

Assessment of Michigan Non-industrial Private Forest Owners' Willingness to Supply Biomass for Bioenergy

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Abstract

Non-industrial private forest (NIPF) owners are the major forest ownership group in Michigan and own approximately 47% of the state's timberlands. Hence they play an indispensable role in the sustainability of the state's forests as well as in the continuing operation of the timber industry. Recently increased interest in bioenergy production has further emphasized the importance of this ownership group in the wood supply chain and a number of studies nationwide are being conducted to understand the harvesting behavior of NIPF owners. The objective of this Michigan study is to understand the perception of Michigan NIPF owners towards wood-based bioenergy and to identify the factors influencing their willingness or unwillingness to supply biomass for energy. The results indicate awareness of and positive attitudes towards woody biomass energy among a majority of the landowners. However, less than half (42%) of the landowners are currently willing to harvest timber from their forests for energy purposes. Lack of interest, concern about the ecological impact of harvesting timber and perceived low financial benefits are some of the main reasons landowners give for their reluctance to supply biomass.

Introduction

Increased interest in alternative energy production from woody biomass has recently been observed in Michigan due to concerns over energy security, environmental health, and economic growth. This has placed significant pressure on the state's timberlands, particularly private forests, for supplying wood fiber to meet the demands of both current forest products markets and emerging bioenergy markets. It is essential, therefore, to understand the fiber supply from the 8.8 million acres of non-industrial private timberland in the state. Predicting the harvesting behavior of NIPF owners is not simple as it includes a diverse and dynamic set of people with varying personal values, attitudes and management objectives. This study is an attempt to understand Michigan NIPF owners' opinions towards bioenergy and their willingness or unwillingness to supply biomass if markets existed for it in the future.



Fig 1. Wood as a source of energy

Study Area

The study area includes twenty nine counties located in the north-eastern region of Michigan. These counties lie within 150 miles radius of a proposed cellulosic ethanol facility in Kinross, Michigan.

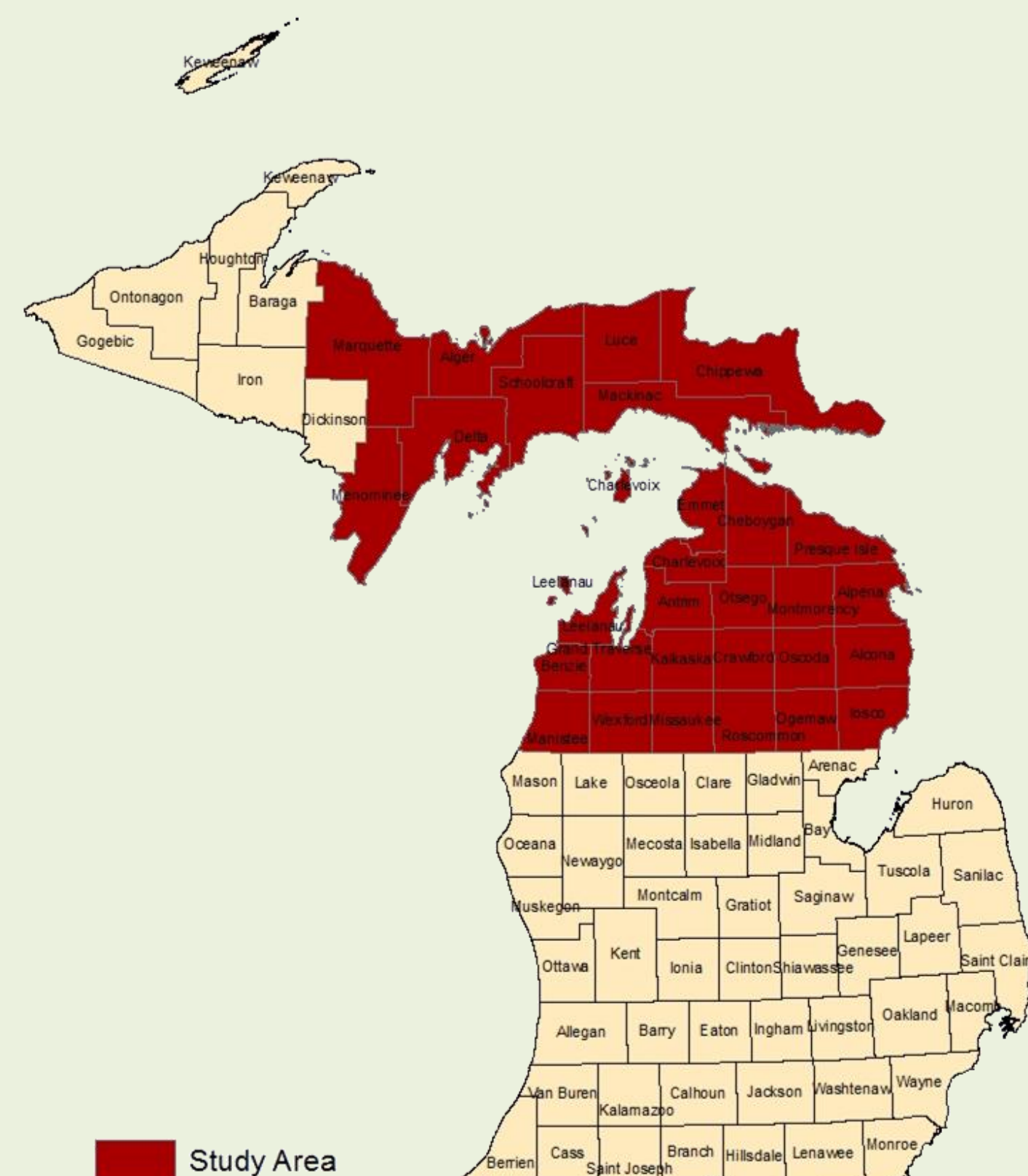


Fig 2. Map of the study area showing counties used for the survey in red

Methods

A mail survey of 1,600 randomly selected landowners owning at least 20 acres of forest in the study area was conducted from November to December 2010 using the Tailored Design Method. The overall response rate after taking into account the undeliverable addresses was 39%.

Results

Demographic characteristics

- ❖ The majority of the respondents (85%) are male with an average age of 61 years and have at least some college education.
- ❖ Approximately half of them (49%) are retired with an annual income of more than \$60,000.
- ❖ Approximately 34% of the respondents reside on their woodlands, while others live on average 228 miles away from their nearest forested parcel.
- ❖ Privacy, to enjoy beauty or scenery, to protect nature and biological diversity, as part of residence, and hunting or fishing are all important reasons for owning the forest land.
- ❖ Approximately 83% of the landowners purchased their property while 20% inherited it.

Landowners' view towards bioenergy

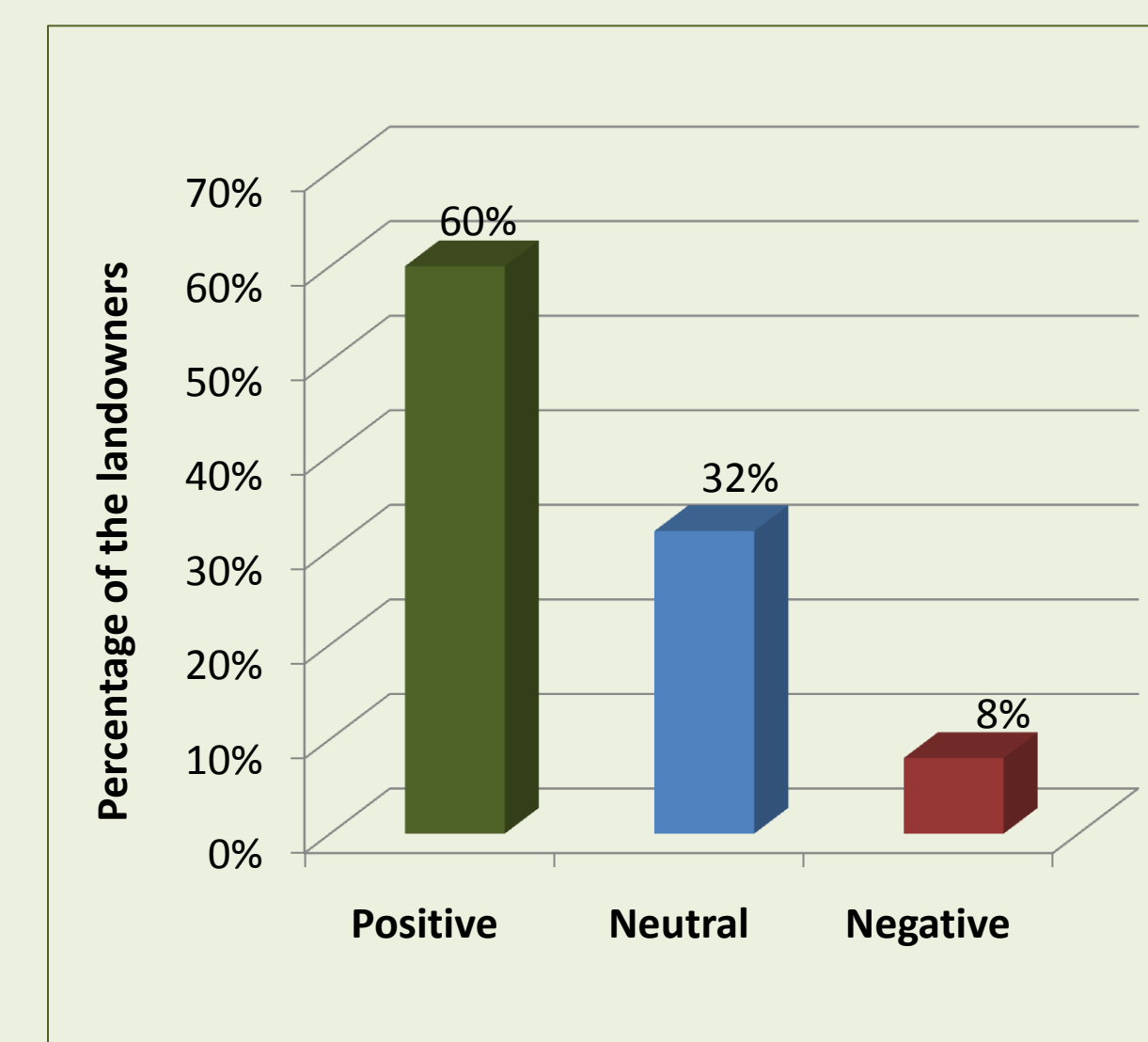


Fig 3. Landowners' perception towards wood-based energy

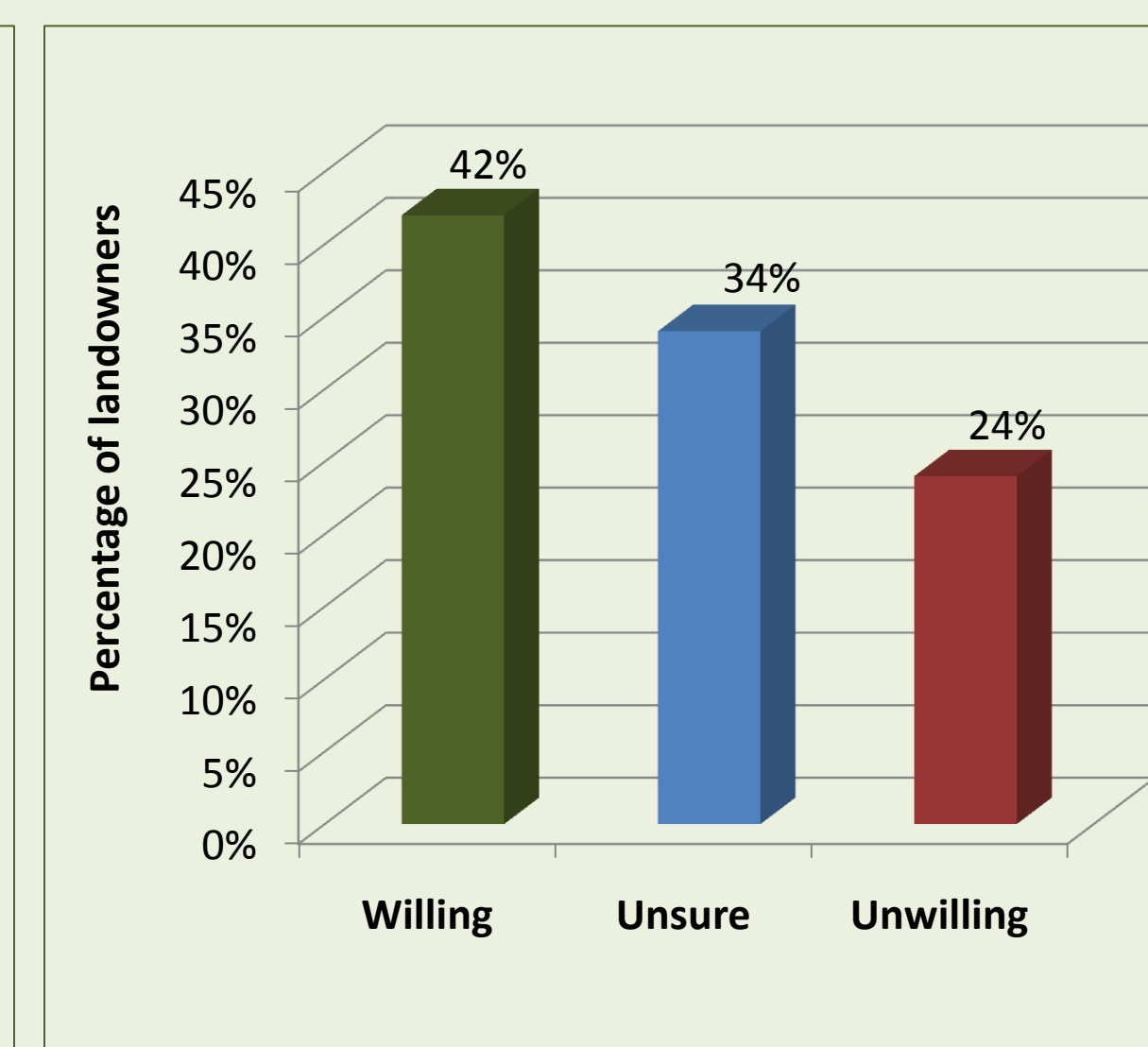


Fig 4. Landowners willingness/unwillingness to supply biomass for bioenergy

- ❖ The majority of landowners (81%) are aware of alternative energy production from woody biomass and approximately 60% agreed that alternative fuel production from woody biomass can create economic opportunities for Michigan landowners.
- ❖ On average, 42% of the landowners are willing to produce and sell timber from their forests for bioenergy purposes.
- ❖ The price of timber and low investment costs are identified as the most important factors for producing and harvesting timber for conversion to alternative energy.
- ❖ Approximately 33% of the landowners are willing to establish energy plantations on their land and 8% are willing to lease their property for the same.

- ❖ Only 18% of the landowners are willing to harvest timber for biomass at the current market price of pulpwood (\$24/cord). However, this number increased to 52% when the price was doubled.
- ❖ A small percentage of the landowners (8%) showed a preference for harvesting timber for bioenergy over pulpwood. Likewise, 8% showed a preference for pulpwood over bioenergy.

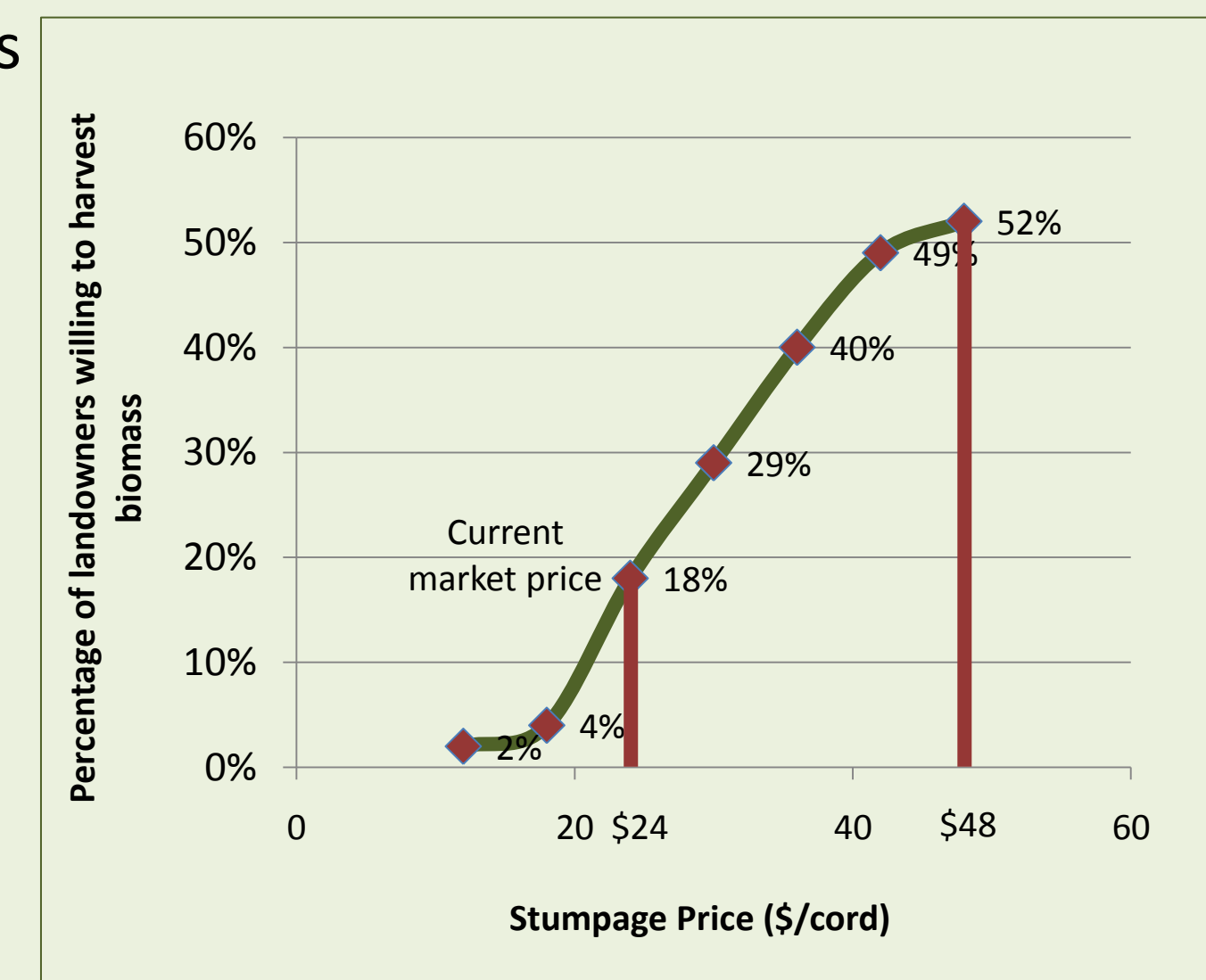


Fig 5. Landowners' willingness to supply biomass at various price levels

Reasons for Landowners' unwillingness to supply biomass

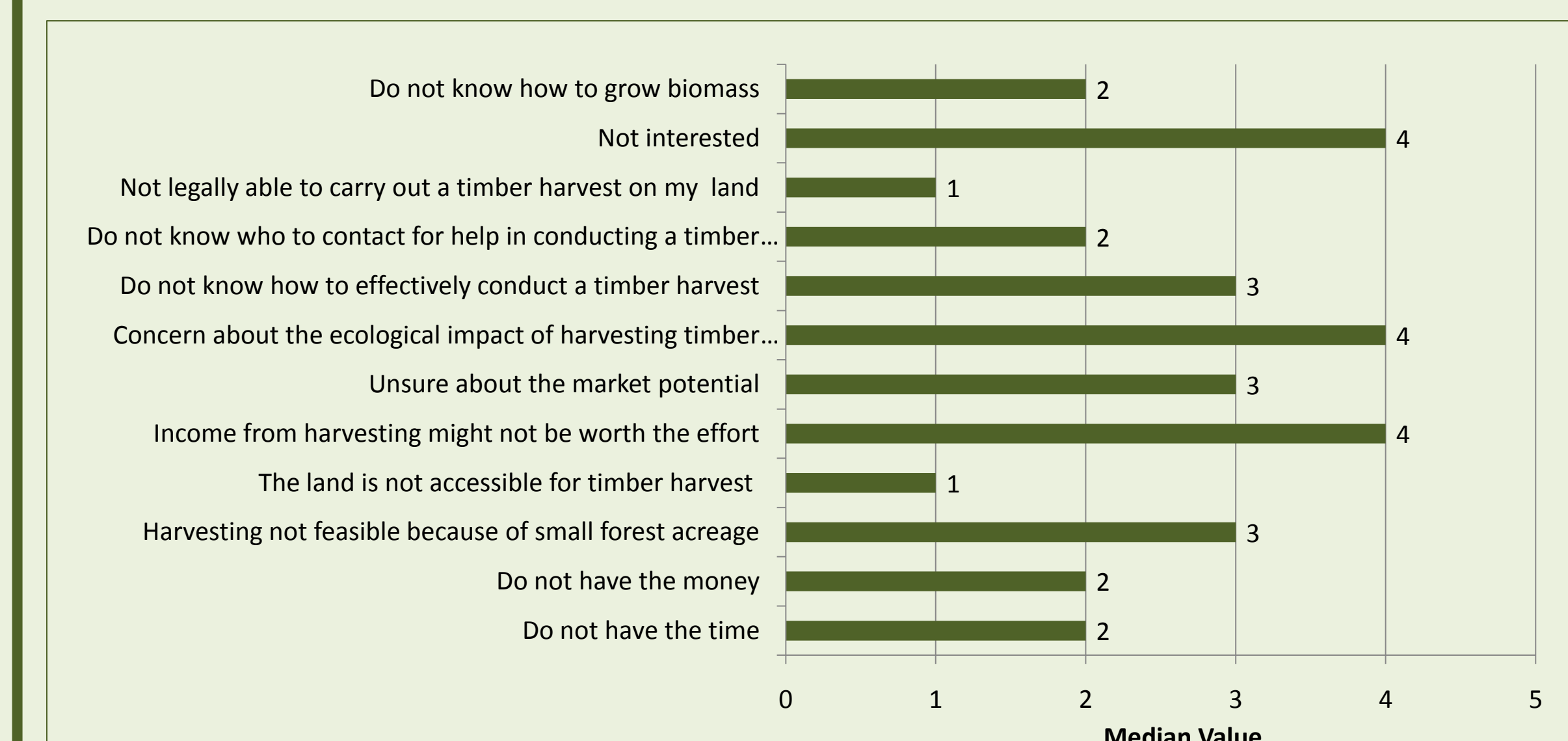


Fig 6. Reasons for landowners' unwillingness to supply biomass for energy. (Median value 5 = high importance and 1 = low importance)

- ❖ Lack of interest in harvesting, the perception that income might not be worth the effort, and concern about ecological impact of producing and harvesting timber for energy are the major reasons for landowners' unwillingness to supply biomass.

Discussion and Conclusion

Our results indicate awareness and positive attitudes among Michigan landowners towards wood based bioenergy. While this is encouraging for the future of bioenergy sector within the state, many landowners seem to expect high prices for woody biomass compared to those for pulpwood. Knowledge about the types and quality of wood that can be used for bioenergy generation needs to be created. Since landowners are concerned about the ecological impacts of harvesting biomass, outreach efforts aimed at enhancing awareness regarding beneficial economic and ecological impacts of using woody biomass for bioenergy could also help promote woody biomass energy.

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