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Test Biomass Harvests Yield Important Lessons

Minneapolis – A series of test forest biomass harvests from the Superior National Forest in northeastern Minnesota indicate that such harvests could reduce the cost of fire prevention management while providing work for loggers and fuel for renewable energy facilities.

The findings were released today in the study, "Harvesting Fuel: Cutting Costs and Reducing Forest Fire Hazards Through Biomass Harvest," coauthored by Don Arnosti (Institute for Agriculture and Trade Policy), Dr. Dalia Abbas (University of Minnesota) and Dr. Michael Demchik (University of Wisconsin-Stevens Point). Biomass is material in the forest not traditionally utilized in pulpwood or sawtimber markets, such as shrubs, small-diameter trees, tree branches, and coarse woody debris.

"While the test harvests took place in Minnesota, we believe many of the lessons from this research will be applicable around the country," said Arnosti. "If we are smart about how we harvest biomass, we can reduce fire risks, cut forest management costs and provide a source of renewable fuel."

The researchers conducted nine test harvests in Superior National Forest, which includes areas of high fuel loads (dense understory vegetation and dead material) that create fire hazards. Harvesting biomass to accomplish the goals of fuel reduction, improved forest management, and supplying material for energy production is an emerging practice in Minnesota and around the country.

The study was designed to look at two challenges in the development of biomass markets around Superior National Forest: 1) economic and operational issues faced by loggers; and 2) environmental constraints of concern to land managers, scientists and policymakers involved in developing and refining biomass harvest practices. Forest planning and management practices designed for timber harvest, not biomass, provided a further challenge examined by this project.

"As with all timber harvests, it is important to carefully monitor environmental impacts, particularly the impacts on soil quality and wildlife," said Dr. Demchik, "but if the harvest is done in an environmentally sound manner, by following the Minnesota Forest Research Council's guidelines, adverse environmental effects can be avoided."

The study compared costs of conventional mechanical methods to reduce fire hazards with the biomass removal option. Researchers found that the biomass model reduced costs in six of the nine test harvests by altering conditions.

"We found that biomass removal can reduce fuel treatment costs and may be a viable approach for forest managers," said Dr. Abbas of the University of Minnesota. "Key factors to consider for whether a biomass harvest makes sense include: the practicality of the harvest guidelines, the area of the site harvested, site terrain and accessibility, number of machines involved in the biomass harvest and the hauling distance of machinery to the forest and of biomass from the forest to the plant."

The research represents one of the only academic studies to include interviews with machine operators on biomass harvesting logistical challenges. Machine operators emphasized the importance of effective communications on harvest requirements, early planning and coordination of operational details such as equipment and the need for a fairer means to set payment levels.

“Feedback from the loggers really helped to ground the data and provided some great insights into obstacles, as well as how this approach can be done effectively,” said Jim Sanders, Supervisor of the Superior National Forest.

Among the study’s other findings:

- Incorporating an early understanding of the logistics into the harvest plans can reduce management and production costs;
- Site prescriptions, distance to market, size and efficiency of operations and the type of equipment all influence the economic viability of biomass harvests as a tool to manage forests.
- The environmental effects of biomass removal on soils, wildlife habitats and other natural features can be mitigated in Minnesota by following the Minnesota Forest Resource Council’s Biomass Harvesting on Forest Management Sites.

The full study, along with an Executive Summary, can be viewed at: www.forestrycenter.org.

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