

Life Cycle Assessment of Bioethanol Production: A Case Study from Poplar Biomass Growth in the U.S. Pacific Northwest

Supplementary Materials

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Table S1. Life cycle inventory of the feedstock and harvesting production

Year	1	2	3	4	5	6	7
Forest Annual Carbon Uptake (tonnes carbon/ha/yr)	0	4.2	4.4	7.9	8.3	8.3	7.9
Bioenergy Removals (dry ton per ha)							
Dry Tons of Dedicated Harvest	0.00	0.00	17.73	0.00	0.00	50.76	0.00
Hardwoods Uncollected Biomass (dry ton per ha)	0.00	0.00	1.30	0.00	0.00	3.74	0.00
Energy Use (per ha)							
BTU of Diesel	5,035,762	0	6,313,400	168,128	299,268	9,923,673	168,128
BTU of Lubricant	99,385	8,609	111,543	1,069	2,911	175,328	2,970
Pesticide Use (per ha)							
Grams Herbicide	9,492	2,526	1,894	6,959	3,480	3,473	6,959
Grams Insecticide	30	0	0	0	0	0	0

Year	8	9	10	11	12	13	14
Forest Annual Carbon Uptake (tonnes carbon/ha/yr)	8.3	8.3	7.9	8.3	8.3	7.9	8.3
Bioenergy Removals (dry ton per ha)							
Dry Tons of Dedicated Harvest	0.00	50.76	0.00	0.00	50.76	0.00	0.00
Hardwoods Uncollected Biomass (dry ton per ha)	0.00	3.74	0.00	0.00	3.74	0.00	0.00
Energy Use (per ha)							
BTU of Diesel	299,268	9,923,673	168,128	299,268	9,923,673	168,128	299,268
BTU of Lubricant	5,287	175,328	2,970	5,287	175,328	2,970	5,287
Pesticide Use (per ha)							
Grams Herbicide	3,480	3,473	6,959	3,480	3,473	6,959	3,480
Grams Insecticide	0	0	0	0	0	0	0

Year	15	16	17	18	19	20	21
Forest Annual Carbon Uptake (tonnes carbon/ha/yr)	8.3	7.9	8.3	8.3	7.9	8.3	8.3
Bioenergy Removals (dry ton per ha)							
Dry Tons of Dedicated Harvest	50.76	0.00	0.00	50.76	0.00	0.00	50.76
Hardwoods Uncollected Biomass (dry ton per ha)	3.74	0.00	0.00	3.74	0.00	0.00	3.74
Energy Use (per ha)							
BTU of Diesel	9,923,673	168,128	299,268	9,923,673	168,128	299,268	11,618,339
BTU of Lubricant	175,328	2,970	5,287	175,328	2,970	5,287	205,270
Pesticide Use (per ha)							
Grams Herbicide	3,473	6,959	3,480	3,473	6,959	3,480	16,100
Grams Insecticide	0	0	0	0	0	0	0