

Wood Bioenergy and Private Forests in the Eastern U.S.*

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Introduction

Perceptions by some are that the Nation's privately held forests can provide furnish for the development of a woody biofuel industry (Perlack et al. 2005). Since 75 percent of the privately held forests are in the East (315 million acres of 423 million acres in private ownership), we conducted this study in those states conterminous to and east of the Mississippi River.

The research questions were: 1) Will the supply of wood-based biofuel from private forestlands meet the needs of production companies? 2) What are the opportunities and concerns of communities, residents, and existing wood-based industries regarding biofuel facilities? 3) How will communities and residents respond to these opportunities and concerns?

Material and Methods

The mixed method approach employed in this study consisted of Key Informant interviews (KIs) and a phone survey of the general population and private forest landowners (PFLs) in the eastern United States. The KIs were conducted in two counties in each of five states selected to represent the range of forest types, market conditions, and social conditions in the region. We conducted approximately 20-30 interviews in each case study site.

The phone survey instrument was developed using the information and insights obtained through the KIs and better captured many of the issues and relationships identified on a local or regional level. Two surveys were conducted – general population and PFLs; the PFL survey is the only survey for which results are presented in this paper. More than 900 interviews were conducted as part of the PFL survey distributed across the study area. The survey included questions regarding the respondents' knowledge of and attitudes about forest management and bioenergy, ownership motivations, past and planned forest management activities, and sociodemographic characteristics.

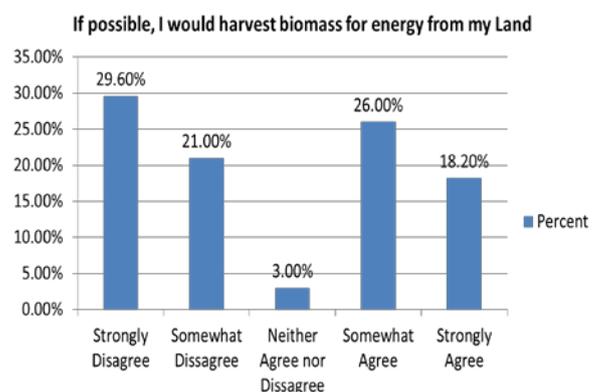
*This research is from Finley, J.; A.E. Luloff, D.G. Hodges. Can the Biofuels Industry Access Biomass from Non-Industrial Private Forests? U.S.D.A National Institute of Food and Agriculture and Food Research Initiative Competitive Grants Program.

Results

The KIs and survey provided some interesting insights into PFLs regarding their interest in biofuels as an alternative product from their forests. The majority of the paper is focused on the survey results, but the KIs did offer some useful information regarding woody bioenergy. Across the five states where the interviews were conducted, six broad themes were consistently mentioned: landowner rights, economic opportunity, education, markets, environment, and community context. Of particular interest were the comments about landowner rights and education. Regarding landowner rights, respondents believed that the public should be involved in public land decisions and that there were experts in place to manage those lands. When it came to private lands, however, the interviewees consistently noted that the individual PFL was responsible for making decisions about the use of their land. On education, the KI results identified two critical issues: education about forests is needed for both landowners and the general public, particularly where large in-migration and declining traditional ties to the land was prevalent; and people do not understand biomass and biofuel and are not in a position to make wise decisions about this industry.

The survey allowed for a more focused and quantitative assessment of forest owner attitudes and interest regarding wood-based bioenergy and forest management. Figure 1 provides responses to the statement "If possible I would harvest biomass for energy from my land", and indicates a strong dichotomy between the respondents. Approximately 50 % indicated that they strongly or somewhat disagree, while less than 45 % strongly or somewhat agreed with the statement. Interestingly, the percentages were reversed when asked if they would harvest only material remaining after other harvests for energy.

Figure 1. Percent of PFL respondents who agreed with harvest biomass for energy from their property.



Examining simple correlations and developing a logistic regression model between willingness to harvest for biomass and a variety of explanatory variables provides more insights into these relationships (Table 1). Examining the correlations identifies a number of strong relationships between interest in biomass harvests and PFL attitudes and past and planned management actions. Specifically, any type of value placed on the forest property by the landowner, regardless of use or non-use orientation, as well as timber or non-timber plans was positively correlated with a willingness to harvest biomass. Not unexpectedly, knowledge of forest industry or the emerging biomass industry and positive attitudes regarding biomass harvesting were correlated with a willingness to harvest, as was past harvest experience.

Table 1: Correlations and regression results between willingness to harvest for biomass and explanatory variables.

| Explanatory Variable | Corr | β | S.E. |
|------------------------------|--------|---------|------|
| Forest Area | 0.11** | -.01 | .041 |
| Use Values | 0.10** | .01 | .01 |
| Exchange Values | 0.26** | .02 | .02 |
| Timber Orientation | 0.32** | .04* | .01 |
| Non-Timber Orientation | 0.14** | -.04 | |
| Biomass/Industry Knowledge | 0.16** | .03 | 4.90 |
| Biomass Harvesting Attitudes | 0.46** | .37*** | 5.09 |
| Corporation/Partnership | -0.05 | -2.94* | 8.27 |
| Harvest experience | 0.18** | .20 | .16 |
| Plan to harvest | 0.25** | .10* | .11* |

*: p<0.05; **: p<0.01; ***: p<0.001

The results for the logistic regression were less encompassing but provided some interesting results as well. Only three variables were found to be significant in the final model. The first two statistically significant variables, possessing a timber orientation for future management activities and holding a positive attitude about biomass harvesting, were not surprising and are similar to numerous studies regarding harvesting behavior.

The sign of the third significant variable, respondents who are classified as representing a corporate or partnership form of forest ownership was initially surprising, but is logical upon further examination. A good deal of controversy has been generated around biomass harvests for energy by the traditional forest products industries (solid wood products, pulp and paper), primarily due to concerns over increased wood prices from the added competition (Favero and Mendelsohn, 2014, Guo et al., 2013). As a consequence, many forest

products companies, most often characterized as corporations or partnerships, are less likely to respond positively to harvests designed to assist potential competitors, in this case bioenergy producers.

Discussion

This brief overview of the survey results provide some interesting insights into the emerging woody biomass for energy industry. First, many PFLs react very similarly to potential markets for woody biomass as they do to more traditional markets such as pulpwood and sawtimber. That is, they do not behave as a monolithic group focused solely on profit maximization for their forests. Instead, PFLs in the U.S. exhibit a range of behaviors reflecting multiple ownership and management objectives -- ranging from profit maximization to an emphasis on utility. Developing market opportunities and willing sellers will require much of the same approaches that have been employed in the past -- providing market information and technical assistance as needed. Interestingly, the KIs pointed to a recognition by PFLs and others that more education is needed in areas with new residents and/or landowners regarding the utilization of forest resources and its sustainability.

Woody biomass for energy, however, offers a somewhat unique question for landowners. While it can be viewed as another product that produces income for owners, it also represents an opportunity to contribute to the demand for alternative fuel sources, which interests many owners. Conversely, other view this new 'product' as a potential competitor for traditional wood products and may not be willing to participate. Thus, education again may play an important role in defining the role of woody biomass for energy in sustainable forest management.

References

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