In-Field Transport of Woody Crops

*Dana Mitchell, USDA Forest Service, Southern Research Station[1]
John Klepac, USDA Forest Service, Southern Research Station[1]
Jason Thompson, USDA Forest Service, Southern Research Station[1]

Harvest system planning is still a difficult task for short rotation woody crop (SRWC) management. The volume of wood produced in a single field may fluctuate based on site conditions (microsites), genetics, weather, management and a host of other considerations. This variability contributes to transportation difficulties.

Swathe chip-at-the-stump harvesting systems could capture chips by using a towed trailer or an on-board hopper. Changing trailers involves logistics issues, such as planning trailer exchanges at the ends of rows, determining the number of trailers needed, and matching row volumes to trailer capacity to improve transportation efficiencies. On-board hoppers require a harvesting machine to stop chipping so that they can perform in-field transportation to dump a full hopper. As a result, a common practice for chip-at-the-stump swathe harvesting systems includes capturing chips with separate equipment as the swathe machine travels down planted rows.

For in-field chip capture and transport, swathe harvesting systems often use whatever types of truck and trailer combinations are available in an area. These trucks travel in line with, or beside, the swathe harvesters and capture the chips that are 'blown' from the chipper's spout. In 2014, we observed the harvest of a short rotation woody crop near Boardman, Oregon. The trucks were normally used to haul a local agricultural crop, potatoes. Three different truck configurations were used to transport chips from the field, often from the middle of a planted row, to a nearby storage location. We observed in-field trucking operations and examined minimum truck turning paths.

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[1] USDA Forest Service, Southern Research Station, Forest Operations Research Unit, 521 Devall Drive, Auburn, AL 36849 334-826-8700 Dana Mitchell danamitchell@fs.fed.us, John Klepac jklepac@fs.fed.us, Jason Thompson jasonthompson@fs.fed.us

Biographical Sketch for Dana Mitchell

Dana Mitchell is a Research Engineer and the Project Leader of the USDA Forest Service, Southern Research Station, Forest Operations Research Unit, in Auburn, Alabama. Dana has degrees from Washington State University, Oregon State University, and Auburn University. She has had a long career with the Forest Service, both on the National Forests and in Research and Development. In 2001, she left federal government employment to work for Georgia Pacific. She returned to the Forest Service in 2004 and has been studying topics related to biomass harvesting, fuels reduction treatments and forest operations technologies. Some of her current research topics include air quality on biomass chipping operations, impacts of extended working hours in logging, and short rotation woody crops harvesting technologies.