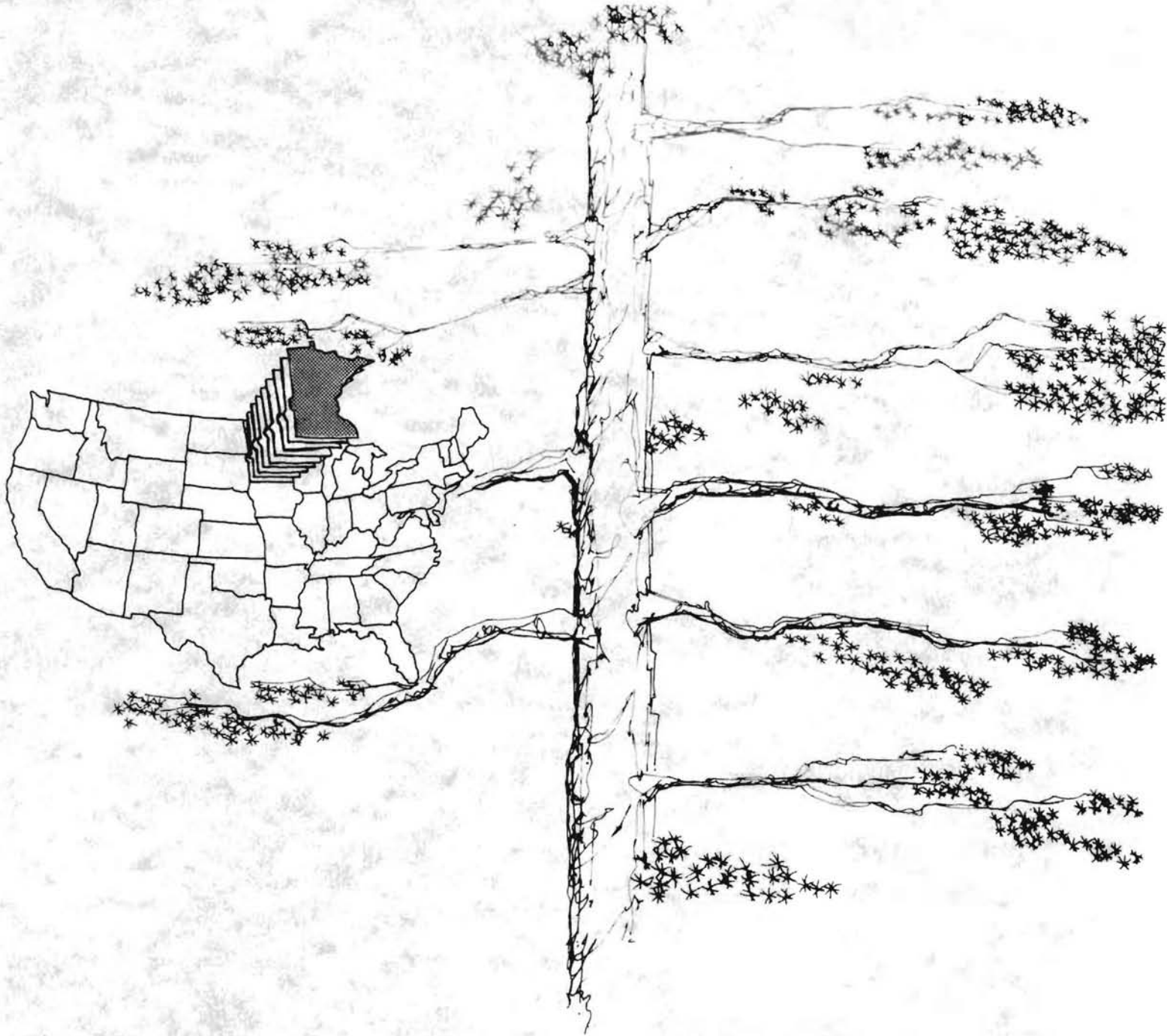


# Minnesota's Forest Resources



Department of Natural Resources  
Division of Forestry  
April 1991

500 Lafayette Road  
St. Paul, Minnesota 55155-4044

## **MINNESOTA WOOD INDUSTRY - 1988**

### **ECONOMIC IMPACT :**

- ★ Value of Forest Products Manufactured = \$ 4.98 Billion
- ★ 2nd Largest Manufacturing Industry in Minnesota
- ★ Generates 16% of Dollars of all Manufacturing

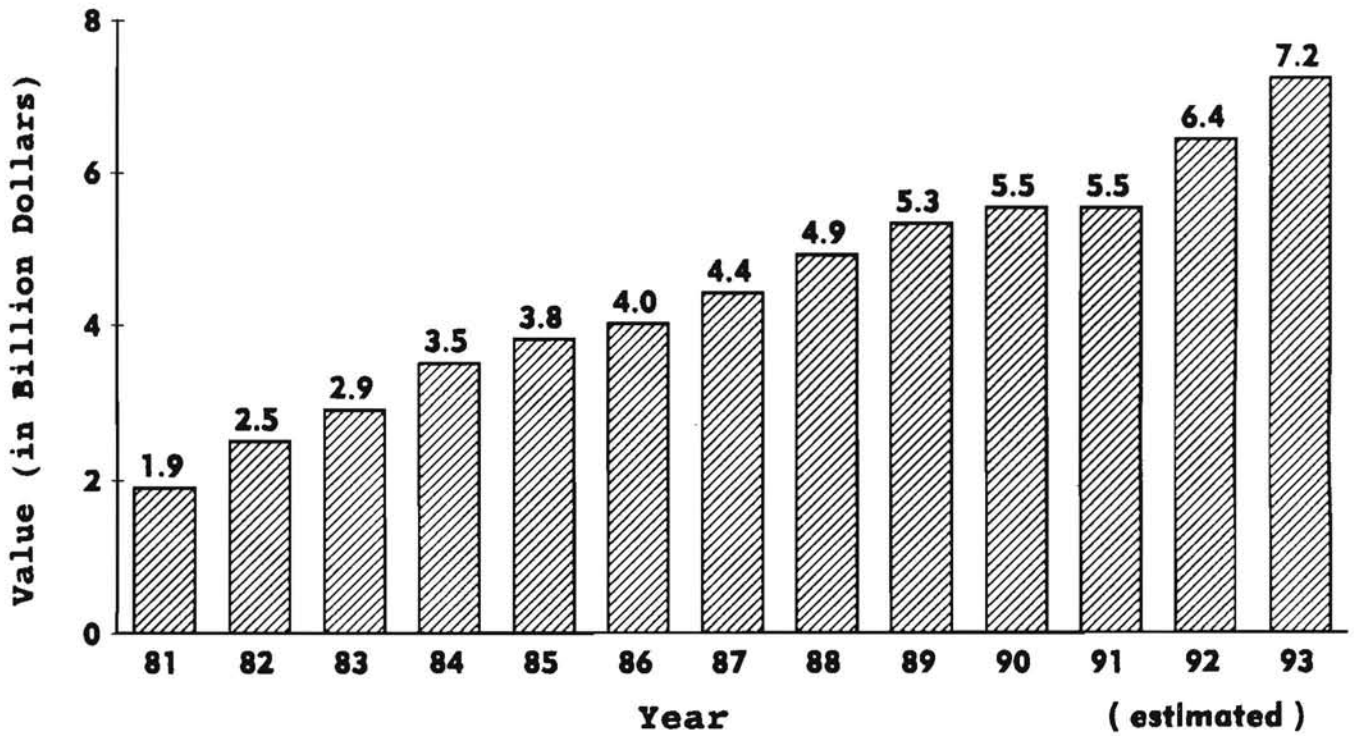
### **EMPLOYMENT :**

- ★ 55,600 Employees
- ★ \$ 1.9 Billion Payroll

### **INDUSTRY :**

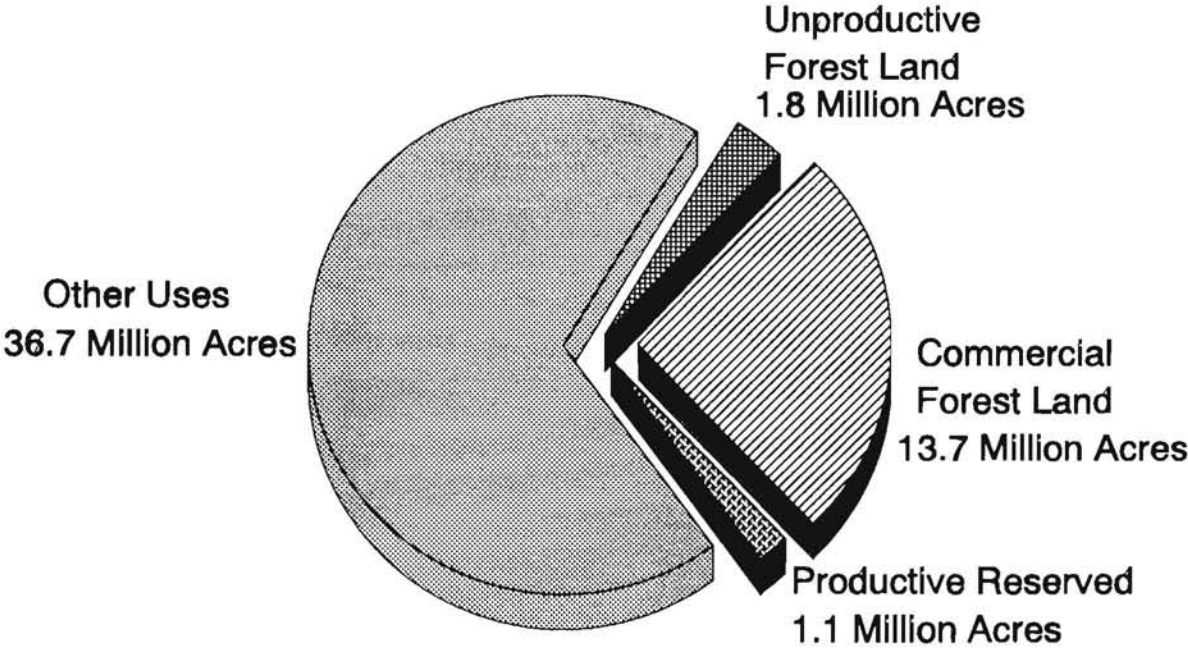
- ★ 8 Pulp & Paper
- ★ 4 Hardboard & Specialty
- ★ 5 Waferboard / OSB
- ★ 900 Sawmills
- ★ Over 850 Secondary

## Value of Forest Products Manufactured in Minnesota



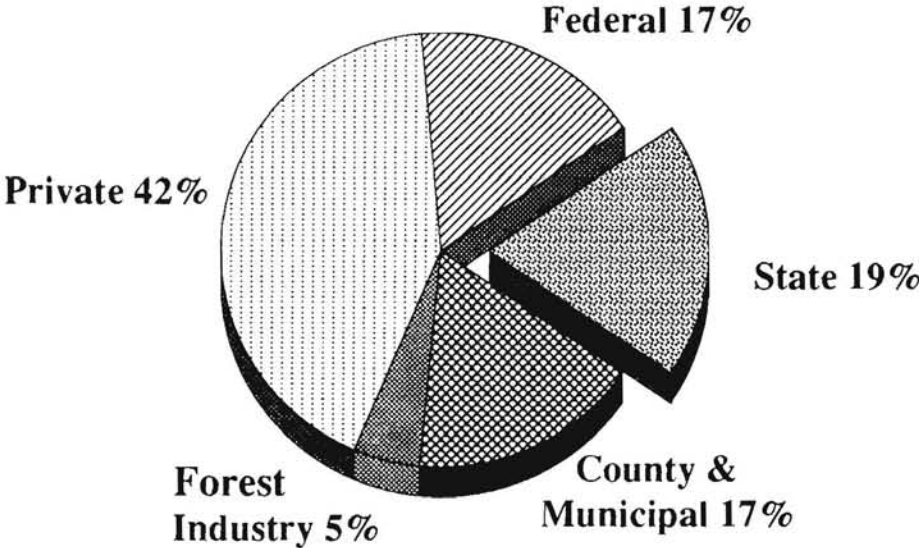
# Minnesota Land Use

- Total of 53.3 Million Acres -



**MINNESOTA COMMERCIAL FOREST LAND  
by OWNERSHIP**

- 13.7 Million Acres -

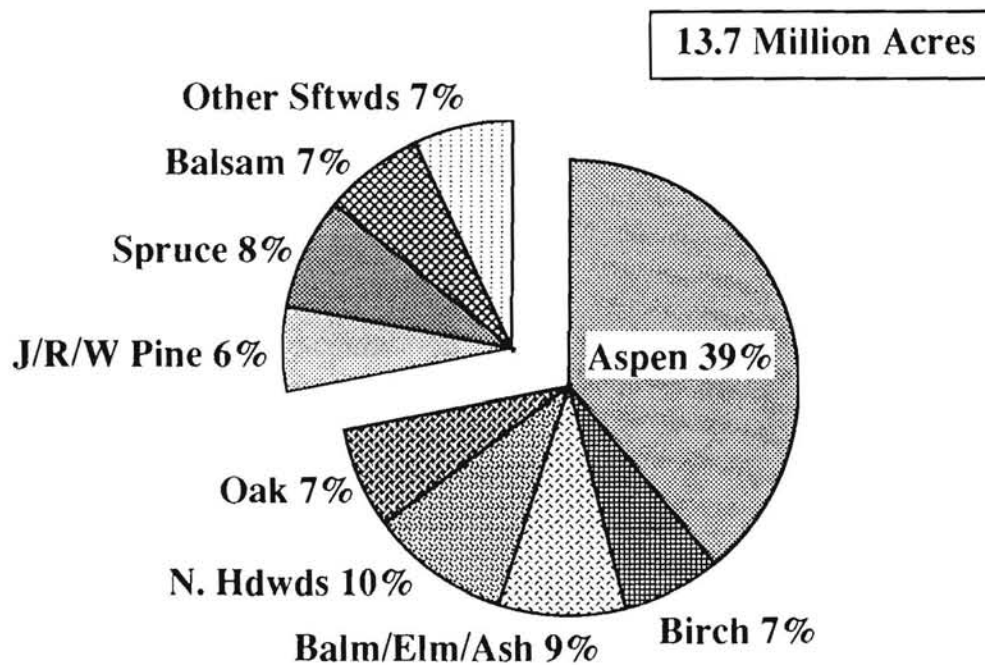


AREA OF COMMERCIAL FOREST LAND  
IN MINNESOTA BY FOREST TYPE

<u>FOREST TYPE</u>	<u>ACRES ( 000's)</u>
1) Jack Pine	504.4
2) Red Pine	246.9
3) White Pine	65.6
4) Balsam Fir	859.1
5) White Spruce	79.2
6) Black Spruce	1,041.8
7) Cedar	498.6
8) Tamarack	465.4
9) Oak	893.9
10) Elm - Ash	738.1
11) Northern Hardwoods	1,283.9
12) Aspen	5,302.3
13) Birch	997.6
14) Balm of Gilead	548.9
15) Non-Forest	169.4
Total All Types	<hr/> 13,695.1

# % of COMMERCIAL FOREST LAND by TYPE

- State of Minnesota -



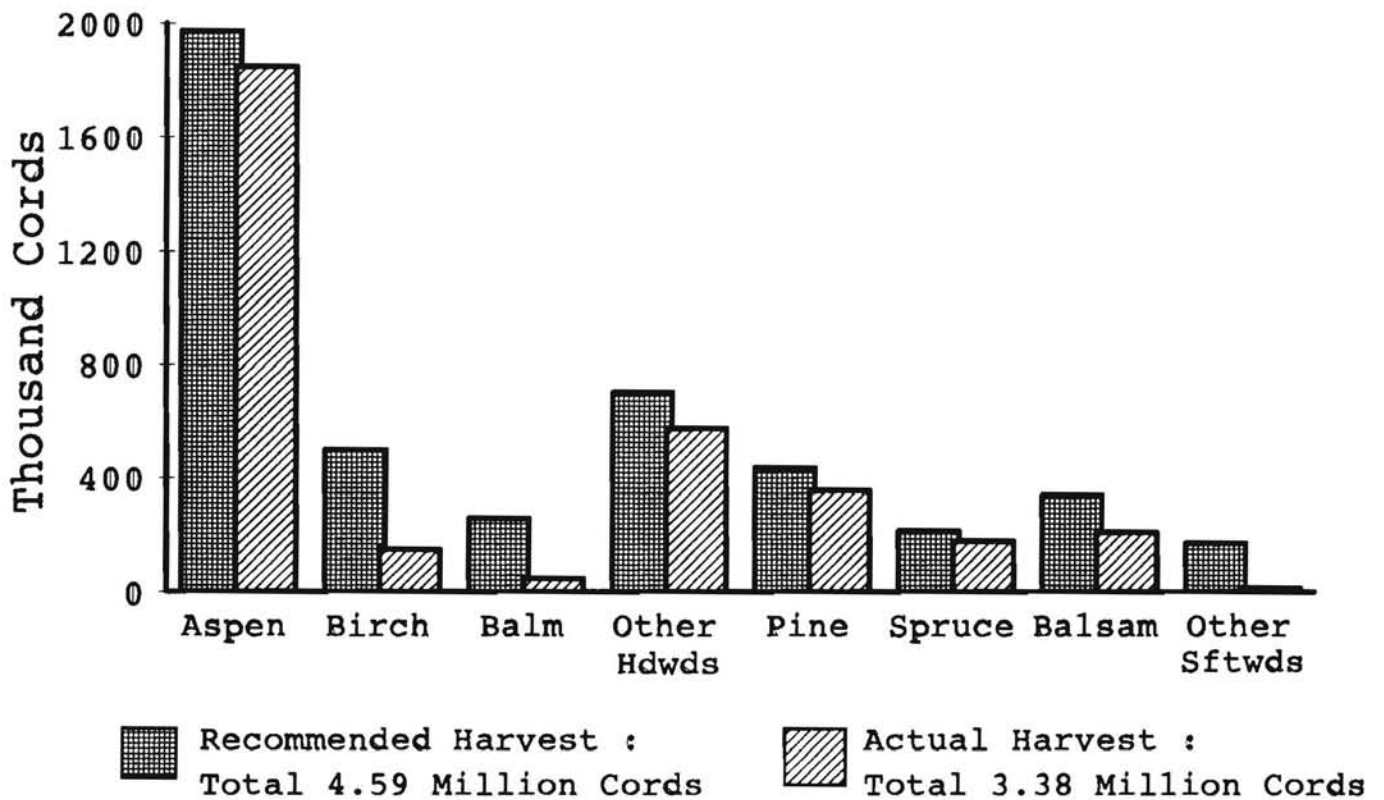
**Minnesota 1990 Resource Availability  
From Commercial Forest Land  
(thousand cords)**

Species	Recommended Harvest	1989 Actual Harvest	Surplus	1980-1989 Accumulated Surplus
Aspen	1,963	1,846.4	116.6	4,181
Birch	503	147.5	355.5	3,575
Balm of Gilead	261	47.8	213.2	2,089
Ash	152	71.0	81.0	817
Oak	245	299.6	(54.6)	(539)
Elm	118	97.8	20.2	(268)
Basswood	106	32.3	73.7	887
Maple	89	64.7	24.3	427
Cottonwood	25	7.4	15.4	146
Other Hardwoods		2.2		
Red Pine	158	136.8	21.2	519
White Pine	67	44.0	23.0	335
Jack Pine	210	177.3	32.7	285
Spruce	215	179.4	35.6	798
Balsam	340	209.8	130.2	2,031
Tamarack	70	5.7	64.3	479
Cedar	100	8.2	91.8	823
<b>Total</b>	<b>4,622</b>	<b>3,377.9</b>	<b>1,244.1</b>	<b>16,585</b>

# RECOMMENED HARVEST & ACTUAL HARVEST

From Commercial Forest Land

- Minnesota 1989 -

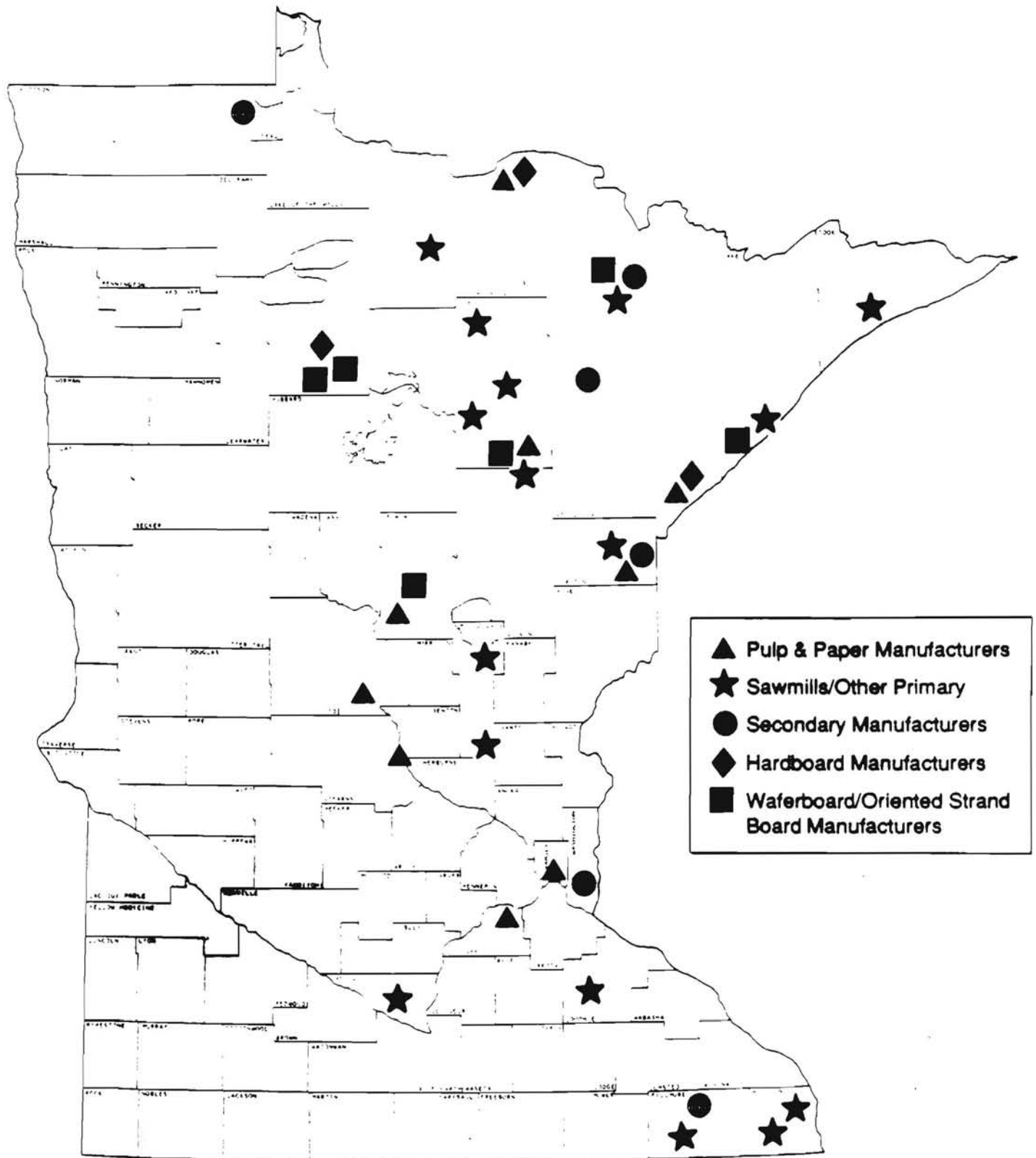


**Total Wood Harvest in Minnesota by Species**  
**- from Commercial Forest Land -**  
**- 1989 -**  
**(in thousand cords)**

Species	Pulpwood	Sawlogs & Other	Fuel		Total
			Residential*	Commercial	
Aspen	1609.6	185.8	46.0	5.0	1846.4
Birch	23.4	41.7	79.4	3.0	147.5
Balm of Gilead	47.0	.8	—	—	47.8
Ash	—	18.1	52.9	—	71.0
Oak	—	108.2	191.4	—	299.6
Elm	—	16.1	81.7	—	97.8
Basswood	—	30.1	2.2	—	32.3
Maple	6.9	8.7	47.1	2.0	64.7
Cottonwood	.1	7.3	—	—	7.4
Other Hardwoods	—	2.2	—	—	2.2
<b>Sub-Total Hardwood</b>	<b>1687.0</b>	<b>419.0</b>	<b>500.9</b>	<b>10.0</b>	<b>2616.7</b>
Pine					
Red Pine	29.6	102.8	4.4	—	136.8
White Pine	2.6	39.4	2.0	—	44.0
Jack Pine	99.4	71.5	6.4	—	177.3
Spruce	162.7	14.7	2.0	—	179.4
Balsam	198.4	8.8	2.6	—	209.8
Tamarack	4.9	.3	.5	—	5.7
Cedar	—	7.5	.7	—	8.2
<b>Sub-Total Softwood</b>	<b>497.6</b>	<b>245.0</b>	<b>18.6</b>	<b>—</b>	<b>761.2</b>
<b>Total</b>	<b>2184.6</b>	<b>664.0</b>	<b>519.3</b>	<b>10.0</b>	<b>3377.9</b>

\* This is 50% of the total fuelwood burned and considered removed from growing stock trees.

# Minnesota's Largest Forest Products Producers



Source: DNR, Division of Forestry, 1988

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## Minnesota Pulp and Paper

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- 1989 -

<u>Firm</u>	<u>Wood Use (Cords)</u>	<u>Product</u>
Blandin Paper Co. Grand Rapids	135,000	Magazines, Catalogs
Boise Cascade Int'l Falls	300,000	Business & Xerox
Hennepin Paper Little Falls	20,000 & Recycled Paper	Construction & Speciality
Champion Int'l Sartell	125,000	Magazines, Catalogs
Lake Superior Paper Duluth	160,000	Advertising Supplements
Potlatch Corp. (2) Brainerd & Cloquet	350,000	Business & Printing
Waldorf Corp. St. Paul	Recycled Paper	Cardboard & Corrugated Boxes

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## Minnesota Waferboard/OSB

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- 1989 -

<u>Firm</u>	<u>Wood Use (Cords)</u>	<u>Product</u>
Potlatch Grand Rapids	265,000	OSB - "Potlatch Select"
Louisiana-Pacific Two Harbors	100,000	Waferboard - Siding "Inner Seal"
Northwood Bemidji	210,000	Waferboard - "Norbord"
Potlatch Bemidji	175,000	OSB - "Oxboard"
Potlatch Cook	175,000	OSB - "Oxboard"

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## Minnesota Hardboard and Specialty

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- 1989 -

<u>Firm</u>	<u>Wood Use (Cords)</u>	<u>Product</u>
<b>Certainteed Corp. Shakopee</b>	<b>25,000 &amp; Recycled Paper</b>	<b>Roofing Felt</b>
<b>Int'l Biltrite Int'l Falls</b>	<b>30,000 &amp; Recycled Paper</b>	<b>Sheathing</b>
<b>Superwood Corp. Duluth</b>	<b>100,000</b>	<b>Industrial Hardboard</b>
<b>Superwood Corp. Bemidji</b>	<b>30,000</b>	<b>Industrial Hardboard</b>

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## Minnesota Wood Harvest for Products from Commercial Forest Land

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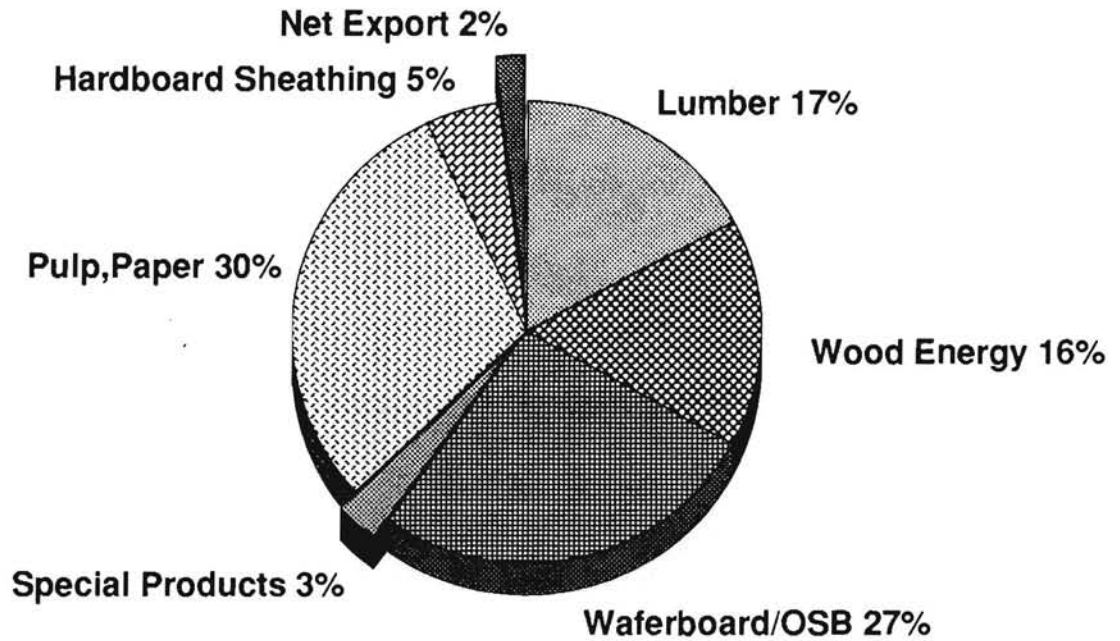
- 1989 -

<u>Product</u>	<u>Thousand Cords</u>
Pulp & Paper	1,013
Waferboard/OSB	925
Hardboard/Sheathing/Other	165
Lumber	575
Special Products	90
Net Export	80
Energy	<u>530</u>
<b>TOTAL</b>	<b>3,378</b>

# MINNESOTA TOTAL WOOD USE by PRODUCT - 1989

Harvest from Commercial Forest Land

Total 3.37 Million Cords (Includes All Species)

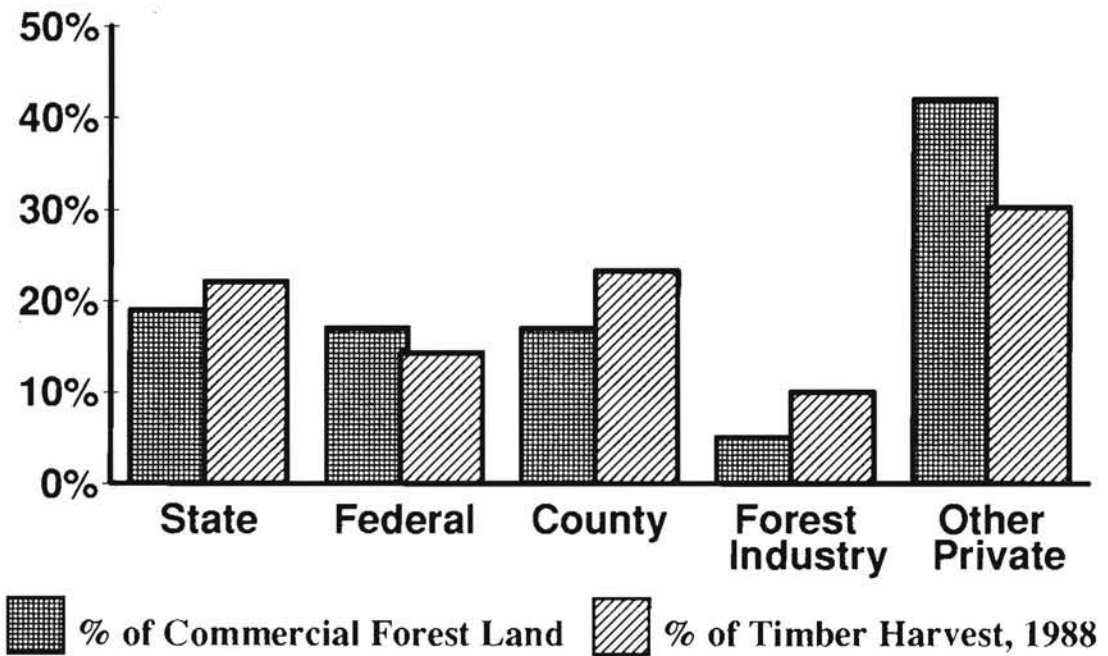


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# COMMERCIAL FOREST LAND OWNERSHIP VS. AMOUNT of TIMBER HARVESTED

(does not include fuelwood)

## Minnesota Statewide by Ownership





# Minnesota - New and Expanding Large Wood Industries

<u>1979-1985</u>		<u>Additional Wood Use</u>	<u>Capital Investment (millions \$)</u>
Potlatch	Paper	30,000 cords	100
Potlatch	OSB	170,000 cords	40
Potlatch	OSB	170,000 cords	40
Northwood Panelboard	Waferboard	220,000 cords	45
Champion International	Paper	60,000 cords	250
Blandin	OSB	220,000 cords	50
Louisiana Pacific	Waferboard	90,000 cords	30
		960,000 cords	\$555 million

## 1986 - 1990

Blandin	Paper	138,000 cords	350
Potlatch	Paper	None	100
Lake Superior Paper Ind.	Paper	130,000 cords	404
International Biltrite	Sheathing	50,000 cords	12
		318,000 cords	\$866 million

## 1991-1997 *1995*

Boise Cascade	Paper	340,000 cords	525
MacMillan Bloedel	**PSL	135,000 cords	70
Potlatch	OSB	160,000 cords	35
Potlatch <i>1995-2000</i>	Lumber	100,000 cords	22
*Blandin #7	Paper	150,000 cords	300
*Lake Superior Paper Ind.	Paper	160,000 cords	505
*Potlatch	Paper	420,000 cords	400
*Champion International	Paper	60,000 cords	400
		1,525,000 cords	\$2.257 Billion

\*Under study

\* \*\*Parallel Strand Lumber

Source: MN DNR - Forestry

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## Minnesota - New and Expanding Wood Using Industries

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### -Sawmills & Secondary Industries-

<u>1979-1989</u>		<u>Additional Wood Use</u>	<u>Capital Investment (millions \$)</u>
Hedstrom Lumber	Lumber	9 Million BF	\$1.5
Rajala Timber	Lumber & Kiln	5 Million BF	\$1.5
Midwest Timber	Lumber	2-1/2 Million BF	\$1
Woodcraft Industries	Cabinet Parts	5 Million BF	\$8
Marvin Windows	Windows	---	--
Valley Forest Resources	Lumber	5 Million BF	--
Diamond Brands	Veneer	2-1/2 Million BF	\$1
Lakewood Industries	Veneer	9 Million BF	\$8

Many Others

## Minnesota

### **New & Expanding Wood Using Industries**

<u>Period</u>	<u>Capital Investment (\$ millions)</u>	<u>Additional Wood Use</u>
1979-1985	\$555	1.0 million cords
1986-1990	\$866	.3 million cords
1991-1997	\$2,257	1.6 million cords
Totals	<u>\$3.678 billion</u>	<u>2.9 million cords</u>

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# World Class Minnesota Mills

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1997

**Champion Int'l. Paper #4**

**Blandin Paper #7**

**Potlatch Paper**

**Lake Superior Paper Industries #2**

**MacMillan Bloedel (OSB)**

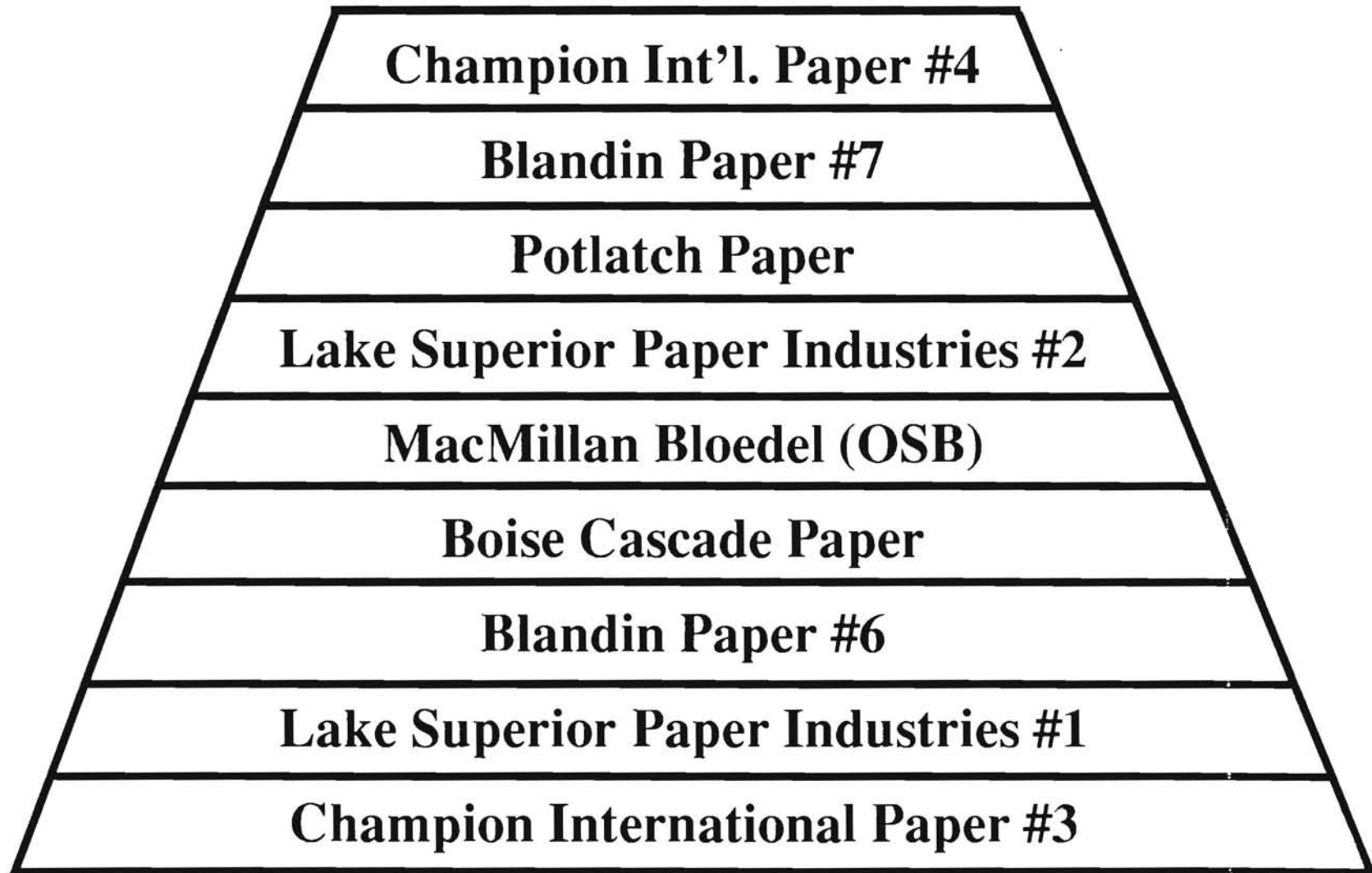
**Boise Cascade Paper**

**Blandin Paper #6**

**Lake Superior Paper Industries #1**

1982

**Champion International Paper #3**



<b>Minnesota Wood Harvest: Timber Removed from Commercial Forest Land - Current and Projected -</b>
---

<u>Product</u>	<u>1989</u> (cords)	<u>1992</u> <u>Projected</u> (cords)	<u>1997</u> <u>Projected</u> (cords)
Pulp & Paper	1,013,000	1,495,000	2,225,000
Waferboard/OSB	925,000	1,185,000	1,220,000
Hardboard/Sheathing	165,000	185,000	185,000
Lumber	575,000	620,000	650,000
Special Products	90,000	100,000	100,000
Net Export	80,000	95,000	120,000
Residential Fuel	520,000	550,000	585,000
Commercial Fuel	<u>10,000</u>	<u>10,000</u>	<u>30,000</u>
<b>Total</b>	<b>3,378,000</b>	<b>4,240,000</b>	<b>5,115,000</b>

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**Current and Projected Wood Harvest  
from Commercial Forest Land  
- Minnesota Statewide -**

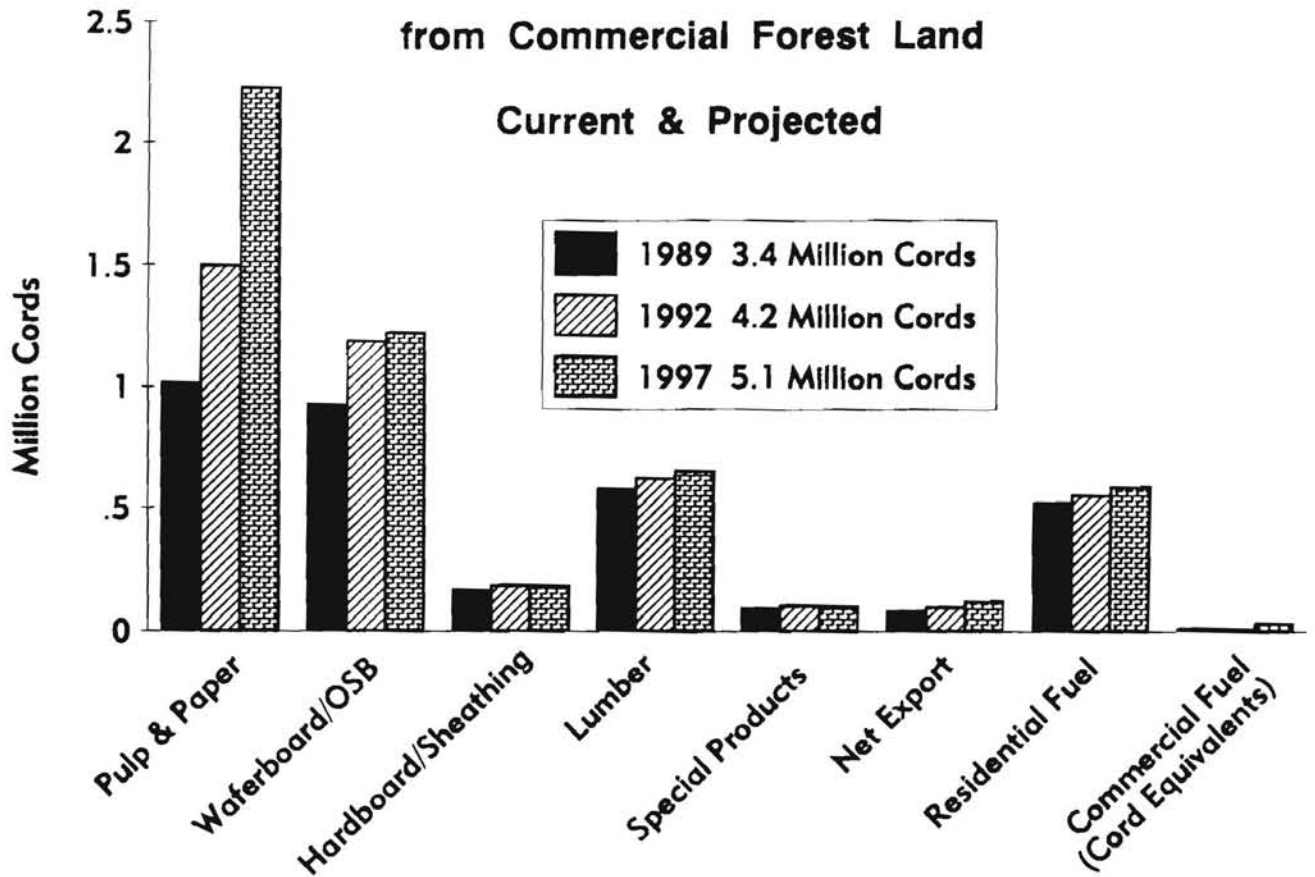
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<u>Species</u>	(In Thousand Cords)		
	<u>1989</u>	<u>1992</u>	<u>1997</u>
Aspen	1,846	2,401	2,662
Birch	148	258	411
Balm-of-Gilead	48	103	113
Ash	71	81	91
Oak	300	305	310
Elm	98	93	95
Basswood	32	47	134
Maple	65	70	155
Cottonwood	7	7	7
Other Hardwoods	2	2	4
Pine	358	413	463
Spruce	179	189	254
Balsam	210	257	402
Tamarack	6	6	6
Cedar	<u>8</u>	<u>8</u>	<u>8</u>
<b>Total</b>	<b>3,378</b>	<b>4,240</b>	<b>5,115</b>

# MINNESOTA WOOD HARVEST : TIMBER REMOVED

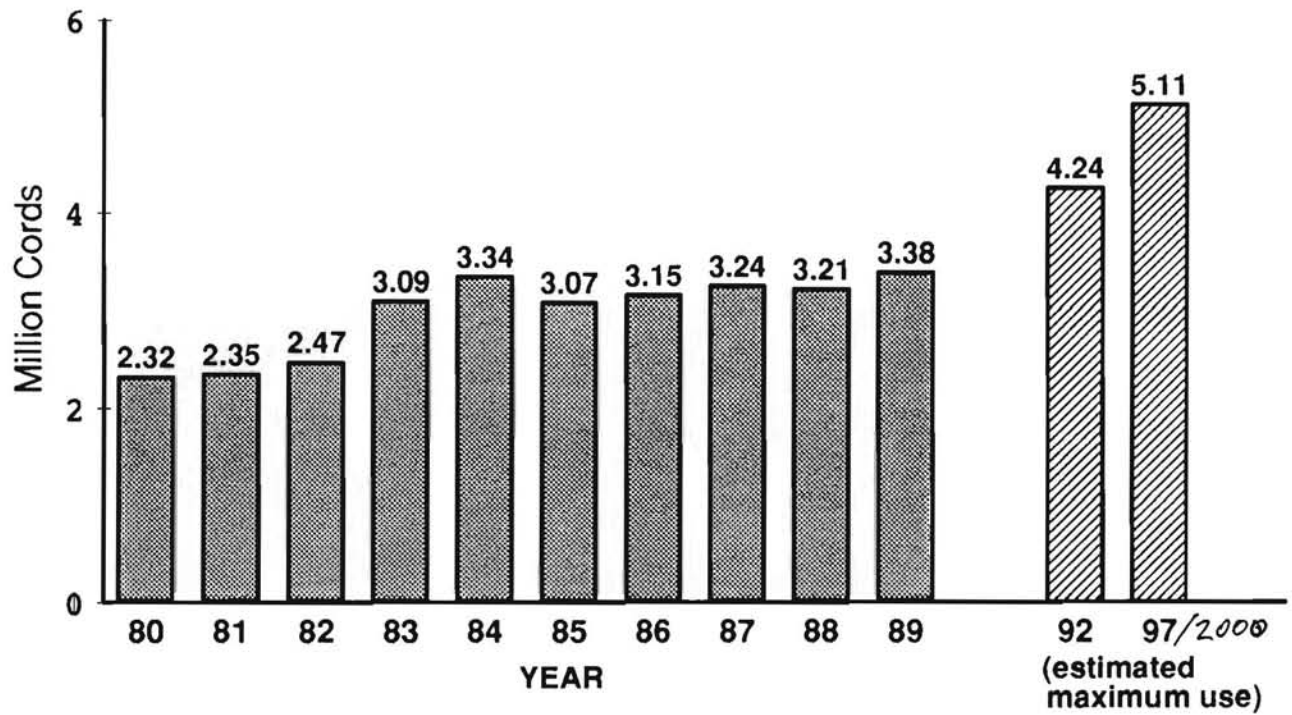
from Commercial Forest Land

Current & Projected



# TOTAL WOOD HARVEST in MINNESOTA

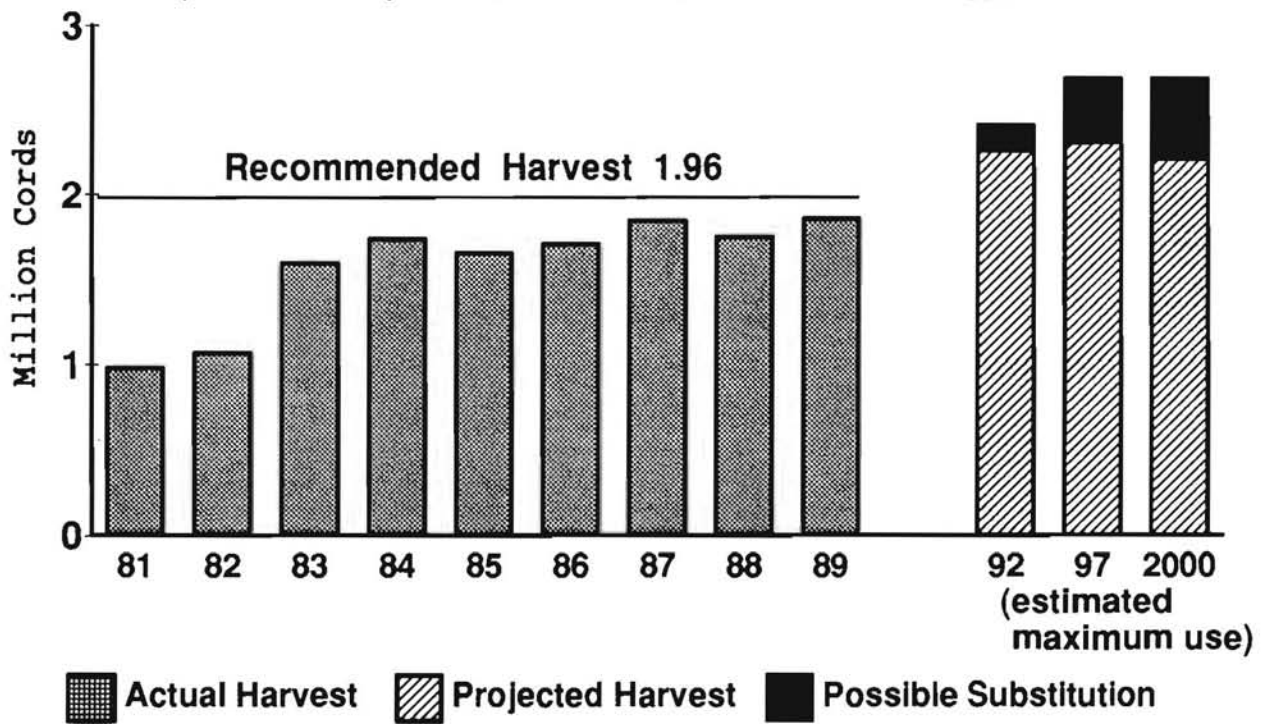
- from Commercial Forest Land -



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## ASPEN HARVEST from MINNESOTA

(includes Pulpwood, Sawtimber, & Wood for Energy)



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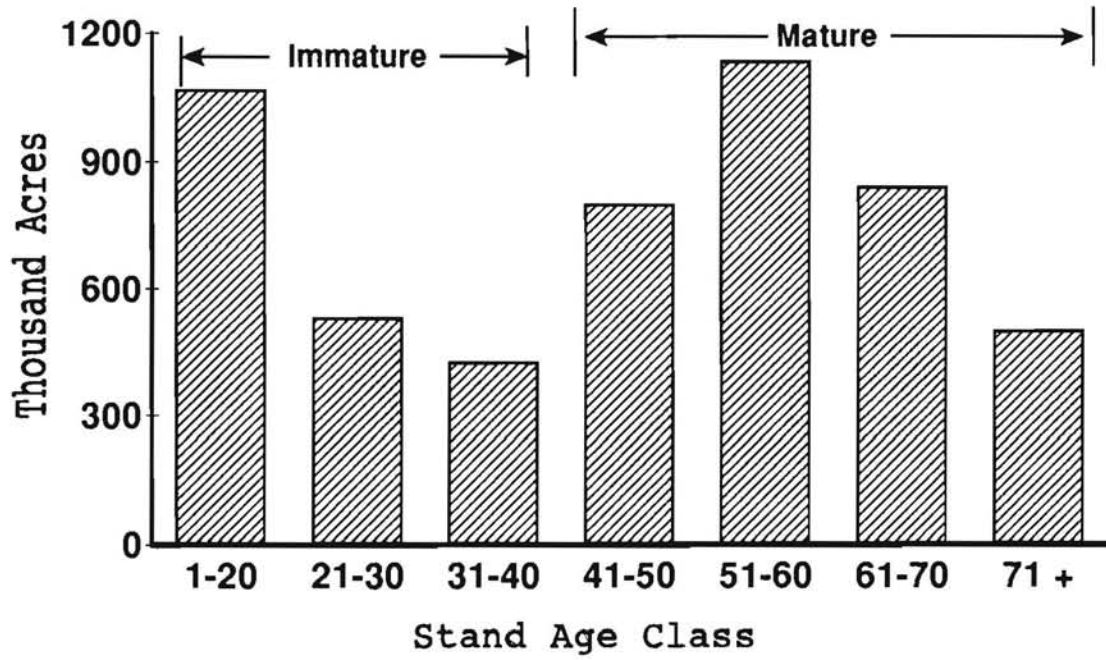
**ASPEN HARVESTED IN MINNESOTA (IN CORDS)**

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	<u>1989 Estimate Pulpwood</u>	<u>1988 Estimate Sawlogs</u>	<u>1988 Estimate Fuelwood</u>	<u>Total</u>
<b>Aspen/Birch Unit</b>				
Carlton	29,600	2,098	552	32,250
Cook	31,300	5,750	645	37,695
Koochiching	153,900	40,410	3,381	197,691
Lake	71,500	1,856	1,276	74,632
St. Louis	<u>330,000</u>	<u>14,019</u>	<u>5,985</u>	<u>350,004</u>
Sub-Total	<u>616,300</u>	<u>64,133</u>	<u>11,839</u>	<u>692,272</u>
<b>Central Hardwood Unit</b>				
Kanabec	3,500	4,676	823	8,999
Mille Lacs	28,700	4,633	3,357	36,690
Morrison	4,400	3,537	800	8,737
Ottertail	--	865	87	952
Pine	43,600	2,770	4,670	51,040
Todd	<u>700</u>	<u>2,143</u>	<u>286</u>	<u>3,129</u>
Sub-Total	<u>80,900</u>	<u>18,624</u>	<u>10,023</u>	<u>109,547</u>
<b>Northern Pine Unit</b>				
Aitkin	65,700	9,971	678	76,349
Becker	56,900	4,780	553	62,233
Beltrami	119,300	11,583	1,173	132,056
Cass	120,900	19,384	1,257	141,541
Clearwater	73,300	5,313	704	79,317
Crow Wing	44,700	8,942	480	54,122
Hubbard	67,700	2,800	632	71,132
Itasca	329,000	30,588	3,222	362,810
Lake of the Woods	6,800	2,245	81	9,126
Mahnomen	15,000	1,017	144	16,161
Roseau	1,900	92	18	2,010
Wadena	<u>8,300</u>	<u>311</u>	<u>77</u>	<u>8,688</u>
Sub-Total	<u>909,500</u>	<u>97,026</u>	<u>9,019</u>	<u>1,015,545</u>
Total	<u>1,606,700</u>	<u>179,783</u>	<u>30,881</u>	<u>1,817,364</u>
Other Parts of Minnesota	<u>3,574</u>			

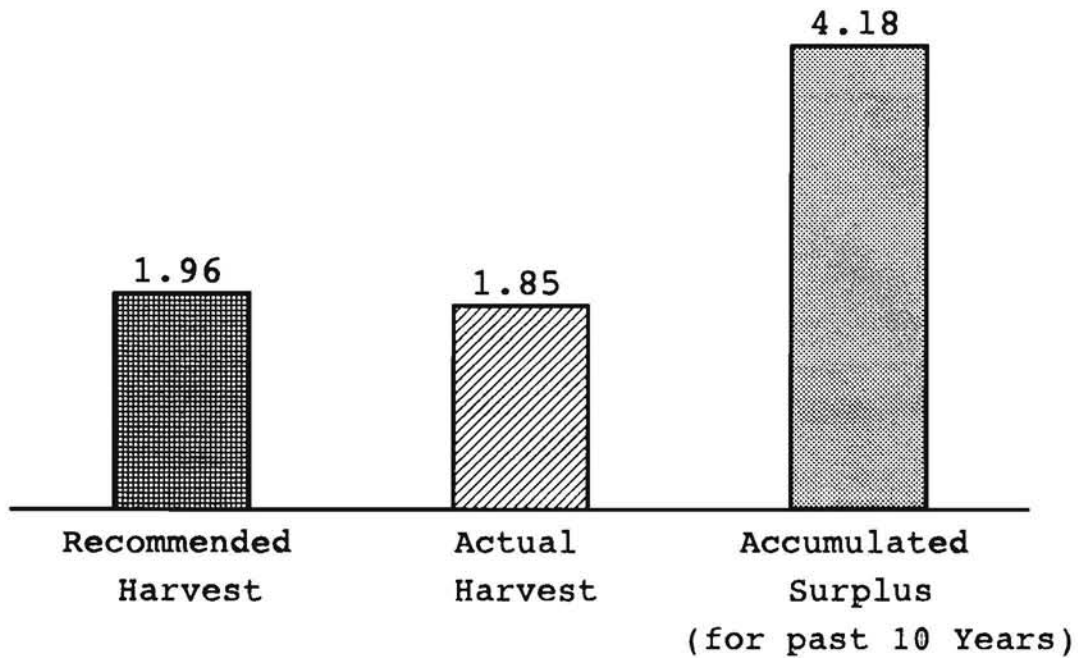
# ASPEN AGE DISTRIBUTION - (1987)

Minnesota Statewide

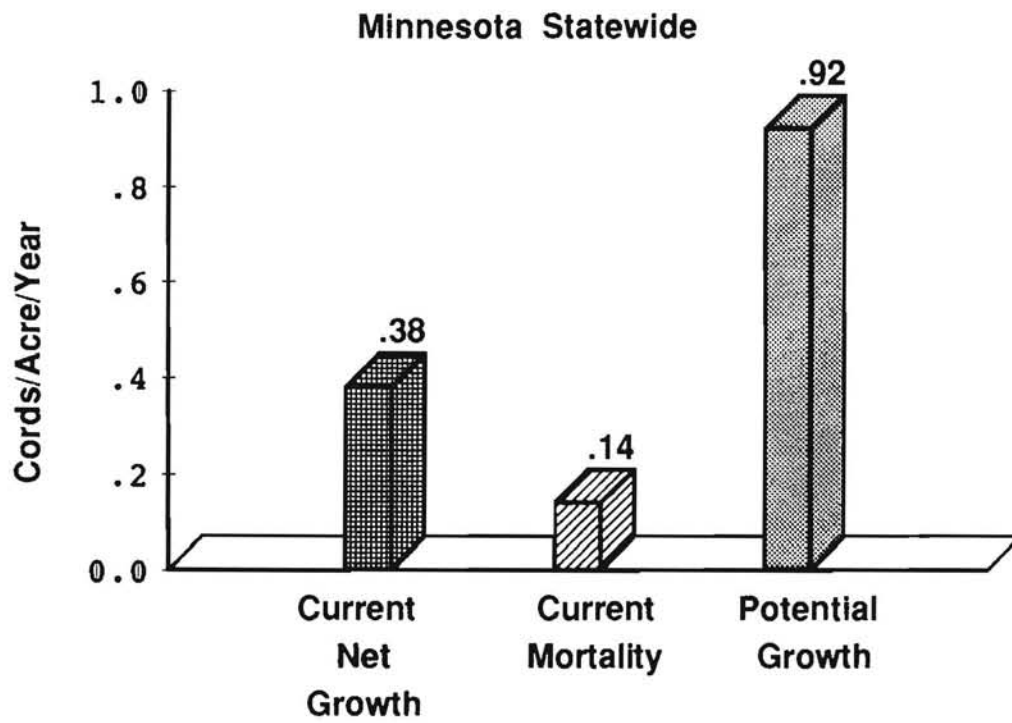


# MINNESOTA ASPEN RESOURCE & USE - 1989

(Volume in Million Cords)



# CURRENT & POTENTIAL GROWTH of ASPEN TYPE



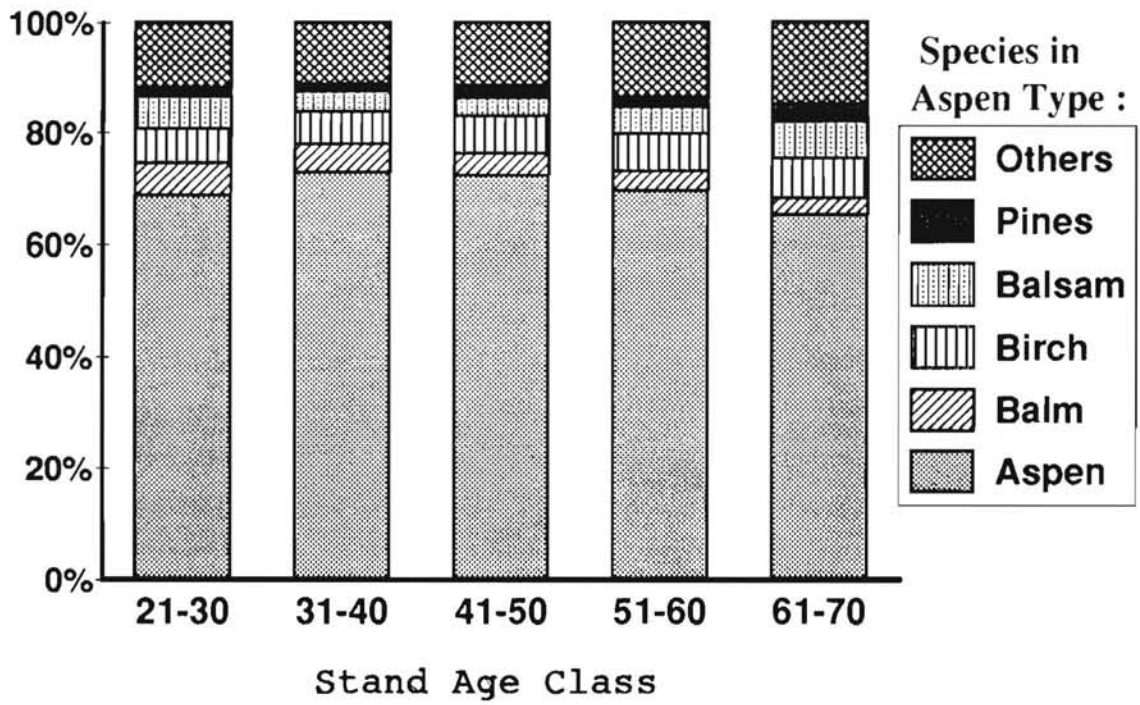
9/90

## **Possible Shortfalls in Aspen Supply Will Be Managed By:**

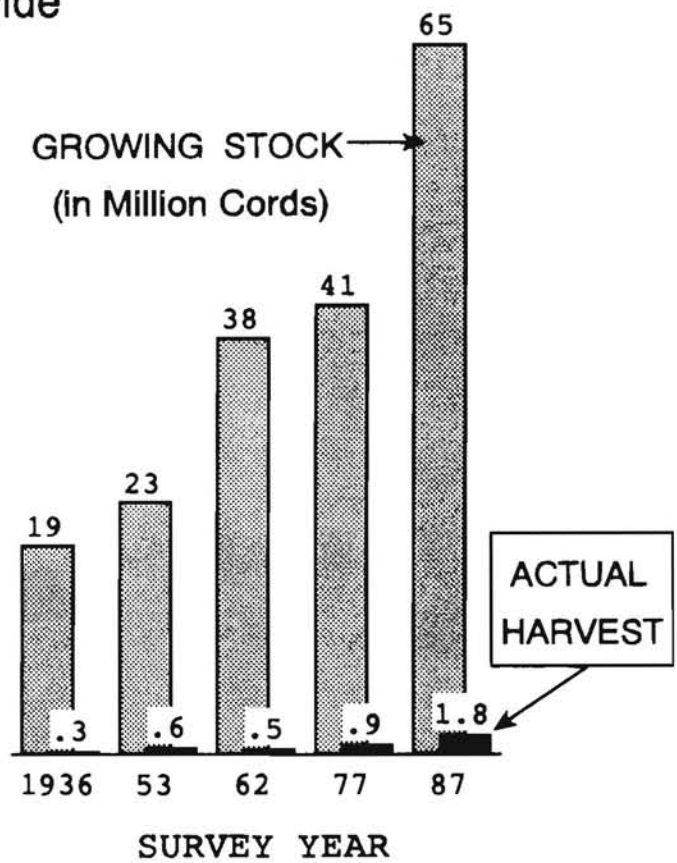
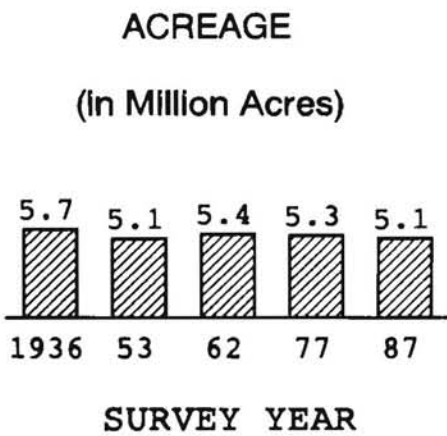
- Use of surplus alternative species such as Balm-of-Gilead, birch, tamarack, pine pulpwood, and maple, basswood and ash pulpwood.**
- Increased imports of Eucalyptus and other semi-finished, bleached pulp.**
- Increased utilization of smaller wood and whole tree chips.**
- Increased procurement from Canada and Wisconsin.**
- Use of recycled paper for pulp.**

# % of SPECIES VOLUME in ASPEN TYPE

Based on State Land

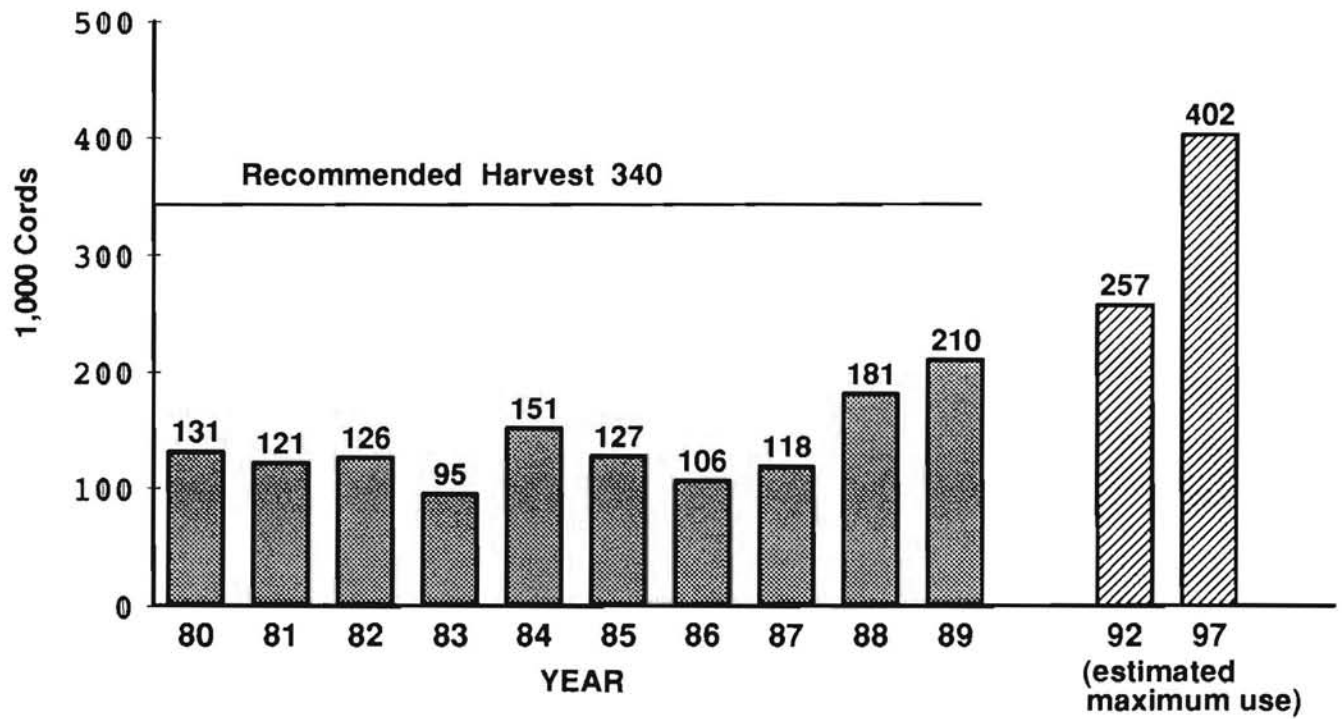


# ASPEN TYPE ACREAGE, VOLUME & HARVEST Minnesota Statewide



# VOLUME of BALSAM FIR HARVEST in MINNESOTA

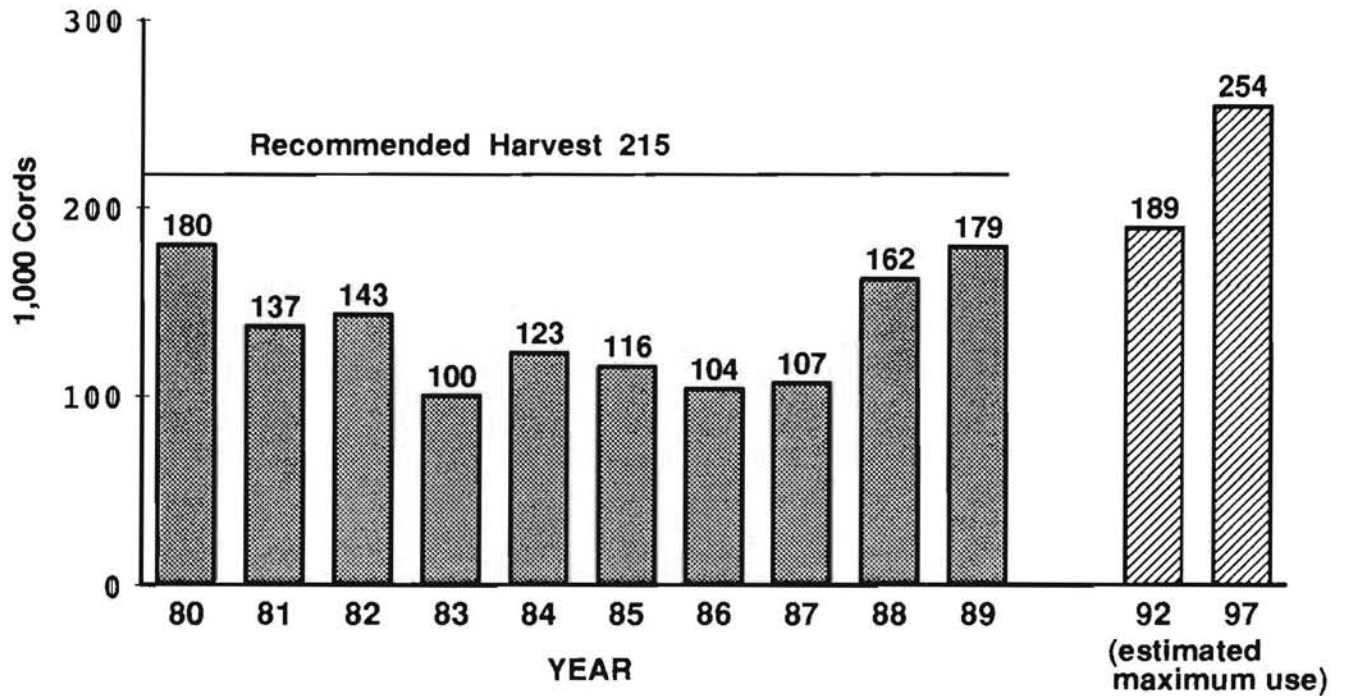
- from Commercial Forest Land -



10/90

# VOLUME of SPRUCE HARVEST in MINNESOTA

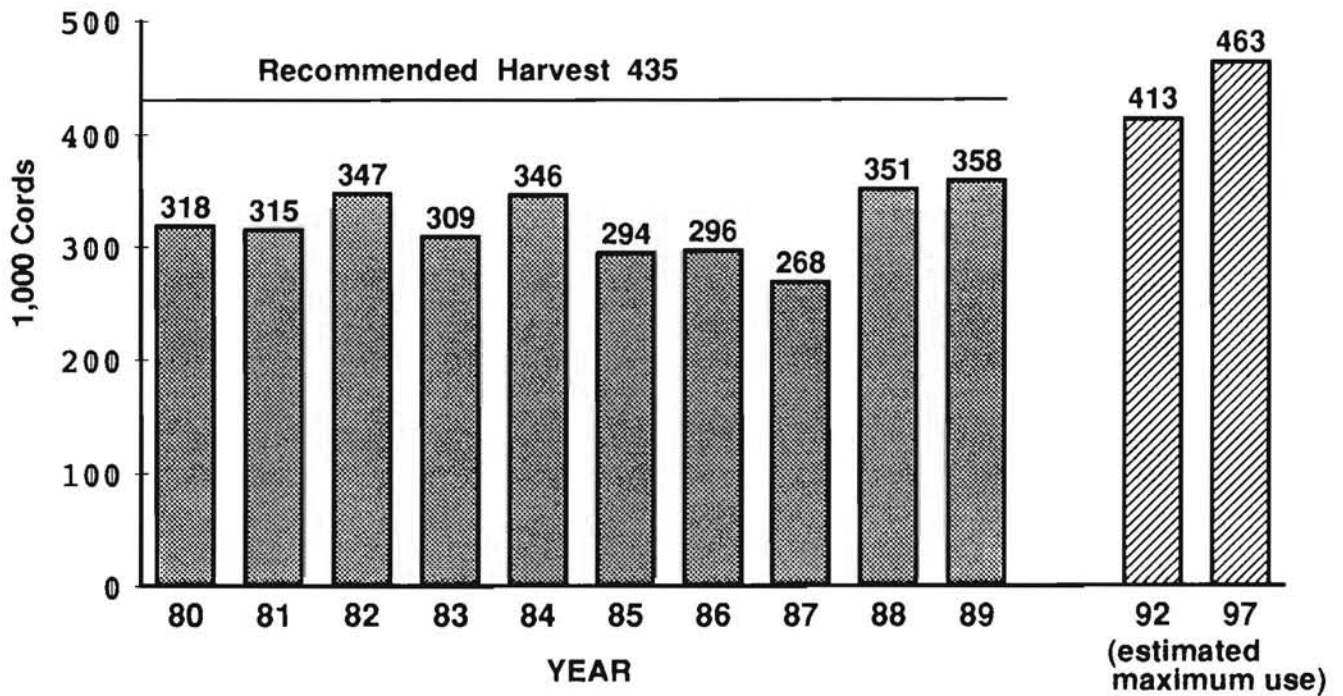
- from Commercial Forest Land -



10/90

# VOLUME of PINE HARVEST in MINNESOTA

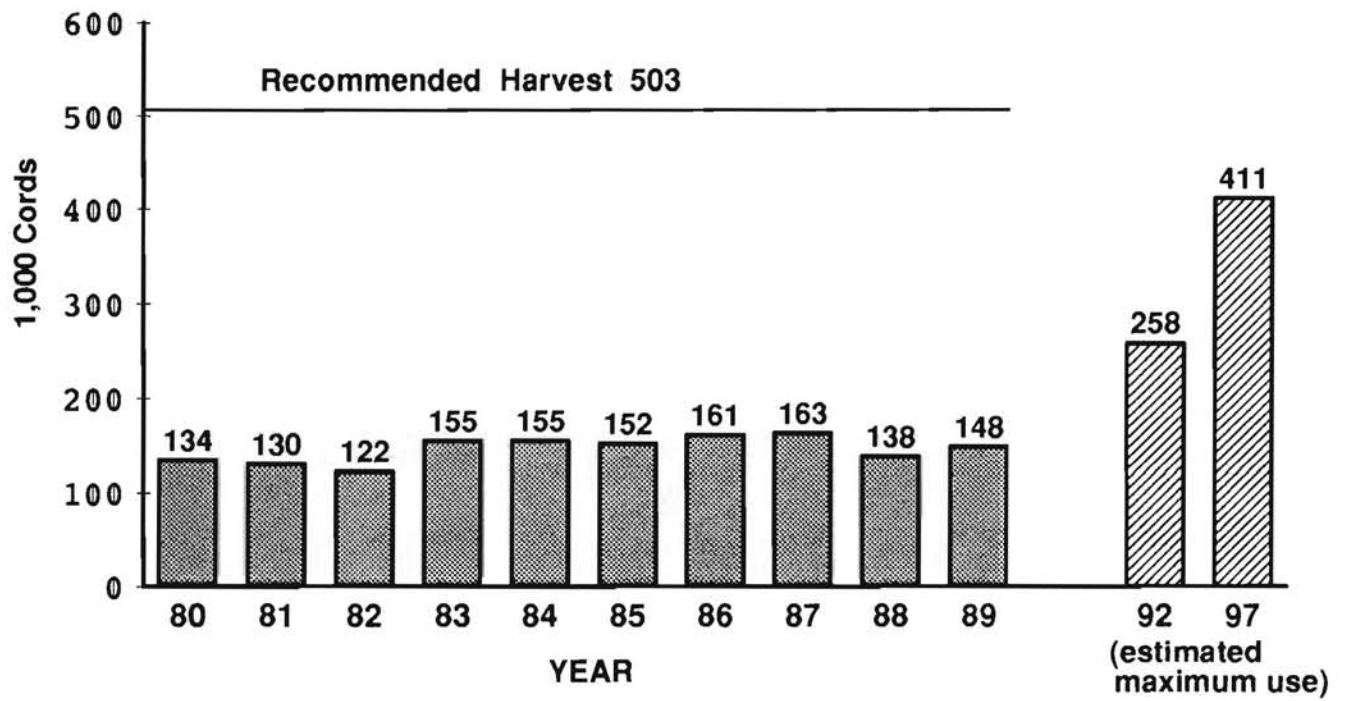
- from Commercial Forest Land -



10/90

# VOLUME of BIRCH HARVEST in MINNESOTA

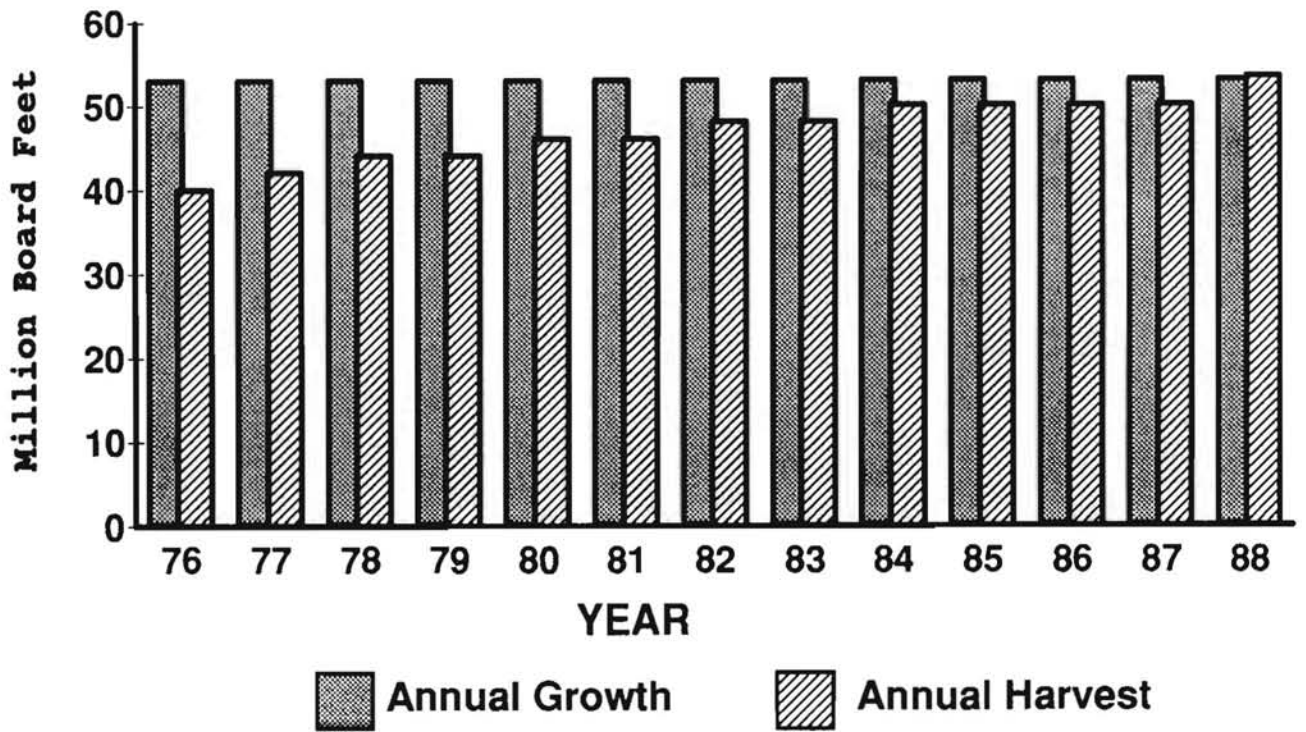
- from Commercial Forest Land -



10/90

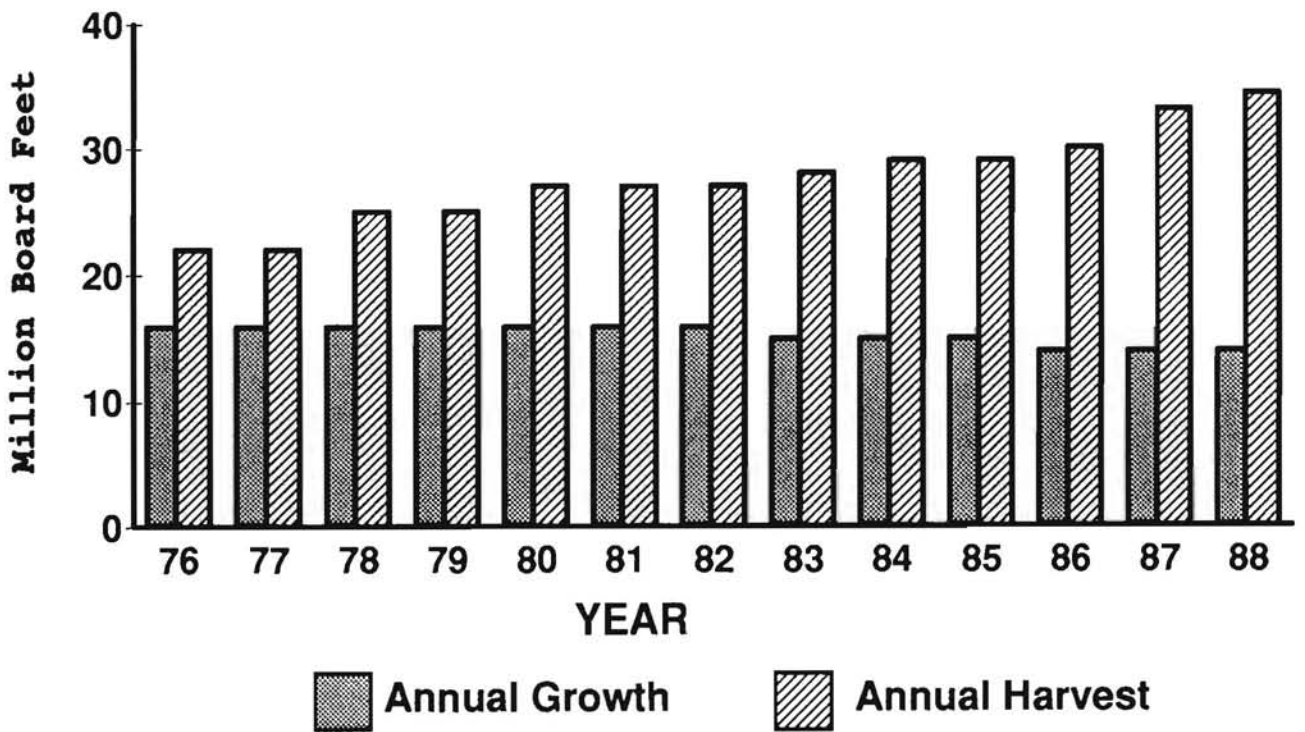
# RED OAK SAWTIMBER HARVEST & GROWTH

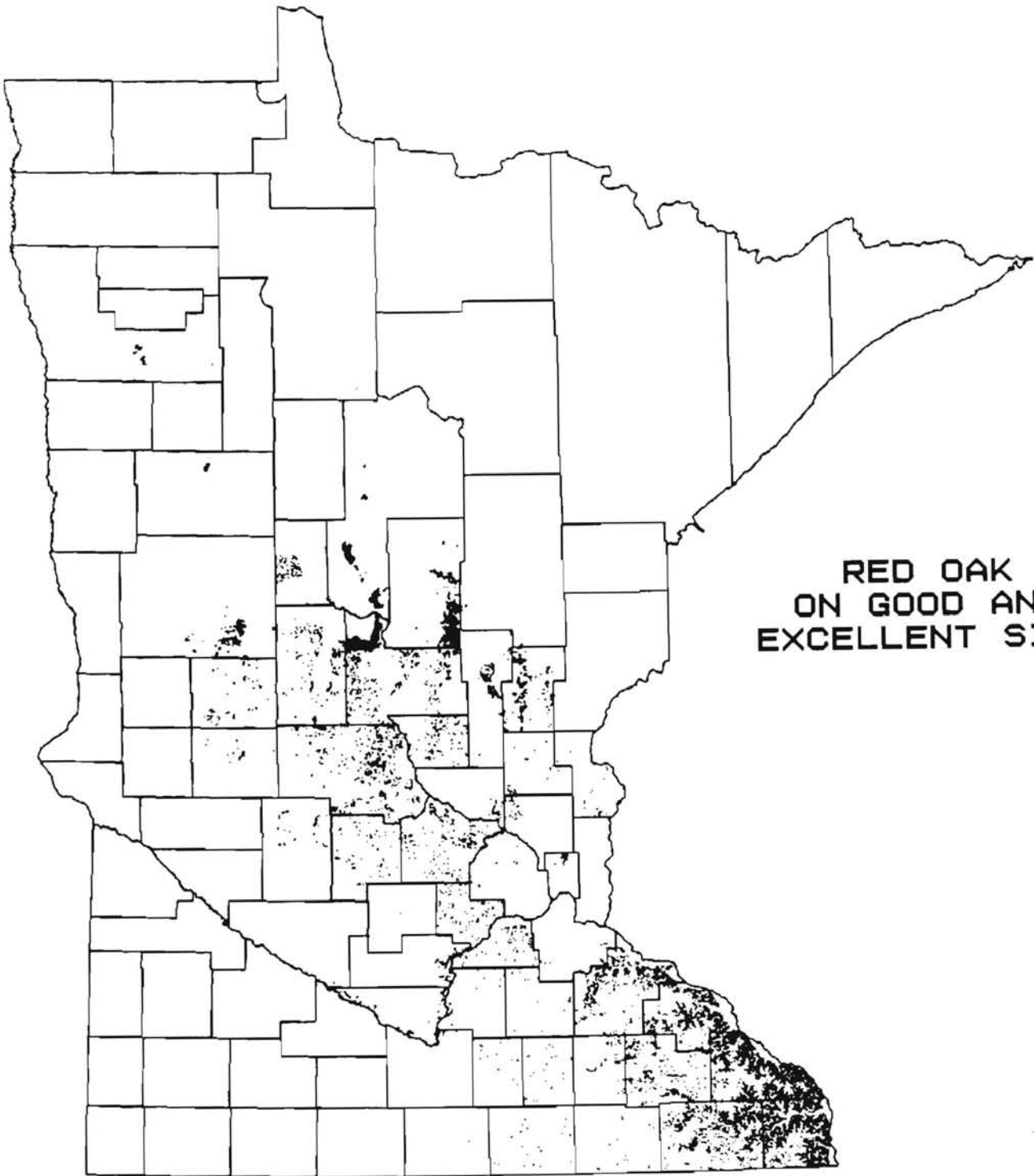
- Minnesota Statewide -



# RED OAK SAWTIMBER HARVEST & GROWTH

- Southern Minnesota -

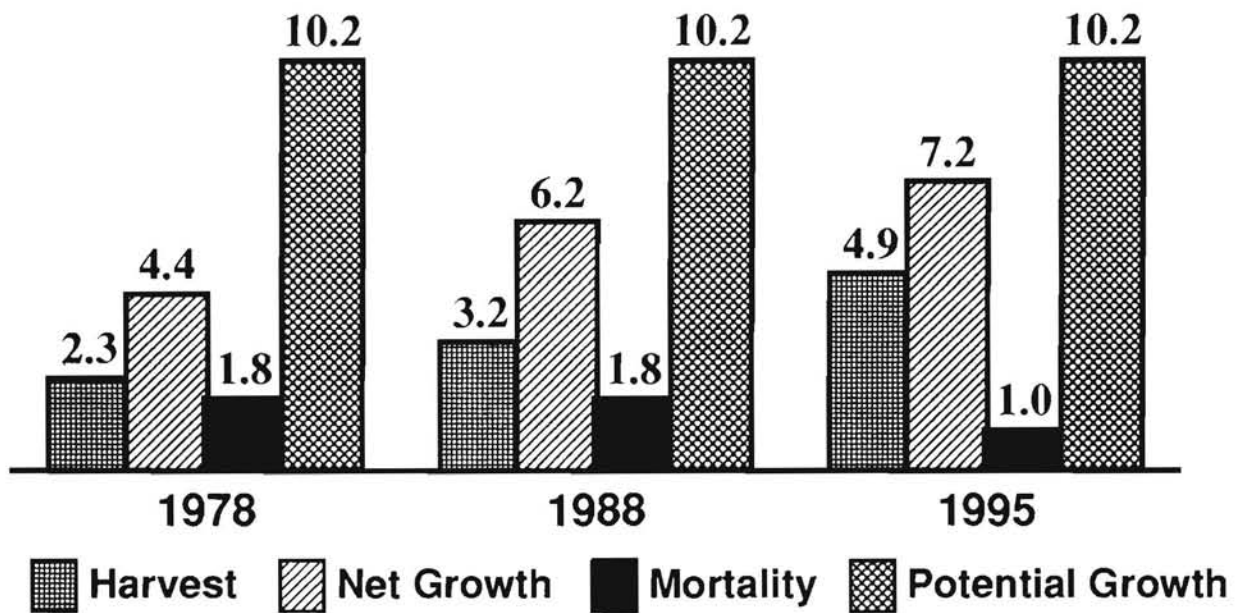




**RED OAK  
ON GOOD AND  
EXCELLENT SITES**

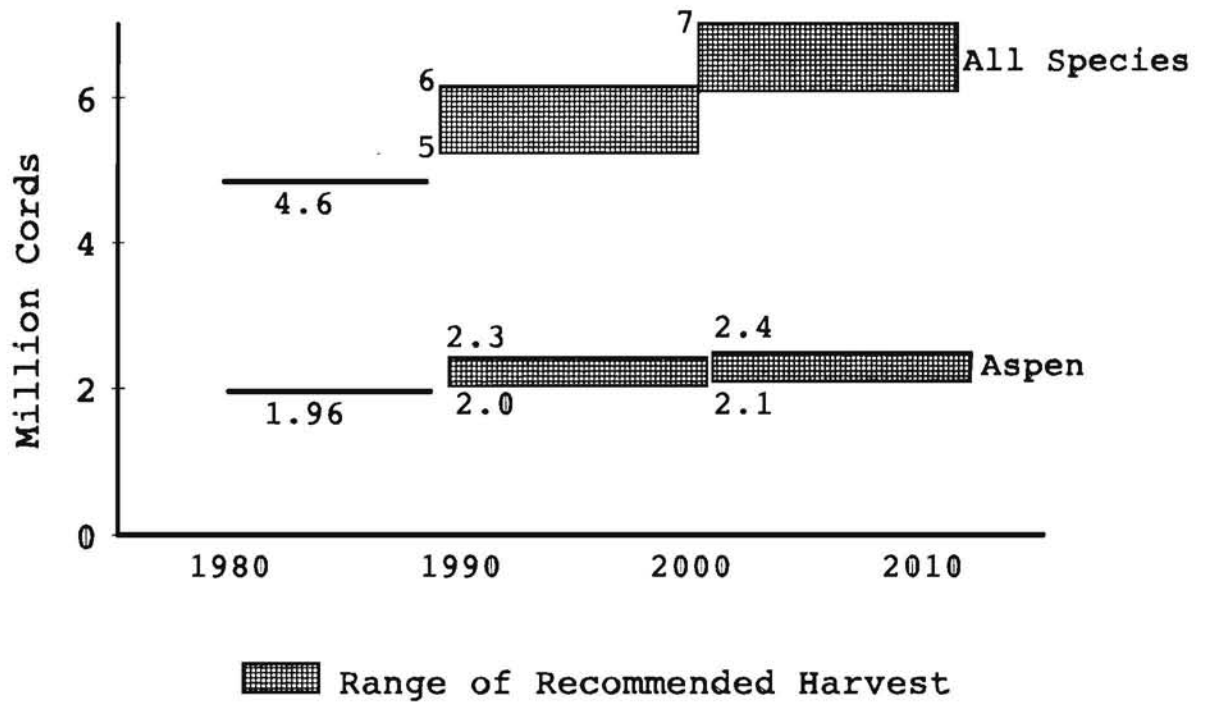
# MINNESOTA TIMBER HARVEST & GROWTH

(from Commercial Forest Land)



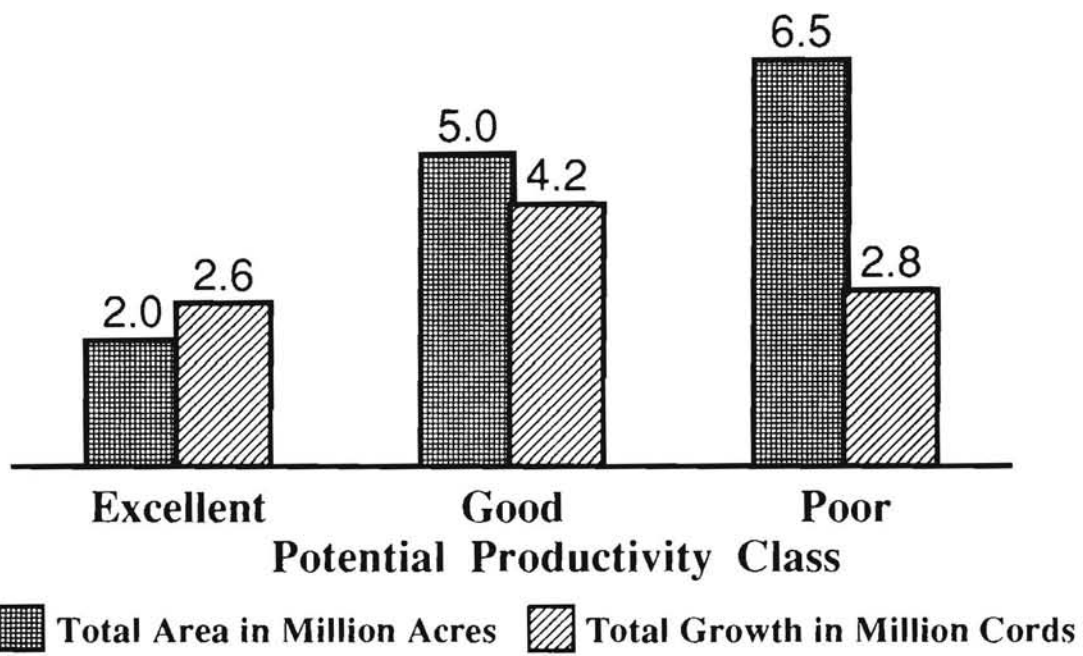
# CURRENT & PROJECTED RECOMMENDED HARVEST LEVELS

- Minnesota Statewide -



# POTENTIAL GROWTH by PRODUCTIVITY CLASS

## MINNESOTA COMMERCIAL FOREST



**Total Minnesota Hardwood Harvest by Species by Year  
From Commercial Forest Land  
(Thousand Cords)**

Year	Aspen	Birch	Balm/ Gilead	Ash	Oak	Elm	Bass- wood	Maple	Cotton- wood	Other Hard- woods	Total Hard- woods
1980	982.2	133.5	46.5	49.4	250.3	91.5	12.1	43.1	6.0	?	1,614.6
1981	1,084.1	129.4	51.7	49.2	250.3	91.2	12.2	42.8	6.0	?	1,716.9
1982	1,148.7	121.7	55.0	52.3	250.5	91.3	12.1	42.7	6.0	?	1,780.3
1983	1,655.9	154.8	69.6	81.7	327.8	195.6	14.3	41.4	9.7	?	2,550.8
1984	1,793.2	154.2	63.1	81.8	327.8	195.7	14.3	41.4	9.7	?	2,681.2
1985	1,625.5	152.2	49.2	81.6	327.8	195.6	14.3	41.3	9.7	?	2,497.2
1986	1,733.4	160.7	48.0	81.4	327.8	195.5	14.3	41.0	9.7	?	2,611.8
1987	1,842.4	163.4	43.1	81.4	327.8	195.5	14.3	40.9	9.7	?	2,718.5
1988	1,737.5	137.4	46.9	73.1	299.6	97.8	32.3	64.1	7.3	2.2	2,498.2
1989	1,846.4	147.5	47.8	71.0	299.6	97.8	32.3	64.7	7.4	2.2	2,616.7

(Includes pulpwood, sawtimber, and fuelwood.)

**Total Minnesota Softwood Harvest by Species by Year  
From Commercial Forest Land  
(Thousand Cords)**

Year	Spruce	Balsam	Tamarack	Cedar	R. Pine	W. Pine	J. Pine	Total Softwoods
1980	180.0	131.1	45.0	26.4	79.7	20.3	220.0	702.5
1981	137.5	120.8	32.5	26.4	81.1	24.8	210.6	633.7
1982	143.3	125.9	47.1	26.4	84.0	27.3	237.2	691.2
1983	100.4	95.9	28.4	16.2	103.2	41.4	156.6	542.1
1984	123.0	151.4	13.8	16.2	122.1	39.2	188.2	653.9
1985	116.3	127.6	11.3	16.2	105.4	30.2	162.5	569.5
1986	103.7	106.8	15.2	16.2	112.4	33.8	153.4	541.5
1987	106.6	118.2	10.8	16.2	102.5	30.5	138.6	523.4
1988	162.2	181.9	11.5	8.2	133.6	43.5	170.7	711.6
1989	179.4	209.8	5.7	8.2	136.8	44.0	177.3	761.2

(Includes pulpwood, sawtimber, and fuelwood.)

**Total Minnesota Wood Harvest of Hardwoods and Softwoods by Year**  
**From Commercial Forest Land**  
**(Thousand Cords)**

Year	Hardwoods	Softwoods	Total
1980	1,614.6	702.5	2,317.1
1981	1,716.9	633.7	2,350.6
1982	1,780.3	691.2	2,471.5
1983	2,550.8	542.1	3,092.9
1984	2,681.2	653.9	3,335.1
1985	2,497.2	569.5	3,066.7
1986	2,611.8	541.5	3,153.3
1987	2,718.5	523.4	3,241.9
1988	2,498.2	711.6	3,209.8
1989	2,616.7	761.2	3,377.9

**Minnesota 1989 Fuelwood Harvest  
From Commercial Forest Land  
(Thousand Cords)**

Species	Survey Unit				Total
	I	II	III	IV	
Oak	9.4	40.9	123.5	17.6	191.4
Birch	32.5	16.2	23.4	7.3	79.4
Ash	8.2	8.2	12.2	24.3	52.9
Elm	1.3	9.3	50.1	21.0	81.7
Maple	12.0	6.8	23.2	5.1	47.1
Aspen	12.2	20.4	10.4	3.0	46.0
Basswood	<u>.1</u>	<u>1.0</u>	<u>.9</u>	<u>.2</u>	<u>2.2</u>
Sub-Total Hardwoods	<u>75.7</u>	<u>102.8</u>	<u>243.7</u>	<u>78.5</u>	<u>500.7</u>
W. Pine	.4	1.0	.5	.1	2.0
R. Pine	.9	2.3	1.1	.1	4.4
J. Pine	1.4	3.3	1.5	.2	6.4
Spruce	.1	.3	.4	.1	2.0
Balsam Fir	.8	.5	1.2	.1	2.6
Tamarack	--	.1	.3	.1	.5
Cedar	--	<u>.2</u>	<u>.5</u>	--	<u>.7</u>
Sub-Total Softwoods	<u>4.2</u>	<u>7.7</u>	<u>6.0</u>	<u>.7</u>	<u>18.6</u>
Total	<u>79.9</u>	<u>110.5</u>	<u>249.7</u>	<u>79.2</u>	<u>519.3</u>

**Minnesota: Adjusted Recommended Harvest from Commercial Forest Land  
1990-1999  
(Thousand Cords)**

Species	Recommended Harvest	Backlog*	Total
Aspen	1,963	209	2,172
Birch	503	179	682
Balm/Gilead	261	104	365
Ash	152	41	193
Oak	245	--	245
Elm	118	--	118
Basswood	106	44	150
Maple	89	21	110
Cottonwood and Other Hardwoods	25	7	32
Red Pine	158	26	184
White Pine	67	17	84
Jack Pine	210	14	224
Spruce	215	40	255
Balsam Fir	340	102	442
Tamarack	70	24	94
Cedar	<u>100</u>	<u>41</u>	<u>141</u>
<b>Total</b>	<b><u>4,622</u></b>	<b><u>869</u></b>	<b><u>5,491</u></b>

\* Assumes 50% of accumulated surplus still available and liquidated over 10-year period.

**Average Prices Received for Stumpage Sold by  
Public Land Agencies in Minnesota: 1982-1990**  
(Compiled by Doug Ford, Forest Economist, DNR-Forestry)

**Pulpwood (\$'s per cord)**

Species	1982	1983	1984	1985	1986	1987	1988	1989	1990*
Aspen	\$3.11	\$3.08	\$3.41	\$3.44	\$3.32	\$3.35	\$3.55	\$4.53	\$6.09
Balm	3.10	1.81	2.40	2.00	2.33	2.72	2.31	2.88	3.35
Birch	2.15	2.33	3.91	2.18	1.46	1.68	1.96	2.64	3.69
Ash	5.30	2.55	4.00	3.26	2.96	2.81	3.05	3.76	3.82
Oak	4.55	4.28	4.59	5.32	3.72	3.46	3.88	4.66	4.89
Mixed Hardwoods	2.31	4.77	3.98	3.00	3.10	2.96	2.37	2.77	5.58
Balsam	4.07	3.55	3.62	2.97	2.47	2.72	3.49	4.15	6.49
W. Spruce	14.20	12.87	12.69	10.25	7.42	6.35	9.29	10.61	12.42
B. Spruce	14.20	12.87	12.69	9.29	10.21	9.90	9.39	9.72	11.88
Tamarack	6.13	5.15	5.30	4.85	4.72	4.85	4.67	4.50	4.61
Cedar	7.59	7.23	7.99	7.01	7.62	7.01	6.83	7.76	9.76
J. Pine	10.97	9.51	9.98	9.49	7.56	8.60	9.69	9.75	11.34
R. & W. Pine	10.78	9.89	9.38	9.28	7.97	7.34	7.48	14.79	13.04

**Sawtimber (\$'s per MBF)**

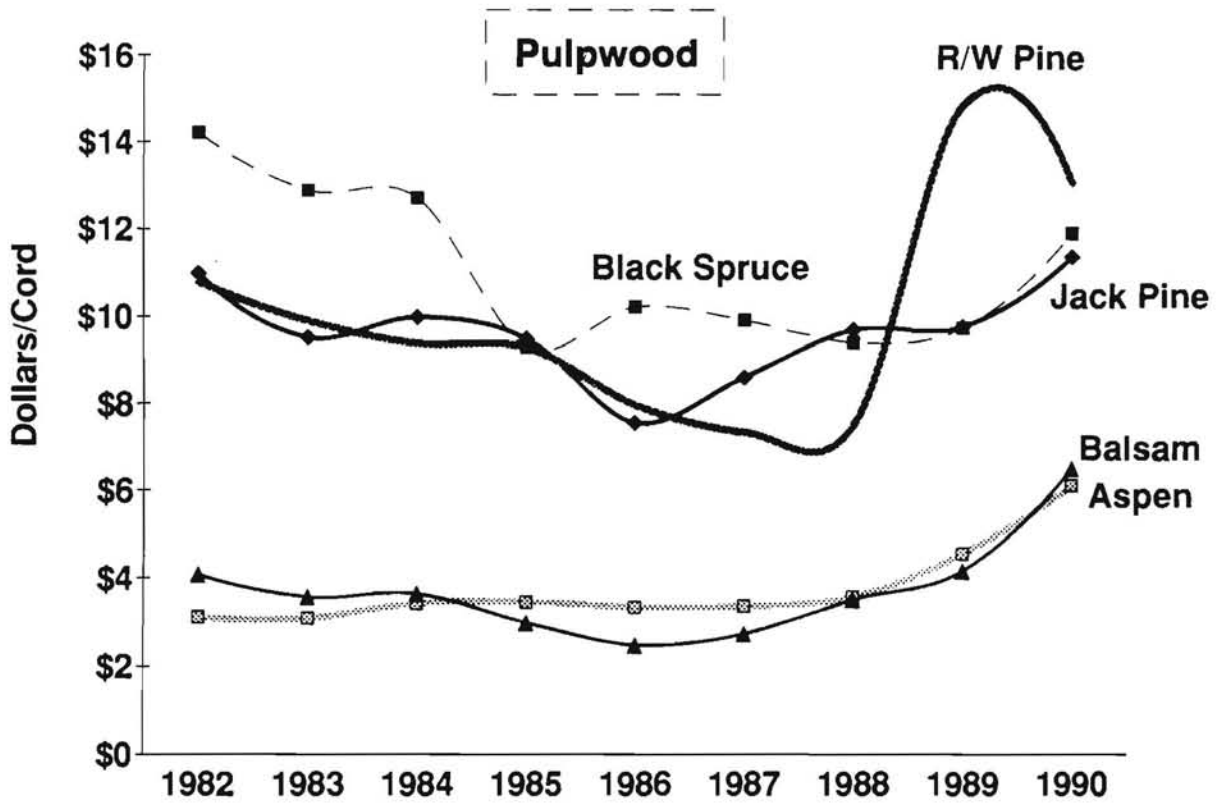
Species	1982	1983	1984	1985	1986	1987	1988	1989	1990*
Aspen	\$11.56	\$12.09	\$14.29	\$13.79	\$14.94	\$16.51	\$15.90	\$17.83	\$23.34
Birch	13.71	10.90	12.97	9.90	11.92	16.74	18.70	18.87	20.87
Ash	26.43	25.11	37.45	25.74	30.61	38.01	38.75	36.52	49.44
Elm	61.72	27.04	33.90	35.37	27.10	28.41	34.25	35.12	38.77
Oak**	49.43	47.29	51.23	59.59	60.19	57.37	60.50	74.11	73.40
Mixed Hardwoods	20.47	15.84	38.06	21.36	19.74	21.07	30.10	31.49	37.48
Balsam	17.38	12.81	13.86	16.61	15.05	13.90	11.80	16.97	20.54
W. Spruce	30.28	26.85	31.43	35.74	23.80	23.93	35.65	38.94	54.34
Cedar	29.12	16.92	27.39	25.13	23.92	26.93	25.50	25.32	29.63
J. Pine	47.86	39.98	45.46	39.04	33.06	38.27	43.50	53.43	62.83
R. & W. Pine	65.08	59.59	60.29	62.34	52.95	57.70	66.85	88.90	93.55

\* Pulpwood prices based on 1.5 million cords sold; sawtimber based on 140 MMBF.

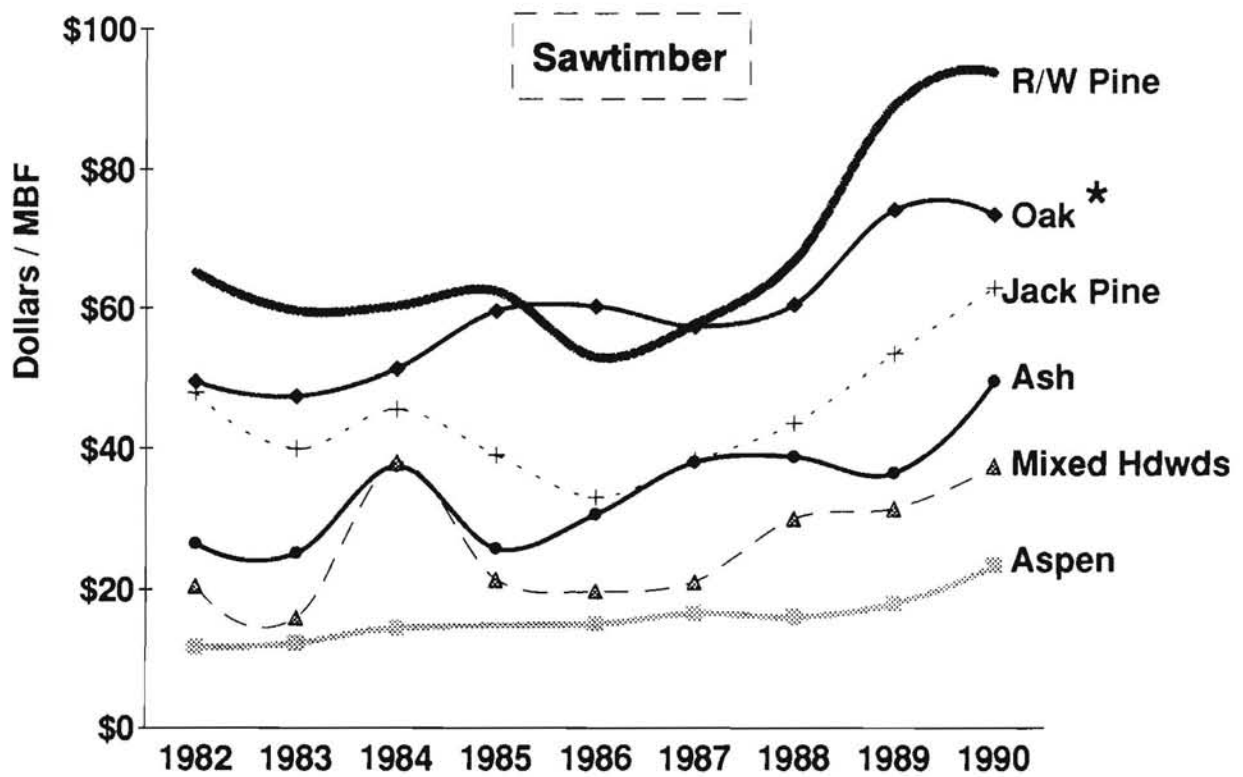
\*\* Oak sawtimber prices mainly from public lands in northern Minnesota.

Average prices based on those reported by Minnesota counties, Chippewa and Superior National Forests, Bureau of Indian Affairs, and Minnesota DNR-Forestry.

**AVERAGE PRICES RECEIVED for STUMPAGE SOLD by PUBLIC LAND AGENCIES in MINNESOTA : 1982 - 1990**

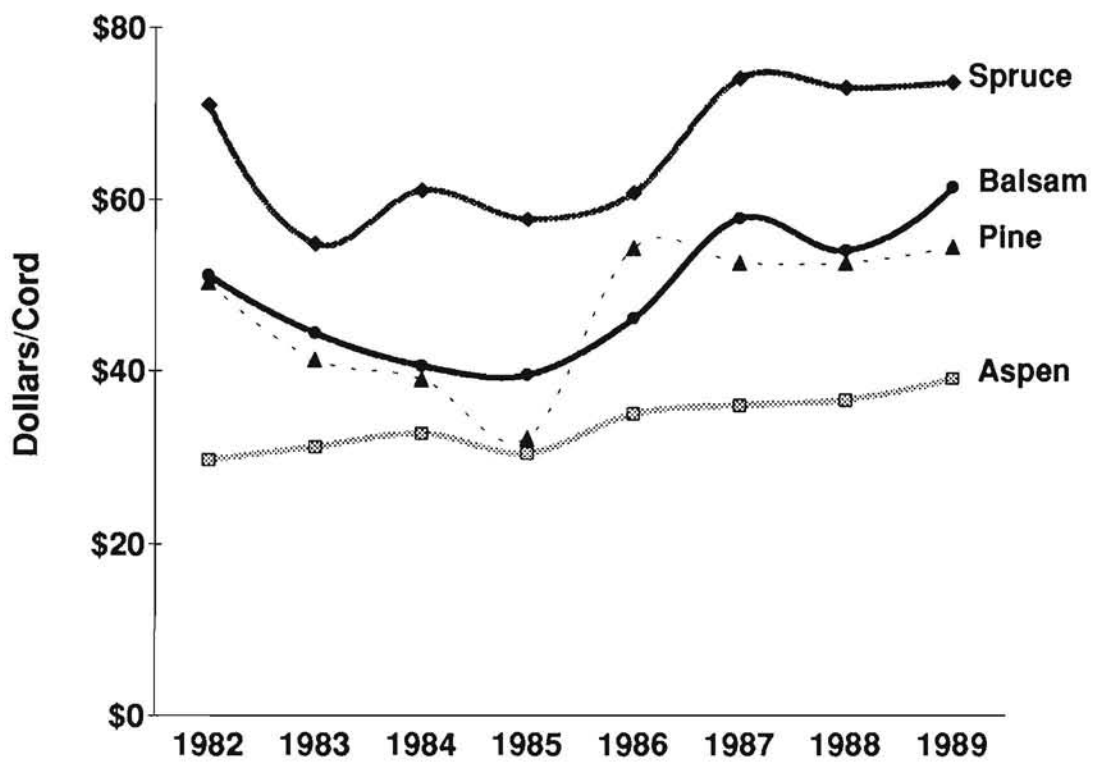


**AVERAGE PRICES RECEIVED for STUMPAGE SOLD by PUBLIC LAND AGENCIES in MINNESOTA: 1982 - 1990**

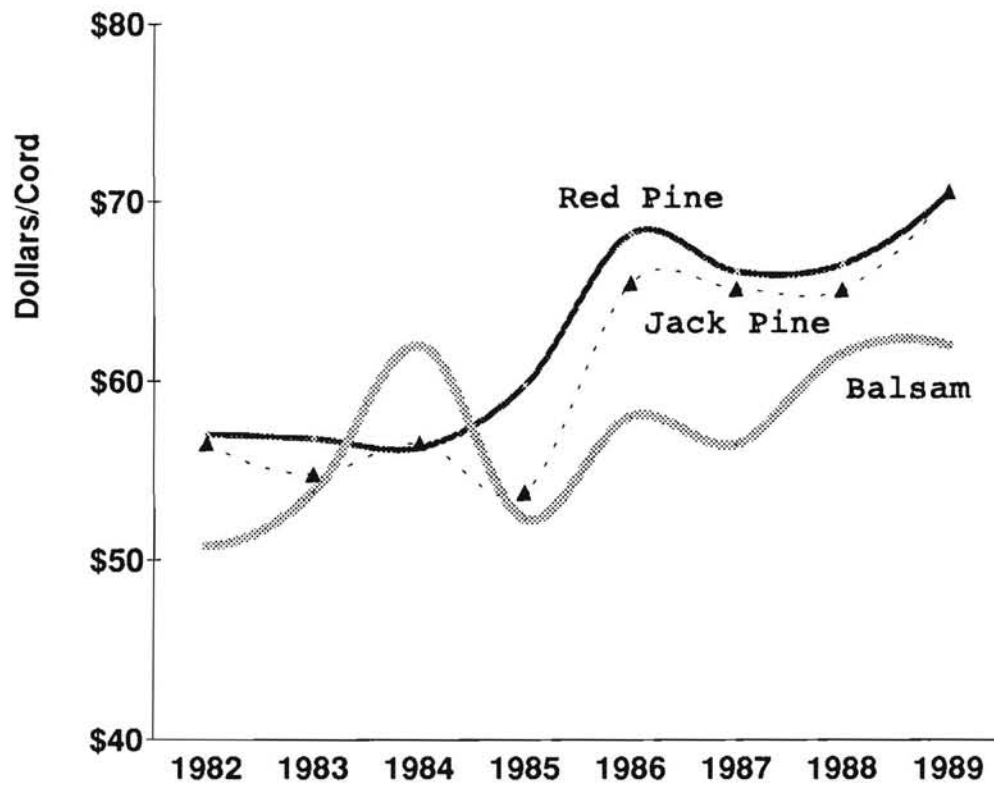


\* Oak sawtimber prices mainly from public lands in northern Minnesota.

## MINNESOTA FOB MILL PRICE TREND for 100" PULPWOOD



## MINNESOTA FOB MILL PRICE TREND for 100" Softwood Sawbolts



## MINNESOTA FOB MILL PRICE TREND for 100" Hardwood Sawbolts

