

NEWS RELEASE: "Forestry Articles"

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The attached article (*Wood Energy Plantations*) is the last in a series of 6 articles that address wood energy, especially for the upper Lake States. The series began with 'challenges' then 'definitions', and this article talks about how plantations might become a more common landscape feature to support a developing wood energy infrastructure. The article has about 600 words.

This is the 163rd article in a series of monthly articles since May, 1997. Feel free to contact me if you have questions about this article or natural resources and natural resource management in general. I'm also open to suggestions for additional articles, if you have identified a particular need. The entire collection can be viewed on the Michigan Society of American Foresters website [<http://michigansaf.org/ForestInfo/Newspaper/0000-Directory.htm>].

Wood Energy Plantations

Wood energy plantations may be a common landscape feature of the future. Or not.

On the positive side, better-controlled wood quality can be grown closer to wood energy mills. Volumes per acre are several times higher than natural forests. Transportation costs can be substantially reduced, which are a large part of the cost of wood procurement.

On the negative side, plantations are expensive and the necessary commercial infrastructure and technology have yet to be developed. At this time, few markets are available to purchase plantation-grown wood. Also, resistance to insects and diseases becomes more important when planting large areas of genetically similar stock.

Many wood energy production systems perform better by using wood with a particular set of specifications. Growing mill-tailored wood may be a viable option, similar to the large wood plantations in central Minnesota that help feed a pulp and paper mill. There many other examples across the USA and worldwide. Doing the research to figure out which genetic mix grows best on particular sites will be critical in achieving economic viability.

In Michigan, there are about 8 million acres of retired farmland. A portion of that farmland may be eligible for wood energy plantations. This puts land back to work and could help support a growing Michigan industry. It's unlikely that natural forest would be converted to plantations.

Varieties of willow and poplar currently appear to be the most likely candidates. Poplar may yield more useable wood than willow over time and offer the opportunity for other products. On the other

hand, willow rotations occur about every three years and poplar rotations every 8-10 years. An investor may see some return in less time with willow.

Poplar can be harvested with currently technology. Willow will need to have a different technology imported and modified. Both species require specialized planting and tending technology. And, of course, commercial production of planting stock will need to be ramped-up. Both species are planted using branch segments (eight-inch sticks), not seed.

Establishing a wood energy plantation involves a process and spacing more similar to agricultural crops than to forestry. However, after the first year or two, inputs will be minimal for several decades, unlike the annual inputs for agriculture.

The need for special machinery and skills might be met by a new breed of contractor, or maybe a cooperative. Few landowners will be able to afford the expense of their own planting and harvesting machinery.

Wood is one form of cellulosic plant material. Cellulose is the main structural ingredient of plants. Agricultural residues may provide additional cellulosic feedstock. So might specially-grown crops such as switchgrass, Miscanthus, and other grasses. Depending upon the needs of a particular energy producer, agricultural feedstocks offer opportunities, too.

However, agricultural crops have higher ash and chemical content. They are also available only certain times of the year, or need to be stored, which would be an additional cost. Annual crops require fairly high annual energy and chemical inputs. Perennial grasses have inputs more similar to wood energy plantations.

Wood energy research has been ongoing for decades, but the pace, urgency, and budgets have increased over the past few years. Both MSU and MTU are involved with wood energy plantation research, as well as cooperators across North America and from several European nations. Research plantations dot the landscape across much of the state. The first commercial plantation in Michigan was established in 2009 in Marquette County. The drive to reduce fossil fuel consumption will likely include wood energy among the various replacement technologies. And, wood is one of the options for which Michigan holds trump cards.