All provided information is based on the Proximate and Short Proximate Analysis testing for solid fuels in accordance with American Society for Testing and Materials (ASTM) [1].

The compiled information should be used only as a general comparative guide for agricultural renewable fuels.

The evaluated agricultural renewable fuel groups include grains, crop residues, grasses, and agricultural processing co-products.

Agricultural products naturally contain variability which is dependent on geographical regions, grain/plant varieties, and seasonal changes.

British Thermal Unit (Btu) information gathered followed ASTM standards and will vary from actual combustion performance. Ash percentage and Btu output are dependent on moisture, combustion efficiency, operation, and operating conditions. Dry matter results are a calculated value for use only as a comparative guide[2].

Cost comparative analysis must be done on a case by case basis. In addition to solid fuel proximate analysis information, consideration must be given to cost of fuel, transportation and physical processing of the fuel (grinding, milling, pelleting). These factors affect fuel cost.

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Information stated on dry basis

Grains	Btu/lb.	Ash %	Carbon %	Hydrogen %	Nitrogen %	Sulfur %	Oxygen % (by difference)	Chlorine ug/g	Chloride ug/g
Corn - Shell #2	7,810	1.15	44.57	6.60	1.23	0.12	46.40	701	520
Distillers Dried Grain with Solubles	9,579	4.88	49.85	7.17	4.83	0.40	36.19	3017	2,558
Distiller's Dried Grain without Solubles	9,709	2.03	50.41	7.09	5.62	0.67	37.35	774	690
Oats	8,746	3.55	46.65	6.66	1.80	0.18	43.40	738	576

Processing Co-Products	Btu/lb.	Ash %	Carbon %	Hydrogen %	Nitrogen %	Sulfur %	Oxygen % (by difference)	Chlorine ug/g	Chloride ug/g
Beet Pulp (dried shreds)	6,405	4.32	43.00	6.09	1.23	0.24	47.45	347	297
Glycerol (crude)	7,181	4.35	37.51	9.79	<0.20	0.10	62.38	20,755	-----
Soybean Hulls	7,720	4.29	43.24	6.22	1.75	0.17	46.60	266	270
Sunflower Hulls (Confection)	8,530	3.95	47.50	6.22	0.98	0.17	43.62	3,034	2,438
Wheat Middlings	8,240	5.89	44.89	6.56	3.08	0.26	42.68	1,078	901

Crop Residue	Btu/lb.	Ash %	Carbon %	Hydrogen %	Nitrogen %	Sulfur %	Oxygen % (by difference)	Chlorine ug/g	Chloride ug/g
Corn Cobs	7,461	8.34	42.66	5.77	0.41	0.06	45.29	1,844	1,532
Corn Stover	7,961	5.10	43.65	6.14	0.49	0.06	47.31	1,380	997
Oat Straw	7,586	7.46	42.70	5.96	0.60	0.09	45.68	8,568	10,346
Soybean Straw	7,940	3.70	45.56	6.42	0.62	0.07	46.42	1,478	1,545
Wheat Straw	7,713	7.71	43.39	5.97	0.82	0.11	44.52	525	352

Grasses	Btu/lb.	Ash %	Carbon %	Hydrogen %	Nitrogen %	Sulfur %	Oxygen % (by difference)	Chlorine ug/g	Chloride ug/g
Blue Stem	8,020	6.14	44.35	6.06	0.82	0.08	44.99	1,880	1,132
Switchgrass	7,929	5.72	45.54	6.05	0.88	0.12	44.23	1,980	1,729

Wood	Btu/lb.	Ash %	Carbon %	Hydrogen %	Nitrogen %	Sulfur %	Oxygen % (by difference)	Chlorine ug/g	Chloride ug/g
Hardwood Pellet	8,298	0.35	48.30	6.03	<.20	0.01	45.11	471	-----

[1]**Methods:** Moisture - ASTM D3173; Ash - ASTM D3174; Btu/lb - ASTM D5865; Sulfur - ASTM D4239; Chlorine - ASTM D4208; Carbon, Hydrogen, and Nitrogen - ASTM D5373
[2]**Calculated value** using ASTM D3180-89