

Wisconsin Timber Industry, 2013

Resource Update FS-125



This resource update provides an overview of timber product output (TPO) and use in Wisconsin based on questionnaires designed to determine the size and composition of the State's primary wood-using industry, its use of roundwood, and its generation

and disposition of wood residues. This study was a cooperative effort between the Wisconsin Department of Natural Resources (WI-DNR) and the Forest Inventory and Analysis (FIA) program at the Northern Research Station (NRS) of the USDA Forest Service. The WI-DNR surveyed all known primary wood-using mills and FIA processed and analyzed the survey responses. This update presents results from the 2013 survey with comparisons to the 2008 survey. The data were accessed from the FIA database in June 2016. Certain terms used in this report—retained, export, import, production, and receipts—have specialized meanings and relationships unique to the FIA program that surveys timber product output (Fig. 1). A complete set of inventory tables is available at <https://doi.org/10.2737/FS-RU-125>.

Overview

In 2013, Wisconsin's primary wood-using industry included 205 sawmills, 4 veneer mills, 9 pulpwood mills, 4 composite product mills, 8 cabin log mills, and 8 mills that produced other products including posts, poles, cooperage and excelsior. (Fig. 2, Table 1). Although total mills increased by 5 percent, the industry experienced losses in cabin log mills (9 mills), veneer mills (4 mills) and pulpwood mills (3 mills). Sawmills on the other hand increased by 26 mills, with the greatest increase in sawmill production size class 1 to 4.9 million board feet (13 mills). Most of the State's pulpwood mills were located in the Central Forest Inventory unit, while 3 of 4 veneer mills in the state were located in the Northwestern Forest Inventory unit (Fig. 2).

Receipts at Wisconsin primary wood-using mills totaled about 307 million ft³, with 260 million ft³ coming from Wisconsin forest lands. An additional 47 million ft³ were imported primarily from forests lands of Michigan and Minnesota. Pulpwood mills receipts totaled 162.5 million ft³ and sawmill receipts totaled 93.3 million ft³. Total softwood receipts increased by 8.2 million ft³ (11 percent) and hardwood receipts increased by 4.3 million ft³ (2 percent) since the last survey was conducted in 2008.

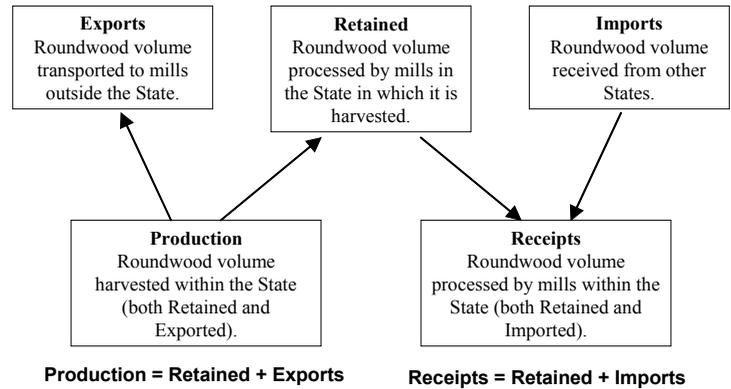


Figure 1.—Diagram of the movement of industrial roundwood.

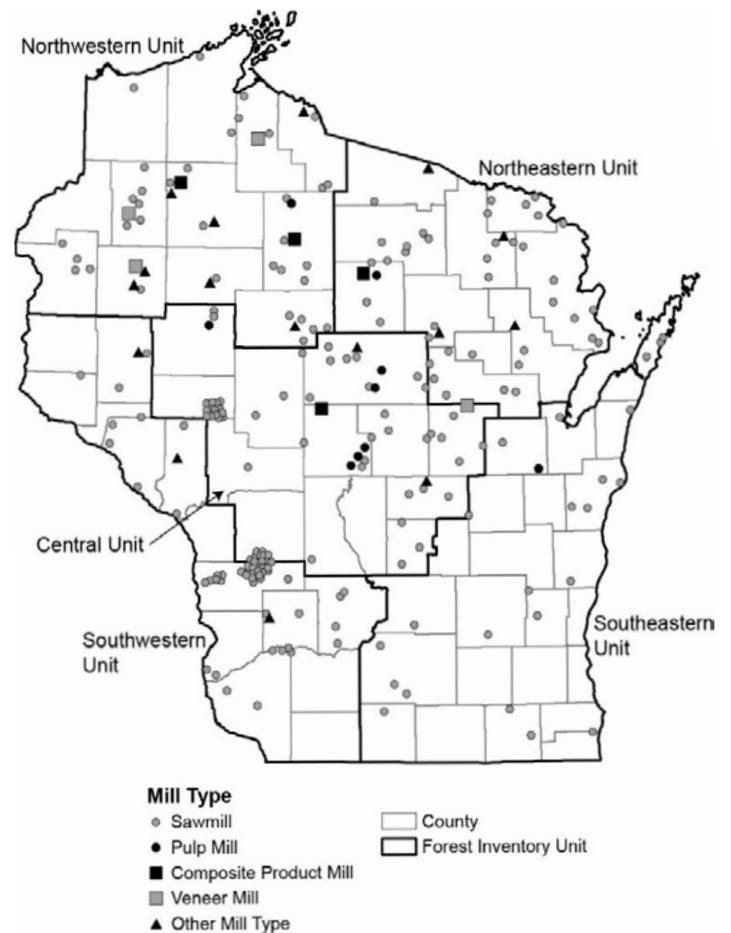


Figure 2.—Primary wood-using mills, Wisconsin, 2013.

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Table 1.—Summary of the Wisconsin timber industry, 2003, 2008, and 2013

	Estimates			Percent Change
	2003	2008	2013	2008-2013
Number of primary wood using mills	275	227	238	4.8
Industrial roundwood production—MMCF ^a	360.3	312.8	308	-1.5
Saw log production—MMBF ^b	561.5	441.3	505.6	14.6
Industrial roundwood receipts—MMCF ^a	346.1	294.7	307.2	4.2
Saw log receipts—MMBF ^b	544.3	428.5	537.5	20.3
Growing-stock removals from timberland for industrial roundwood—MMCF ^a	324.8	239.2	272.0	13.7
Sawtimber removals from timberland for industrial roundwood—MMBF ^b	719.3	755.8	850.0	12.4
Wood material harvested for industrial roundwood—MMCF ^a	512.5	367.6	430.3	17.1
Harvest residue generated by industrial roundwood harvesting—MMCF ^a	151.7	106.3	122.2	15.0
Residues produced at primary wood-using mills, in thousand green tons	2,552.1	1,866.6	2,392.6	28.2

^a Million cubic feet

^b Million board feet, International ¼-inch rule

Primary Timber Industry

Industrial Roundwood Production

Industrial roundwood production decreased slightly by 1.5 percent, or 4.8 million ft³ in 2013 (Fig. 3). Of the 308 million ft³ of industrial roundwood produced from Wisconsin's forests, roughly 84 percent, or 260 million ft³, was processed at Wisconsin mills. About 48 million ft³ were exported to primary mills in other states. Michigan and Minnesota mills received the largest share, about 48 and 47 percent of industrial roundwood exports, respectively. Canadian mills received less than 1 percent of the State's exports. Wisconsin mills imported about 47 million ft³, and Michigan and Minnesota supplied most of imported wood. Seventy-three percent of the industrial roundwood processed by Wisconsin's primary wood-using mills were hardwood species. Aspen, hard maple, red oak, red pine, and soft maple accounted for 62 percent of the total volume processed in the State. Other species of importance to the forest products industry were ash, jack pine, white pine, basswood, white birch and spruce (Fig. 4).

Saw Logs

Saw logs represented 29 percent of the total industrial roundwood production in 2013. Production of saw logs increased by 15 percent or 64 million board feet between 2008 and 2013. In 2013, red oak, red pine, and hard maple accounted for 56 percent of the total harvest of saw logs from Wisconsin's forests. Other important species/species groups harvested were aspen, soft maple, white oak, white pine, ash, and basswood. Wisconsin saw log receipts totaled 538 million board feet in 2013, an increase of 25 percent from 2008. Softwood saw log receipts were at 129.7 million board feet, while those of hardwoods were 407.9 million board feet.

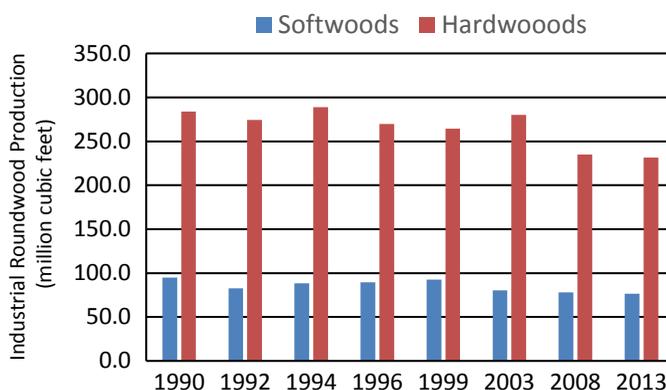


Figure 3.—Industrial roundwood production by softwoods and hardwoods, and survey year, Wisconsin.

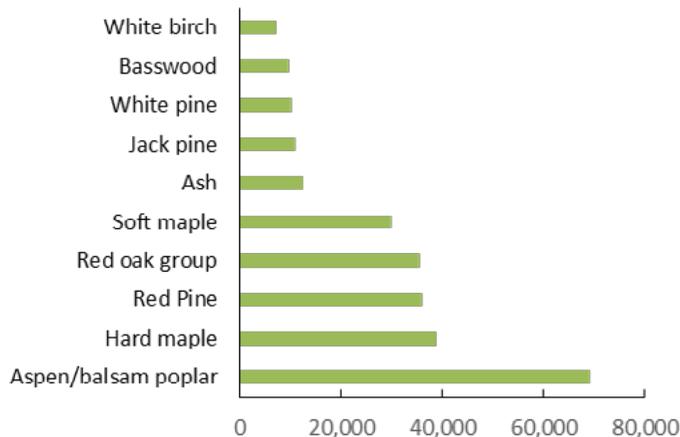


Figure 4.—Industrial roundwood production for the top ten species group, Wisconsin 2013.

Other Products

Production of pulpwood from Wisconsin's forests amounted to 164.3 million ft³, a decrease of 3 percent over the 169.6 million ft³ harvested in 2008. Receipts at Wisconsin pulp and composite product mills decreased 2 percent from 205.2 million ft³ in 2008 to 201.3 million ft³ in 2013. There were 7.6 million ft³ of industrial fuelwood harvested from Wisconsin forests in 2013, a significant increase from the 566,000 ft³ harvested in 2008. The remaining industrial roundwood harvested in 2013 included veneer logs, excelsior shavings, cabin logs, and other miscellaneous products, accounting for 3.6 percent of the total volume produced 2013.

Timber Removals

During the harvest of industrial roundwood from Wisconsin's forests in 2013, 308 million ft³ of wood material from growing stock (e.g., sawtimber and pole timber) and non-growing stock (e.g., limb wood, saplings, cull trees, dead trees) was used for primary wood products and another 122 million ft³ of wood material from growing stock (e.g., logging residue) and non-growing stock (e.g., logging slash) was left on the ground as harvest residues (Fig. 5). Growing-stock sources, at 272 million ft³, were the largest component of removals for industrial roundwood production. Ninety-four percent of the growing stock removed was used for products, while the remaining 6 percent was left as harvest residue. Sawtimber-size trees accounted for 62 percent of the growing-stock volume used for products, and the remainder came from pole-size tree.

In 2013, 158 million ft³ of non-growing-stock wood material was removed in the production of industrial roundwood, but only 34 percent of this material was used for products and the remainder was left on the ground as logging slash. Thirty-six percent of the non-growing-stock material used for industrial roundwood came from limbs of growing-stock trees, 32 percent from dead trees, 27 percent from cull trees, and the other 4 percent from sapling trees.

Harvest Intensity

Statewide in 2013, average annual net growth (gross growth minus mortality) and removals of live trees on forest land averaged 35 ft³/acre and 20 ft³ acre, respectively (Miles 2017). Only 7 counties had more than 30 ft³ of total live trees removed per acre of forest land (Fig. 6). (For reference, a cord of roundwood contains about 79 ft³ of wood.)

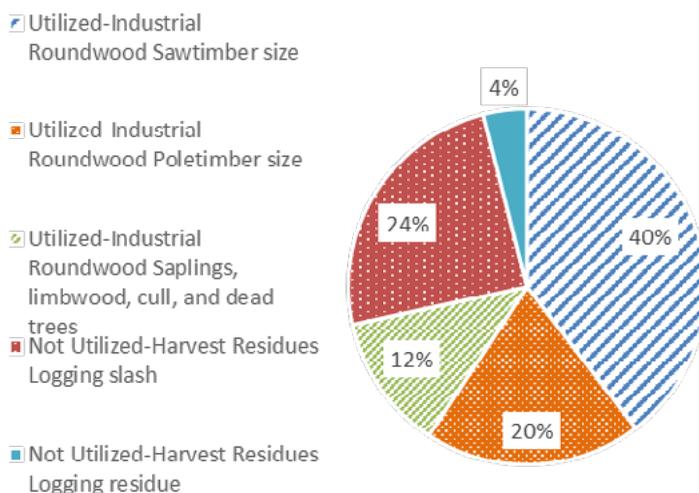


Figure 5.—Distribution of timber removals for industrial roundwood by source of material, Wisconsin, 2013.

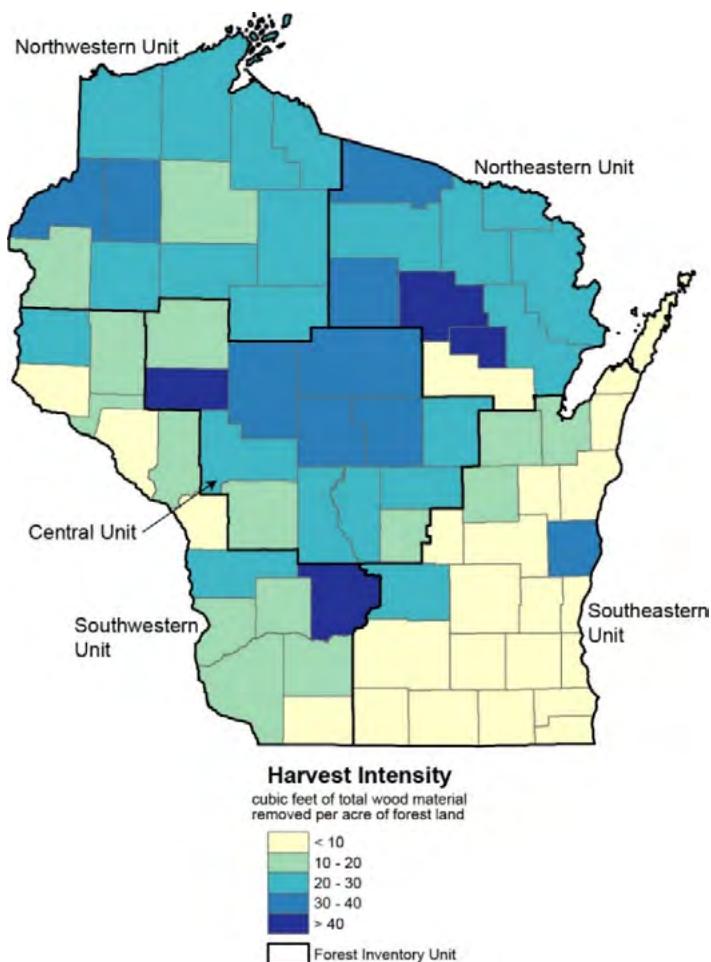


Figure 6.—Harvest intensity for industrial roundwood production, Wisconsin, 2013.

In 2013, there were over 17 million acres of forest land in Wisconsin (Perry 2014). The net volume in live trees on forest land was over 24 billion ft³. The 364 million ft³ of total wood material removed due to harvesting was 1 percent of the total live volume of trees on forest land in Wisconsin.

The Northeastern Forest Inventory Unit had the greatest harvest intensity in 2013, with an average of 32 ft³ of total wood removals per acre of forest land. The Central Unit with 27 ft³ of total wood removals per acre of forest land followed by the Northwestern Unit with 27 ft³, Southwestern Unit with 23 ft³, and the Southeastern Unit with 7 ft³.

Primary Mill Residues

In converting industrial roundwood into products, such as lumber, Wisconsin's primary wood-using industries generated over 2 million green tons of wood (coarse and fine residues) and bark residue. Forty percent of the mill residues were from bark. Fine wood residue (e.g., sawdust) made up another 26 percent. Coarse wood residue (e.g., slabs and edgings residue) accounted for the remaining 34 percent (Fig.7).

Industrial fuel, fiber products, mulch, livestock bedding, pellets, residential fuel, miscellaneous use (e.g., small dimension, charcoal and specialty items), and unused accounted for 48, 24, 11, 6, 5, 3, 2 and 1 percent, respectively, of the end-use of mill residues generated by the primary wood processors in Wisconsin (Fig. 8). Fifty-nine percent of the coarse residue was used for fiber products, industrial fuel uses consumed 46 percent of the total fine residue generated and 76 percent of the total bark residue.

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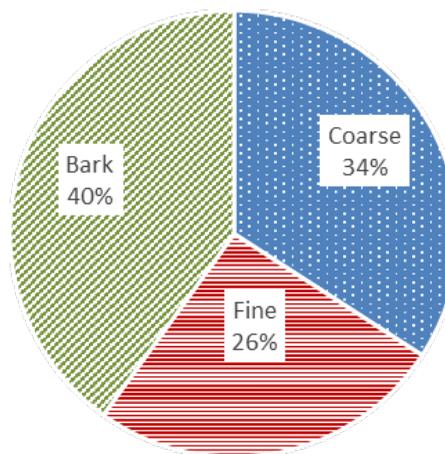


Figure 7.—Distribution of residues generated by primary wood-using mills by type of residue, Wisconsin, 2013.

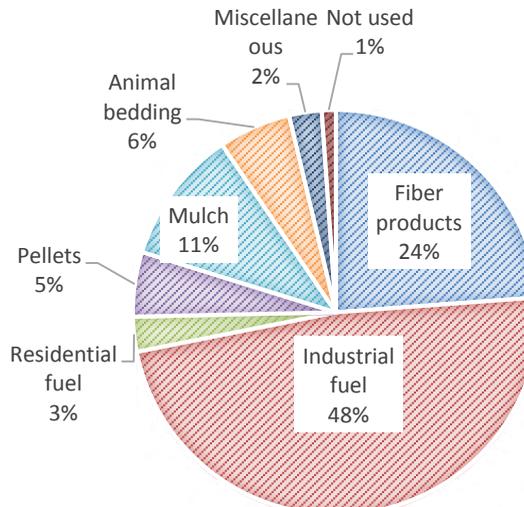


Figure 8.—Distribution of residues generated by primary wood-using mills by method of disposal, Wisconsin, 2013.

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Northern FIA: <https://nrs.fs.fed.us/fia/>
National FIA: <https://fia.fs.fed.us>

Contact Information

David E. Haugen, Forester
U.S. Forest Service
1992 Folwell Ave.
St. Paul, MN 55108
Ph: 651-649-5137
Fax: 651-649-5140
dhaugen01@fs.fed.us

Definition of Terms

Growing-stock removals. The growing-stock volume removed from timberland by harvesting industrial roundwood products. (Note: Includes sawtimber removals, poletimber removals, and logging residues.)

Growing-stock tree. A live timberland tree of commercial species that meets specified standards of size, quality, and merchantability. (Note: Excludes rough, rotten, and dead trees.)

Growing-stock volume. Net volume of growing-stock trees 5.0 inches d.b.h. and larger, from 1 foot above the ground to a minimum 4.0-inch top diameter outside bark of the central stem or to the point where the central stem breaks into limbs.

Harvest residues. The total net volume of unused portions of trees cut or killed by logging. (Note: Includes both logging residues and logging slash.)

Industrial roundwood exports. The quantity of industrial roundwood harvested in a geographical area and transported to other geographical areas.

Industrial roundwood imports. The quantity of industrial roundwood received from other geographical areas.

Industrial roundwood products. Saw logs, pulpwood, veneer logs, poles, commercial posts, pilings, cooperage logs, particleboard bolts, shaving bolts, lath bolts, charcoal bolts, and chips from roundwood used for pulp or board products.

Industrial roundwood production. The quantity of industrial roundwood harvested in a geographic area plus all industrial roundwood exported to other geographical areas.

Industrial roundwood receipts. The quantity of industrial roundwood received by commercial mills in a geographic area plus all industrial roundwood imported from other geographical areas.

Industrial roundwood retained. The quantity of industrial roundwood harvested from and processed by commercial mills within the same geographical area.

Limbs removals. Net volume of all portions of a tree other than the central stem (including forks, large limbs, tops, and stumps) harvested for industrial roundwood products.

Logging residue. The net volume of unused portions of the merchantable central stem of growing-stock trees cut or killed by logging.

Logging slash. The net volume of unused portions of the unmerchantable (non-growing-stock) sections of trees cut or killed by logging.

Poletimber. A growing-stock tree at least 5.0 inches d.b.h. but smaller than sawtimber size (9.0 inches d.b.h. for softwoods, 11.0 inches d.b.h. for hardwoods).

Primary wood-using mills. Mills receiving roundwood or chips from roundwood for processing into products such as lumber, veneer, and pulp.

Primary wood-using mill residue. Wood materials (coarse and fine) and bark generated at manufacturing plants that process industrial roundwood into principal products. These residues include wood products obtained incidental to production of principal products and wood materials not utilized for some product.

Rotten tree. A tree that does not meet regional merchantability standards because of excessive unsound cull.

Rough tree. A tree that does not meet regional merchantability standards because of excessive sound cull (includes forks, sweep and crook, and large branches or knots), including noncommercial tree species.

Roundwood. Logs, bolts, or other round sections cut from trees (including chips from roundwood).

Sapling. A live tree between 1.0 and 5.0 inches d.b.h.

Sawtimber removals. As used in Table 10, sawtimber removals refers to the net volume in the merchantable central stem of sawtimber-size trees harvested for industrial roundwood products. (Note: includes the saw log and upper stem portions of sawtimber-size trees.) When referring to the sawtimber volume removed from timberland as in Table 12, sawtimber removals refers to the net volume in the saw log portion of sawtimber-size trees harvested for roundwood products or left on the ground as harvest residue, and is usually expressed in thousands of board feet (International ¼-inch rule).

Sawtimber tree. A growing-stock tree containing at least a 12-foot saw log or two noncontiguous saw logs 8 feet or longer, and meeting regional specifications for freedom from defect. Softwoods must be at least 9.0 inches d.b.h. and hardwoods must be at least 11.0 inches d.b.h.

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