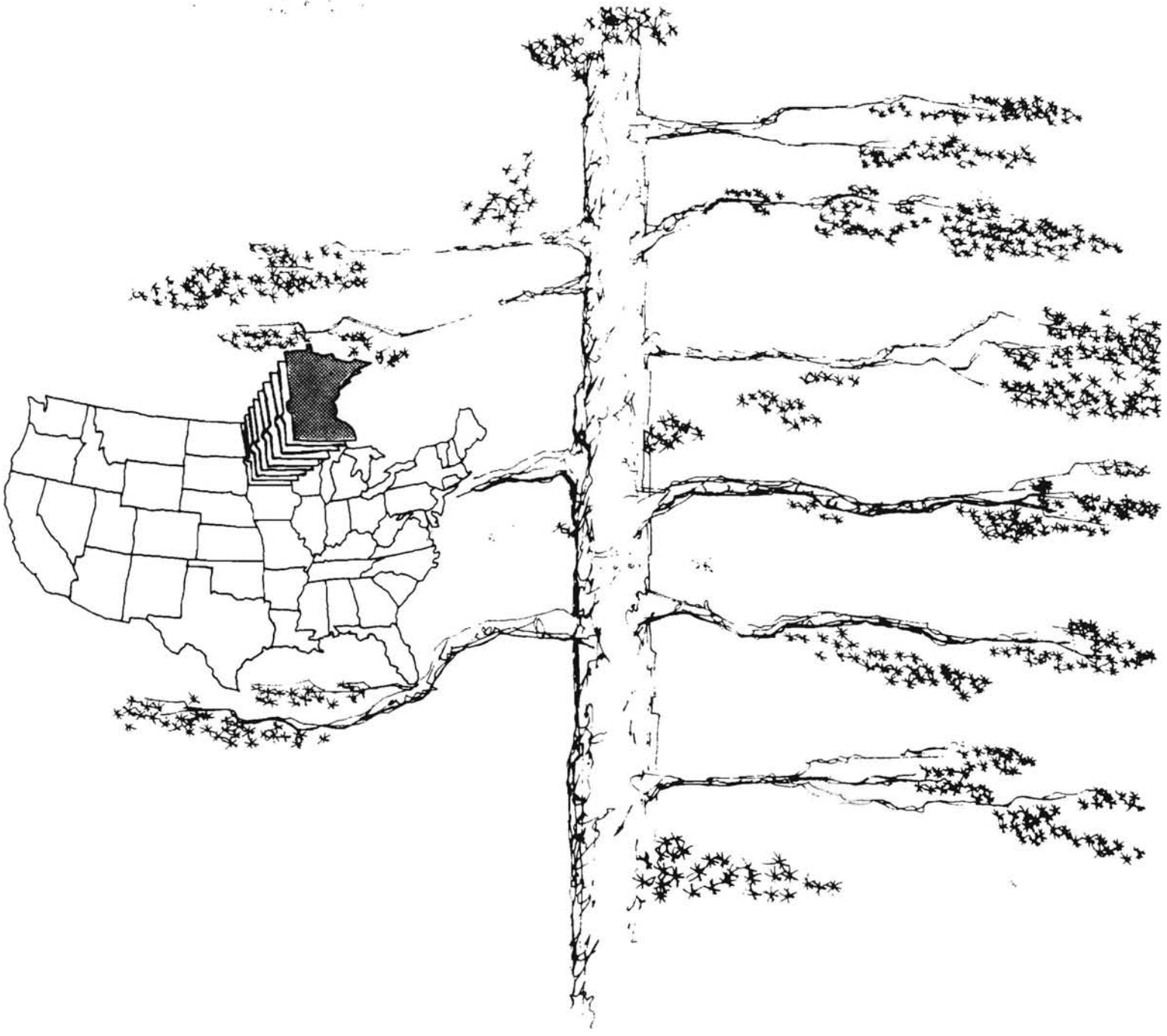


J. Krentz

# Minnesota's Forest Resources



Department of Natural Resources  
Division of Forestry  
August 1987

500 Lafayette Road - Box 44  
St. Paul, Minnesota 55146

THE FOREST RESOURCES & INDUSTRY  
*OF*  
MINNESOTA

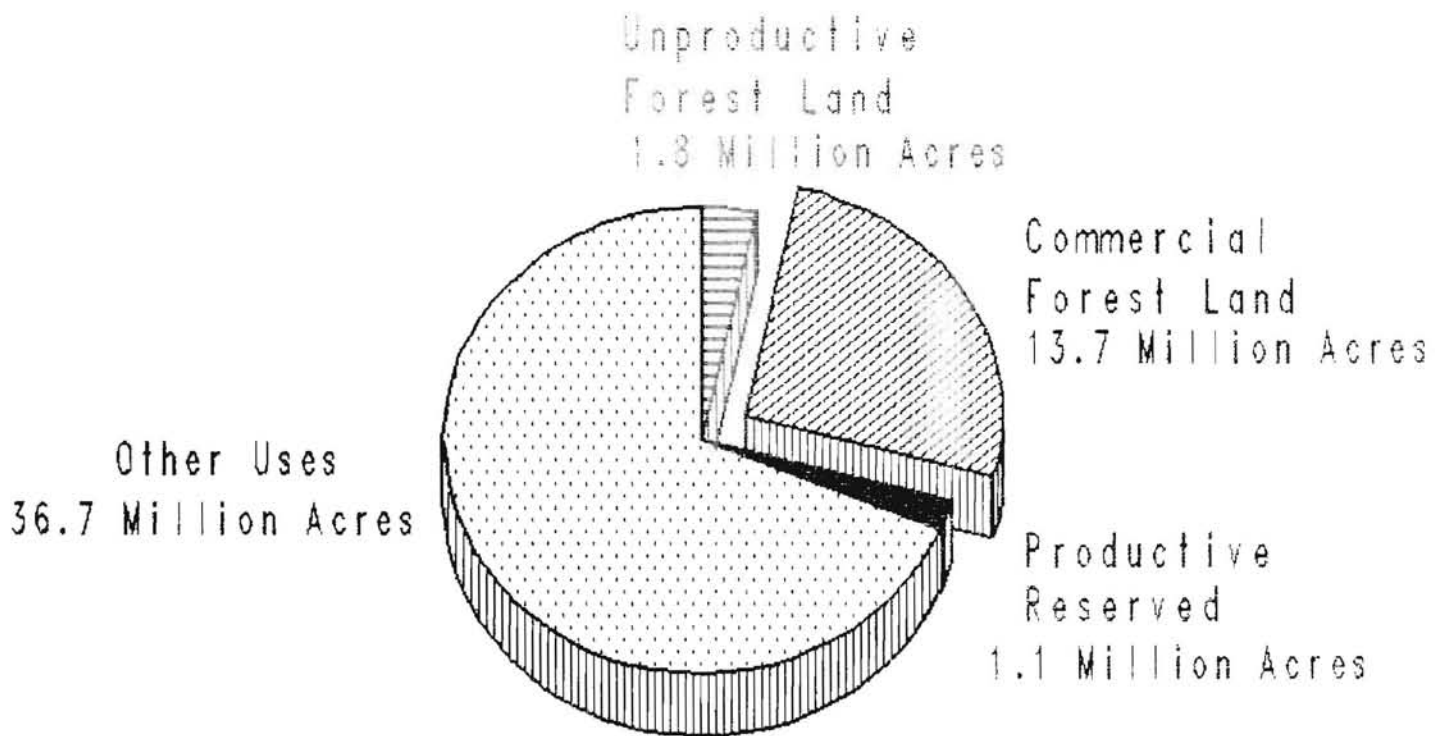


AUGUST, 1987

# **LAND USE**

# MINNESOTA LAND USE

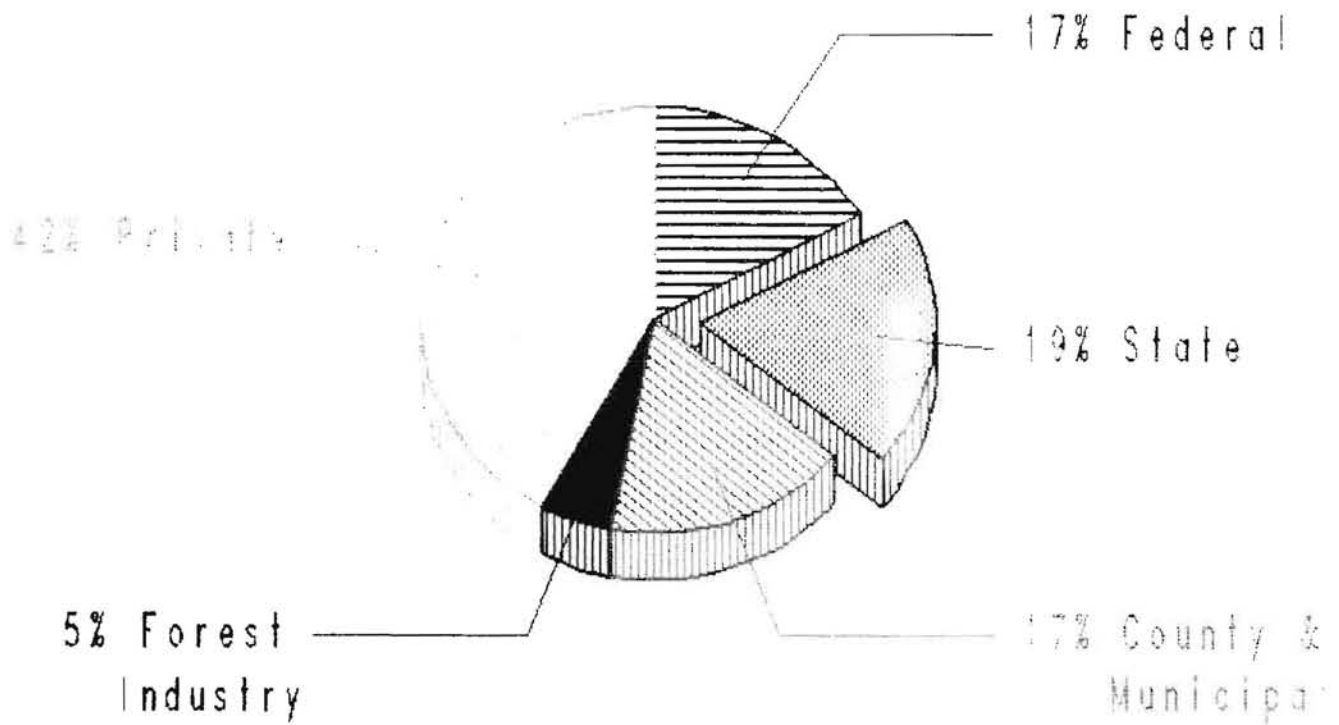
- Total of 53.3 Million Acres -



MINNESOTA FOREST LAND OWNERSHIP

<u>OWNER</u>	<u>ACRES UNPRODUCTIVE</u>	<u>ACRES COMMERCIAL</u>
Federal (USFS, BLM, Indian)	252,000	2,336,000
State	1,078,000	2,651,000
County and Municipal	200,000	2,343,000
Forest Industry	35,000	772,000
Private	274,000	5,593,000
	<hr/>	<hr/>
	1,836,000	13,695,000
 Productive Reserved (BWCA, Parks, etc.)	 1,106,000	

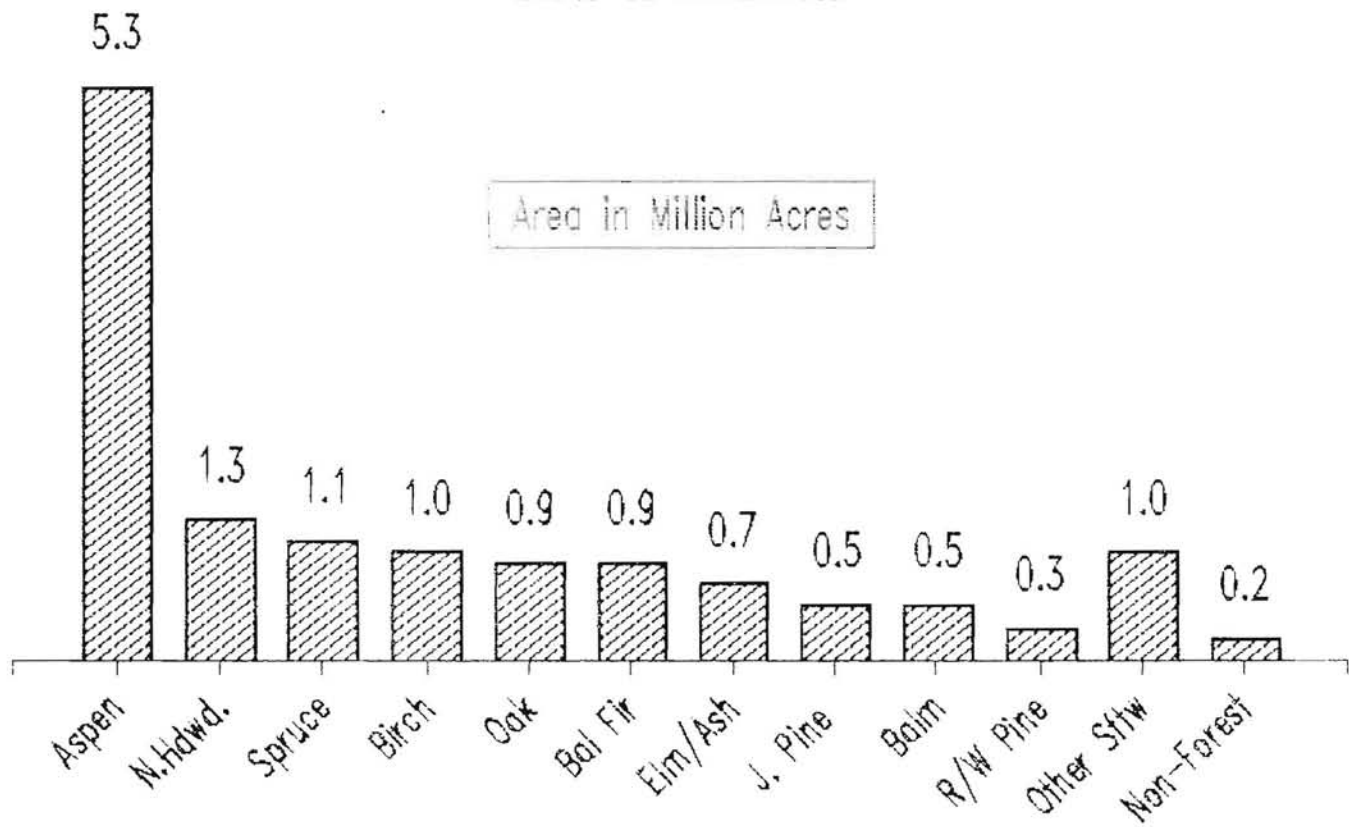
MINNESOTA COMMERCIAL FOREST LAND OWNERSHIP  
- 13.7 Million Acres -



**AREA OF COMMERCIAL FOREST LAND**  
**IN MINNESOTA BY FOREST TYPE**

<b><u>FOREST TYPE</u></b>	<b><u>ACRES ( 000's)</u></b>
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

AREA of COMMERCIAL FOREST LAND by COVER TYPE  
- State of Minnesota -





**FOREST PRODUCTS  
INDUSTRY & WOOD USE**

## MINNESOTA WOOD INDUSTRY - 1986

### ECONOMIC IMPACT :

- Value of Forest Products Manufactured = \$ 3.8 Billion
- 5th Largest manufacturing industry in Minnesota
- Generates 16% of Dollars of all Manufacturing

### EMPLOYMENT :

- 51,000 Employees
- \$ 1.4 Billion Payroll

### INDUSTRY :

- 8 Pulp, Paper & Hardboard
- 6 Waferboard / OSB
- 900 Sawmills
- Over 850 Secondary

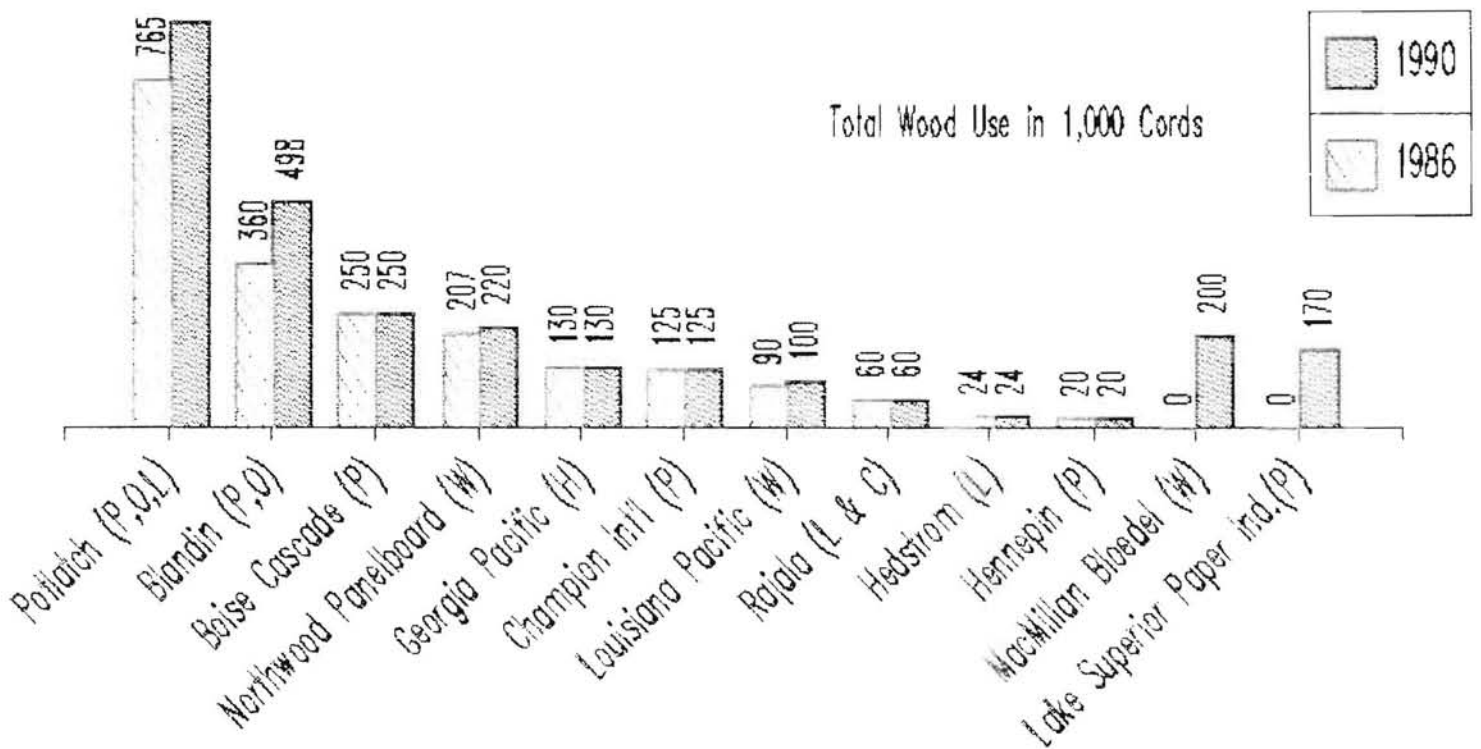
## MINNESOTA'S LARGEST FOREST RESOURCE USERS

<u>INDUSTRY</u>	<u>TOTAL WOOD USE</u>	
	<u>1986</u>	<u>1990</u>
POTLATCH (PAPER, OSB, LUMBER)	765,000 cfs.	890,000 cfs.
BLANDIN (PAPER, OSB)	360,000	498,000
BOISE CASCADE (PAPER)	250,000	same
NORTHWOOD PANELBOARD (WAFERBOARD)	207,000	220,000
GEORGIA PACIFIC (HARDBOARD)	130,000	same
CHAMPION INT'L (PAPER)	125,000	same
LOUISIANA PACIFIC (WAFERBOARD)	90,000	100,000
RAJALA (LUMBER & CHIPS)	60,000	same
HEDSTROM (LUMBER)	24,000	same
HENNEPIN (PAPER)	20,000	same
MACMILLAN BLOEDEL (WAFERBOARD)	0	200,000
LAKE SUPERIOR PAPER INDUSTRIES (PAPER)	0	170,000

COMPILED BY DNR-FORESTRY (UNOFFICIAL)

# MINNESOTA'S LARGEST FOREST RESOURCE USERS

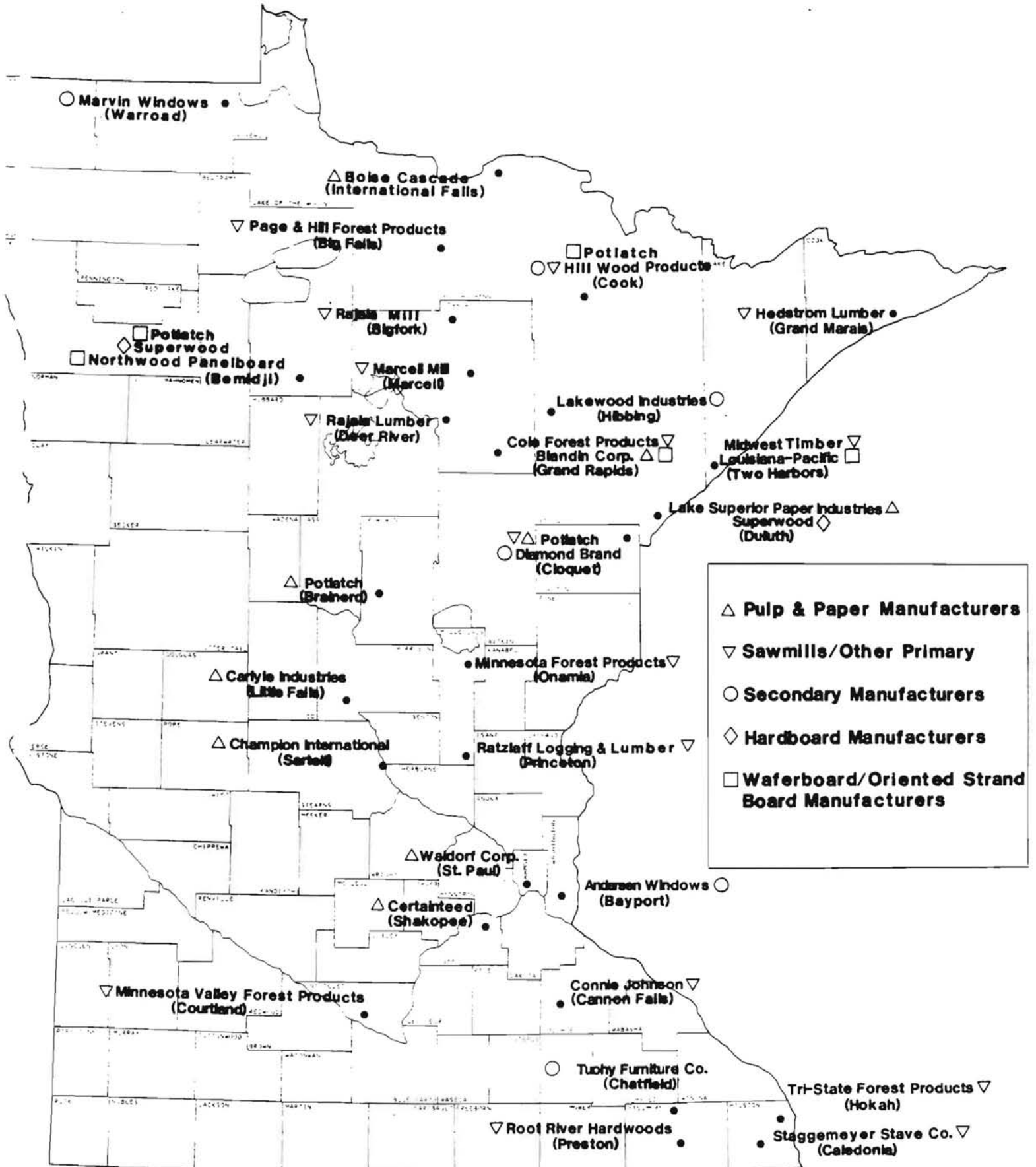
( Compiled by DNR-Forestry - unofficial )



C=chips, H=hardboard, L=lumber, O=OSB, P=paper, W=waferboard

Figure 6

# Minnesota's Largest Forest Products Producers 1987



MINNESOTA: NEW AND EXPANDING WOOD USING INDUSTRIES

1979 - 1986

<u>NAME</u>	<u>PRODUCT</u>	<u>INVESTMENT</u>	<u>ADDITIONAL WOOD USE</u>
- POTLATCH (CLOQUET)	PAPER	\$100 MILLION	30,000 CDS (ASP, SP, PINE)
- POTLATCH (BEMIDJI)	OSB	\$ 40 MILLION	120,000 CDS (ASPEN)
- POTLATCH (COOK)	OSB	\$ 40 MILLION	120,000 CDS (ASPEN)
- NORTHWOOD PANELBOARD (BEMIDJI)	WAFERBOARD	\$ 45 MILLION	200,000 CDS (ASPEN)
- CHAMPION INT'L (SARTELL)	PAPER	\$250 MILLION	60,000 CDS (ASP, SP, BAL)
- BLANDIN (GRAND RAPIDS)	OSB	\$ 50 MILLION	150,000 CDS (ASPEN)
- LOUISIANA PACIFIC (TWO HARBORS)	WAFERBOARD	\$ 30 MILLION	70,000 CDS (ASPEN)
- LAKEWOOD IND. (HIBBING)	VENEER FOR CHOPSTICKS	\$ 6 MILLION	18,000 CDS (ASPEN)

MINNESOTA - NEW AND EXPANDING WOOD USING INDUSTRIES

1987 - 1990

<u>NAME</u>	<u>PRODUCT</u>	<u>INVESTMENT</u>	<u>ADDITIONAL WOOD USE</u>
BLANDIN (GRAND RAPIDS)	PAPER	\$350 MILLION	100,000 CDS (ASP, SP, BAL)
POTLATCH (CLOQUET)	PAPER	\$100 MILLION	NO ADDITIONAL WOOD
LAKE SUPERIOR PAPER (PENTAIR / MP&L)	PAPER	\$400 MILLION	150-170,000 CDS ( CONIFERS)
INT'L BILTRITE (INT'L FALLS)	SHEATHING BOARD	\$ 12 MILLION	55-65,000 CDS (ASP, BALM)
POTLATCH (BEMIDJI)	OSB	\$ 25 MILLION	120-140,000 CDS (ASP)

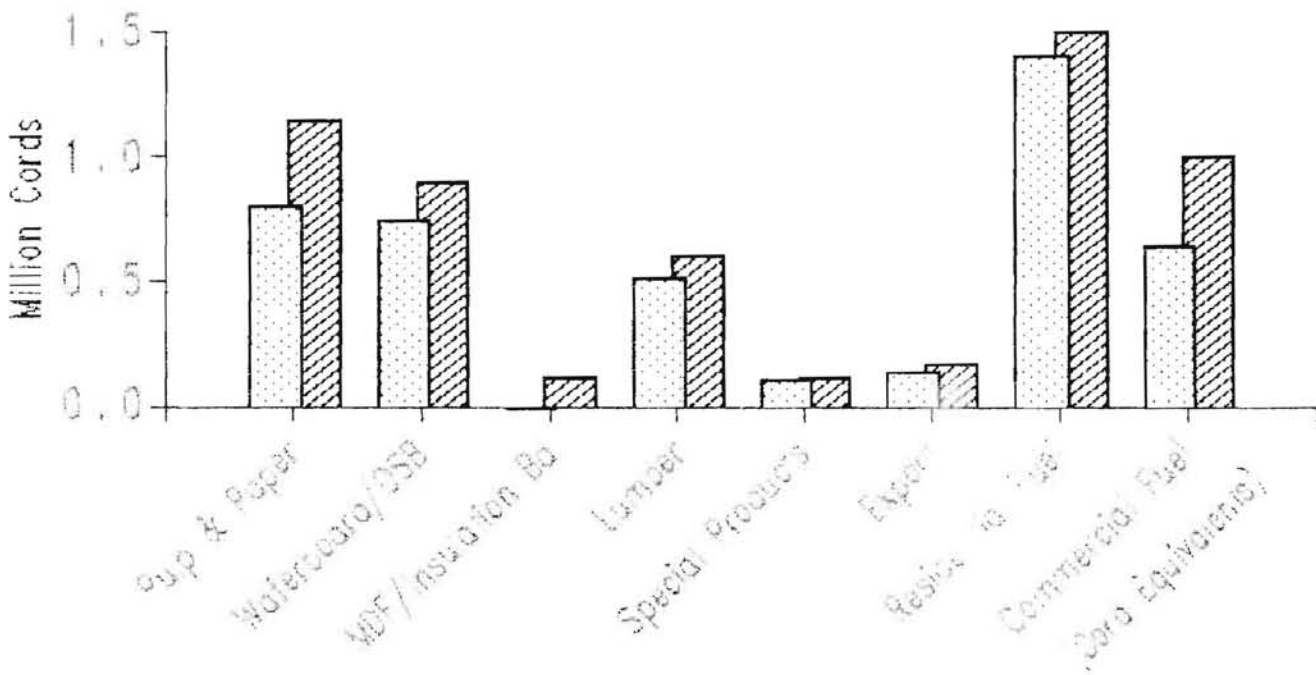
MINNESOTA WOOD HARVEST AND USE  
- CURRENT AND PROJECTED -

<u>PRODUCT</u>	<u>1985 CURRENT</u>	<u>1995 PROJECTED</u>
PULP & PAPER, HARDBOARD	800,000 CDS.	1,150,000 CDS.
WAFFERBOARD/OSB	750,000 CDS.	1,150,000 CDS.
MDF/PARTICLEBOARD/ INSULATION BOARD	0	120,000 CDS.
LUMBER	540,000 CDS.	600,000 CDS.
SPECIAL PRODUCTS	110,000 CDS.	120,000 CDS.
EXPORT	147,000 CDS.	170,000 CDS.
RESIDENTIAL FUEL*	1,400,000 CDS.	1,500,000 CDS.
COMMERCIAL FUEL*	650,000 CDS.	1,000,000 CDS.
TOTAL	4,397,000 CDS.	5,810,000 CDS.

\* APPROXIMATELY 1/3 FUEL USE HARVESTED FROM GROWING STOCK.  
COMMERCIAL FUEL MEASURED IN CORD EQUIVALENTS.



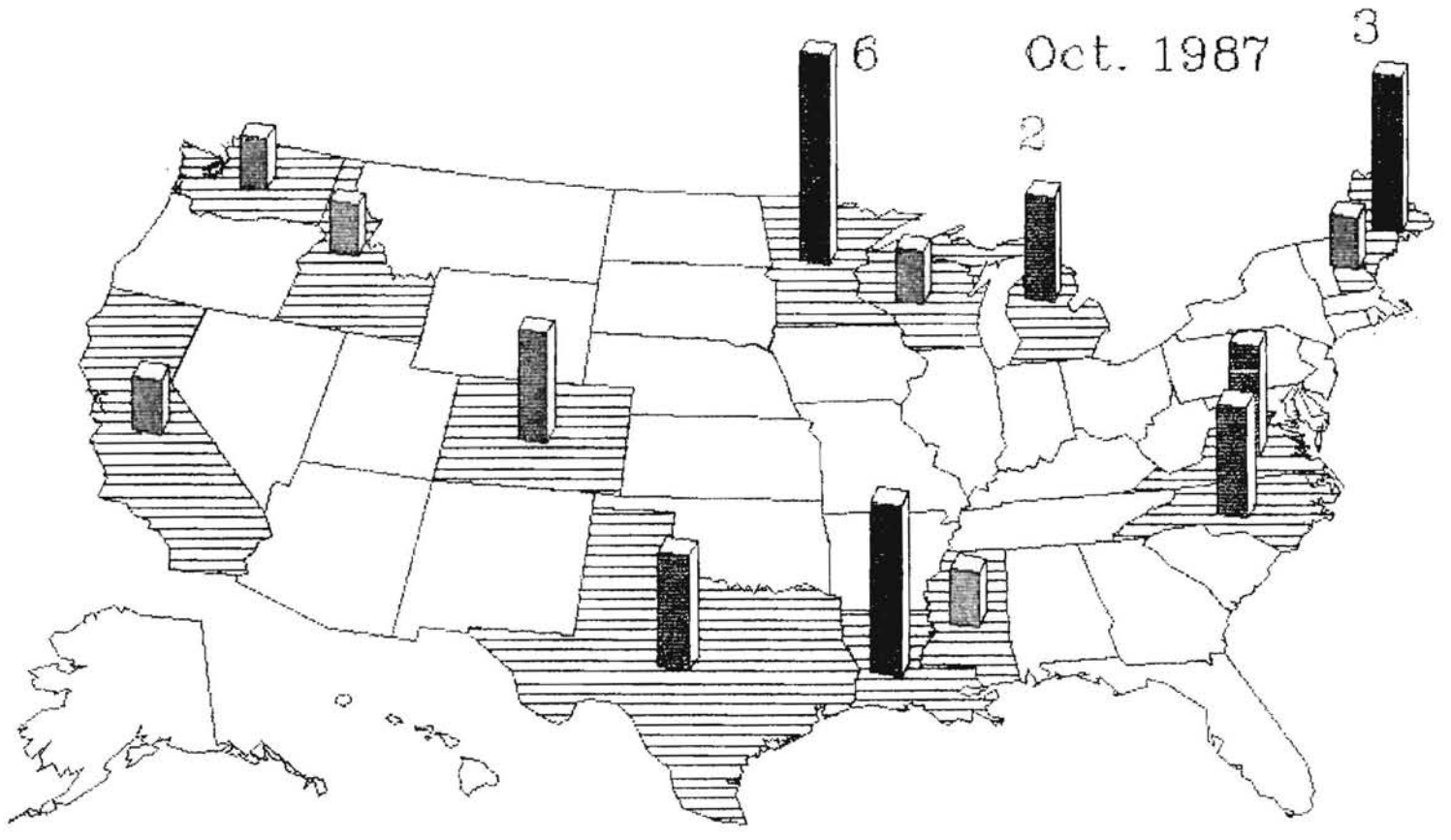
## MINNESOTA WOOD HARVEST and USE - Current & Projected -



1985 Current: 4.38 Million Cords	1995 Projected: 5.56 Million Cords
----------------------------------	------------------------------------

# COMPOSITE BOARD PLANT LOCATIONS

( CURRENT & PLANNED WAFERBOARD & OSB )

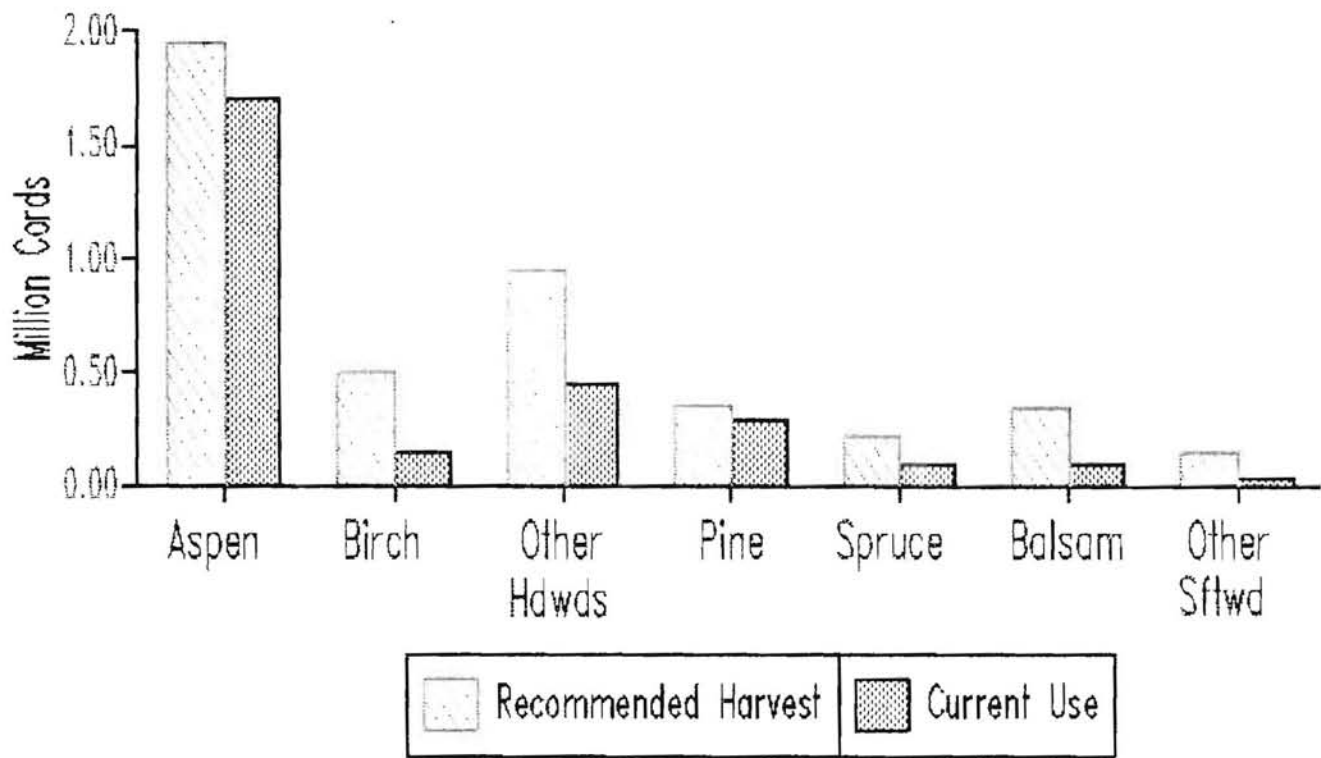


# OF PLANTS:

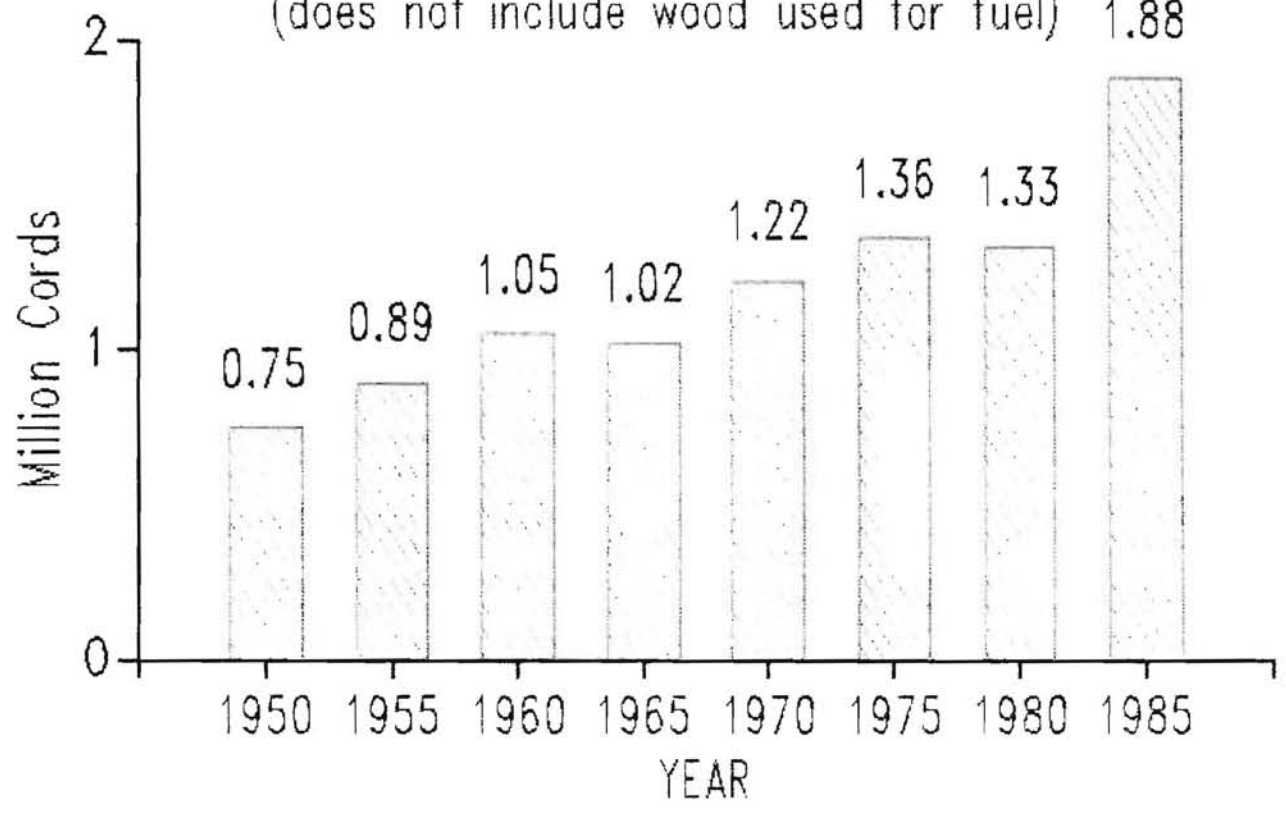
	1 PLANT		2 PLANTS
	3 PLANTS		6

# **PULPWOOD & LUMBER PRODUCTION**

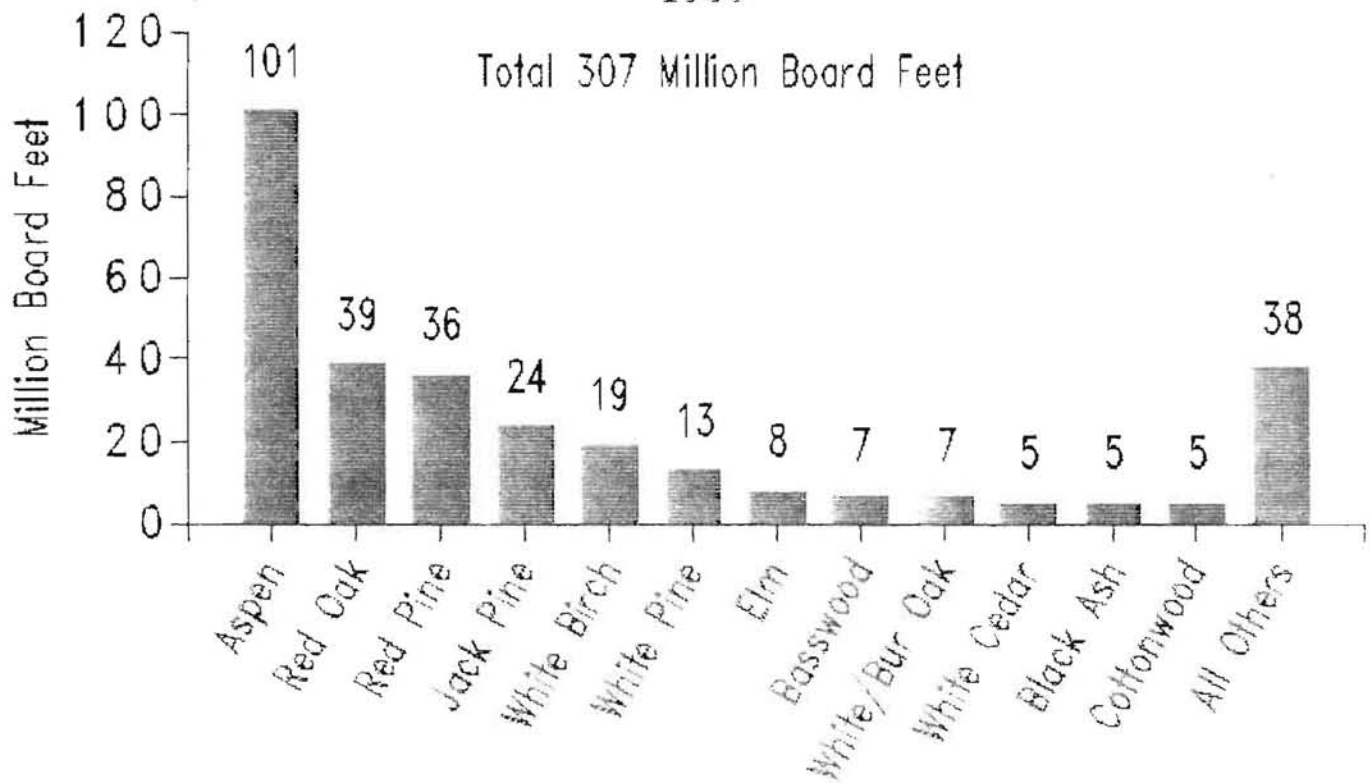
# MINNESOTA: RECOMMENDED TIMBER HARVEST & USE 1986



PULPWOOD PRODUCTION in MINNESOTA  
- Selected years, all species -  
(does not include wood used for fuel)

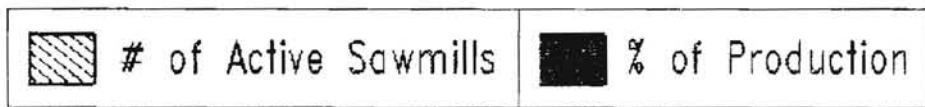
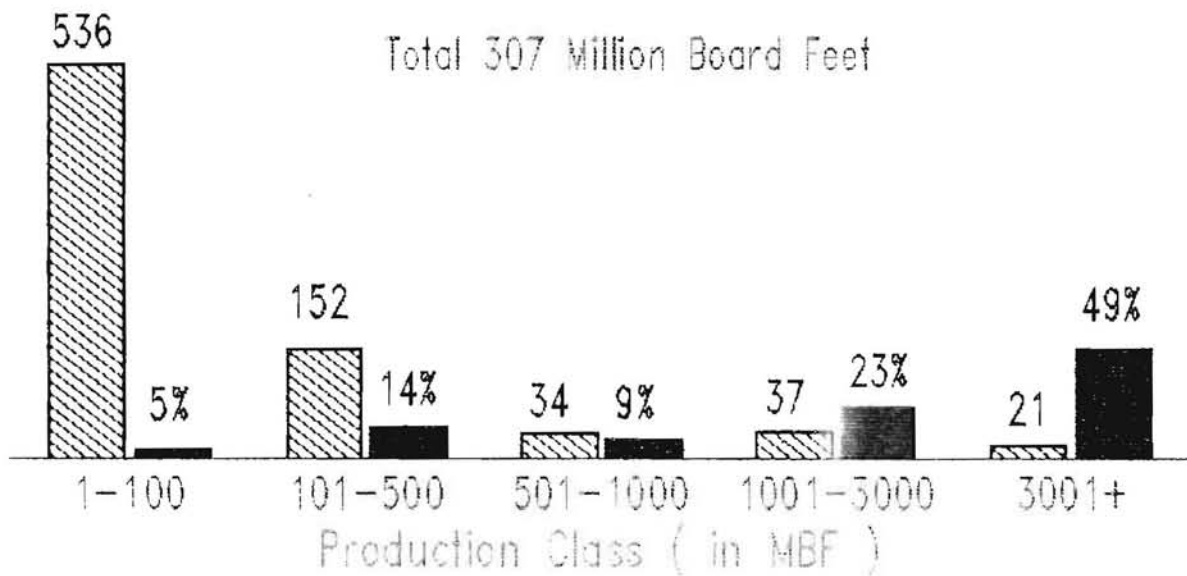


# MINNESOTA LUMBER PRODUCTION by MAJOR SPECIES - 1985 -

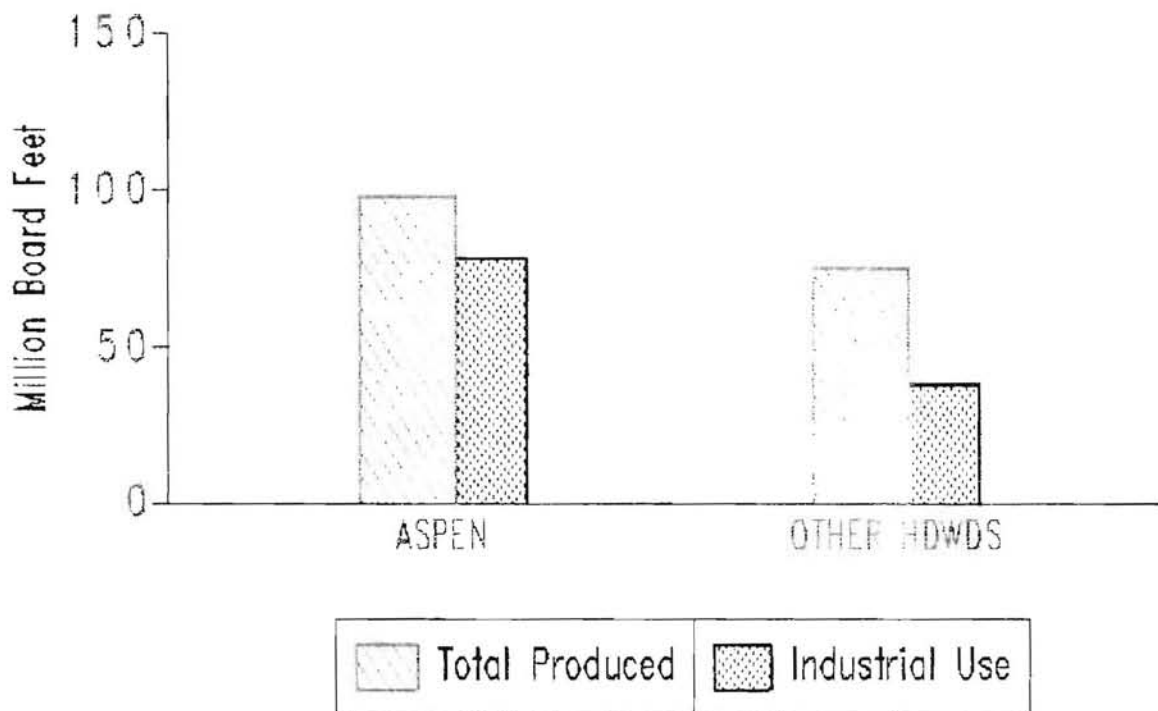


PRODUCTION SUMMARY of ACTIVE SAWMILLS  
- Minnesota 1985 -

Total 307 Million Board Feet



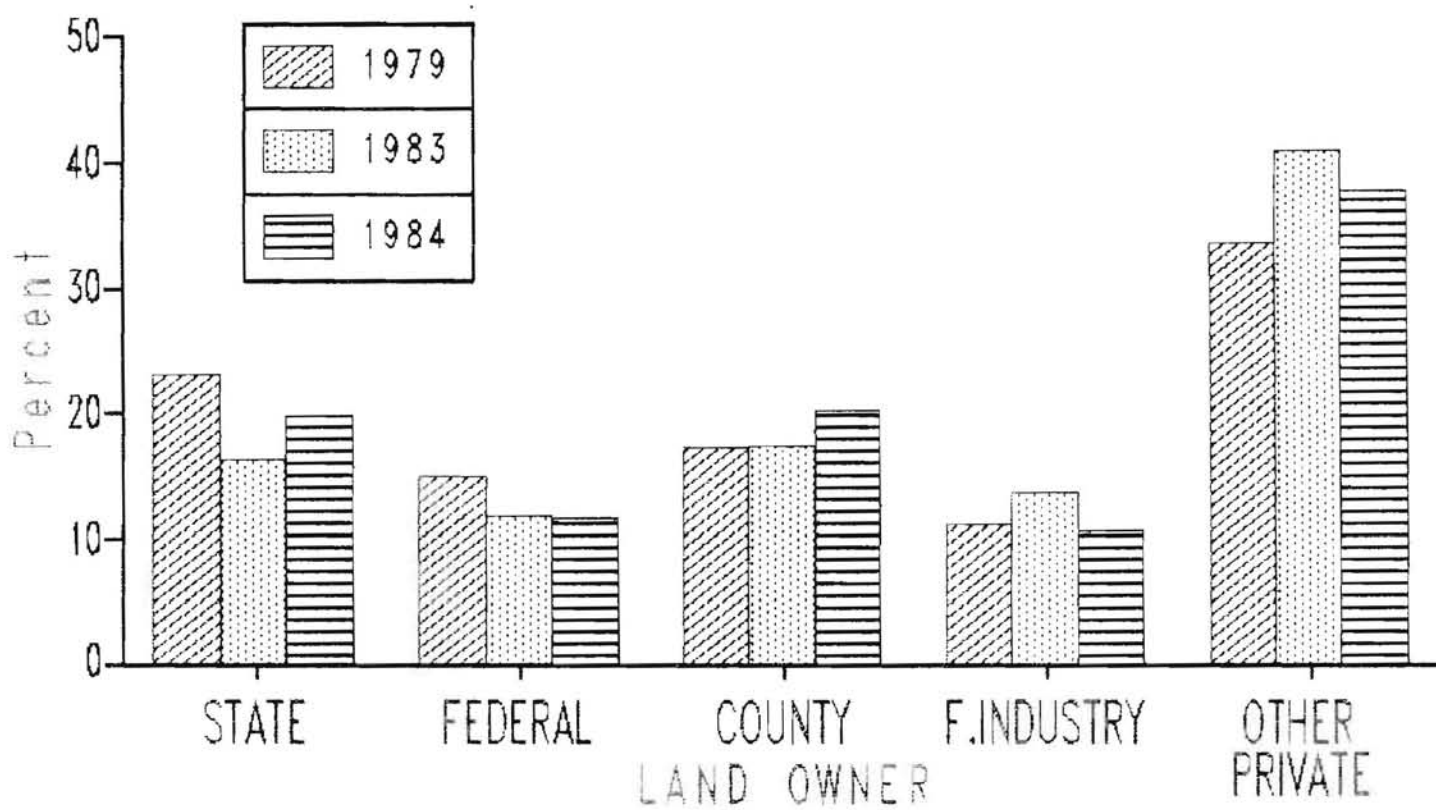
USE of HARDWOOD LUMBER  
- Minnesota 1985 -



Industrial Use : pallets, reels, spools, crating, blocking, railroad ties

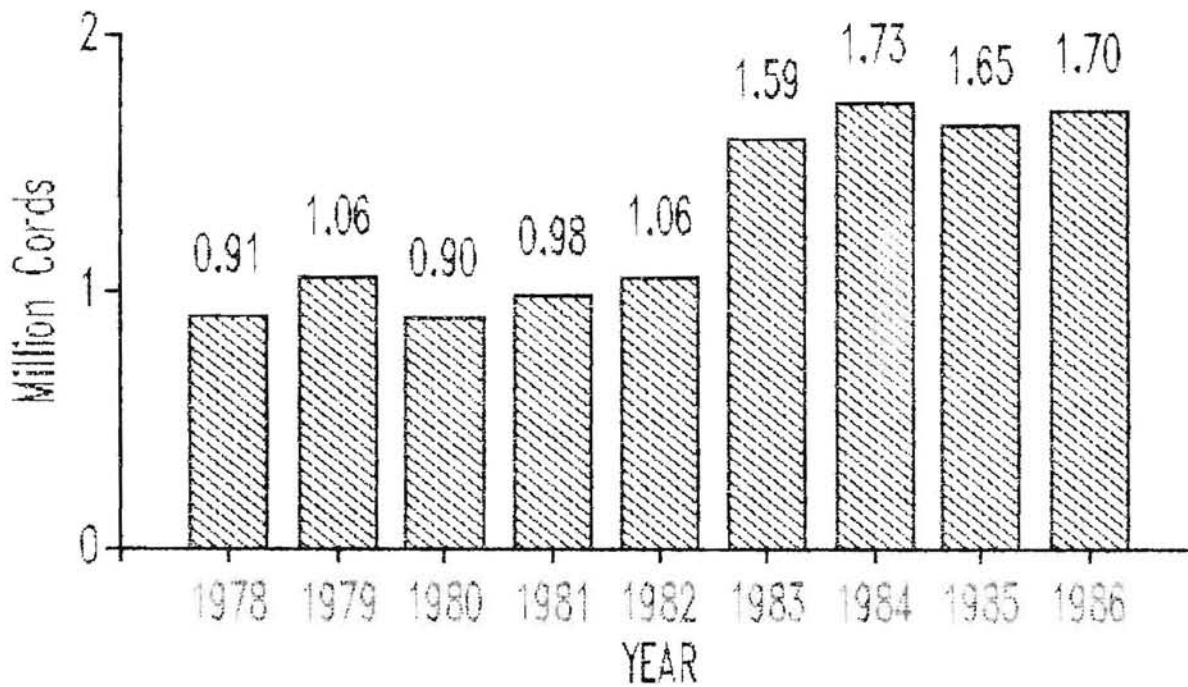


TIMBER HARVESTED by OWNERSHIP  
- MINNESOTA -

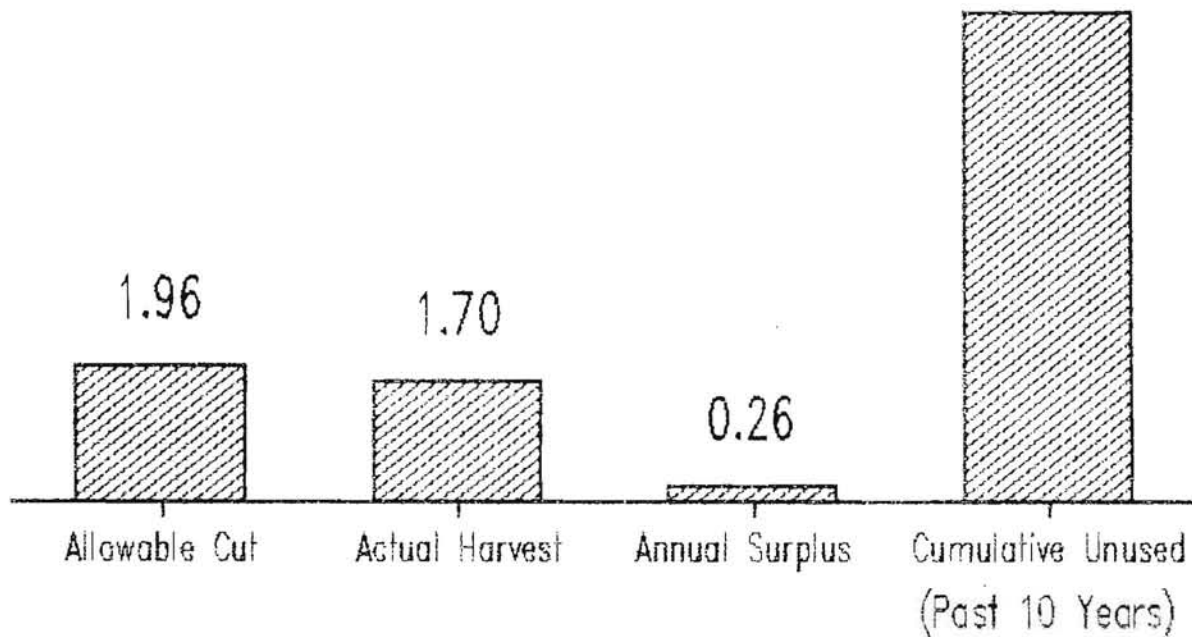


**ASPEN**

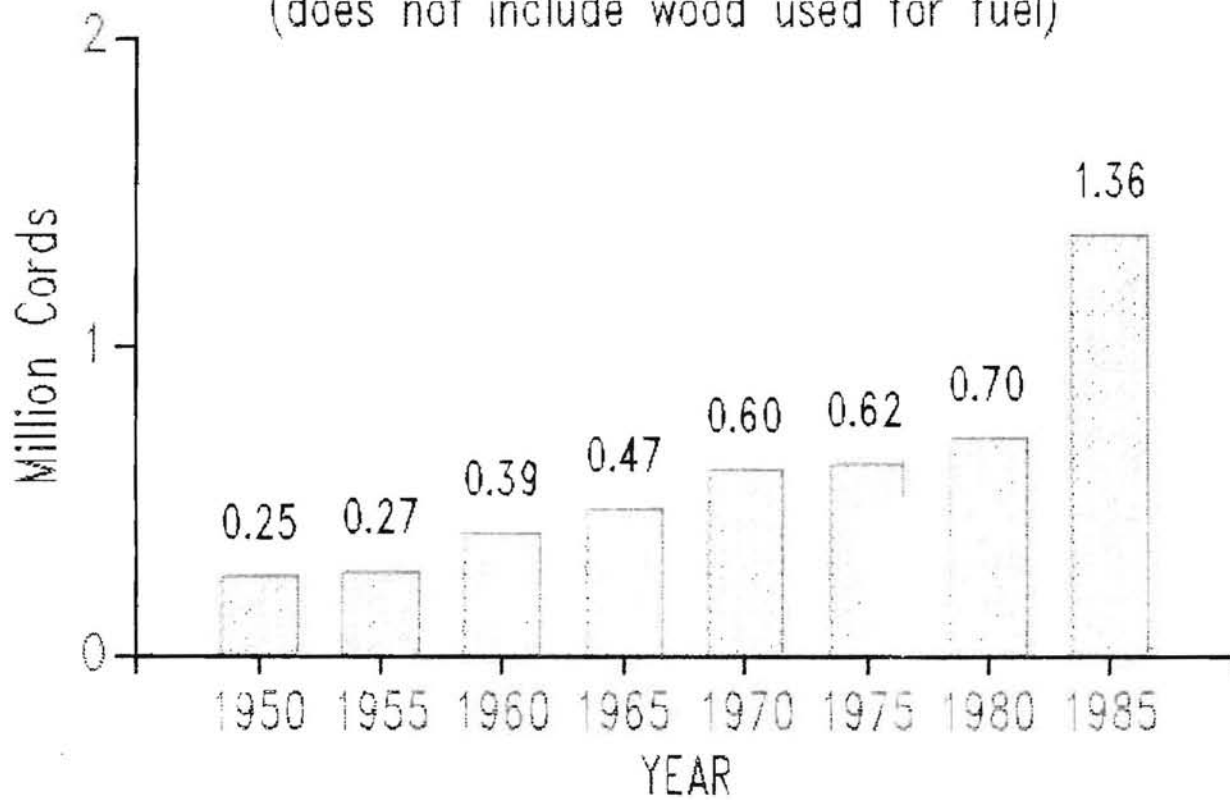
ASPEN HARVEST from MINNESOTA  
( Includes Pulpwood , Sawtimber and Energy Chips )



MINNESOTA ASPEN RESOURCE & USE - 1986  
( Volume in Million Cords)



ASPEN PULPWOOD PRODUCTION in MINNESOTA  
- Selected years -  
(does not include wood used for fuel)



ASPEN - 1985

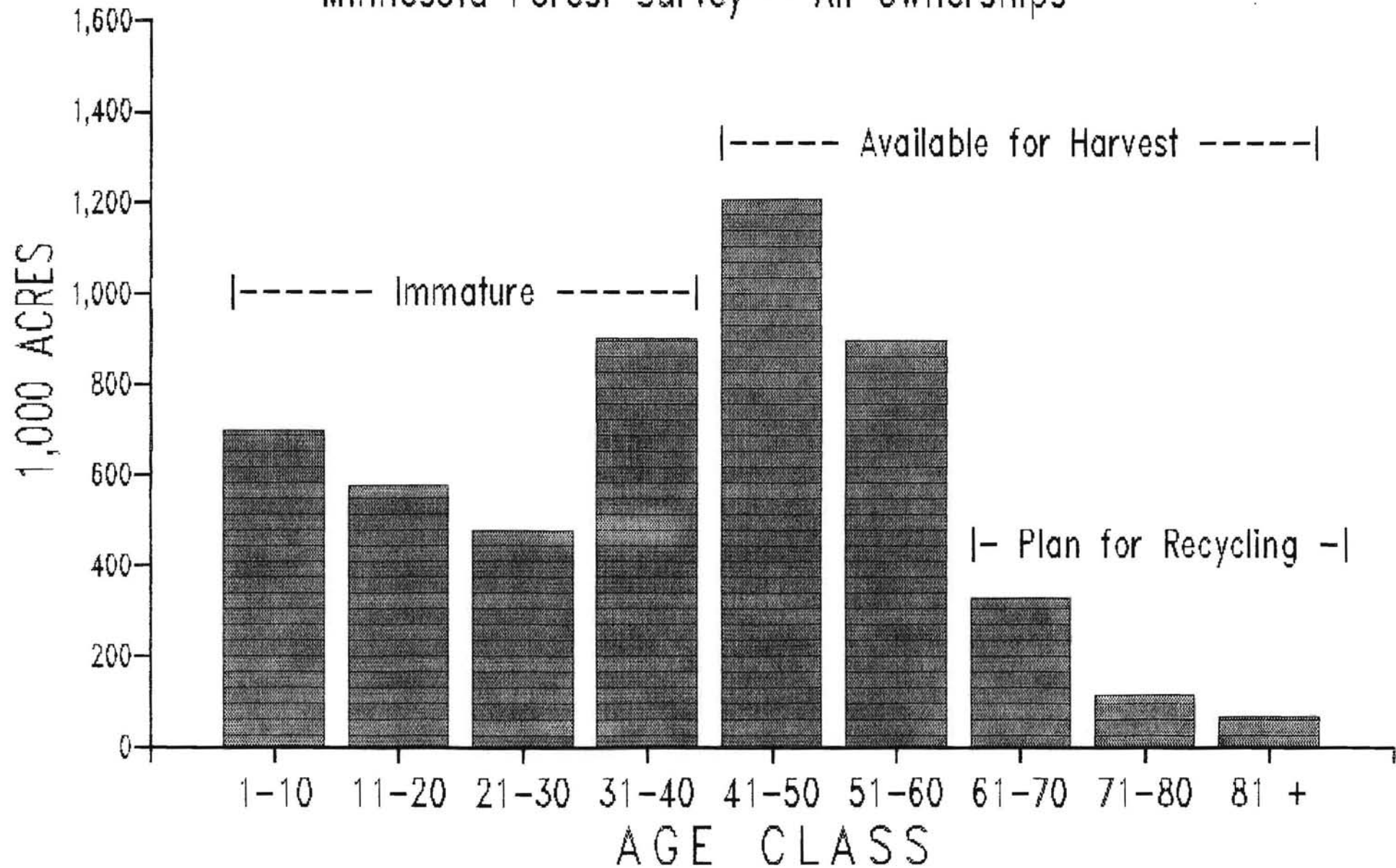
- STATEWIDE -

<u>RESOURCE ( 1985 )</u>		<u>CORDS</u>
ALLOWABLE CUT	-----	1,963,000
ACTUAL HARVEST	-----	1,651,000
NET ANNUAL SURPLUS	-----	312,000
BACKLOG	-----	6,652,000 (9 YRS)

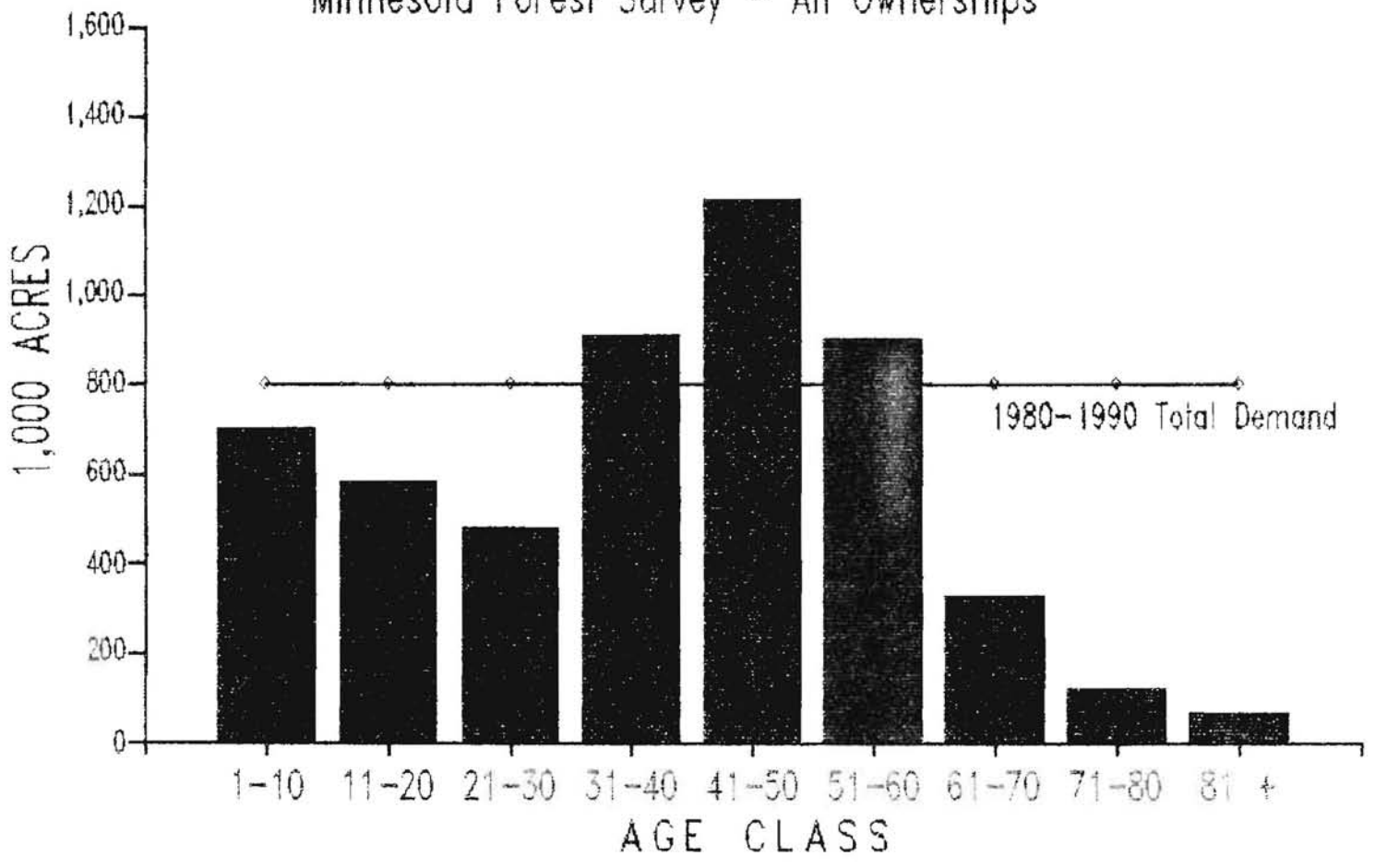
WOOD USE ( 1985 )

1) EXPORT	-----	81,000
2) PULP AND PAPER (BLANDIN, BOISE CASCADE, POTLATCH CHAMPION, HENNEPIN)	-----	450,000
3) WAFERBOARD, OSB, HARDBOARD (BLANDIN, POTLATCH, NORTHWOOD, SUPERWOOD)	-----	830,000
4) OTHER (LUMBER, VENEER, ENERGY CHIPS)		290,000
5) IMPORT	-----	40,000

ASPEN AGE DISTRIBUTION - ( 1980 )  
Minnesota Forest Survey - All Ownerships



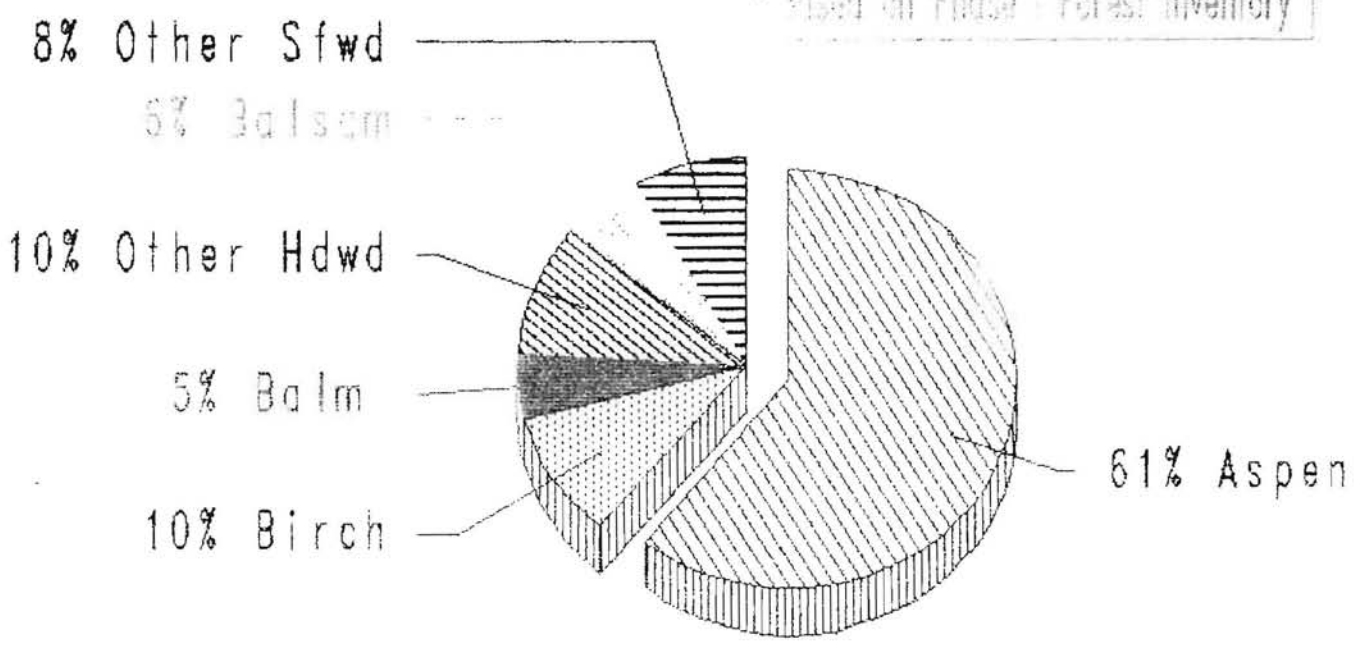
ASPEN AGE DISTRIBUTION - ( 1980 )  
Minnesota Forest Survey - All Ownerships



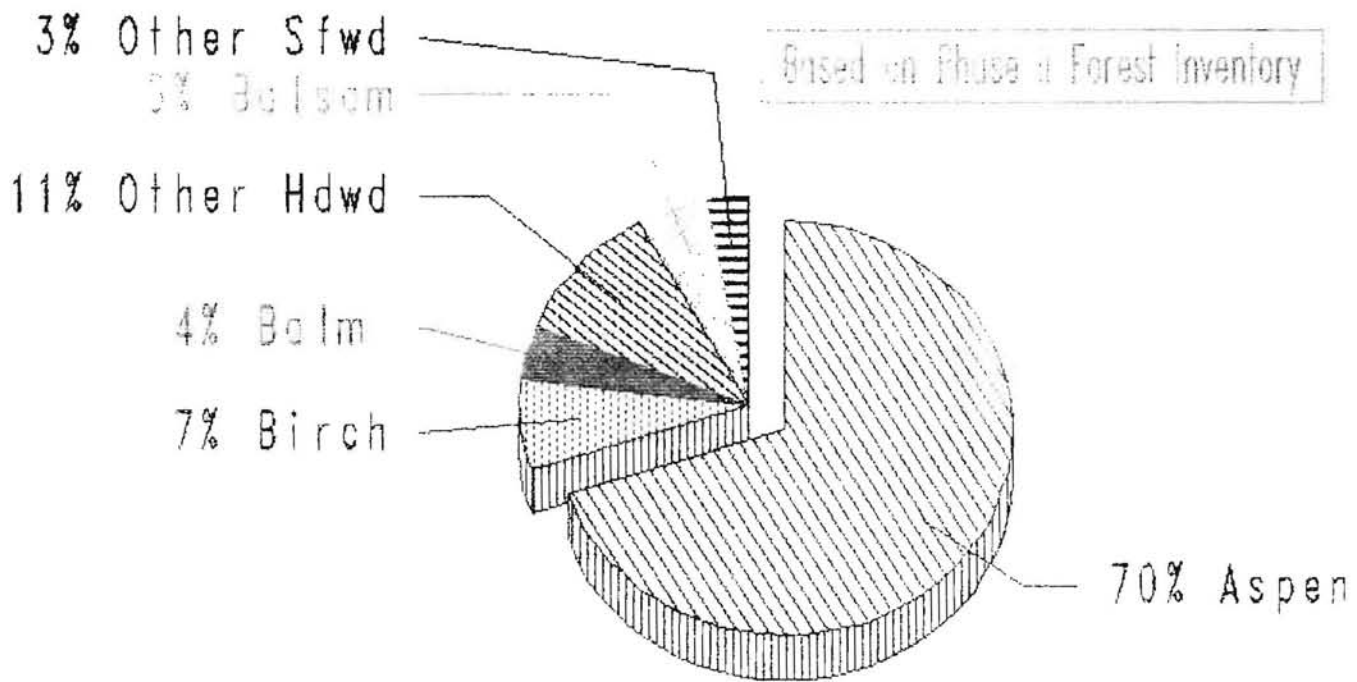


MINNESOTA: ASPEN COVER TYPE by SPECIES COMPOSITION  
(5.3 Million Acres Aspen Type)

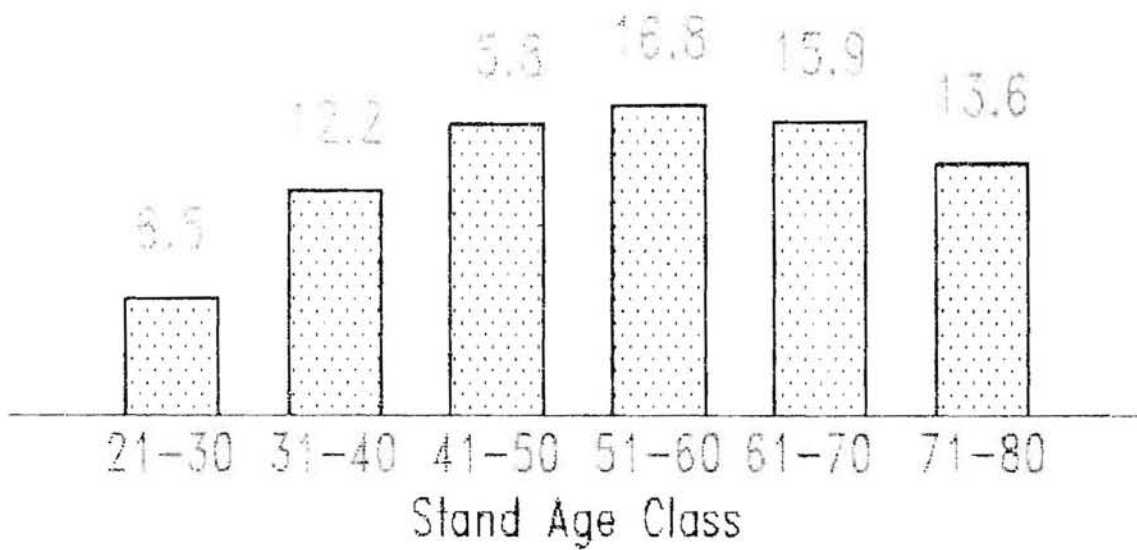
Based on Phase I Forest Inventory



MINNESOTA: ASPEN COVER TYPE by SPECIES COMPOSITION  
( State Forestry Admin. Land )

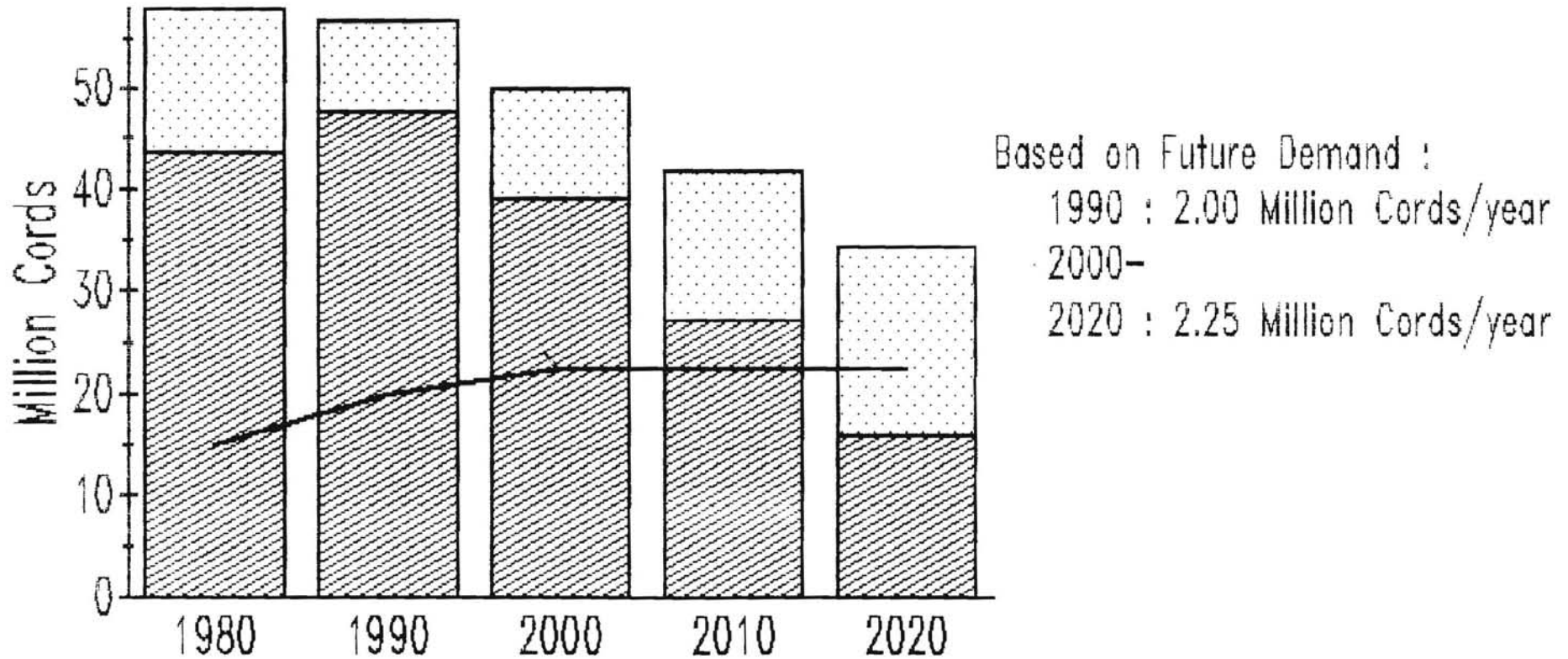


ASPEN SPECIES in ASPEN TYPE by AGE CLASS  
(Volume in Cords/acre Based on Phase II Inventory)



# GROWING STOCK VOLUME & DRAIN of ASPEN SPECIES in ASPEN TYPE (All Ownerships in the State of Minnesota) 1/16/1986

Based on Phase I Acres & Phase II Vol/acre & Species Composition

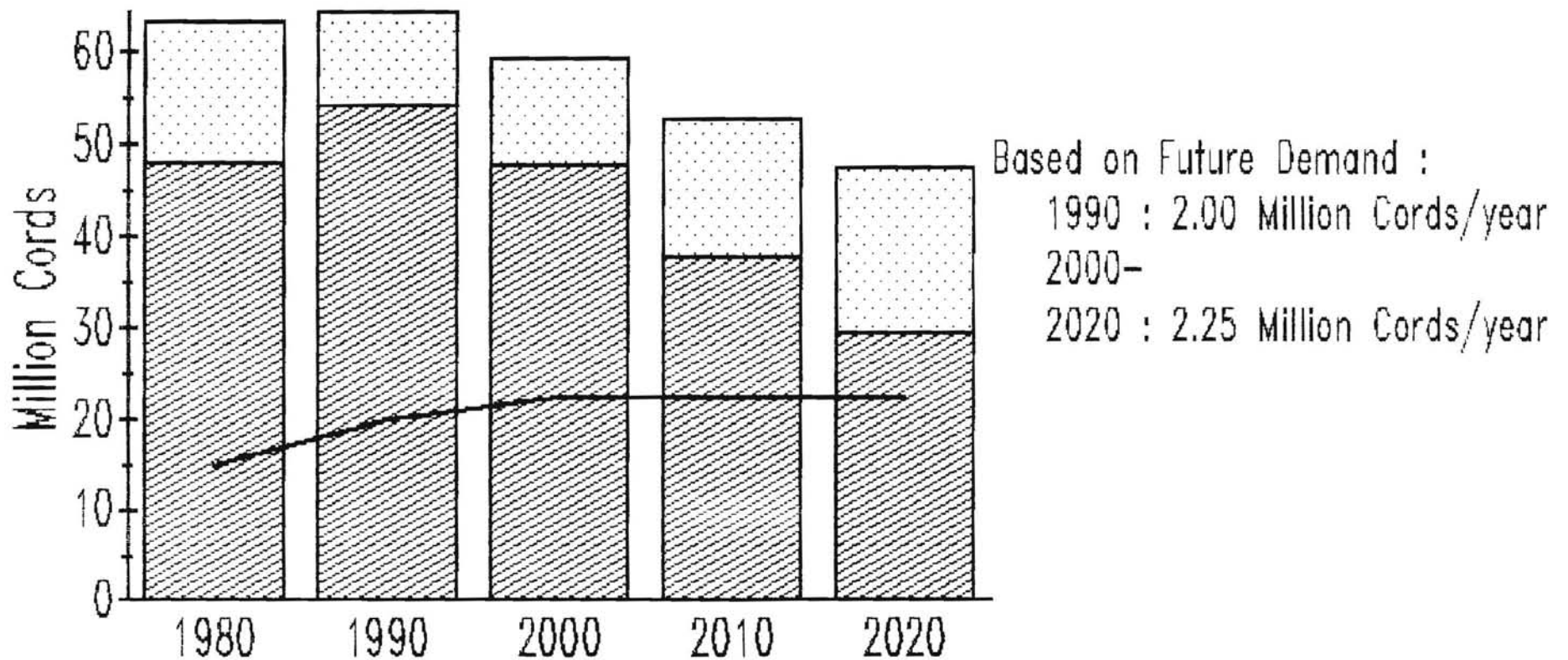


— 10 Year Drain Projection (Based on Current Harvesting Standards)

▨ Available for Harvest, Age 41+      ▩ Immature, 21-40 years only

GROWING STOCK VOLUME & DRAIN of ASPEN & BIRCH SPECIES in ASPEN TYPE  
 (All Ownerships in the State of Minnesota) 3/17/1986

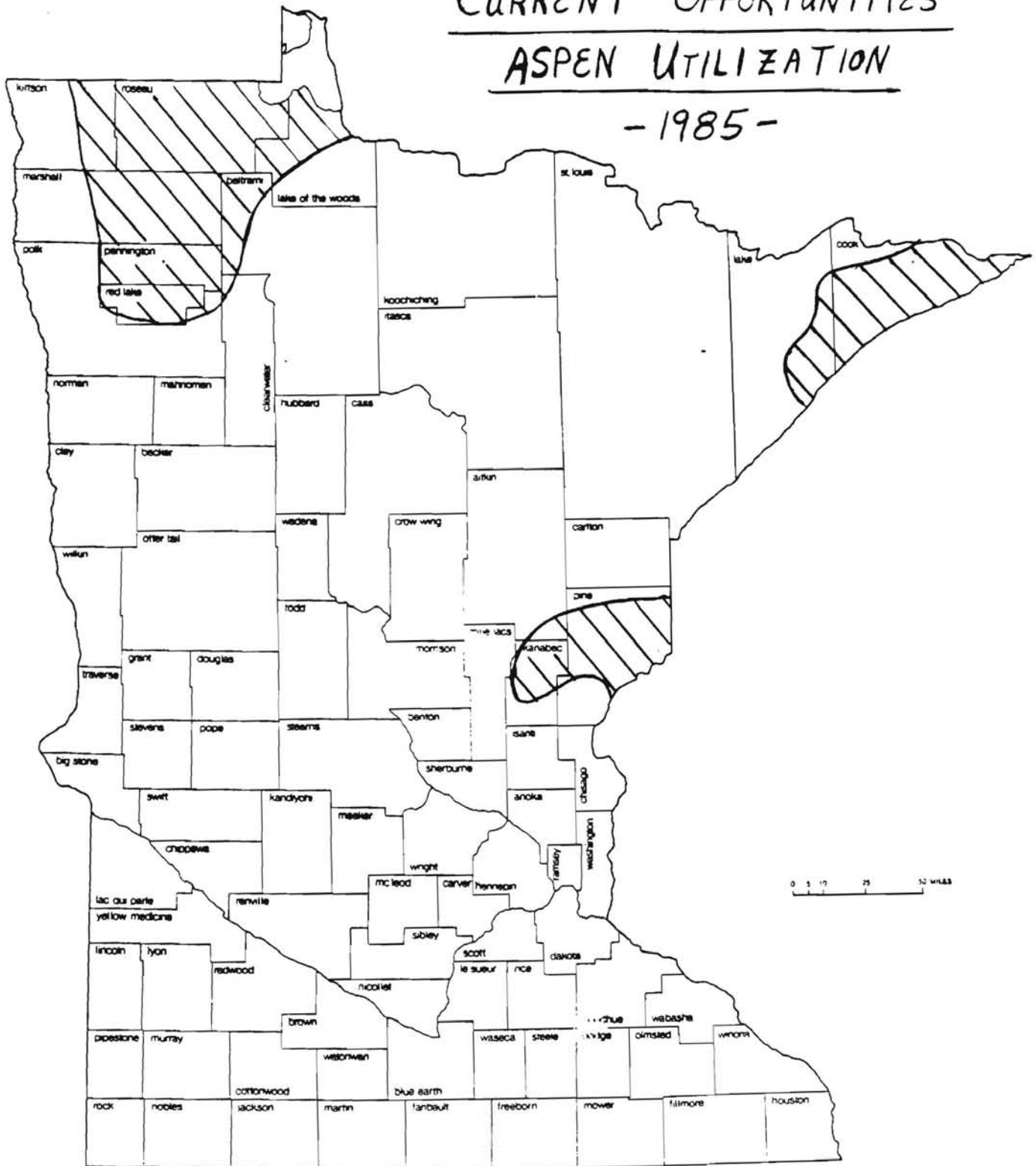
Based on Phase I Acres & Phase II Vol/acre & Species Composition



— 10 Year Drain Projection (Based on Current Harvesting Standards)	
▨ Available for Harvest, Age 41+	▤ Immature, 21-40 years only

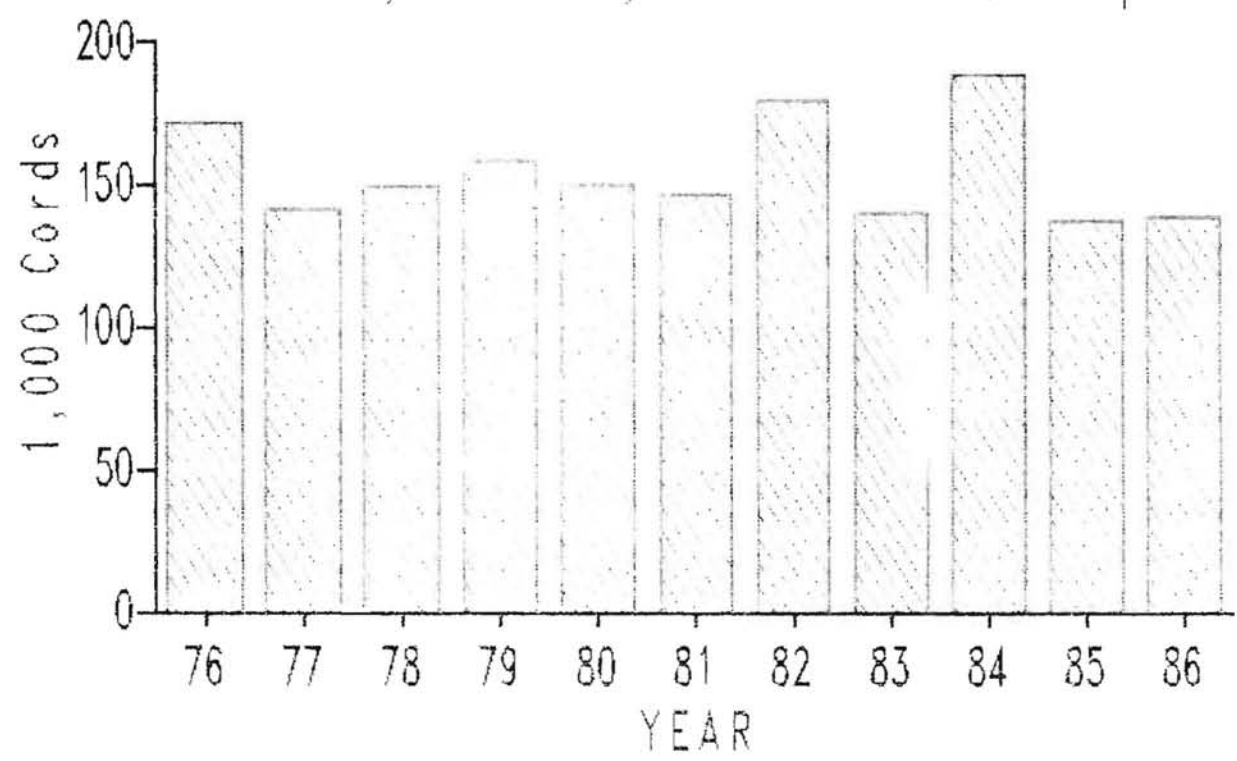
# CURRENT OPPORTUNITIES ASPEN UTILIZATION

-1985-



## **OTHER SPECIES**

VOLUME of PINE PULPWOOD HARVEST in MINNESOTA by YEAR  
Jack Pine, White Pine, Red Pine - All Ownerships





WHITE & NORWAY PINE - 1985

- STATEWIDE -

<u>RESOURCE ( 1985 )</u>		<u>CORDS</u>
ALLOWABLE CUT	-----	153,000
ACTUAL HARVEST	-----	100,000
NET ANNUAL SURPLUS	-----	53,000
BACKLOG	-----	463,000 (9 YRS.)

WOOD USE ( 1985 )

1) EXPORT	-----	3,000
2) PULP AND PAPER (BOISE CASCADE, POTLATCH)	-----	27,000
3) OTHER (LUMBER, POSTS, POLES, TIES)		70,000
4) IMPORT	-----	11,000

JACK PINE - 1985

- STATEWIDE -

<u>RESOURCE ( 1985 )</u>		<u>CORDS</u>
ALLOWABLE CUT	-----	204,000
ACTUAL HARVEST	-----	204,000
NET ANNUAL SURPLUS	-----	0
BACKLOG	-----	215,000 (9YRS.)

WOOD USE ( 1985 )

1) EXPORT	-----	16,000
2) PULP AND PAPER (BOISE CASCADE, POTLATCH)	-----	91,000
3) OTHER (LUMBER, POSTS, POLES, TIES)		97,000
4) IMPORT	-----	13,000

BLACK & WHITE SPRUCE - 1985

- STATEWIDE -

<u>RESOURCE ( 1985 )</u>		<u>CORDS</u>
ALLOWABLE CUT	-----	215,000
ACTUAL HARVEST	-----	119,000
NET ANNUAL SURPLUS	-----	96,000
BACKLOG	-----	737,000 (9 YRS.)

WOOD USE ( 1985 )

1) EXPORT	-----	31,000
2) PULP AND PAPER (BLANDIN, BOISE CASCADE, CHAMPION, HENNEPIN)	-----	80,000
3) OTHER (LUMBER)	-----	8,000

BALSAM FIR - 1985

- STATEWIDE -

<u>RESOURCE ( 1985 )</u>		<u>CORDS</u>
ALLOWABLE CUT	-----	340,000
ACTUAL HARVEST	-----	142,000
NET ANNUAL SURPLUS	-----	198,000
BACKLOG	-----	1,889,000 (9 YRS)

WOOD USE ( 1985 )

1) EXPORT	-----	16,000
2) PULP AND PAPER (BLANDIN, BOISE CASCADE, CHAMPION, HENNEPIN)	-----	106,000
3) OTHER (LUMBER)	-----	20,000
4) IMPORT	-----	500

TAMARACK - 1985

- STATEWIDE -

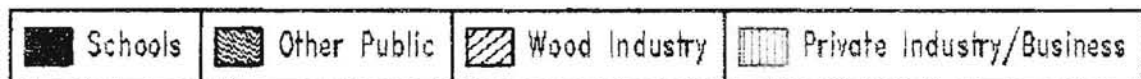
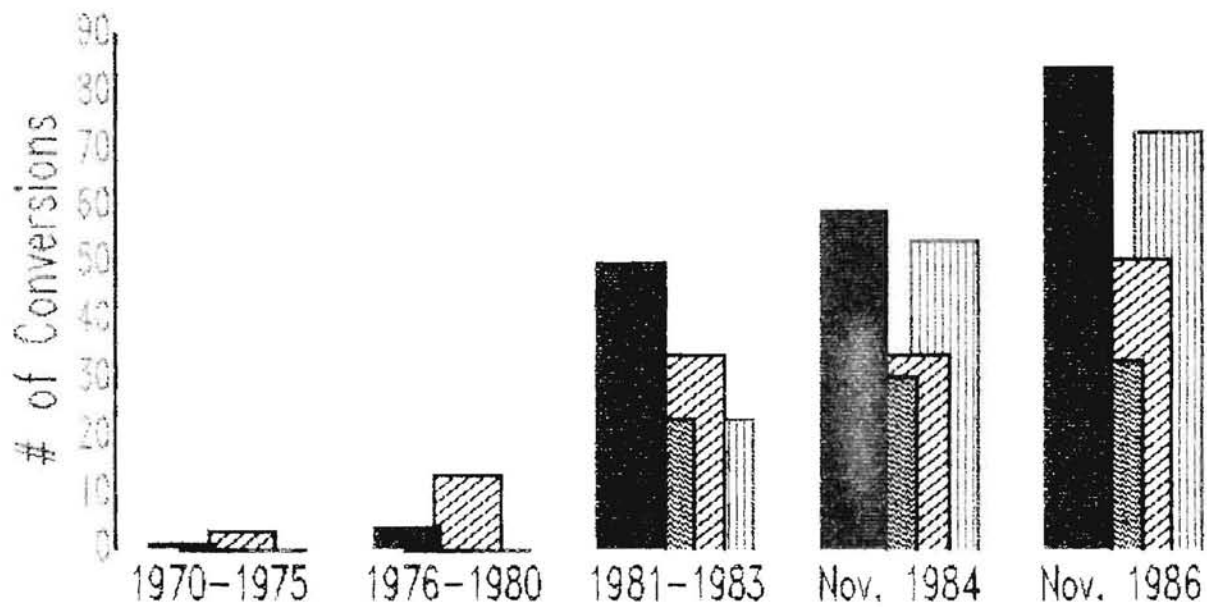
<u>RESOURCE ( 1985 )</u>		<u>CORDS</u>
ALLOWABLE CUT	-----	69,000
ACTUAL HARVEST	-----	10,000
NET ANNUAL SURPLUS	-----	59,000
BACKLOG	-----	342,000 (9 YRS)

WOOD USE ( 1985 )

1) EXPORT	-----	0
2) PULP AND PAPER (BOISE CASCADE)	-----	9,000
3) OTHER (POST, SMALL POLES)	-----	1,000

# **WOOD FOR ENERGY**

## GROWTH of COMMERCIAL WOOD ENERGY USE in MINNESOTA



LARGE SCALE WOOD ENERGY USERS

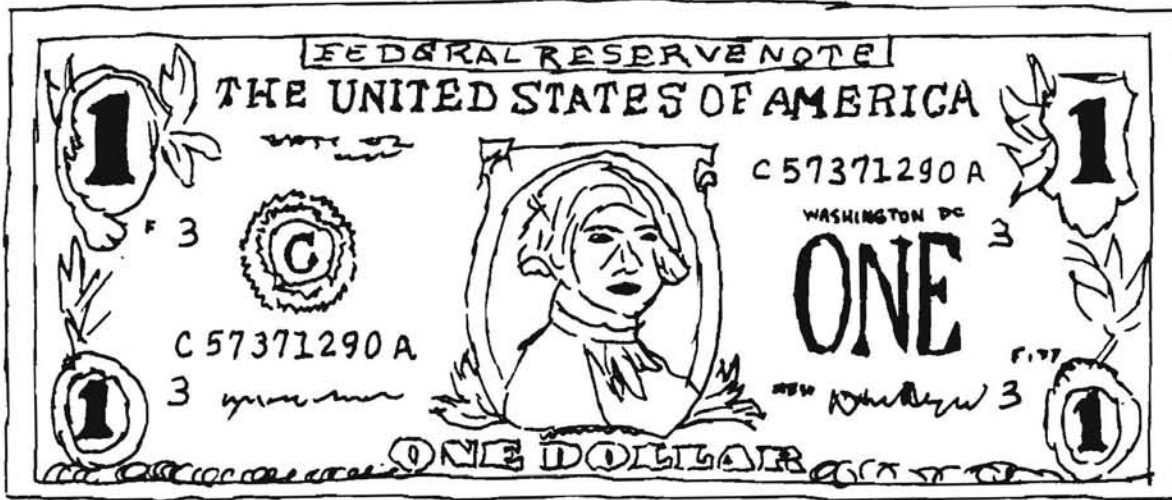
A) CURRENT:

- |                        |                              |
|------------------------|------------------------------|
| 1. BLANDIN -----       | 800 TONS/DAY RESIDUE & CHIPS |
| 2. POTLATCH -----      | 600 TONS/DAY RESIDUE & CHIPS |
| 3. BOISE CASCADE ----- | 20-30,000 CDS./YR. (CHIPS)   |

B) PLANNING:

- |                              |  |
|------------------------------|--|
| 1. LAKE SUPERIOR PAPER ----- | 80-90,000 CDS. (ROUNDWOOD)             |
| 2. TACONITE INDUSTRY         |  |
| - U.S. STEEL -----           | 70,000 + CDS. (ROUNDWOOD)              |
|                              | 30,000 CDS. (RESIDUES)                 |
| - INLAND STEEL -----         | 45-50,000 CDS. (ROUNDWOOD<br>OR CHIPS) |
| 3. LARGE UTILITIES -----     | ? ? ? ?                                |





WHEN \$1 IS SPENT FOR:

- 1) PETROLEUM ENERGY
- 2) BIOMASS ENERGY

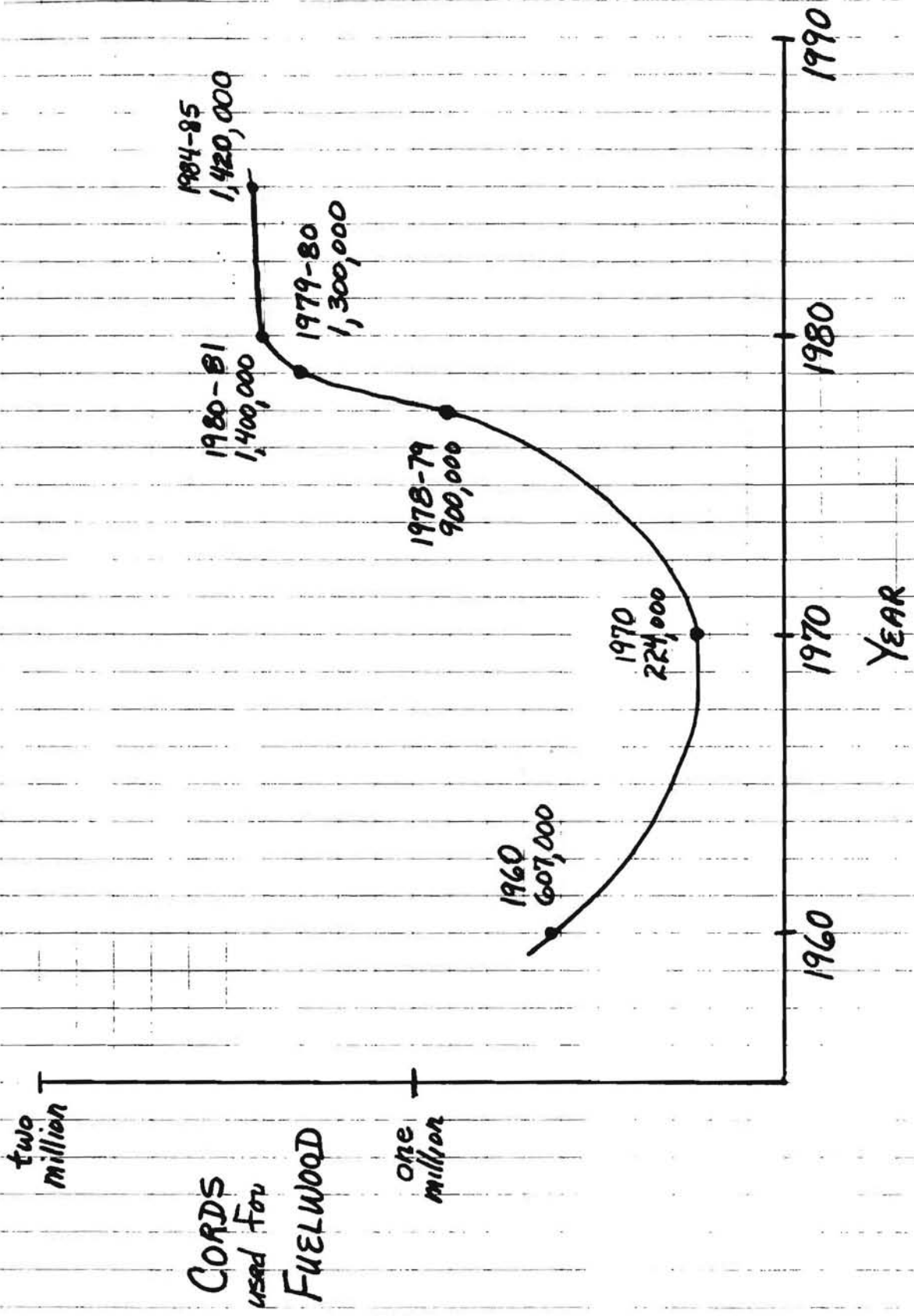
TOTAL ADDITIONAL  
ECONOMIC ACTIVITY  
GENERATED IN MINNESOTA

LESS THAN 34¢

ABOUT \$ 1.50

SOURCE: DEPARTMENT OF ENERGY AND ECONOMIC DEVELOPMENT - 1985

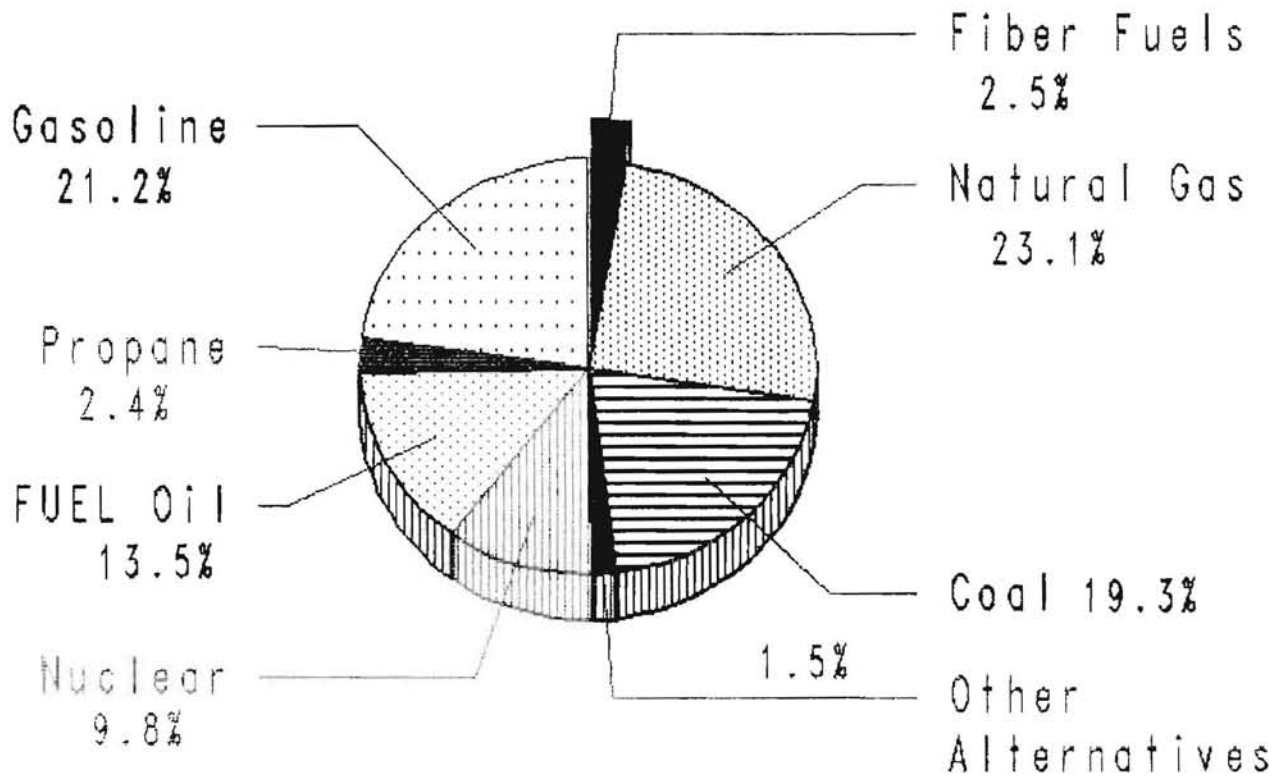
# FUELWOOD DEMAND in MINNESOTA





# TOTAL ENERGY CONSUMED in 1982 - MINNESOTA

Source: Minnesota DEED, 1985



# WOOD FUEL USED in MINNESOTA: Annual Volume

