

Potential biomass fuels tested for torrefaction¹

	Sample	Chipped	Liquid (%)	Solid (%)	Gas (%)	Residence Time (mins)	Feed Rate (g/min)
1	Corn Stover	Yes	38.55	57.83	3.61	7.5	3.44
2	Annual Rye Straw Pellet	Yes	38.46	43.36	18.18	10.8	4.58
3	Wheat Straw	Yes	47.78	45.56	6.67	7.5	3.70
4	Perennial Rye Straw	Yes	41.98	46.91	11.11	7.5	8.17
5	Pea Hay	Yes	30.87	58.39	10.74	7.5	5.78
6	Sorghum Biomass	Yes	56.99	41.94	1.08	7.5	8.67
7	Poplar Planer Saw Dust (shavings)	N/A	24.53	72.17	3.30	7.5	9.2
8	Poplar Wood Chips	N/A	26.60	64.89	8.51	10.8	5.47
9	Digester Fiber - Cow manure (Sunnyside, WA)	N/A	36.08	59.79	4.12	7.5	10.9
10	<i>Arundo donax</i> harvested September, 2011 - Boardman Area	Yes	40.94	49.66	9.40	7.5	7.48
11	Poplar Coppice Compost Summer 2011	N/A	19.38	74.38	6.25	7.5	13.2
12	<i>Arundo coppice</i> (January, 2012)	Yes	41.78	47.95	10.27	7.5	6.75
13	Red Fir Wood Chips (Red fir wood chips - suitable for pulping)	N/A	15.15	83.33	1.52	10.8	9.5
14	Red Fir Bark Chips (Red fir hog fuel - principally bark)	Yes	9.89	83.96	6.15	10.8	19.9
15	White Fir Wood Pellet Fuel (<i>Abies</i>) pellets – includes zeolite (Aluminum silicate)	N/A	9.65	84.80	5.56	10.8	11.7
16	Red Fir (<i>Pseudotsuga</i> - Doug Fir) Wood Pellet Fuel	N/A	20.63	75.00	4.38	10.8	5.13
17	Mint slugs	Yes	23.08	75.00	1.92	7.5	12.73
18	Popular Planer Dust (Popular sander dust)	N/A	40.78	49.51	9.71	7.5	4.22



Who to contact

Project Information

Wendy Buck
503-464-7368

Media Inquiries

Steve Corson
503-464-8444

¹ Torrefied by Dr. Manuel Garcia-Perez, Department of Biological Engineering, WSU – Pullman, WA

	Sample	Chipped	Liquid (%)	Solid (%)	Gas (%)	Residence Time (mins)	Feed Rate (g/mins)
19	<i>Arundo donax</i> (2014 sample, including both stems and leaves)	N/A	34	53	13	8	N/A
20	Reed Canary Grass (SE OR)	N/A	38	41	21	8	N/A
21	Reed Canary Grass (NW OR)	N/A	36	44	20	8	N/A
22	Russian Olive	Yes	33	55	12	8	N/A
23	Scotch Broom	Yes	28	48	23	8	N/A
24	English Ivy	N/A	21	52	27	8	N/A
25	Himalayan Blackberry	N/A	31	50	19	8	N/A
26	Phragmites	N/A	29	54	16	8	N/A
27	Western Juniper	Yes	16	76	8	8	N/A
28	Cake (de-watered sewage)	N/A	8	47	44	8	N/A
29	BFP (de-watered sewage)	N/A	6	51	43	8	N/A