

## Climate and environmental pollution caused by important energy crops

Plant, fruit	Raw material	Process or use	Product	Nitrogen requirement, (cause of greenhouse gas N <sub>2</sub> O)	Use of herbicides, fungicides, pesticides
<b>Beet, potato, grain, corn</b>	Plant material containing sugar and starch	Fermentation into ethanol	Fuel, ("bioethanol", fuel additive)	<b>High</b>	<b>High</b>
<b>Sugar cane</b>	Plant material containing sugar and starch	Fermentation into ethanol	Fuel, ("bioethanol", fuel additive)	<b>High</b>	<b>Low</b>
<b>Rapeseed, sunflower seeds</b>	Plant material containing oil	Pressing, extraction, transesterification	Fuel, ("biodiesel", fuel additive)	<b>High</b>	<b>High</b>
<b>Oil palms</b>	Plant material containing oil	Pressing, extraction, transesterification	Fuel, ("biodiesel", fuel additive)	<b>Medium</b>	<b>High</b>
<b>Jatropha</b>	Plant material containing oil	Pressing, extraction, transesterification	Fuel, ("biodiesel", fuel additive)	<b>Medium</b>	<b>Low</b>
<b>Straw</b>	Wood chips	Combustion	Heat and possibly electricity	<b>None</b>	<b>None</b>
<b>Miscanthus (Chinese silver grass, elephant grass)</b>	Wood chips	Combustion	Heat and possibly electricity	<b>Low</b>	<b>Low</b>
<b>Hemp</b>	Wood chips	Combustion	Heat and possibly electricity	<b>Low</b>	<b>Low</b>
<b>Trees, bushes</b>	Logs, wood chips, pellets	Combustion	Heat and possibly electricity	<b>Low</b>	<b>Low</b>
<b>Grass clippings, plant waste</b>	Chopped pieces	Anaerobic fermentation into methane ("biogas")	Electricity and heat (combustion in gas turbines, engines)	<b>Low</b>	<b>Low</b>
<b>Corn, grain, beet</b>	Chopped pieces	Anaerobic fermentation into methane ("biogas")	Electricity and heat (combustion in gas turbines, engines)	<b>High</b>	<b>High</b>

Sources for this table: Schlipf et al; Handbuch der Landwirtschaft [Farming Manual]; website of the training and research stations at the University of Bonn; website of the Bayerische Landesanstalt für Wald und Forstwirtschaft [Bavarian State Institute of Forestry]; FAO databases (Food and Agriculture Organization of the United Nations).