

North Dakota Timber Industry, 2014

Resource Update FS-118



This resource update provides an overview of timber product output (TPO) and use in North Dakota 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 North Dakota Forest Service (NDFS) and the Forest Inventory and Analysis (FIA) program at the Northern Research Station (NRS) of the U.S. Forest Service. The NDFS surveys all known primary wood-using mills and FIA processes and analyzes the survey responses. This update presents results from the 2014 survey with comparisons to the 2009 survey. The data were accessed from the FIA database in November 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).

Overview

In 2014, North Dakota's primary wood-using industry included seven sawmills (Fig. 2). There was one less mill in 2014 than in 2009. Total production of industrial roundwood harvest from North Dakota forests in 2014 was 119,600 cubic feet, of which 106,300 cubic feet was processed by mills within the state, and 13,300 cubic feet was exported to primary wood processing mills in Minnesota. Saw log harvests accounted for 59 percent of the total wood material harvested within the State. Industrial roundwood harvests resulted in 62,800 cubic feet of logging residues. Primary mills generated 151,400 thousand green tons of mill residues, and 30 percent of mill residues were used for residential fuelwood.

About 60 percent of mill residues were not used for other products. Total receipts at North Dakota primary mills totaled about 106.9 thousand cubic feet—106,300 cubic feet from North Dakota sources and 600 cubic feet from Minnesota.

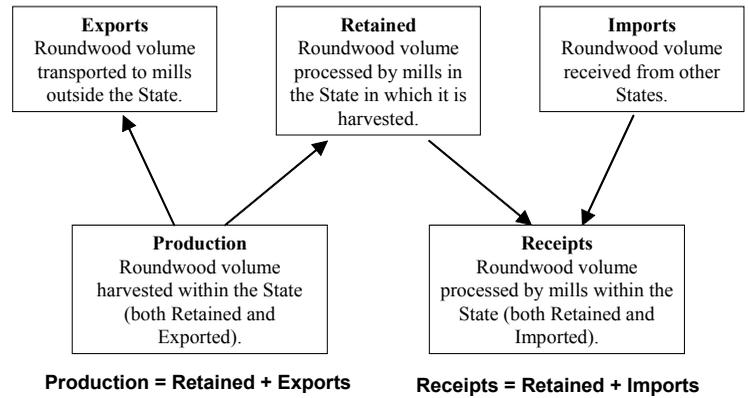


Figure 1.—Diagram showing the movement of industrial roundwood.

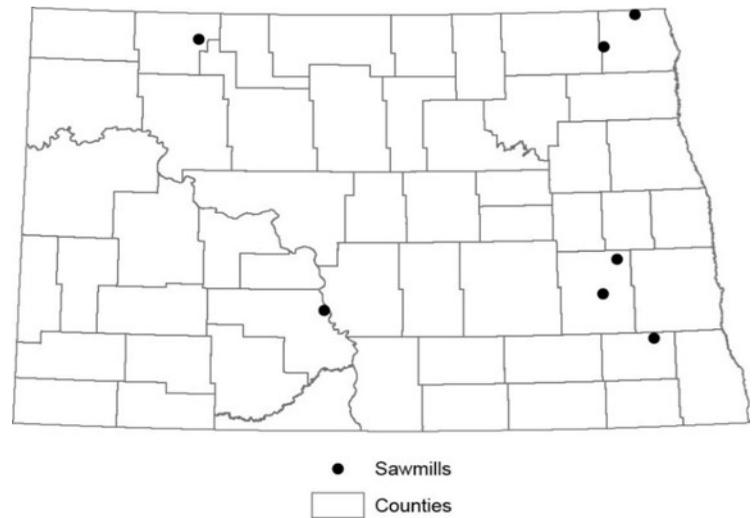


Figure 2.—Primary wood-using mills, North Dakota, 2014

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Table 1.—Summary of the North Dakota timber industry, 2003, 2009, and 2014

	2003	2009	2014	Change 2009-2014
Number of primary wood-using mills	9	8	7	-12.5%
Industrial roundwood production—MCF ^a	296.2	156.2	119.6	-23.4%
Saw log production—MBF ^b	1,008.0	858.8	682.0	-20.5%
Industrial roundwood receipts—MCF ^a	47.9	68.0	106.9	57.2%
Saw log receipts—MBF ^b	271.0	359.2	609.3	69.5%
Growing-stock removals from timberland for industrial roundwood—MCF ^a	306.9	176.3	136.1	-22.8%
Sawtimber removals from timberland for industrial roundwood—MBF ^b	1,123.9	870.8	679.7	-21.9%
Wood material harvested for industrial roundwood—MCF ^a	404.9	235.5	182.4	-22.5%
Harvest residue generated by industrial roundwood harvesting—MCF ^a	108.3	79.2	62.8	-20.7%
Residues produced at primary wood-using mills, in thousand green tons	720.7	987.7	1,801.3	82.3%

^aThousand cubic feet

^bThousand board feet, International ¼-inch rule

Primary Timber Industry

Industrial Roundwood Production

Industrial roundwood production decreased by 23 percent, or 36,000 cubic feet in 2014 (Table 1 and Fig. 3). Of the 119,000 cubic feet of industrial roundwood produced from North Dakota's forests, roughly 88 percent or 107,000 cubic feet was processed at North Dakota mills. About 13,000 cubic feet were exported to primary mills in Minnesota. North Dakota mills imported about 600 cubic feet supplied from Minnesota forest lands. Ninety-seven percent of the industrial roundwood processed by North Dakota's primary wood-using mills was hardwood species. Cottonwood and ash accounted for 95 percent of the total volume processed in the State. Other species of importance to the forest products industry were spruce and bur oak (Fig. 4).

Saw Logs

North Dakota sawmill receipts totaled 609,000 board feet in 2014, a increase of 70 percent from 2009. Softwood saw log receipts were estimated at 19,000 board feet, while those of hardwoods equaled 590,000 board feet. Cottonwood saw log receipts increased 60 percent, while ponderosa pine saw log receipts declined by 45 percent between the 2009 and 2014 survey. Saw log production decreased by 21 percent between 2009 and 2014, from 859,000 board feet in 2009 to 682,000 board feet in 2014. Softwood saw log production remained unchanged at 16,000 board feet in 2014, while those of hardwoods decreased 21 percent to 666,000 board feet. In 2014, cottonwood accounted for almost 86 percent of the total harvest of saw logs from North Dakota forests. Other important species groups harvested were ash, spruce, and bur oak.

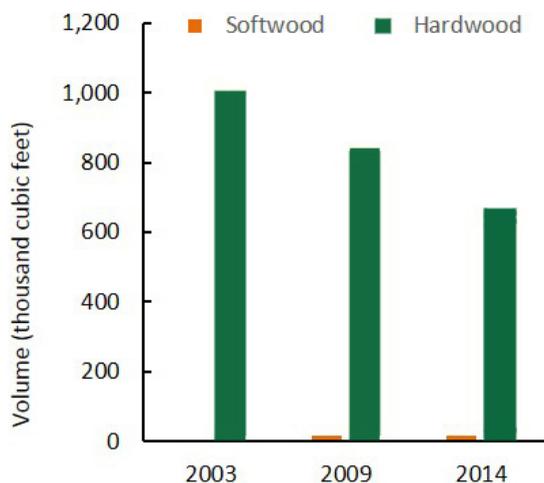


Figure 3.—Industrial roundwood production by softwoods and hardwoods, and survey year, North Dakota.

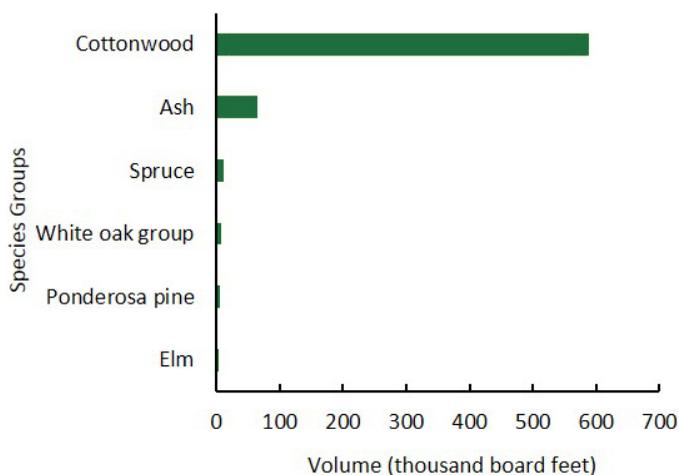


Figure 4.—Industrial roundwood production for the top five species groups, North Dakota 2014.

Timber Removals

During the harvest of industrial roundwood from North Dakota's forests in 2014, 119,600 cubic feet 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) were used for primary wood products and another 62,800 cubic feet of wood material from growing stock (e.g., logging residue) and non-growing stock (e.g., logging slash) were left on the ground as harvest residues (Fig. 5). Growing-stock sources, at 136,100 cubic feet, were the largest component of removals for industrial roundwood production. Eighty-four percent of the growing stock removed was used for products, while the remaining 16 percent, was left as harvest residue. Sawtimber-size trees accounted for 79 percent of the growing-stock volume used for products, and the remainder came from pole-size tree. In 2014, 43,400 cubic feet of non-growing-stock wood material was removed in the production of industrial roundwood, but only 13 percent of this material was used for products and the remainder was left on the ground as logging slash. Two percent of the non-growing-stock material used for industrial roundwood came from limbs of growing-stock trees, and 2 percent came from cull and sapling trees.

Harvest Intensity

Statewide in 2014, average annual net growth (gross growth minus mortality) and removals of live trees on forest land were 13.0 cubic feet and 0.2 cubic feet per acre, respectively (Miles 2017). Only one county had more than 3 cubic feet of total growing stock removed per acre of forest land (Fig. 6). (For reference, a cord of roundwood contains about 79 cubic feet of wood.)

In 2014, there were over 796,000 acres of forest land in North Dakota (Haugen and Pugh 2014). The net volume in live trees on forest land was over 750 million cubic feet. The 404,000 cubic feet of total wood material removed due to harvesting was less than 1 percent of the total live volume of trees on forest land in North Dakota.

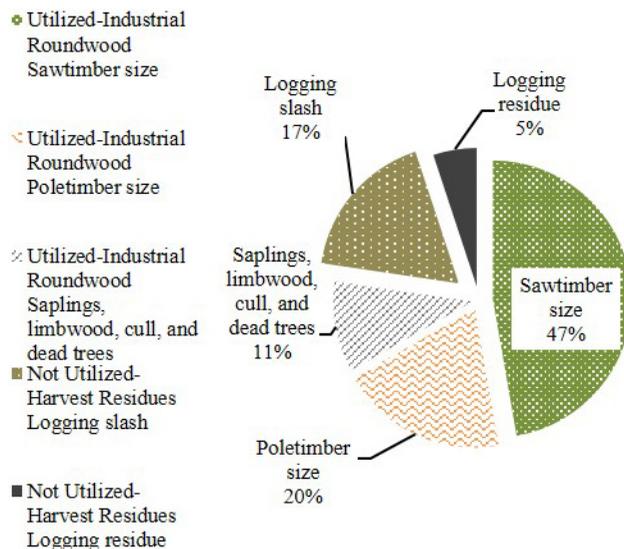


Figure 5.—Distribution of timber removals for industrial roundwood by source of material, North Dakota, 2014

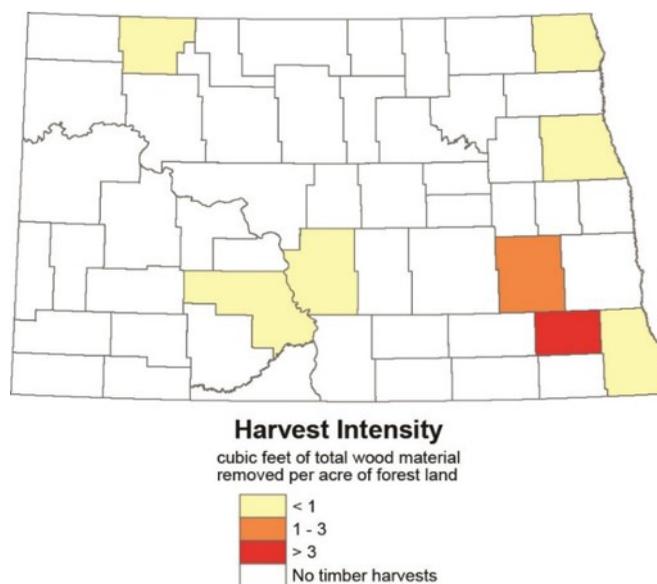


Figure 6.—Harvest intensity for industrial roundwood production, North Dakota, 2014.

Primary Mill Residues

In converting industrial roundwood into products, such as lumber, North Dakota's primary wood-using industries generated 1,800 green tons of wood (coarse and fine residues) and bark residue. Twenty-one percent of the mill residues were from bark.

Fine wood residue (e.g., sawdust) made up another 28 percent. Coarse wood residue (e.g., slabs and edgings residue) accounted for the remaining 51 percent (Fig.7).

Residential fuelwood, livestock bedding, miscellaneous use (e.g., small dimension, and specialty items), and mulch accounted for 31, 6, 3, and 2 percent, respectively, of the end-use of mill residues generated by the primary wood processors in North Dakota (Fig. 8). Fifty-eight percent of mill residues were unused. Sixty-one percent of the coarse residue was used for residential fuelwood. Animal bedding use consumed 15 percent of the total fine residue generated, and 9 percent of the bark residue went into mulch

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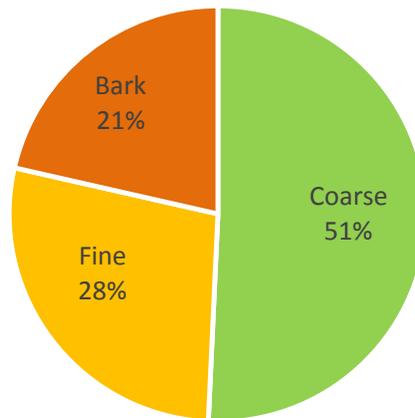


Figure 7.—Distribution of residues generated by primary wood-using mills by type of residue, North Dakota, 2014.

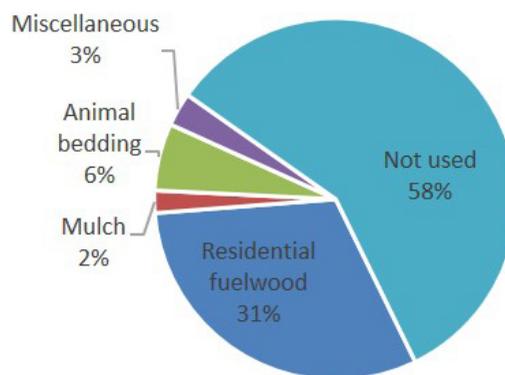


Figure 8.—Distribution of residues generated by primary wood-using mills by method of disposal, North Dakota, 2014.

How to Cite This Publication

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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.

Limbwood 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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