# Development and performance evaluation of a forwarder with compression equipment for biomass

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We have developed a forwarder that can collect and transport wood biomass and round wood more efficiently. This machine has equipment to compress the laden wood biomass by expanding the loading space. As this report was intended to evaluate the operating performance of our developed machine, we examined the collection and transport of logging residues found in three thinning stands. The mean bulk density of branches without compression was 0.05 t-dry/$m^3$, that for branches with one compression was 0.07 t-dry/$m^3$, and that for branches subject to repeated compression was 0.11 t-dry/$m^3$. For a forwarding distance of 1000 m, the productivity of loading branches was estimated at 3.3 t-wet/hour, and that of loading branches and short logs at 3.1 t-wet/hour. Productivity was thus increased 1.3 - 1.5 times as compared to previous forwarders without compression equipment.

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