41 ^{ac}	0.85 ± 0.04 ^{ad}	17.04 ± 0.71 ^{acd}	86.22 ± 3.81 ^{bce}	1.73 ± 0.09 ^{ab}	-
	Sugarcane	0.28 ± 0.09 ^{a}	14.82 ± 3.90 ^{acd}	7.07 ± 0.84 ^{ac}	0.67 ± 0.11 ^{ac}	28.47 ± 6.86 ^{de}	69.93 ± 37.06 ^{acd}	0.97 ± 0.11 ^{ab}	-
	Energy cane V2	0.12 ± 0.12 ^{a}	30.72 ± 0.92 ^{eg}	6.94 ± 0.28 ^{ac}	0.65 ± 0.06 ^{ac}	19.18 ± 1.07 ^{bcd}	186.40 ± 3.71 ^{e}	1.34 ± 0.03 ^{ab}	-
	Energy cane V3	0.18 ± 0.08 ^{a}	20.14 ± 2.36 ^{bcde}	3.85 ± 0.61 ^{ab}	0.26 ± 0.12 ^{a}	10.64 ± 2.11 ^{ab}	141.05 ± 14.85 ^{ef}	0.70 ± 0.21 ^{a}	-
	Sugarcane bagasse	0.45 ± 0.11 ^{ab}	27.13 ± 0.98 ^{cef}	5.61 ± 0.22 ^{ac}	0.77 ± 0.03 ^{ad}	12.49 ± 0.48 ^{ac}	175.13 ± 6.10 ^{f}	2.59 ± 0.10 ^{bd}	-
	p-value	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**-**
4M NaOH	Soybean residues	3.38 ± 0.20 ^{e}	5.60 ± 0.42 ^{ab}	13.53 ± 0.66 ^{df}	4.61 ± 0.31 ^{f}	39.77 ± 1.06 ^{cd}	227.61 ± 13.19 ^{bc}	29.09 ± 1.04 ^{e}	-
	Soybean husk	2.75 ± 0.36 ^{e}	5.32 ± 0.74 ^{ab}	11.10 ± 1.22 ^{cde}	2.39 ± 0.31 ^{bd}	23.29 ± 1.75 ^{ad}	157.22 ± 8.56 ^{ab}	22.22 ± 2.29 ^{de}	-
	Soybean straw	0.41 ± 0.02 ^{ab}	0.70 ± 0.06 ^{a}	2.93 ± 0.14 ^{ac}	2.44 ± 0.13 ^{bd}	28.33 ± 1.76 ^{ab}	165.11 ± 4.76 ^{ab}	18.83 ± 0.85 ^{cd}	-
	Coffee husk	0.26 ± 0.16 ^{a}	11.71 ± 1.90 ^{ac}	14.05 ± 2.49 ^{df}	3.67 ± 0.69 ^{df}	28.85 ± 4.88 ^{ad}	182.57 ± 28.96 ^{ac}	11.55 ± 2.05 ^{bc}	-
	Bean straw	2.87 ± 0.15 ^{e}	8.28 ± 0.99 ^{ab}	14.97 ± 1.12 ^{df}	3.72 ± 0.33 ^{df}	42.77 ± 3.26 ^{d}	161.27 ± 15.01 ^{ab}	23.73 ± 1.03 ^{de}	-
	Duckweed	1.36 ± 0.25 ^{cd}	10.32 ± 2.49 ^{ac}	10.07 ± 1.60 ^{bcde}	3.95 ± 0.29 ^{ef}	14.57 ± 2.84 ^{ab}	150.20 ± 27.66 ^{ab}	8.36 ± 1.85 ^{ab}	22.12 ± 3.19
	Pruning tree residues	1.69 ± 0.46 ^{d}	3.13 ± 0.58 ^{ab}	21.49 ± 4.13 ^{f}	2.21 ± 0.38 ^{bc}	77.49 ± 13.01 ^{e}	88.30 ± 13.71 ^{a}	20.96 ± 5.01 ^{d}	-
	Eucalyptus chip	1.31 ± 0.19 ^{bd}	4.58 ± 0.26 ^{ab}	16.37 ± 1.42 ^{ef}	3.10 ± 0.30 ^{cde}	15.34 ± 1.77 ^{ab}	193.95 ± 10.49 ^{bc}	6.06 ± 0.84 ^{ab}	-
	Industry paper residues	0.00 ± 0.00 ^{a}	0.12 ± 0.07 ^{a}	0.89 ± 0.08 ^{a}	0.00 ± 0.00 ^{a}	14.74 ± 1.66 ^{ab}	154.22 ± 7.99 ^{ab}	1.71 ± 0.10 ^{a}	-
	Barley bagasse	0.11 ± 0.11 ^{a}	47.62 ± 10.54 ^{de}	7.00 ± 1.32 ^{ad}	0.75 ± 0.33 ^{a}	19.64 ± 2.27 ^{abc}	176.58 ± 27.99 ^{ac}	5.57 ± 0.77 ^{ab}	-
	Sorghum residues	0.00 ± 0.00 ^{a}	70.41 ± 5.99 ^{e}	15.13 ± 1.52 ^{df}	1.24 ± 0.13 ^{ab}	39.03 ± 3.56 ^{cd}	273.78 ± 17.67 ^{c}	3.49 ± 0.33 ^{a}	-
	Corn cob	0.58 ± 0.06 ^{abc}	43.69 ± 7.11 ^{ce}	14.38 ± 2.69 ^{df}	0.44 ± 0.19 ^{a}	21.63 ± 2.95 ^{abc}	222.40 ± 31.23 ^{bc}	1.51 ± 0.32 ^{a}	-
	Corn straw	0.00 ± 0.00 ^{a}	43.56 ± 9.19 ^{ce}	7.66 ± 1.26 ^{ad}	0.44 ± 0.19 ^{a}	20.83 ± 1.15 ^{abc}	211.53 ± 18.54 ^{bc}	3.76 ± 1.00 ^{ab}	-
	Wheat bran	0.40 ± 0.11 ^{ab}	137.28 ± 22.55 ^{f}	11.76 ± 2.28 ^{de}	0.71 ± 0.25 ^{a}	25.77 ± 4.14 ^{ad}	161.89 ± 20.90 ^{ab}	2.88 ± 0.32 ^{a}	-
	Rice husk	0.38 ± 0.16 ^{a}	35.16 ± 3.28 ^{bcd}	10.65 ± 1.15 ^{bcde}	0.76 ± 0.11 ^{a}	15.03 ± 2.45 ^{ab}	200.88 ± 15.22 ^{bc}	1.33 ± 0.11 ^{a}	-
	Sugarcane	0.17 ± 0.11 ^{a}	13.24 ± 0.51 ^{ac}	1.11 ± 0.05 ^{a}	0.00 ± 0.00 ^{a}	30.92 ± 1.51 ^{bd}	199.69 ± 7.58 ^{bc}	2.98 ± 0.12 ^{a}	-
	Energy cane V2	0.00 ± 0.00 ^{a}	15.98 ± 0.55 ^{acd}	1.25 ± 0.14 ^{a}	0.00 ± 0.00 ^{a}	28.19 ± 2.98 ^{ad}	215.94 ± 7.39 ^{bc}	2.58 ± 0.19 ^{a}	-
	Energy cane V3	0.00 ± 0.00 ^{a}	12.33 ± 0.65 ^{ac}	0.30 ± 0.04 ^{a}	0.00 ± 0.00 ^{a}	36.64 ± 0.90 ^{cd}	168.27 ± 6.59 ^{ab}	1.40 ± 0.19 ^{a}	-
	Sugarcane bagasse	0.00 ± 0.00 ^{a}	19.59 ± 3.19 ^{acd}	2.36 ± 0.38 ^{ab}	0.00 ± 0.00 ^{a}	9.85 ± 2.86 ^{a}	203.44 ± 33.23 ^{bc}	2.24 ± 0.35 ^{a}	-
	p-value	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**-**
Residue	Soybean residues	0.43 ± 0.16 ^{ac}	0.45 ± 0.13 ^{a}	0.73 ± 0.20 ^{c}	0.18 ± 0.11 ^{a}	18.79 ± 4.78 ^{a}	1.01 ± 0.27 ^{a}	3.58 ± 0.99 ^{c}	-
	Soybean husk	0.57 ± 0.09 ^{ac}	0.13 ± 0.08 ^{a}	0.42 ± 0.06 ^{ac}	0.00 ± 0.00 ^{a}	33.68 ± 2.41 ^{bde}	11.82 ± 2.15 ^{a}	2.25 ± 0.20 ^{bc}	-
	Soybean straw	0.08 ± 0.08 ^{ab}	0.04 ± 0.04 ^{a}	0.09 ± 0.06 ^{ab}	0.00 ± 0.00 ^{a}	26.31 ± 1.01 ^{ab}	2.85 ± 0.25 ^{a}	0.26 ± 0.03 ^{a}	-
	Coffee husk	0.53 ± 0.15 ^{ac}	0.88 ± 0.09 ^{a}	1.54 ± 0.13 ^{d}	0.41 ± 0.18 ^{a}	39.90 ± 3.01 ^{cdef}	2.71 ± 0.59 ^{a}	6.89 ± 0.56 ^{d}	-
	Bean straw	0.67 ± 0.19 ^{ace}	0.29 ± 0.13 ^{a}	0.63 ± 0.12 ^{bc}	0.00 ± 0.00 ^{a}	34.16 ± 2.94 ^{bde}	2.11 ± 0.25 ^{a}	0.77 ± 0.24 ^{ab}	-
	Duckweed	1.36 ± 0.23 ^{de}	0.68 ± 0.04 ^{a}	3.71 ± 0.16 ^{e}	2.68 ± 0.17 ^{c}	20.14 ± 1.42 ^{a}	40.27 ± 3.02 ^{b}	2.26 ± 0.45 ^{bc}	53.90 ± 2.01
	Pruning tree residues	0.76 ± 0.21 ^{bce}	3.63 ± 0.17 ^{c}	3.89 ± 0.20 ^{ef}	1.50 ± 0.13 ^{b}	26.86 ± 1.85 ^{abc}	4.04 ± 0.70 ^{a}	0.64 ± 0.10 ^{ab}	-
	Eucalyptus chip	0.86 ± 0.11 ^{ce}	0.01 ± 0.01 ^{a}	0.63 ± 0.17 ^{bc}	0.00 ± 0.00 ^{a}	25.39 ± 0.78 ^{ab}	1.79 ± 0.82 ^{a}	0.19 ± 0.19 ^{bc}	-
	Industry paper residues	0.56 ± 0.23 ^{ac}	0.00 ± 0.00 ^{a}	0.00 ± 0.00 ^{a}	0.00 ± 0.00 ^{a}	30.50 ± 2.38 ^{ad}	2.70 ± 0.29 ^{a}	0.00 ± 0.00 ^{a}	-
	Barley bagasse	0.49 ± 0.12 ^{ac}	1.08 ± 0.09 ^{ab}	0.38 ± 0.04 ^{ac}	0.00 ± 0.00 ^{a}	43.15 ± 2.42 ^{def}	2.92 ± 0.19 ^{a}	1.02 ± 0.08 ^{ab}	-
	Sorghum residues	0.29 ± 0.12 ^{ac}	2.27 ± 0.58 ^{b}	0.74 ± 0.15 ^{c}	0.00 ± 0.00 ^{a}	19.46 ± 3.99 ^{a}	3.65 ± 0.94 ^{a}	0.00 ± 0.00 ^{a}	-
	Corn cob	0.65 ± 0.19 ^{acd}	1.12 ± 0.10 ^{ab}	0.71 ± 0.08 ^{c}	0.00 ± 0.00 ^{a}	48.50 ± 2.48 ^{f}	3.65 ± 0.27 ^{a}	0.61 ± 0.24 ^{ab}	-
	Corn straw	0.38 ± 0.16 ^{ac}	0.78 ± 0.10 ^{a}	0.29 ± 0.08 ^{ac}	0.00 ± 0.00 ^{a}	47.86 ± 1.20 ^{f}	3.74 ± 0.35 ^{a}	0.25 ± 0.10 ^{a}	-
	Wheat bran	0.78 ± 0.01 ^{bce}	5.89 ± 0.79 ^{d}	0.31 ± 0.05 ^{ac}	0.00 ± 0.00 ^{a}	31.60 ± 2.90 ^{ae}	118.73 ± 8.52 ^{c}	1.03 ± 0.10 ^{ab}	-
	Rice husk	1.40 ± 0.21 ^{e}	0.84 ± 0.04 ^{a}	4.46 ± 0.19 ^{f}	3.30 ± 0.20 ^{d}	24.74 ± 1.76 ^{ab}	47.99 ± 3.40 ^{b}	2.76 ± 0.53 ^{c}	-
	Sugarcane	0.00 ± 0.00 ^{a}	0.06 ± 0.06 ^{a}	0.00 ± 0.00 ^{a}	0.00 ± 0.00 ^{a}	40.80 ± 0.67 ^{def}	3.29 ± 0.25 ^{a}	0.00 ± 0.00 ^{a}	-
	Energy cane V2	0.00 ± 0.00 ^{a}	0.51 ± 0.04 ^{a}	0.00 ± 0.00 ^{a}	0.00 ± 0.00 ^{a}	44.44 ± 4.09 ^{ef}	5.82 ± 0.35 ^{a}	0.00 ± 0.00 ^{a}	-
	Energy cane V3	0.00 ± 0.00 ^{a}	0.19 ± 0.08 ^{a}	0.00 ± 0.00 ^{a}	0.00 ± 0.00 ^{a}	44.72 ± 1.68 ^{ef}	3.62 ± 0.31 ^{a}	0.00 ± 0.00 ^{a}	-
	Sugarcane bagasse	0.57 ± 0.02 ^{ac}	0.45 ± 0.02 ^{a}	0.28 ± 0.01 ^{ac}	0.00 ± 0.00 ^{a}	40.60 ± 1.91 ^{def}	1.90 ± 0.08 ^{a}	0.35 ± 0.00 ^{a}	-
	p-value	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**-**
Residue II	Soybean residues	-	-	-	-	287.42 ± 8.37 ^{bd}	-	-	-
	Soybean husk	-	-	-	-	352.01 ± 13.70 ^{be}	-	-	-
	Soybean straw	-	-	-	-	279.08 ± 16.92 ^{b}	-	-	-
	Coffee husk	-	-	-	-	376.61 ± 34.22 ^{cdef}	-	-	-
	Bean straw	-	-	-	-	367.75 ± 15.78 ^{be}	-	-	-
	Duckweed	-	-	-	-	181.68 ± 24.82 ^{a}	-	-	-
	Pruning tree residues	-	-	-	-	308.66 ± 63.42 ^{be}	-	-	-
	Eucalyptus chip	-	-	-	-	297.65 ± 30.81 ^{bcd}	-	-	-
	Industry paper residues	-	-	-	-	374.61 ± 10.70 ^{cdef}	-	-	-
	Barley bagasse	-	-	-	-	407.94 ± 14.38 ^{de}	-	-	-
	Sorghum residues	-	-	-	-	316.95 ± 15.37 ^{bd}	-	-	-
	Corn cob	-	-	-	-	395.66 ± 19.65 ^{de}	-	-	-
	Corn straw	-	-	-	-	410.54 ± 15.17 ^{e}	-	-	-
	Wheat bran	-	-	-	-	346.18 ± 13.68 ^{be}	-	-	-
	Rice husk	-	-	-	-	415.42 ± 6.86 ^{e}	-	-	-
	Sugarcane	-	-	-	-	463.2 ± 22.06 ^{be}	-	-	-
	Energy cane V2	-	-	-	-	391.1 ± 2.24 ^{de}	-	-	-
	Energy cane V3	-	-	-	-	345.4 ± 7.85 ^{be}	-	-	-
	Sugarcane bagasse	-	-	-	-	430.59 ± 14.44 ^{e}	-	-	-
	p-value	-	-	-	-	**0.000**	-	-	-