

Miles per Acre of a 2001 Toyota Prius

The 2001 Toyota Prius has not been designed as a flex-fuel vehicle, however at least one study [1] has documented short-term vehicle operation on E85. Based on this information, I have replicated the results of the study by operating a 2001 model year prius with 4 test runs over the past 6 months.

As a comparison to corn based ethanol, miles per acre using sweet sorghum are shown based on the Sorganol [2] process of in-field harvesting and processing of sweet sorghum into Ethanol with a projected yield of 6000 gallons per acre of sorghum juice and a 1000 gallons per acre yield of distilled ethanol.

Estimated EtOH in tank from previous E10	0.2	Corn, Bushels per acre	180		
Estimated gasoline in tank from previous E10	1.8	Corn, Gallons EtOH /bushel	2.9	Sweet Sorghum	1000
				EtOH/acre	

Date	Trip mileage	Gallons E85	Prius MPG	Gallons EtOH	Gallons Gas	Bushels Corn	Acres Corn	Corn Mi/Acre	Sorghum Acres	Sorghum Mi/Acre
04/07/07	231	5.19	32.9	4.61	2.58	1.59	0.0088	26,163	0.0046	50,120
07/10/07	254	6.50	36.1	5.73	2.78	1.98	0.0110	23,146	0.0057	44,340
08/18/07	249	6.74	40.3	5.93	2.81	2.05	0.0114	21,913	0.0059	41,979
08/31/07		6.56	--	5.78	2.78	1.99	0.0111	0	0.0058	0

The miles per acre figures above are calculated based on 2 gallons of E10 fuel remaining in the 11 gallon Prius fuel tank, and are only based on the total miles traveled for both ethanol and gasoline, so the numbers are artificially inflated. Adjusted numbers using the Prius reported trip MPG figures and the estimated gallons of Ethanol are shown to the left.

	Adj. miles	Corn Mi/Acre	Sorghum Mi/Acre
04/07/07	151.63	17173.8	32900
07/10/07	206.80	18844.2	36100
08/18/07	239.04	21036.6	40300

[1] <http://www.greenenergynetwork.com/media/studies/prius-e85.PDF>

[2] <http://www.sorganol.com>