

## Metadata form of Silva Fennica

This form is designed for writing the elements of metadata, which are used in the description of research materials such as data and codes. The form is based on the work done in the Work Group “Description of research materials” under the Finnish Open Science Coordination.

Item	Description	Responsible
<i>Name of the data / code</i>	Research data for the article “Productivity and cost of cut-to-length harvesting on small wet sites in the US South.”	Author
<i>Author &amp; ORCID</i>	<sup>a</sup> Bolding, M. Chad, <a href="https://orcid.org/0000-0002-6212-7133">https://orcid.org/0000-0002-6212-7133</a> <sup>a</sup> Conrad, Joseph L., <sup>b</sup> Magagnotti, Natascia, <a href="https://orcid.org/0000-0003-3508-514X">https://orcid.org/0000-0003-3508-514X</a> <sup>b</sup> Spinelli, Raffaele, <a href="https://orcid.org/0000-0001-9545-1004">https://orcid.org/0000-0001-9545-1004</a> <sup>a</sup> Miller, Timothy R., <a href="https://orcid.org/0009-0005-5499-3073">https://orcid.org/0009-0005-5499-3073</a>	Author
<i>Authors' affiliation(s)</i>	<sup>a</sup> Harley Langdale Jr. Center for Forest Business, Warnell School of Forestry and Natural Resources, University of Georgia, Athens, Georgia, USA <sup>b</sup> Consiglio Nazionale delle Ricerche, Istituto per la Bioeconomia (CNR IBE), Firenze, ITALY	Author
<i>Owner of the material</i>	The University of Georgia, <a href="https://ror.org/00te3t702">https://ror.org/00te3t702</a>	Author
<i>Publisher</i>	The University of Georgia, <a href="https://ror.org/00te3t702">https://ror.org/00te3t702</a>	Author
<i>Funder</i>	Harley Langdale Jr. Center for Forest Business, University of Georgia, Athens, GA USA, <a href="https://ror.org/00te3t702">https://ror.org/00te3t702</a>	Author
<i>Description</i>	Master database in Microsoft Excel format of time and motion productivity data associated with the Ponsse Ergo Harvester and Ponsse Elephant Forwarder performing the operations of harvesting-processing, forwarding, and loading while working in wet soil conditions in the US South.	Author
<i>Methods</i>	Cycle-level elemental time studies were conducted for felling-processing, forwarding, and loading. The harvester cycle consisted of the felling and processing of one tree, while a forwarder cycle consisted of the extraction of one load or the loading of one truck – depending on the job being performed. Harvester cycle time was associated with the species and the volume of the tree being harvested as reported on the harvester on-board display. Tree volume (m <sup>3</sup> ), pieces/logs processed per tree (n <sup>o</sup> ), cycle time per tree (s), and observed delays determined harvester productivity in both trees per productive machine hour (pmh) and m <sup>3</sup> pmh <sup>-1</sup> . Multiple linear regression was used to predict felling and processing time per tree (s) as a function of tree volume (m <sup>3</sup> ) and species. Forwarder cycle times (s) consisted of outhaul, load, move, inhaul, and unload (either cold decking or hot decking onto an awaiting truck). Forwarding distance (m), logs per load, and stops per load were recorded for each cycle. To determine forwarder truck loading productivity, truck docketts were recorded, so that each specific load could be tracked and associated to a weight determined by the receiving mill. This procedure provided estimates of mean log size and extraction cycle volumes (e.g., mean log volume x n <sup>o</sup> of logs in the load). The number of logs per load, loading time, and grapple loads were separated by either cold or hot decking and front or rear truck bunks. The hourly owning and operating costs of the harvester and forwarder were estimated using the machine rate method. Hourly machine costs were combined with hourly productivity estimates in a modified version of the Auburn Harvesting Analyzer. Data analysis consisted of a preliminary consistency check, the extraction of descriptive statistics, the assessment of significant differences through non-parametric tests (Mann-Whitney U-test) and the estimation of regression	Author

	equations for selected variables. Statistical significance was assumed for $\alpha < 0.05$ .	
<i>Variables</i>	Harvesting: Volume per tree, time per tree, pieces per tree, delay per cycle, species  Forwarding: Date, trip number, product, travel distance, cycle time, operator number  Loading: Date, trip number, load ticket, product, cycle time, number of logs, loading type, operator number	Author
<i>Author keywords</i>	Harvester, forwarder, cost	Author
<i>Vocabulary keywords (community standard)</i>	-	Author
<i>Discipline</i>	Forest operations/engineering	Archive/Repository/Publisher
<i>Type of material</i>	Master database in Microsoft Excel format of time and motion productivity research data	Author
<i>Language</i>	Eng	Author
<i>Time range covered</i>	2024-08-28 2025-01-31	Author
<i>Geographic region</i>	United States 30° 54' 01.1" N, 82° 36' 20.2" W	Author
<i>Version</i>	-	Author
<i>File format(s)</i>	.xlsx	Author
<i>Availability of the materials (open, embargo, registration, limited, registration required)</i>	All research data of this study are openly available in University of Georgia Open Scholar, <a href="https://openscholar.uga.edu/record/27985">https://openscholar.uga.edu/record/27985</a>	Author
<i>Justification for access restrictions</i>	-	Author
<i>Licence</i>	CC BY 4.0	Author
<i>Connections with other research materials</i>	It has no connection with other materials.	Author
<i>Access to the connected research materials</i>	-	Author
<i>Codes only: hardware/software requirements for running the code</i>	-	Author
<i>Connections to other products of research</i>	None	Author
<i>Personal data</i>	No personal information.	Author
<i>Confidential or secret data</i>	No	Author
<i>Publication date</i>	June 9, 2026	Archive/Repository/Publisher
<i>Preservation policy</i>	The University Libraries commit to the long-term preservation of research data	Author
<i>Permanent identifier (PID)</i>	<a href="https://openscholar.uga.edu/record/27985">https://openscholar.uga.edu/record/27985</a>	Archive/Repository/Publisher