NORTH CENTRAL FOREST EXPERIMENT STATION 1992 FOLWELL AVE ST PAUL MN 55108 FOREST SERVICE-U.S.D.A.

Research Note NC-335

1986

TIMBER VOLUME IN WISCONSIN 1983

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ABSTRACT.—The fourth inventory of Wisconsin's forest resources shows a 39-percent increase in growing-stock volume between 1968 and 1983, from 11.2 to 15.5 billion cubic feet.

KEY WORDS: Timber resources, statistics, growing-stock, sawtimber.

Volume of growing-stock[1] on commercial forest land in Wisconsin increased from 11.2 billion cubic feet in 1968 to 15.5 billion cubic feet in 1983, a 39-percent gain:

Growing stock	Survey year 1968[2]	Survey year 1983	Change since 1968
	(Million cubic feet)		(Percent)
Softwoods	2,519	3,638	44
Hardwoods	8,649	11,860	37
Total	11,168	15,498	39

Softwood growing-stock volume increased by 44 percent; hardwood volume grew by 37 percent.

These volume gains were made in spite of a less than 2 percent increase in commercial forest area. These increased volumes reflect an increase in average growing-stock volume per acre, from 768 cubic feet per acre in 1968 to 1,050 cubic feet per acre in 1983.

Growing-stock volume did not increase uniformly throughout the State (table 1). The largest per unit increase was in the Central Unit, and the smallest increase was in the Northwest Unit. The largest volume is in the Northwest Unit, and the smallest volume is in the Southeast Unit. Figure 1 shows the unit and county boundaries for the five inventory units in Wisconsin.

The aspen species group is the most abundant species group in Wisconsin and accounts for almost 17 percent of the growing-stock volume. Its volume increased by almost 21 percent between surveys. Hard maple—primarily sugar maple—and select red oak—primarily northern red oak—are the second and third most plentiful, each comprising 9 percent of the total. The fourth largest group, red and jack pine, had 8 percent of the volume, a 91-percent increase between inventories. As shown in the following tabulation, other prominent species include the other oaks and the spruce-fir groups:

Species group	Growing stock
	(Million cubic feet)
Aspen	2,625
Hard maple	1,495
Select red oak	1,420
Red and jack pine	1,299
Other oaks	1,257
Spruce-fir	877
Other hardwoods	5,063
Other softwoods	1,462
Total	15,498

Included in the growing-stock volume are 35.0 billion board feet of sawtimber.[3] The oak groups, select

[1]*Net volume in cubic feet of growing-stock trees 5 inches d.b.h. and larger from the stump to a variable 4-inch top diameter.*

[2]*Figures have been adjusted from those published after the 1968 survey to conform to 1983 volumes because of changes in survey procedures and definitions.*

[3]*Net volumes of the saw log portion of live sawtimber trees (softwoods 9 inches d.b.h. or larger and hardwoods 11 inches and larger) from the stump to a point in the central stem at which utilization for sawn products is limited by large branches, forks, or other defects or by a diameter outside bark of 7 inches for softwoods and 9 inches for hardwoods.*

Table 1.--Net volume of growing stock in 1968 and 1983 by forest inventory unit and change since 1968, Wisconsin

Forest inventory unit	1968 growing-stock volume	1983 growing-stock volume	Change since 1968
	Million cubic feet		Percent
Northeast	3,626	4,474	+23
Northwest	3,898	5,311	+36
Central	1,740	2,869	+65
Southwest	1,240	1,936	+56
Southeast	664	908	+37
Total	11,168	15,498	+39

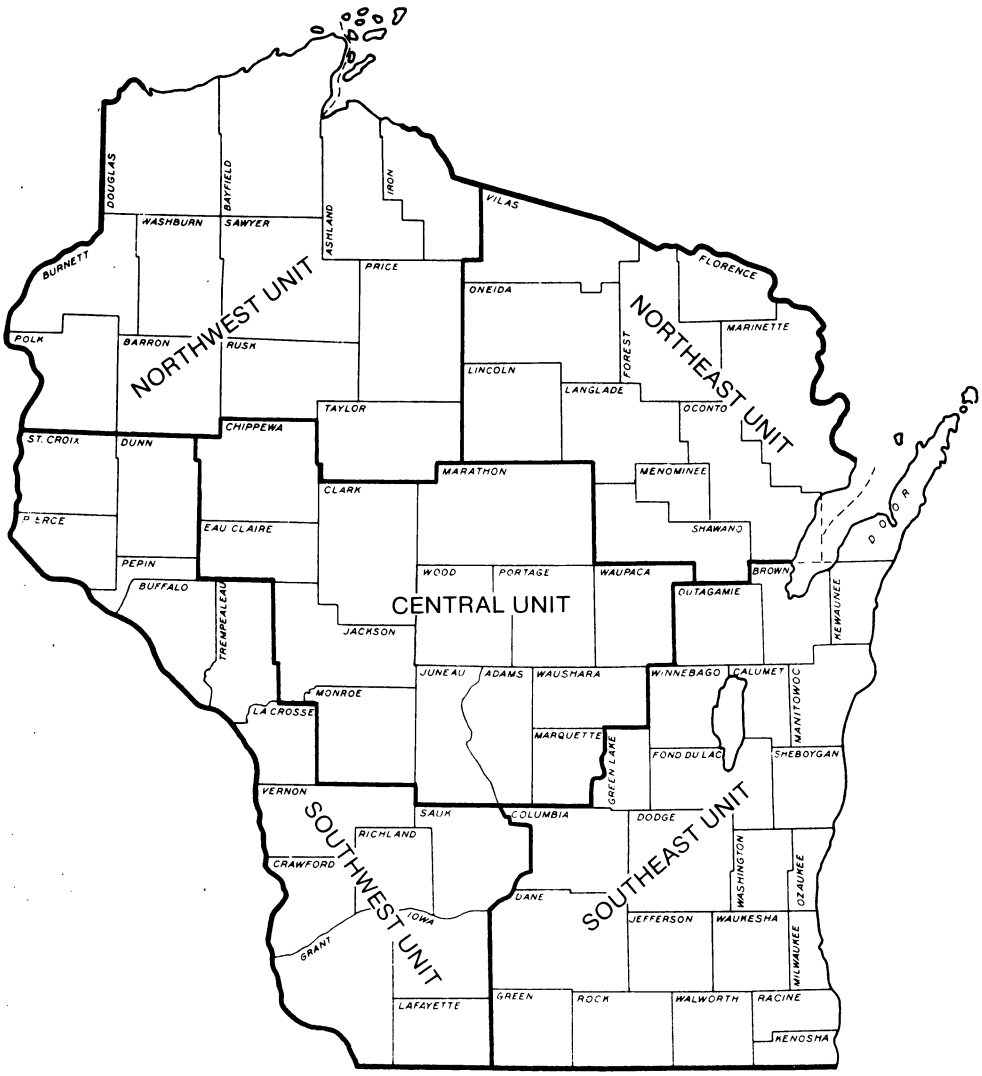

Figure 1.—*Wisconsin's five forest inventory units.*

red oak, and other oaks have the greatest sawtimber volume, followed by the aspen, hard maple and pine groups rounding out the top five:

Species group	Sawtimber (Million board feet)[4]
Select red oak	4,555
Other oaks	4,049
Aspen	4,041
Hard maple	3,384
Red and jack pine	3,066
Spruce-fir	1,740
Other hardwoods	9,077
Other softwoods	5,122
Total	35,035

The major concentrations of timber are found in the northern part of the State:

Forest inventory unit	Growing-stock volume	
	Softwoods	Hardwoods
	(Million cubic feet)	
Northeast	1,424	3,050
Northwest	1,283	4,028
Central	703	2,166
Southwest	92	1,844
Southeast	136	772
Total	3,638	11,860

Northern Wisconsin contains less than 40 percent of the State's land, but more than 60 percent of its growing-stock volume. Bayfield County in the Northwest Unit has the most growing-stock and sawtimber volume of any county in the State, followed by Marinette and Forest Counties in the Northeast Unit (tables 2 and 3). These two northern units contain 72 percent of the State's aspen volume and 60 percent of the pine volume. The Central Unit also has a significant proportion (32 percent) of the State's pine volume.

The sampling error in this inventory was ±1.05 percent for the State's 15.5 billion cubic feet of growing-stock material.

This forest inventory was conducted by the North Central Forest Experiment Station, USDA Forest Service. More intensified field sampling was made possible by additional funding provided the North Central Station by the State Legislature through the Wisconsin Department of Natural Resources.

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[4]*International 1/4-inch rule.*

Table 2.--Net volume of growing stock on commercial forest land by species group[1/] and county, Wisconsin, 1983

(In thousand cubic feet)

County	All species	Softwoods: Red and jack pine	Softwoods: Spruce-fir	Softwoods: Other softwoods	Hardwoods: Select red oak	Hardwoods: Other oaks	Hardwoods: Hard maple	Hardwoods: Aspen	Hardwoods: Other hardwoods
NORTHEAST UNIT									
Florence	284,632	9,409	28,712	42,471	7,865	1,254	56,515	65,715	72,691
Forest	649,211	24,182	97,962	89,107	2,757	--	141,136	76,158	217,909
Langlade	423,998	7,727	43,996	28,854	7,343	291	97,931	83,082	154,774
Lincoln	341,784	36,758	29,637	17,857	14,214	109	39,455	78,972	124,782
Menominee	419,553	6,282	10,378	151,964	34,389	6,943	68,751	32,168	108,678
Marinette	669,096	65,547	50,084	96,815	40,767	29,696	45,369	131,635	209,183
Oconto	401,444	49,053	9,146	76,055	23,901	5,049	22,236	74,694	141,310
Oneida	484,290	72,381	70,711	62,391	27,117	1,114	27,946	88,668	133,962
Shawano	328,496	23,645	9,390	50,090	22,132	5,979	62,048	24,260	130,952
Vilas	471,572	67,765	34,896	60,347	29,209	2,356	77,675	88,154	111,170
Total	4,474,076	362,749	384,912	675,951	209,694	52,791	639,062	743,506	1,405,411
NORTHWEST UNIT									
Ashland	651,025	18,933	112,328	77,976	6,794	141	124,845	108,105	201,903
Barron	144,244	713	579	3,043	28,970	18,464	4,502	42,443	45,530
Bayfield	856,259	120,845	46,999	63,749	107,971	3,514	72,378	224,386	216,417
Burnett	278,576	71,391	357	8,090	33,600	26,595	4,106	76,028	58,409
Douglas	546,017	75,440	81,161	26,043	20,538	3,294	27,163	121,447	190,931
Iron	443,803	6,102	77,491	60,046	7,631	--	80,295	64,185	148,053
Polk	210,261	6,668	692	5,304	42,055	30,252	6,804	55,670	62,816
Price	478,144	31,304	56,734	44,159	11,081	469	59,126	92,538	182,733
Rusk	366,295	4,262	12,004	15,729	30,380	6,058	40,501	98,239	159,122
Sawyer	650,709	31,655	43,571	61,461	53,396	7,715	75,803	111,497	265,611
Taylor	358,765	2,634	26,205	23,475	15,272	416	45,431	53,468	191,864
Washburn	327,292	46,973	3,707	16,056	35,287	18,061	12,837	96,322	98,049
Total	5,311,390	416,920	461,828	405,131	392,975	114,979	553,791	1,144,328	1,821,438
CENTRAL UNIT									
Adams	168,308	76,885	--	11,595	7,755	48,183	--	14,550	9,340
Chippewa	221,462	7,610	624	13,979	25,414	18,725	12,753	51,923	90,434
Clark	315,028	13,850	1,614	13,226	39,938	26,867	11,129	114,536	93,868
Eau Claire	170,129	32,694	--	7,054	16,066	50,310	1,692	34,207	28,106
Jackson	352,216	84,424	--	23,941	63,963	73,864	--	58,067	47,957
Juneau	226,073	64,101	--	10,161	29,203	59,351	2,226	31,792	29,239
Marathon	392,263	3,274	9,902	39,069	34,127	3,731	63,910	67,226	171,024
Marquette	68,327	12,165	--	12,917	5,393	25,548	--	3,132	9,172
Monroe	200,384	18,363	--	15,534	49,727	46,433	2,829	20,502	46,996
Portage	168,395	30,358	591	25,210	15,040	31,777	3,804	25,182	36,433
Waupaca	249,567	17,976	8,020	48,747	21,145	17,046	14,030	18,463	104,140
Waushara	156,602	47,200	--	23,877	6,326	50,325	--	9,150	19,724
Wood	180,111	14,100	471	13,523	22,811	25,059	3,518	56,164	44,465
Total	2,868,865	423,000	21,222	258,833	336,908	477,219	115,891	504,894	730,898

(Table 2 continued on next page)

[1/] Species groups: other softwoods - primarily white pine, northern white-cedar, hemlock and tamarack; other hardwoods - primarily soft maple, paper birch, basswood, elm and ash.

(Table 2 continued)

County	All species	Softwoods: Red and jack pine	Softwoods: Spruce-fir	Softwoods: Other softwoods	Hardwoods: Select red oak	Hardwoods: Other oaks	Hardwoods: Hard maple	Hardwoods: Aspen	Hardwoods: Other hardwoods
SOUTHWEST UNIT									
Buffalo	222,070	5,415	--	--	54,034	53,653	664	35,303	73,001
Crawford	174,687	--	--	--	40,838	38,522	11,069	9,239	75,019
Dunn	189,128	27,050	--	1,634	36,716	36,774	11,473	23,416	52,065
Grant	182,760	--	--	1,341	36,821	63,285	10,995	8,755	61,563
Iowa	106,129	191	--	2,663	14,001	33,143	3,556	7,984	44,591
La Crosse	137,032	9,877	--	2,496	37,183	29,813	--	11,148	46,515
Lafayette	28,891	--	--	--	1,896	15,613	--	1,131	10,251
Pepin	44,697	--	--	168	10,063	3,661	2,524	5,613	22,668
Pierce	84,224	3,331	--	--	11,476	8,573	22,926	5,375	32,543
Richland	158,639	--	--	--	18,431	24,960	27,209	8,686	79,353
St.Croix	54,936	7,475	310	--	5,889	7,225	--	16,825	17,212
Sauk	195,053	8,328	1,108	2,850	51,839	40,778	4,770	21,982	63,398
Tempealeau	139,178	12,907	--	3,307	26,656	44,871	--	7,756	43,681
Vernon	218,247	--	--	1,325	57,728	52,685	21,683	3,778	81,048
Total	1,935,671	74,574	1,418	15,784	403,571	453,556	116,869	166,991	702,908
SOUTHEAST UNIT									
Brown	56,984	--	--	841	4,224	1,431	7,727	6,636	36,125
Calumet	17,223	--	--	2,772	432	--	841	640	12,538
Columbia	86,055	4,041	445	1,128	11,855	40,190	--	10,448	17,948
Dane	87,232	2,362	--	1,467	7,349	41,003	--	7,771	27,280
Dodge	18,651	--	--	1,116	1,174	2,114	350	2,089	11,808
Door	120,032	--	3,994	41,798	2,109	--	16,110	15,435	40,586
Fond du Lac	38,862	6,903	--	685	2,447	6,655	4,288	869	17,015
Green	31,528	--	225	1,470	4,303	5,735	2,982	1,150	15,663
Green Lake	20,631	511	--	3,550	3,833	6,695	--	868	5,174
Jefferson	41,317	4,987	--	--	6,530	8,869	6,118	--	14,813
Kenosha	7,282	--	--	1,084	1,134	2,151	--	--	2,913
Kewaunee	46,229	--	--	16,152	305	--	5,213	402	24,157
Manitowoc	58,351	--	600	12,505	3,692	762	8,617	4,306	27,869
Milwaukee	--	--	--	--	--	--	--	--	--
Outagamie	67,333	3,064	--	10,558	1,045	2,226	2,324	4,945	43,171
Ozaukee	18,426	--	--	1,571	--	1,253	1,639	--	13,963
Racine	6,961	--	--	--	492	2,437	854	513	2,665
Rock	23,905	162	--	--	907	11,979	--	--	10,857
Sheboygan	43,746	286	1,977	7,476	6,699	1,859	7,147	1,659	16,643
Walworth	33,071	--	--	--	5,257	14,477	--	1,587	11,750
Washington	35,124	--	--	2,256	1,604	1,492	4,028	1,019	24,725
Waukesha	23,392	--	--	--	8,014	6,879	--	1,520	6,979
Winnebago	25,848	--	--	--	3,136	775	760	3,697	17,480
Total	908,183	22,316	7,241	106,429	76,541	158,982	68,998	65,554	402,122
All counties	15,498,185	1,299,559	876,621	1,462,128	1,419,689	1,257,527	1,494,611	2,625,273	5,062,777

Table 3.--Net volume of sawtimber on commercial forest land by species group[1/] and county, Wisconsin, 1983

(In thousand board feet)[2/]

County	All species	Softwoods: Red and jack pine	Softwoods: Spruce-fir	Softwoods: Other softwoods	Hardwoods: Select red oak	Hardwoods: Other oaks	Hardwoods: Hard maple	Hardwoods: Aspen	Hardwoods: Other hardwoods
NORTHEAST UNIT									
Florence	676,752	40,324	64,961	163,701	15,691	2,739	140,374	89,222	159,740
Forest	1,507,044	127,245	204,994	300,981	10,789	--	276,188	157,399	429,448
Langlade	746,043	36,011	82,240	59,490	20,857	--	216,967	99,012	231,466
Lincoln	537,299	64,660	42,974	67,440	29,172	--	56,853	107,326	168,874
Menominee	1,485,899	24,521	9,610	701,627	129,246	23,747	248,699	51,868	296,581
Marinette	1,211,917	174,927	86,992	279,861	78,568	67,739	77,457	200,857	245,516
Oconto	776,203	110,320	23,491	206,249	37,685	13,069	22,442	117,877	245,070
Oneida	968,341	258,677	112,766	223,136	78,583	1,950	34,169	131,532	127,528
Shawano	801,205	18,543	18,024	112,764	78,925	16,339	220,968	38,798	296,844
Vilas	1,157,977	274,042	64,649	242,032	86,454	8,570	175,792	156,762	149,676
Total	9,868,680	1,129,270	710,701	2,357,281	565,970	134,153	1,469,909	1,150,653	2,350,743
NORTHWEST UNIT									
Ashland	1,329,025	63,585	253,867	258,681	24,764	700	217,162	191,534	318,732
Barron	328,796	2,754	--	13,470	82,632	66,201	12,336	73,003	78,400
Bayfield	1,542,248	320,835	131,746	274,764	144,423	2,525	83,277	344,591	240,087
Burnett	538,202	120,764	--	34,649	74,258	72,837	14,114	124,649	96,931
Douglas	925,498	166,810	165,521	89,720	35,409	2,306	47,871	182,191	235,670
Iron	922,489	30,287	177,633	225,621	10,148	--	112,437	99,330	267,033
Polk	433,953	10,425	2,347	22,732	115,949	98,913	15,647	78,559	89,381
Price	862,152	101,433	111,226	121,124	12,190	1,869	97,403	136,866	280,041
Rusk	734,009	20,241	22,167	64,981	96,480	16,698	103,922	141,688	267,832
Sawyer	1,330,980	117,656	70,558	258,723	135,497	11,059	119,440	221,467	396,580
Taylor	568,777	9,318	46,719	70,547	47,402	1,137	55,141	44,091	294,422
Washburn	541,309	93,735	9,337	60,042	67,541	28,650	26,322	147,950	107,732
Total	10,057,438	1,057,843	991,121	1,495,054	846,693	302,895	905,072	1,785,919	2,672,841
CENTRAL UNIT									
Adams	289,680	102,033	--	36,779	24,656	91,483	--	15,779	18,950
Chippewa	486,377	35,154	2,082	52,459	83,878	52,253	33,183	91,495	135,873
Clark	581,519	55,016	--	72,588	115,347	66,621	34,654	118,443	118,850
Eau Claire	276,705	22,486	--	36,903	54,353	97,740	1,387	40,992	22,844
Jackson	758,779	163,704	--	95,062	207,378	170,301	--	59,137	63,197
Juneau	511,882	127,134	--	40,323	87,423	155,885	11,438	30,534	59,145
Marathon	891,885	8,757	13,253	137,055	100,493	15,911	184,487	92,805	339,124
Marquette	194,081	4,592	--	35,292	17,536	107,641	--	4,547	24,473
Monroe	538,948	50,067	--	71,444	174,869	119,366	9,750	32,694	80,758
Portage	390,347	46,169	--	85,893	52,716	106,519	5,235	28,248	65,567
Waupaca	668,728	33,205	9,688	145,228	85,555	56,040	53,984	26,592	258,436
Waushara	312,746	54,671	--	74,560	12,854	128,856	--	9,740	32,065
Wood	394,059	38,728	--	59,745	89,524	76,881	7,358	43,526	78,297
Total	6,295,736	741,716	25,023	943,331	1,106,582	1,245,497	341,476	594,532	1,297,579

(Table 3 continued on next page)

[1/] Species groups: other softwoods - primarily white pine, northern white-cedar, hemlock and tamarack; other hardwoods - primarily soft maple, paper birch, basswood, elm and ash.

[2/] International 1/4-inch rule.

(Table 3 continued)

County	All species	Softwoods: Red and jack pine	Softwoods: Spruce-fir	Softwoods: Other softwoods	Hardwoods: Select red oak	Hardwoods: Other oaks	Hardwoods: Hard maple	Hardwoods: Aspen	Hardwoods: Other hardwoods
SOUTHWEST UNIT									
Buffalo	670,741	2,993	--	--	206,157	211,842	1,574	104,014	144,161
Crawford	531,580	--	--	--	176,224	129,227	31,952	16,715	177,462
Dunn	520,234	24,414	--	7,207	149,716	111,758	30,957	54,748	141,434
Grant	651,885	--	--	7,241	164,905	232,375	44,562	8,591	194,211
Iowa	327,103	--	--	14,234	57,240	137,808	9,831	7,101	100,889
La Crosse	452,035	43,986	--	14,283	160,386	108,558	--	22,932	101,890
Lafayette	105,662	--	--	--	8,956	72,004	--	1,149	23,553
Pepin	148,333	--	--	654	37,803	12,255	10,300	18,271	69,050
Pierce	279,016	13,479	--	--	47,333	31,324	88,301	10,059	88,520
Richland	496,242	--	--	--	75,642	90,192	111,002	25,956	193,450
St.Croix	113,372	3,243	--	--	18,646	16,839	--	42,373	32,271
Sauk	563,748	4,173	--	11,447	210,438	164,280	12,693	49,921	110,796
Tempealeau	390,487	--	--	--	114,963	165,457	--	23,760	86,307
Vernon	788,675	--	--	4,753	270,544	211,156	83,889	1,522	216,811
Total	6,039,113	92,288	--	59,819	1,698,953	1,695,075	425,061	387,112	1,680,805
SOUTHEAST UNIT									
Brown	162,959	--	--	874	19,319	6,441	25,655	8,607	102,063
Calumet	51,617	--	--	11,998	2,212	--	4,250	--	33,157
Columbia	259,221	--	--	4,225	47,765	155,238	--	12,131	39,862
Dane	322,788	3,561	--	6,741	35,877	182,310	--	22,926	71,373
Dodge	60,643	--	--	--	5,911	10,316	1,824	4,862	37,730
Door	280,462	--	9,522	90,707	1,704	--	54,366	25,229	98,934
Fond du Lac	139,445	22,048	--	3,781	11,689	26,599	10,218	1,066	64,044
Green	118,640	--	1,249	8,339	21,808	25,729	10,717	--	50,798
Green Lake	45,251	--	--	--	16,739	15,340	--	--	13,172
Jefferson	146,388	1,400	--	--	29,746	37,469	28,112	--	49,661
Kenosha	24,849	--	--	1,918	5,042	9,893	--	--	7,996
Kewaunee	137,906	--	--	48,278	1,575	--	20,067	1,225	66,761
Manitowoc	186,802	--	--	35,618	15,877	3,924	35,514	10,174	85,695
Milwaukee	--	--	--	--	--	--	--	--	--
Outagamie	185,690	17,447	--	29,182	3,992	10,029	3,846	15,432	105,762
Ozaukee	52,763	--	--	4,281	--	6,157	--	--	42,325
Racine	20,456	--	--	--	2,501	12,419	2,267	--	3,269
Rock	78,471	938	--	--	4,695	47,613	--	--	25,225
Sheboygan	109,692	--	2,579	13,918	28,191	6,860	23,623	3,134	31,387
Walworth	132,216	--	--	--	24,630	73,024	--	1,686	32,876
Washington	97,240	--	--	6,795	8,235	6,724	19,838	4,164	51,484
Waukesha	94,043	--	--	--	34,612	31,252	--	1,960	26,219
Winnebago	66,904	--	--	--	14,945	3,791	2,605	9,883	35,680
Total	2,774,446	45,394	13,350	266,655	337,065	671,128	242,902	122,479	1,075,473
All counties	35,035,413	3,066,511	1,740,195	5,122,140	4,555,263	4,048,748	3,384,420	4,040,695	9,077,441

1966-86

NORTH CENTRAL

FOREST

EXPERIMENT STATION

20th Anniversary