

Development of a Biomass Component Prediction Model Based on Elemental and Proximate Analyses

Table S1. Data for model prediction

.	Biomass	Ultimate					Proximate			Structural contents			Ref
		C	H	N	O	S	VM	FC	Ash	Cellulose	Hemicellulose	Lignin	
1	Pine	51.22	6.02	0.12	42.64	0.00	82.79	16.81	0.40	38.01	27.21	34.77	[1]
2	Fir	50.01	6.07	0.15	43.77	0.00	82.88	17.00	0.12	38.21	25.71	36.08	
3	Spruce	51.25	5.95	0.12	42.68	0.00	80.37	19.39	0.24	43.47	20.54	35.99	
4	Coconut shell	44.69	5.47	9.57	40.27	0.00	73.19	17.88	8.93	41.00	20.61	38.39	[2]
5	Bamboo-bottom	46.92	6.36	0.18	46.54	0.00	79.86	18.19	1.95	47.43	24.56	28.02	[3]
6	Bamboo-middle	47.04	6.42	0.18	46.36	0.00	81.14	17.43	1.43	47.95	25.01	27.05	
7	Bamboo-top	46.47	6.34	0.27	46.92	0.00	79.08	18.52	2.40	47.63	25.59	26.77	
8	Sugarcane bagasse	42.38	5.46	0.18	51.86	0.12	81.96	16.00	2.04	37.59	35.21	27.20	[4]
9	Sugarcane bagasse-T230	48.15	4.83	0.26	46.63	0.13	73.55	23.90	2.55	34.38	14.52	51.09	
10	Sugarcane bagasse-T250	50.85	3.82	0.25	44.94	0.14	62.83	34.17	3.00	25.57	6.88	67.55	
11	Sugarcane bagasse-T270	57.10	2.76	0.30	39.69	0.15	50.98	45.13	3.89	5.64	3.18	91.19	
12	Sugarcane bagasse-T290	59.18	2.25	0.31	38.11	0.16	46.32	49.24	4.44	0.24	1.50	98.26	[5]
13	Barley straw	45.96	5.30	0.71	47.94	0.09	57.83	33.72	8.46	47.92	41.92	10.16	
14	Barley straw-225/30	46.76	5.52	1.04	46.61	0.07	58.26	33.29	8.45	48.27	39.30	12.43	
15	Barley straw-225/60	47.98	5.10	0.99	45.82	0.11	52.39	38.38	9.23	50.94	34.21	14.85	
16	Cumin stalk	43.74	4.79	0.62	50.80	0.05	54.74	35.02	10.24	66.51	17.08	16.41	
17	Cumin stalk-225/30	46.29	4.61	0.77	48.26	0.07	49.32	40.10	10.58	57.57	16.77	25.67	
18	Cumin stalk-275/30	52.15	4.44	0.79	42.51	0.11	40.57	49.40	10.03	38.03	7.92	54.04	

19	Cumin stalk-300/30	58.66	3.95	0.93	36.39	0.07	26.59	62.59	10.82	19.59	11.83	68.58	
20	Cumin stalk-225/60	47.98	4.55	0.74	46.67	0.06	46.68	42.86	10.46	61.34	10.58	28.08	
21	Cumin stalk-275/60	56.23	4.38	0.91	38.42	0.06	34.39	55.65	9.96	32.32	8.05	59.63	
22	Cumin stalk-300/60	58.00	3.87	1.04	36.97	0.12	26.35	62.43	11.22	18.95	8.82	72.23	
23	Wood	48.77	6.77	0.10	44.36	0.00	81.12	18.61	0.27	40.49	15.74	43.77	[6]
24	Bamboo	45.43	6.27	0.07	48.22	0.00	75.83	20.55	3.62	55.01	28.03	16.96	
25	Banyan	46.72	6.15	0.08	47.05	0.00	80.21	18.64	1.15	57.07	12.19	30.74	[7]
26	Bamboo-210	48.54	6.08	0.03	45.22	0.13	80.94	17.75	1.31	56.00	14.00	30.00	
27	Bamboo-240	49.97	6.03	0.01	43.88	0.11	78.27	20.38	1.35	58.59	7.07	34.34	
28	Bamboo-270	53.55	5.60	0.00	40.78	0.07	71.69	26.55	1.76	53.00	2.00	45.00	[7]
29	Bamboo-300	61.23	4.80	0.00	33.93	0.04	64.80	33.22	1.98	43.00	1.00	56.00	
30	Sugarcane Bagasse	32.50	5.01	0.38	61.55	0.56	73.78	16.99	9.23	44.78	31.92	23.30	
31	Sugarcane Bagasse-200/15	32.80	5.01	0.38	61.26	0.55	73.38	17.41	9.22	44.43	29.82	25.75	
32	Sugarcane Bagasse-200/30	33.10	4.99	0.37	61.01	0.53	72.72	18.00	9.27	43.98	28.84	27.18	
33	Sugarcane Bagasse-200/45	33.90	4.99	0.37	60.22	0.52	71.73	19.09	9.17	42.45	27.94	29.61	
34	Sugarcane Bagasse-200/60	34.50	4.98	0.37	59.65	0.50	70.81	20.01	9.17	41.49	27.07	31.44	
35	Sugarcane Bagasse-225/15	34.80	4.98	0.36	59.31	0.55	70.75	20.32	8.93	44.19	28.50	27.31	
36	Sugarcane Bagasse-225/30	36.20	4.97	0.36	57.95	0.52	68.84	22.33	8.83	41.63	26.56	31.82	
37	Sugarcane Bagasse-225/45	36.90	4.88	0.35	57.37	0.50	66.92	24.05	9.03	39.57	26.10	34.33	
38	Sugarcane Bagasse-225/60	38.01	4.82	0.35	56.33	0.49	64.89	26.06	9.05	38.41	24.14	37.46	[8]
39	Sugarcane Bagasse-250/15	37.10	4.87	0.35	57.17	0.51	66.63	24.39	8.99	40.14	25.69	34.17	
40	Sugarcane Bagasse-250/30	39.20	4.71	0.34	55.27	0.48	62.22	28.60	9.19	37.35	23.99	38.66	
41	Sugarcane Bagasse-250/45	40.50	4.69	0.33	54.02	0.46	60.39	30.53	9.08	36.23	23.60	40.17	
42	Sugarcane Bagasse-250/60	42.60	4.66	0.33	51.99	0.42	57.37	33.67	8.95	34.24	20.81	44.95	
43	Sugarcane Bagasse-275/15	39.60	4.61	0.34	54.96	0.49	60.67	29.96	9.37	35.85	23.62	40.53	
44	Sugarcane Bagasse-275/30	42.10	4.32	0.32	52.83	0.43	54.19	35.85	9.96	30.91	21.00	48.09	
45	Sugarcane Bagasse-275/45	43.20	4.22	0.32	51.86	0.40	51.62	38.22	10.17	26.40	19.14	54.46	

46	Sugarcane Bagasse-275/60	45.60	4.12	0.31	49.58	0.39	47.63	42.30	10.08	25.27	18.39	56.35	[9]
47	Sugarcane Bagasse-300/15	40.60	3.90	0.29	54.83	0.38	51.06	37.43	11.52	24.37	12.73	62.91	
48	Sugarcane Bagasse-300/30	48.30	3.80	0.27	47.28	0.35	40.73	48.66	10.61	22.16	10.06	67.78	
49	Sugarcane Bagasse-300/45	49.60	3.60	0.25	46.25	0.30	36.76	52.15	11.10	20.07	7.89	72.04	
50	Sugarcane Bagasse-300/60	50.30	3.40	0.22	45.79	0.29	33.72	54.76	11.53	18.83	5.72	75.45	
51	Corn stalk	43.15	8.00	2.22	46.39	0.24	65.69	8.90	25.41	40.30	40.98	18.72	
52	Wheat straw	42.86	6.86	2.29	47.82	0.18	59.13	16.71	24.15	47.62	37.85	14.52	
53	Poplar wood	51.38	6.40	1.94	40.10	0.18	54.94	31.35	13.72	55.31	15.50	29.19	
54	Cedar wood	57.22	6.74	1.79	34.06	0.20	52.29	35.70	12.01	51.39	13.06	35.55	
55	Bamboo-220/10	48.73	6.03	0.00	45.24	0.00	64.58	30.72	4.71	46.28	26.33	27.39	[10]
56	Bamboo-220/30	49.23	5.95	0.00	44.83	0.00	63.09	32.06	4.85	46.91	25.59	27.50	
57	Bamboo-220/60	49.29	5.94	0.00	44.77	0.00	62.90	32.23	4.87	46.73	24.79	28.48	
58	Bamboo-240/10	49.92	5.78	0.00	44.31	0.00	60.35	34.43	5.23	46.87	24.81	28.32	
59	Bamboo-240/30	49.53	5.79	0.00	44.68	0.00	60.91	33.82	5.27	48.24	22.73	29.03	
60	Bamboo-240/60	50.49	5.88	0.00	43.63	0.00	60.80	34.35	4.85	48.97	19.01	32.02	
61	Bamboo-260/10	51.03	6.00	0.00	42.97	0.00	61.52	34.07	4.40	53.44	20.06	26.51	
62	Bamboo-260/30	51.89	6.11	0.00	42.00	0.00	61.76	34.28	3.95	53.05	14.39	32.55	
63	Bamboo-260/60	52.64	6.21	0.00	41.15	0.00	62.01	34.45	3.54	50.47	12.16	37.37	
64	Bamboo-280/10	53.68	6.21	0.00	40.11	0.00	60.79	35.85	3.37	50.70	8.76	40.54	[11]
65	Bamboo-280/30	54.15	6.20	0.00	39.65	0.00	60.12	36.56	3.32	50.39	5.67	43.95	
66	Bamboo-280/60	55.42	5.98	0.00	38.60	0.00	56.12	40.15	3.74	47.40	2.20	50.40	
67	Plumeria alba	44.50	6.10	0.60	48.80	0.00	68.52	25.03	6.45	41.44	27.75	30.81	
68	Humulus lupulus -180	45.10	5.90	1.30	47.70	0.00	63.39	28.20	8.41	38.25	19.45	42.30	
69	Humulus lupulus -200	49.70	6.40	1.90	42.00	0.00	61.79	30.75	7.46	38.49	19.90	41.61	
70	Humulus lupulus -220	52.80	6.40	1.90	38.90	0.00	58.09	34.96	6.95	31.49	25.06	43.44	
71	Humulus lupulus -240	55.90	6.00	2.20	35.90	0.00	48.83	42.93	8.24	32.20	13.97	53.83	
72	Humulus lupulus -260	60.50	6.00	2.70	30.80	0.00	41.68	49.78	8.54	22.26	11.94	65.81	

73	Pine	51.15	6.18	0.30	42.37	0.00	62.76	33.04	4.20	40.64	28.90	30.45	[12]
74	Ash-wood	49.25	5.91	0.30	44.54	0.00	61.56	32.74	5.70	44.72	25.11	30.16	
75	Miscanthus	48.16	5.98	0.30	45.56	0.00	64.03	30.70	5.27	51.52	25.70	22.77	
76	Wheat straw	45.15	5.69	0.80	48.35	0.00	62.60	29.55	7.84	44.47	28.55	26.97	
77	Peach pit	55.33	6.16	0.00	38.51	0.00	84.80	13.90	1.30	39.41	26.23	34.36	[13]
78	Marc	59.28	6.64	0.00	34.07	0.00	69.21	21.98	8.81	26.29	8.52	65.20	
79	Stalk	51.60	6.42	0.00	41.98	0.00	66.77	23.07	10.16	30.46	10.99	58.55	
80	Sawdust	48.32	5.19	0.00	46.49	0.00	86.31	11.79	1.90	47.87	22.27	29.86	
81	Poplar wood	51.47	5.91	1.53	41.09	0.00	73.85	18.61	7.54	50.00	26.00	24.00	[14]
82	Poplar leaf	49.70	5.26	1.32	43.72	0.00	68.74	15.57	15.69	27.00	33.00	40.00	
83	Chinar leaf	53.12	4.90	1.02	40.96	0.00	69.74	21.03	9.23	30.00	26.00	44.00	[15]
84	Bamboo	51.50	5.23	0.32	42.90	0.05	81.54	16.12	2.34	48.38	27.51	24.11	
85	Pinewood	49.02	6.40	0.14	44.42	0.01	87.47	10.93	1.59	45.88	40.00	14.12	[16]
86	Bamboo	43.23	5.65	0.64	50.48	0.00	78.73	14.17	7.10	54.38	28.44	17.18	[17]
87	Peanut shell	41.38	5.75	2.30	50.57	0.00	76.87	5.11	18.01	49.67	14.84	35.49	
88	Chestnut shell	41.41	5.33	0.85	52.41	0.00	77.24	17.67	5.09	28.92	21.85	49.23	[18]
89	Switchgrass	49.02	6.04	0.19	44.44	0.32	61.37	29.85	8.78	42.50	34.30	23.20	
90	Wheat straw	48.91	5.66	0.69	44.61	0.12	49.95	32.07	17.98	47.40	31.82	20.77	
91	Eastern redcedar	51.92	6.07	0.38	41.63	0.00	58.87	34.69	6.44	42.83	19.02	38.15	
92	Hybrid poplar	49.95	5.99	0.40	43.66	0.00	84.00	14.70	1.30	52.02	17.46	30.52	[19]
93	Softwood (av.)	51.80	6.10	0.30	41.80	0.00	81.30	16.60	2.10	43.72	26.06	30.22	
94	Hardwood (av.)	50.15	6.09	0.60	43.16	0.00	85.10	13.10	1.80	50.80	29.70	19.50	
95	Corn stover 2 (CRS2)	47.10	5.70	0.60	46.60	0.00	78.10	15.60	6.30	48.86	29.49	21.65	
96	Switchgrass	47.10	5.90	0.60	46.40	0.00	82.40	13.60	4.00	45.42	29.08	25.50	
97	Sorghum	46.40	5.70	1.00	46.90	0.00	77.00	15.80	7.20	50.89	27.40	21.71	
98	Mixed grasses	47.60	5.80	1.40	45.20	0.00	78.60	14.80	6.60	47.15	27.24	25.61	
99	Miscanthus	48.85	5.79	0.40	44.96	0.00	82.50	14.90	2.60	48.56	25.09	26.34	

100	Pine	51.50	6.10	0.20	42.20	0.00	83.50	15.80	0.70	48.42	22.37	29.21	[20]
101	Rice straw	37.96	4.90	1.40	55.74	0.00	68.30	14.80	16.90	40.52	29.90	29.58	
102	Leuceana wood	44.84	5.61	1.80	47.75	0.00	92.60	0.60	6.80	36.49	27.02	36.49	
103	Oil palm empty fruit bunch	51.00	7.10	0.60	41.30	0.00	83.80	8.40	7.80	39.75	33.91	26.35	
104	Sugarcane top and leave	51.70	4.10	2.20	42.00	0.00	88.20	9.40	2.40	35.07	27.70	37.23	
105	Eucalyptus	47.25	5.79	0.80	46.15	0.00	88.90	9.90	1.20	38.94	31.36	29.70	
106	Impereta cylindrical	50.05	5.91	1.10	42.94	0.00	91.90	0.50	7.60	47.82	11.78	40.40	
107	Napier grass	37.30	4.50	2.40	55.80	0.00	83.10	13.90	3.00	39.61	33.51	26.88	[16]
108	Rice husk	43.60	5.70	0.70	50.00	0.00	73.80	10.50	15.70	40.77	29.82	29.41	
109	Wheat straw 1 (WS1)	51.50	6.10	0.20	42.20	0.00	83.50	15.80	0.70	40.61	34.39	25.00	
110	Barley straw	41.44	6.21	0.60	51.75	0.00	84.30	5.20	10.50	40.02	31.65	28.33	
111	Flax straw	43.16	6.19	0.70	49.95	0.00	87.10	9.60	3.30	36.79	34.36	28.85	
112	Pinewood	49.00	6.20	0.40	44.40	0.00	83.30	11.00	5.70	45.88	40.00	14.12	
113	Timothy grass	42.50	6.00	1.00	50.50	0.00	82.00	16.80	1.20	37.95	33.13	28.92	[21]
114	Rice straw (RS)	45.95	7.91	0.20	45.95	0.00	72.20	12.60	15.20	54.51	28.47	17.02	
115	Wheat Straw 2 (WS2)	46.95	5.59	0.50	46.95	0.00	70.50	17.80	11.70	48.28	24.93	26.78	
116	Sugarcane baggase (SCB)	46.45	6.69	0.40	46.45	0.00	84.40	10.70	4.90	48.74	24.90	26.36	
117	Corn stover 1 (CRS1)	46.60	6.40	0.40	46.60	0.00	79.30	8.60	12.10	42.75	24.77	32.48	
118	Sorghum stalk (SS)	46.50	6.50	0.50	46.50	0.00	72.30	18.10	9.60	49.44	24.30	26.26	
119	Mustard stalk (MS)	46.70	6.30	0.30	46.70	0.00	77.60	13.60	8.80	48.95	23.17	27.88	
120	Jatropha wood (JW)	46.55	5.99	0.90	46.55	0.00	77.60	16.80	5.60	48.14	20.35	31.51	[22]
121	Corn cob 1 (CC1)	46.70	6.20	0.40	46.70	0.00	89.00	4.70	6.30	41.82	37.66	20.52	
122	Cotton stalk (CS)	46.65	6.39	0.30	46.65	0.00	78.00	18.20	3.80	48.17	23.47	28.36	
123	Rice husk (RH)	46.20	6.30	0.40	47.10	0.00	74.00	21.40	4.60	44.57	19.12	36.31	
124	Beech wood	47.25	6.21	0.30	46.25	0.00	86.20	13.40	0.40	46.03	31.96	22.01	
125	Birchwood	48.40	5.60	0.20	45.80	0.00	78.80	20.90	0.30	31.57	49.14	19.29	
126	Furniture sawdust	47.40	5.70	0.20	46.70	0.00	85.50	13.70	0.80	35.43	40.43	24.13	

127	Hardwood (av.)	46.40	6.60	0.60	46.40	0.00	70.90	9.80	19.30	46.03	31.87	22.10	
128	Softwood (av.)	52.45	6.11	0.20	41.24	0.00	70.10	28.20	1.70	46.64	24.85	28.51	
129	Spruce wood	48.50	6.30	0.40	44.80	0.00	83.40	16.10	0.50	51.06	21.31	27.64	
130	Almond shell	54.80	7.50	0.30	37.40	0.00	91.80	5.60	2.60	34.24	33.06	32.70	
131	Hazelnut shell	57.60	7.20	5.70	29.50	0.00	68.00	27.80	4.20	25.42	17.43	57.16	
132	Sugarcane Baggase	47.90	6.40	0.30	45.40	0.00	93.20	1.80	5.00	41.03	34.62	24.36	
133	Corn cob 2 (CC2)	44.20	5.90	0.70	49.20	0.00	80.60	18.20	1.20	47.98	34.17	17.86	
134	Wood chips	46.40	5.90	0.10	47.60	0.00	88.80	10.90	0.30	38.50	38.50	23.00	
135	Ailanthus wood	51.00	6.40	0.30	42.30	0.00	74.40	25.10	0.50	46.93	26.73	26.33	
136	Napier grass stem	48.80	6.00	1.00	44.20	0.00	81.50	16.70	1.80	45.33	23.13	31.54	
137	Napier grass leaf	44.30	5.50	1.00	49.20	0.00	79.10	16.90	4.00	38.94	21.19	39.87	[23]
138	Napier grass stem and leaf	45.10	5.90	1.50	47.50	0.00	85.20	8.50	6.30	43.35	25.86	30.80	
139	Echinochloa stagnina	38.14	5.01	3.10	53.75	0.00	80.90	10.10	9.00	47.88	26.92	25.19	
140	Eragrostis airoides	41.04	6.71	1.10	51.15	0.00	91.60	4.40	4.00	51.12	12.66	36.21	[24]
141	Arundinella khasiana	41.26	5.39	1.30	52.05	0.00	89.40	1.50	9.10	55.45	21.52	23.03	
142	Rice husk	48.90	6.20	0.80	44.10	0.00	72.80	9.30	17.90	35.05	35.05	29.90	[25]
143	Timothy grass (TG)	45.15	6.31	1.30	47.25	0.00	82.90	13.30	3.80	47.72	30.71	21.58	
144	Hydrothermally treated timothy grass (TGHT)	45.90	7.10	1.10	45.90	0.00	78.90	15.30	5.80	64.76	11.32	23.92	
145	Hydrothermally treated wheat straw (WSHT)	47.70	8.50	0.20	43.60	0.00	80.70	12.80	6.50	68.05	9.48	22.47	
146	Pinewood (PW)	50.10	6.30	0.10	43.50	0.00	76.90	20.60	2.50	51.89	23.34	24.77	[26]
147	Wheat straw (WS)	46.20	6.30	0.40	47.10	0.00	73.97	21.42	4.60	54.29	24.69	21.03	
148	Hydrothermally treated pinewood (PWHT)	48.55	7.01	0.10	44.34	0.00	76.00	19.20	4.80	68.80	4.61	26.60	
149	Bamboo	39.00	6.10	0.60	54.30	0.00	77.60	19.60	2.80	53.25	17.26	29.48	[27]
150	Rape straw 1	48.35	5.79	1.20	44.66	0.00	80.60	12.50	6.90	41.64	34.77	23.59	
151	Wheat straw	47.20	6.00	0.70	46.10	0.00	79.90	15.20	4.90	45.92	33.20	20.89	
152	Reed canary grass	48.05	6.09	0.30	45.55	0.00	81.50	13.70	4.80	38.71	58.06	3.23	[28]
153	Switchgrass	49.00	6.20	0.40	44.40	0.00	83.28	11.01	5.71	48.85	42.88	8.28	

154	Sugarcane straw (SCS)	46.35	5.79	0.60	47.25	0.00	77.58	15.92	6.51	43.76	22.48	33.77	[29]
155	Sawdust	46.40	7.00	1.20	45.40	0.00	79.97	7.31	12.72	40.10	26.70	33.20	[30]
156	Rice husk	46.80	6.20	0.40	46.60	0.00	60.30	17.00	22.70	43.75	31.25	25.00	[31]
157	Hazelnut shell	51.40	5.20	0.20	43.20	0.00	77.09	21.48	1.43	26.62	29.70	43.68	[32]
158	Oil palm empty fruit bunch	46.27	6.71	1.35	45.67	0.00	75.30	17.81	6.89	42.21	17.91	39.88	[33]
159	Cocoa Husks	48.75	6.61	2.60	42.04	0.00	85.10	6.90	8.00	38.01	41.33	20.66	[34]
160	Coffee Pellets	50.55	6.49	3.10	39.86	0.00	86.20	5.20	8.60	38.73	28.39	32.88	
161	Rice Husk	40.40	5.30	0.50	53.80	0.00	83.40	12.00	4.60	42.91	17.62	39.47	
162	Hazelnut Shells	56.16	6.41	1.60	35.84	0.00	77.10	21.10	1.80	33.33	28.31	38.36	
163	Sugar cane bagasse	47.50	5.50	0.50	46.50	0.00	85.13	12.16	2.71	40.66	34.28	25.06	[35]
164	Bagasse	47.75	5.61	0.10	46.55	0.00	85.91	11.39	2.70	48.52	29.58	21.90	[36]
165	Corncob	47.20	6.00	0.50	46.30	0.00	80.92	15.88	3.20	41.86	35.08	23.06	
166	Patula pine (RAW)	55.70	7.14	0.19	36.97	0.00	83.83	15.85	0.32	48.95	9.24	41.81	[37]
167	Patula pine (180-30)	55.15	7.20	0.15	37.50	0.00	82.22	17.43	0.35	49.52	9.65	40.82	
168	Patula pine (180-75)	55.40	6.96	0.00	37.64	0.00	81.49	18.15	0.36	62.29	8.79	28.92	
169	Patula pine (180-120)	56.45	6.60	0.48	36.47	0.00	80.78	18.87	0.35	54.64	10.40	34.96	
170	Patula pine (210-30)	56.91	6.74	0.44	35.91	0.00	80.92	18.72	0.36	56.58	7.63	35.79	
171	Patula pine (210-75)	58.15	6.59	0.22	35.04	0.00	78.46	21.16	0.38	36.67	5.99	57.34	
172	Patula pine (240-30)	76.03	3.75	0.35	19.87	0.00	28.59	70.48	0.93	2.35	9.71	87.93	
173	Patula pine (240-75)	72.58	2.49	0.02	24.91	0.00	32.01	66.78	1.21	4.29	3.41	92.30	
174	Patula pine (240-120)	71.17	2.65	0.08	26.10	0.00	33.90	64.87	1.23	1.95	3.29	94.76	

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