Florida Native Plant Society Policy Statement on Bioenergy Crops

A. Policy Statement

The Florida Native Plant Society supports the development and use of bioenergy crops as an important element of a comprehensive energy strategy to reduce the generation of greenhouse gases, provided such crops will maximize carbon savings while producing a minimum of negative ecological impacts. The following conditions shall be construed as necessary to ensure that the ecological impact of bioenergy crops and sources is minimized:

- Existing conservation lands and significant natural areas must not be converted to accommodate the production of bioenergy crops.
- Non-native plant species that are known to be invasive, or are predicted to have high potential to become invasive in Florida, shall not be cultivated for use as carbon sources (Barney and DiTomaso 2008, Simberloff 2008).
- Tree and crop residues generated during the harvest of lands in silviculture and agriculture, waste biomass generated during habitat restoration projects, and urban waste wood should be used as sources of biomass energy to the extent feasible, provided such usage does not significantly reduce soil organic matter.
- Plant species native to Florida should receive preferential consideration as potential bioenergy crops, and such crops should be derived from local germplasm under circumstances where gene exchange with local congeners is likely to occur.
- The direct and indirect environmental consequences of land conversions to accommodate bioenergy crops, including biodiversity impacts and those affecting water quantity and quality, should be incorporated into all cost/benefit analyses related to bioenergy production (Mulkey et al. 2008).

B. Background

Bioenergy crops are grown either for biomass energy production, which involves burning plant material to produce electricity (replacing coal and other sources of electricity), or biofuel production, which uses biochemical action and heat to convert plant material into a fuel that can be burned (replacing petroleum and natural gas). The combustion of biomass and biofuel for energy production releases CO_2 that was removed from the atmosphere as the plants grew, and thus does not constitute a net increase in atmospheric CO_2 (Mulkey et al. 2008). However, the conversion of vegetation to energy requires some petroleum inputs, the magnitude of which can vary greatly depending on the plant species used, the process involved, associated transportation costs, etc. (Searchinger et al. 2008). As with conventional agricultural and silvicultural crops, the more sustainably a bioenergy crop is managed, the lower the energy and water inputs necessary.

Replacing conventional sources of energy with bioenergy crops may result in a number of costs and benefits relevant to the mission and membership of the Florida Native Plant Society. Decreased releases of greenhouse gases should decrease climate variability over the long-term, reducing environmental stresses to native species. However, increased cultivation of bioenergy crops is already incurring significant conversion of native habitats (Fargione et al. 2008, Searchinger et al. 2008). That conversion releases carbon stored in vegetation and soils and displaces native species. Cultivation and processing plant biomass can require substantial freshwater inputs, particularly for ethanol production (Mulkey et al. 2008). Both water quality and quantity may be impacted by bioenergy crop production.

Additionally, several of the non-native species proposed for cultivation in Florida and elsewhere have the potential to become invasive (Raghu et al. 2006, Barney and DiTomaso 2008). The creation of extensive monocultures of non-native species like elephant grass (*Pennisetum purpuretum* L.), giant reed (*Arundo donax* L.) and physic nut (*Jatropha curcas*) would significantly increase "propagule pressure", which is positively correlated with the probability that a species will become invasive (Lockwood et al. 2005, Mack 2008, Reaser et al. 2008). There are plant species native to Florida that may be suitable for use as bioenergy crops (e.g., switchgrass (*Panicum virgatum*)), and non-native species that have a long history of successful cultivation in Florida and no propensity for invasiveness (sugar cane). Such species should receive preferential consideration as potential bioenergy sources.

References

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