Thinning the Garden

Using Crop Tree Management to Grow Quality Sawlogs Faster

Candia Agriculture Commission

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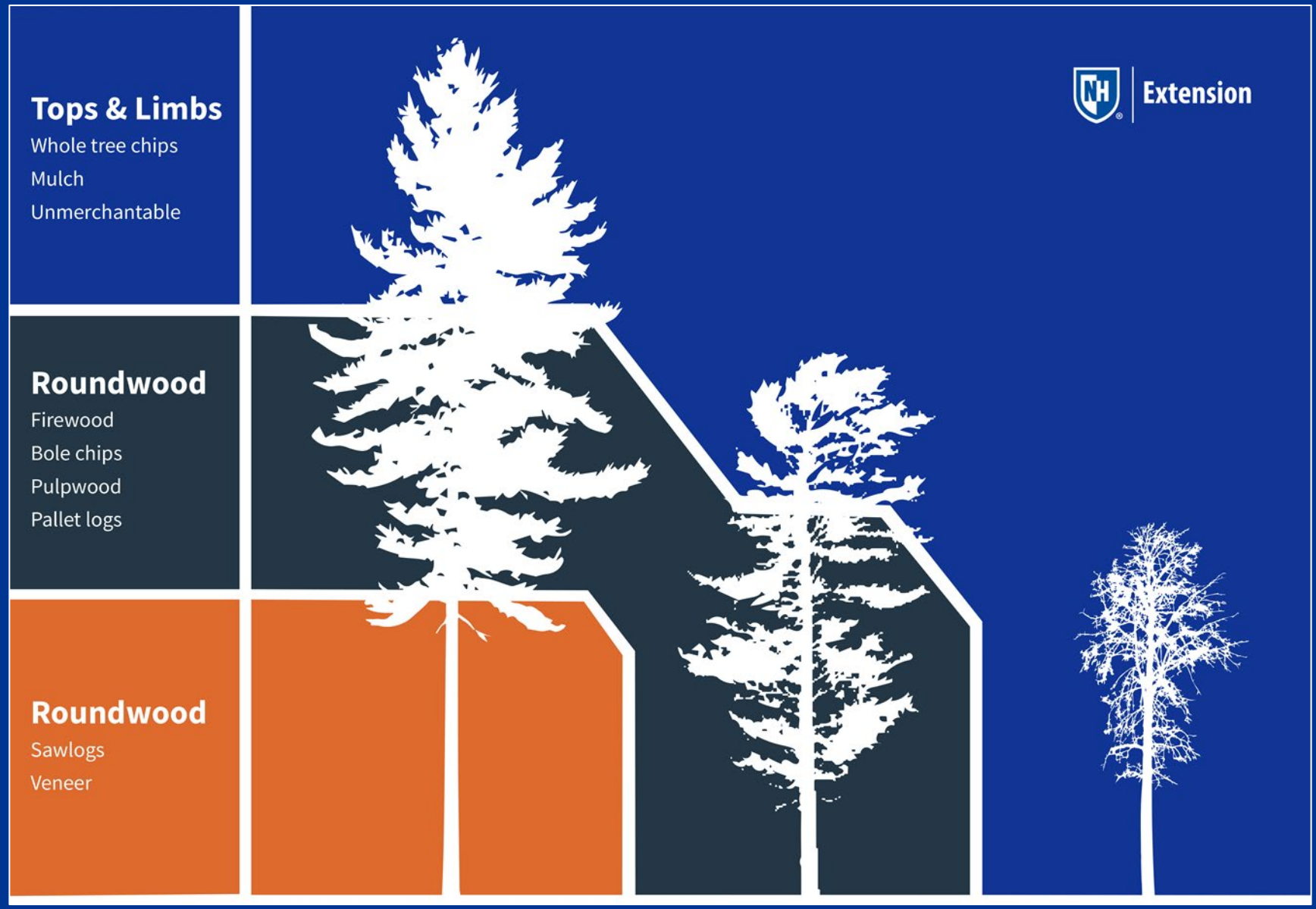
“What to Grow”

versus

“What to Go”

How does thinning increase value and returns:

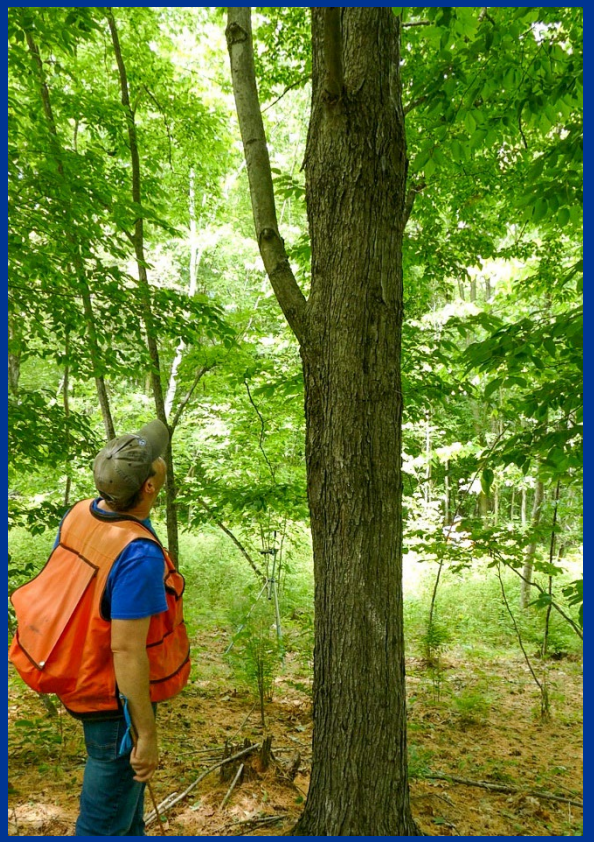
- Grow trees faster
- Helps turn lower value products into higher value products
- Promotes better species composition


Tops & Limbs
Whole tree chips
Mulch
Unmerchantable
Roundwood
Firewood
Bole chips
Pulpwood
Pallet logs
Roundwood
Sawlogs
Veneer
Extension

Tops and Limbs – “Biomass” or “chips”

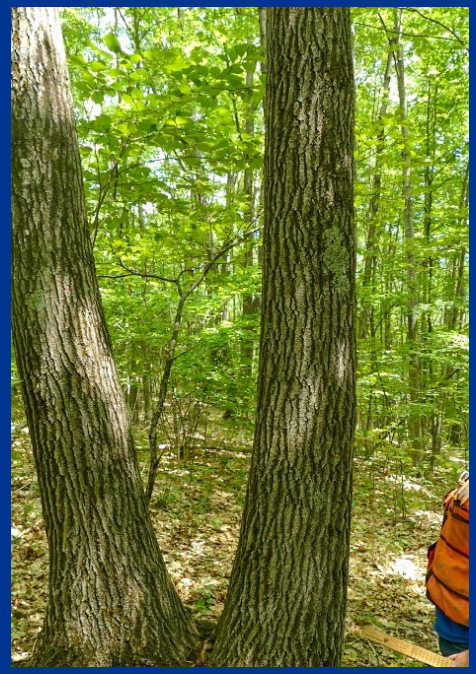
$0.00 - 0.25/ton
(negative)

Pulpwood, firewood, pallet



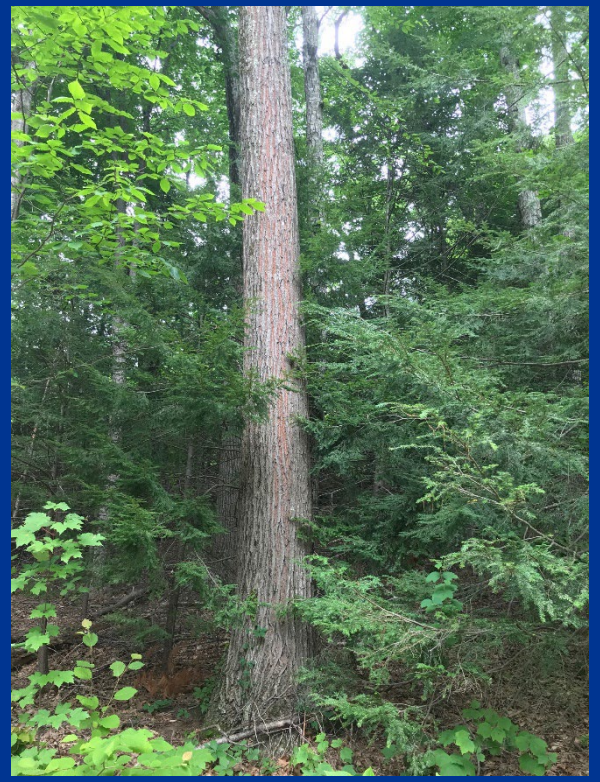
$5/ton

Sawlogs [Lumber] & Veneer



$40/ton

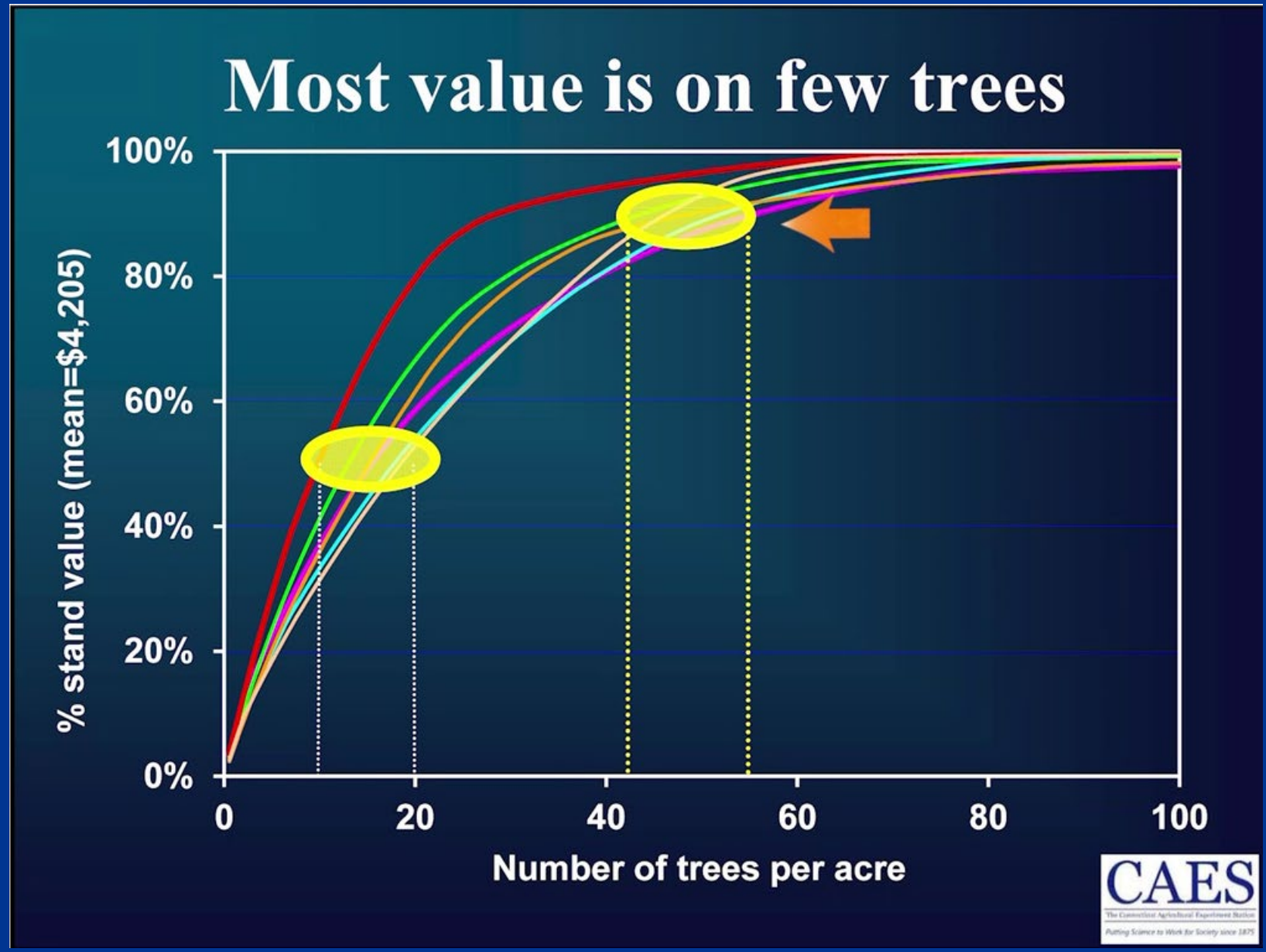
Sawlogs [Lumber] & Veneer



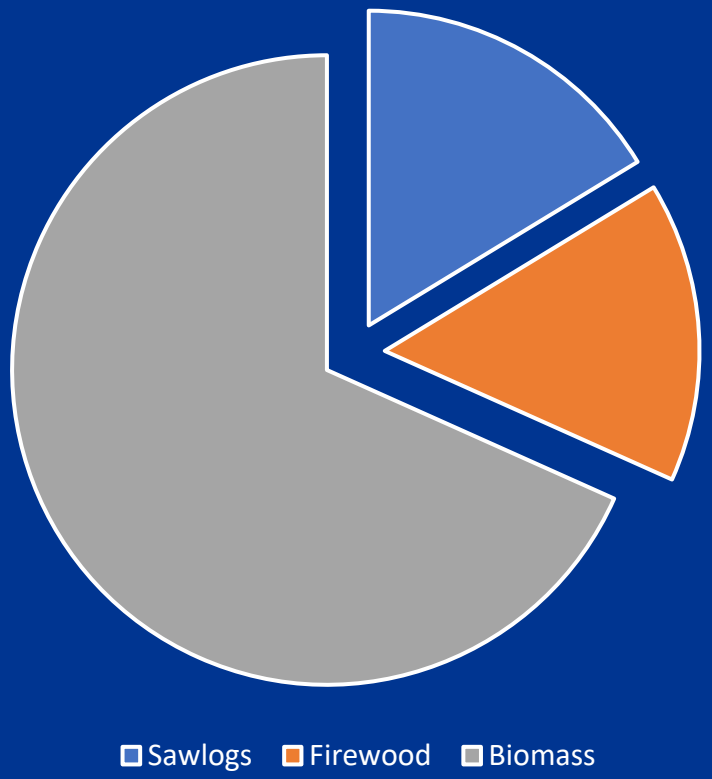
$200+/ton

It is value that counts; not volume.

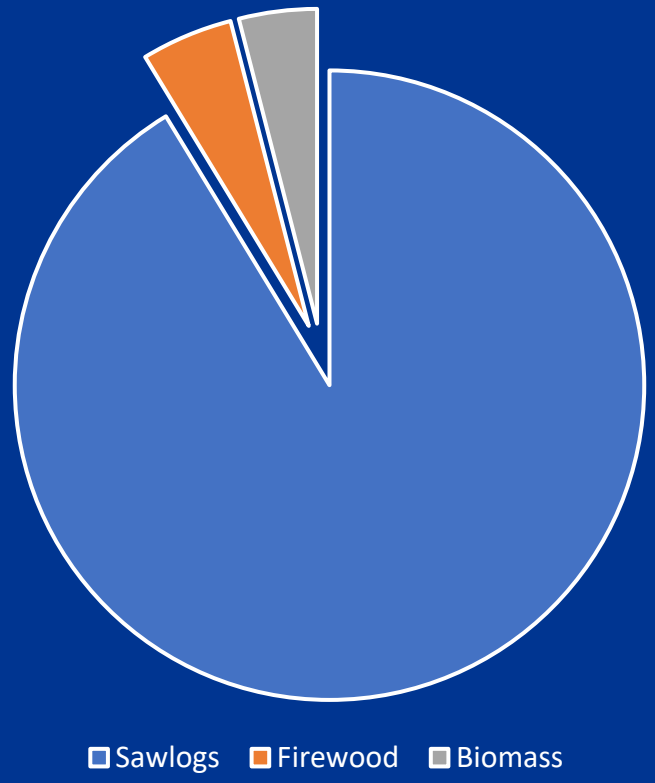
Ascending Tree Value Ranking	Stocking	Volume	Stumpage Value
# Trees/acre	*% of Total*		
10	15	32	45
20	26	53	63
30	34	69	76
40	41	80	86
50	48	89	93
60	53	95	98
70	58	99	99


Most value is on few trees
100%
80%
60%
40%
20%
0%
% stand value (mean=$4,205)
0
20
40
60
80
100
Number of trees per acre
CAES

- % Volume by Product (tons/acre)



- % Value by Product
- ($/acre)



1 red oak ***log***,
0.085 MBF
@ $600/MBF =
$51.00

1 load firewood,
7.5 cords/load
@ $10/cord =
$75.00

1 load chips
30± tons/box
@ $0.25/ton* =
$7.50
(0 or negative?)

*Timber Crier – Fall · 2021

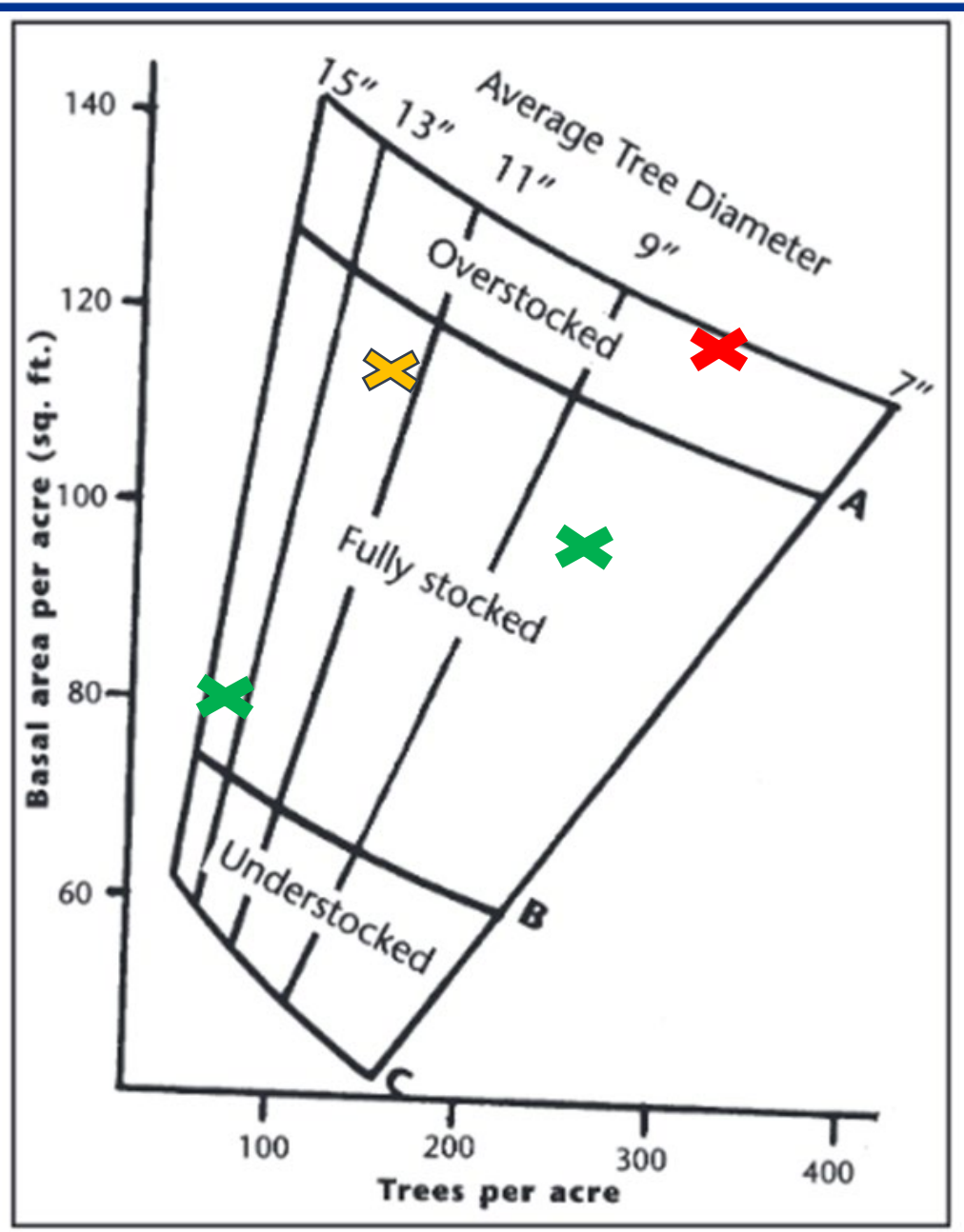
***white pine sawtimber* = $34.88/ton**

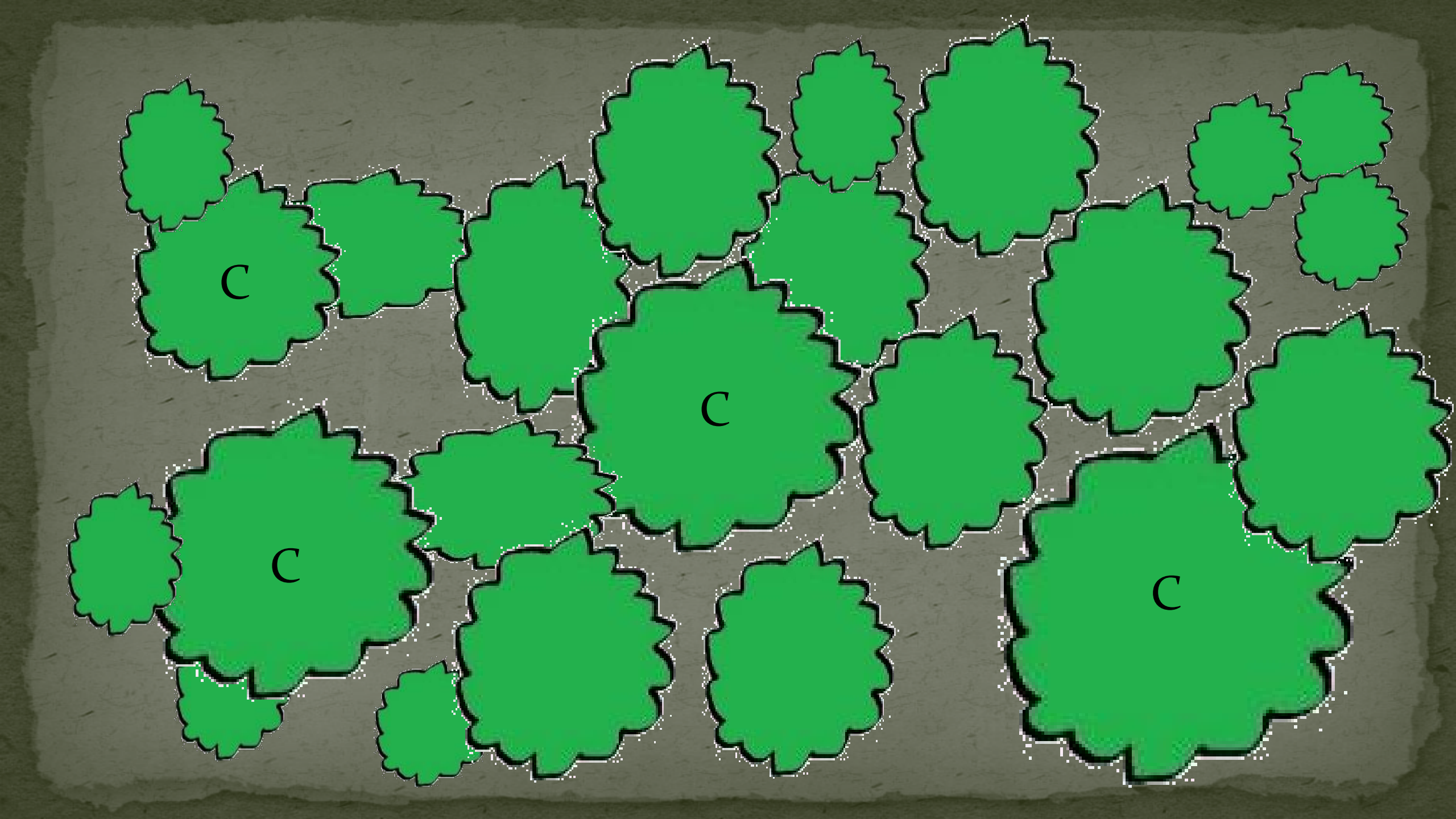
***white pine chips* = $0/ton* (-$?.??)**

***white pine pulp* = $0/ton* (-$?.??)**

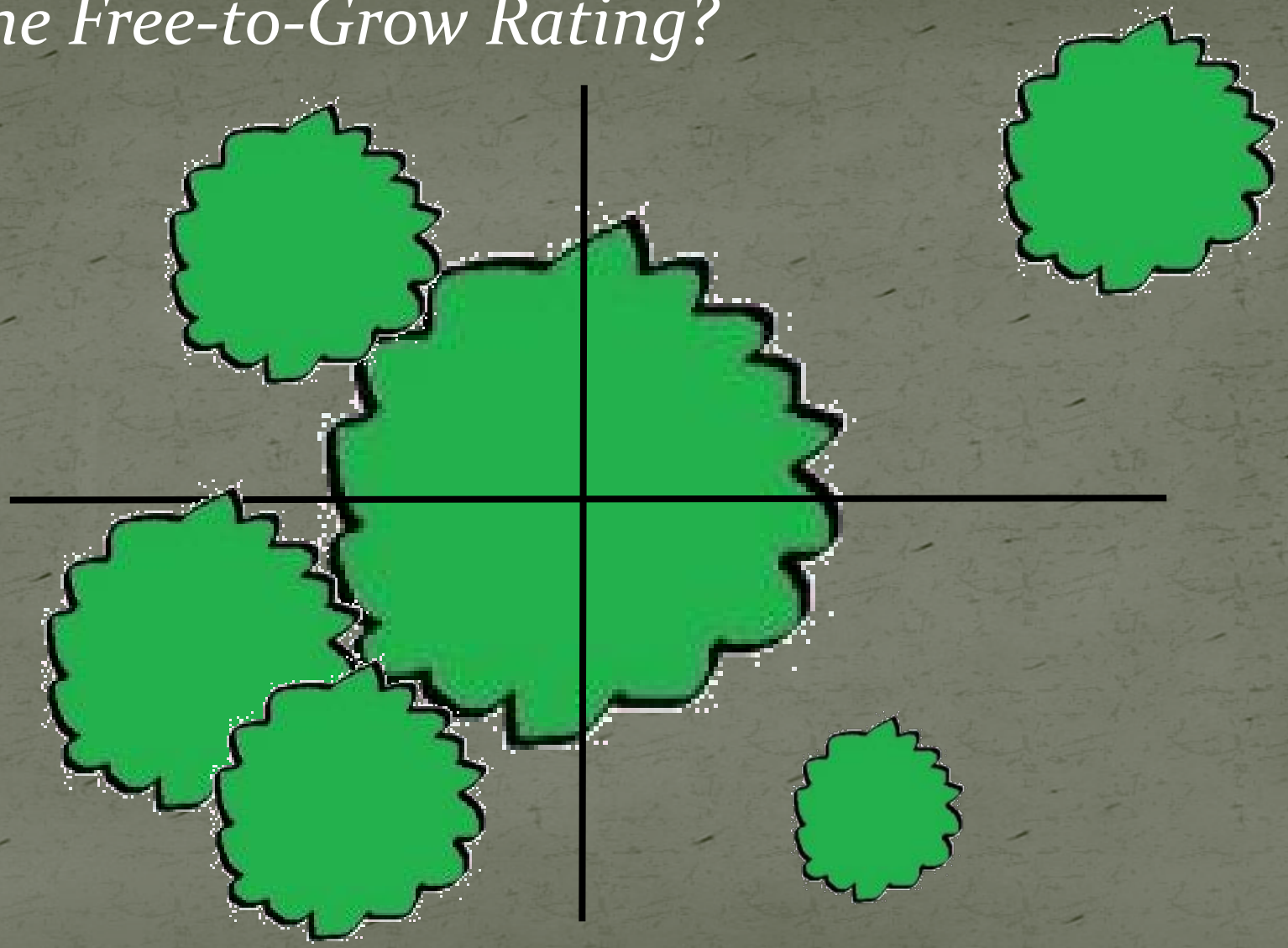
$150/MBF*

*Timber Crier – Winter · 2021


Average Tree Diameter
15"
13"
11"
9"
7"
Overstocked
Fully stocked
Understocked
A
B
C
140
120
100
80
60
Basal area per acre (sq. ft.)
100
200
300
400
Trees per acre

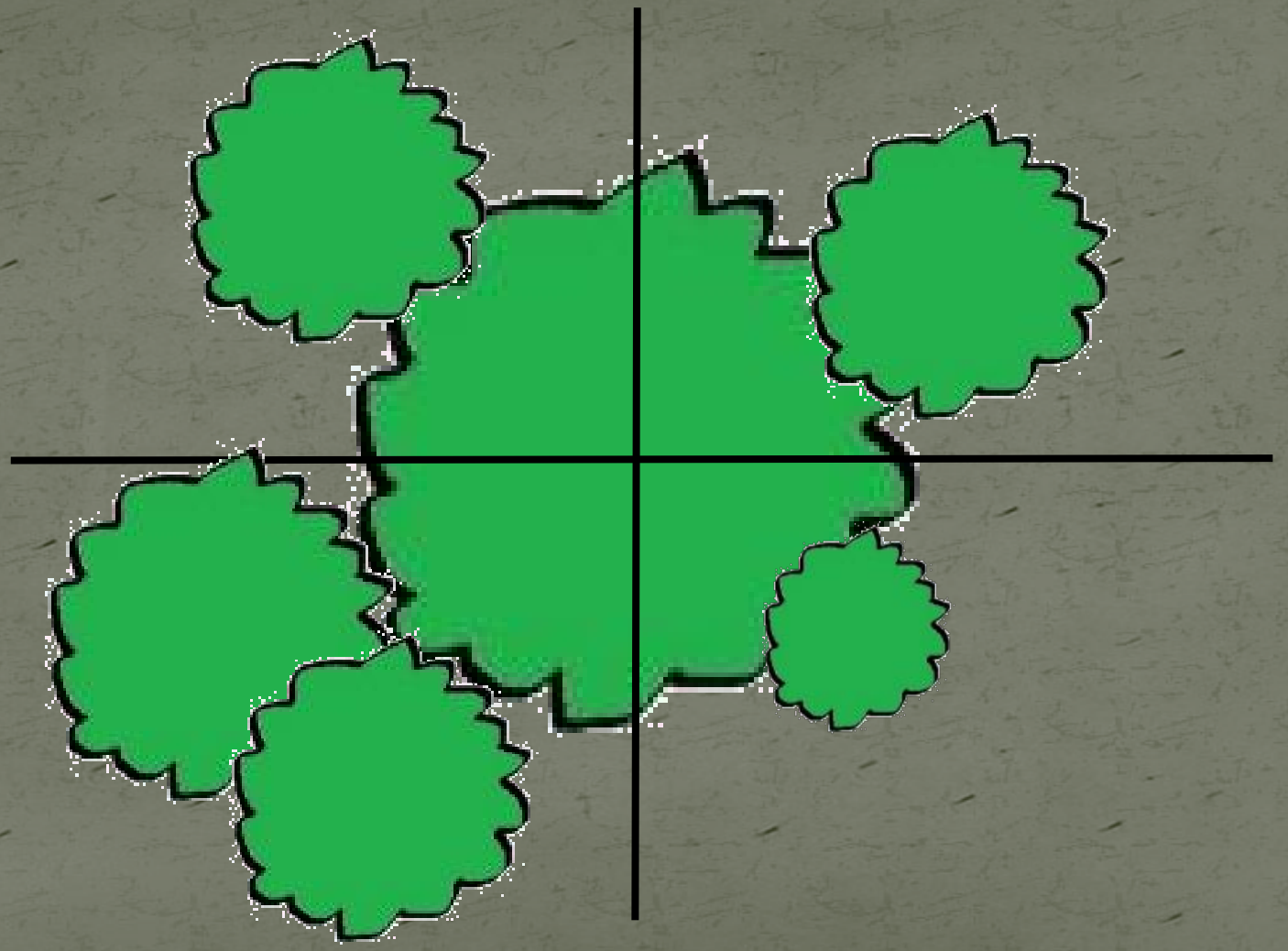

C
C
C
C

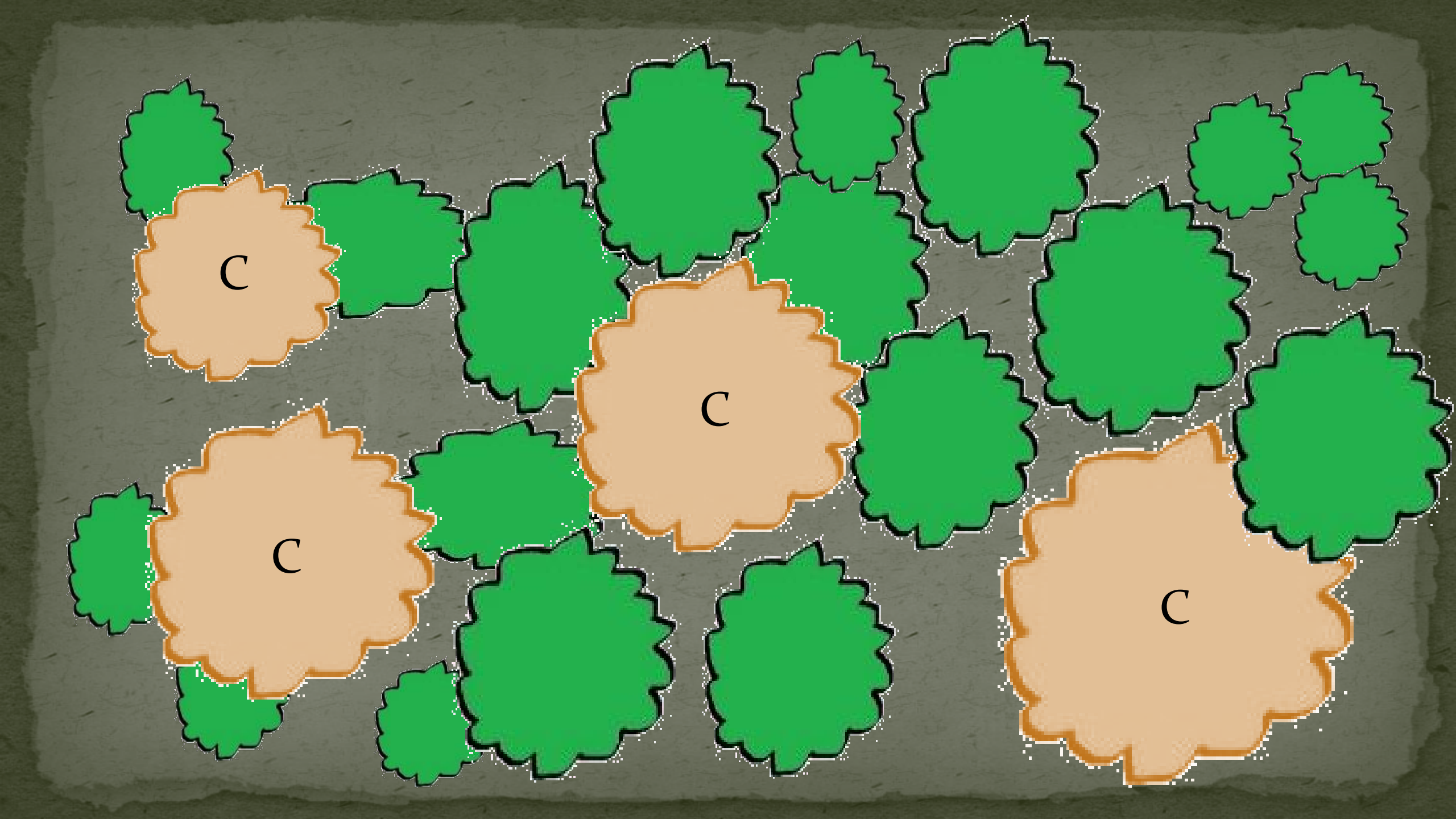
What's the Free-to-Grow Rating?



Alternative to "B-line Thinning" is Crop Tree Management

Crown-Touching Release

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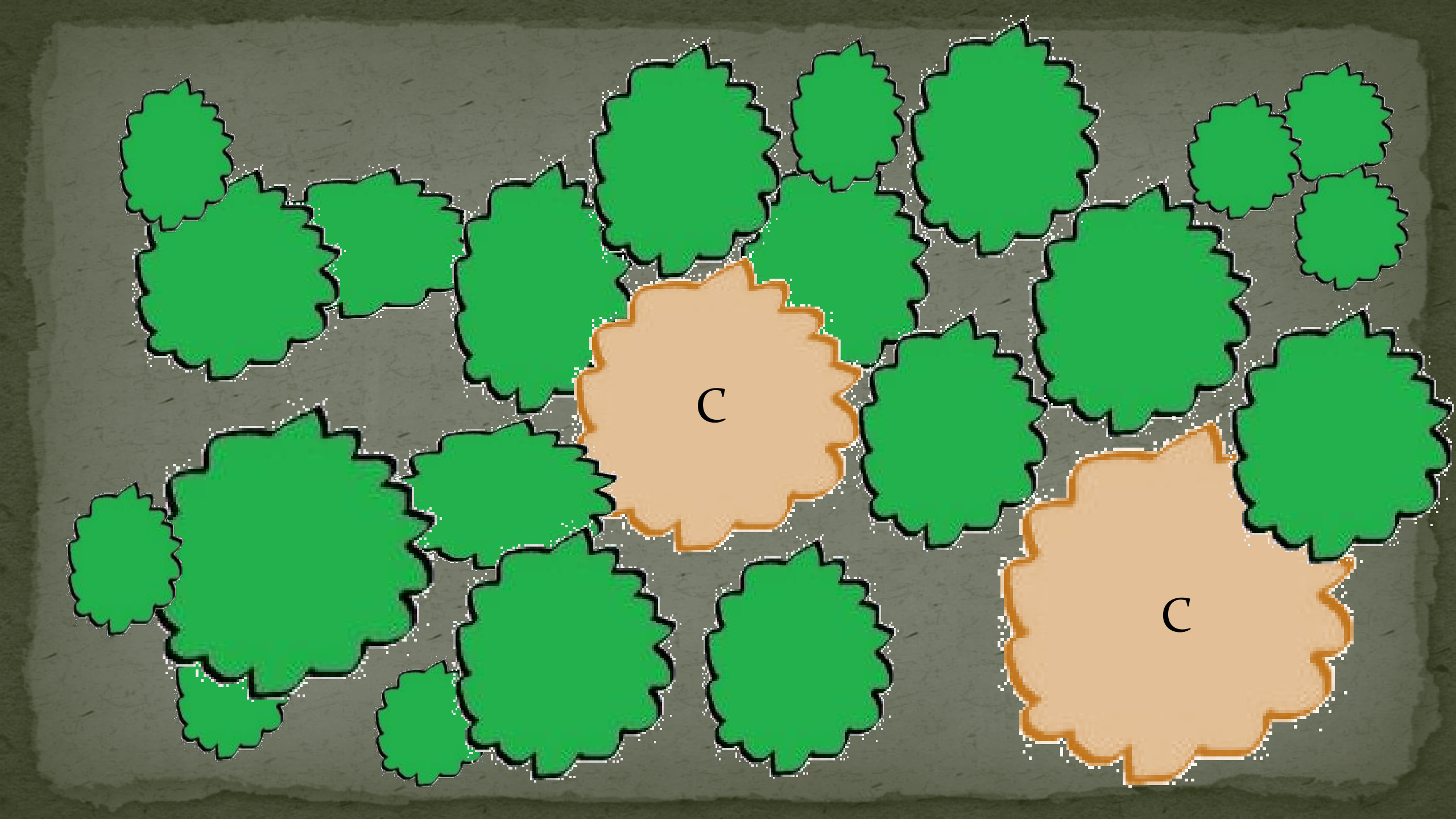
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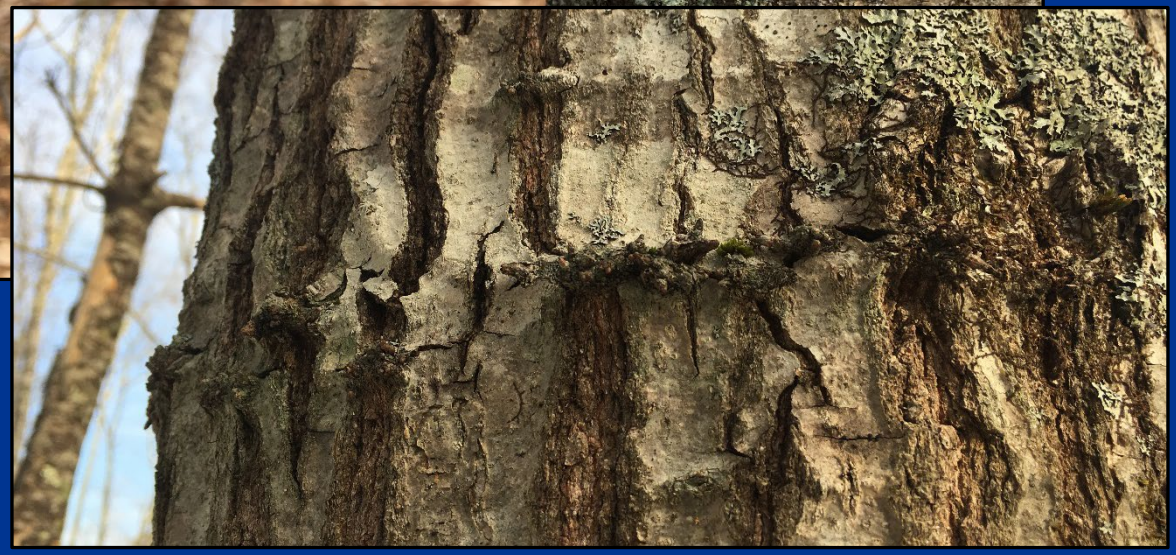
From:
Beattie et al. 1993. Working with Your Woodland: A Landowner's Guide. University Press of New England 279pp.

What to look for when choosing crop trees:

- @ least 25’ tall, 4-5” diameter
- Full, heathy crown
- No heavy “leaners”
- No V-shaped forks
- Nicely formed butt logs
- No epicormic branches
- High-value species

Photo: Ethan Belair



YEAR:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	15 yr DBH	
Oak Tree	4/23/2000	4/19/2001	4/24/2002	4/19/2003	4/17/2004	4/18/2005	4/18/2006	4/18/2007	4/20/2008	4/16/2009	4/10/2010	4/18/2011	4/1/2012	4/14/2013	4/18/2014	Increase	Notes:
1	10.3	10.5	10.55	10.7	10.8	10.9	11.0	11.1	11.20	11.40	11.50	11.55	11.60	11.85	12.00	1.70	Small/crowded top - sits by road
2	14.55	14.8	15.15	15.45	15.75	16.1	16.3	16.6	16.95	17.28	17.60	17.85	18.20	18.40	18.70	4.15	Great open top
3	11.95	12	12.1	12.25	12.35	12.48	12.6	12.7	12.85	13.00	13.25	13.30	13.40	13.55	13.65	1.70	Good top, fairly open
4	15.8	15.95	16.2	16.35	16.6	16.75	17.0	17.1	17.30	17.60	17.80	18.00	18.30	18.40	18.55	2.75	Great top, open
5	14.5	14.8	15.2	15.45	15.75	16.1	16.3	16.5	16.80	17.05	17.40	17.70	18.00	18.30	18.40	3.90	Great top, open
6	16.72	17	17.3	17.5	17.6	17.8	18.0	18.2	18.35	18.60	18.80	18.95	19.15	19.35	19.50	2.78	Great top, open
7	16.45	16.65	16.9	17.2	17.5	17.7	17.85	18.1	18.35	18.70	18.95	19.20	19.70	19.70	19.80	3.35	Great top, open; growing in better site.
8	12.1	12.45	12.7	13	13.25	13.5	13.7	13.9	14.10	14.35	14.65	14.85	15.00	15.25	15.45	3.35	Good top, fairly open
9	11.6	11.8	12	12.25	12.45	12.7	12.9	13.0	13.20	13.40	13.70	13.90	14.00	14.20	14.40	2.80	Good top, fairly open
10	16.18	16.25	16.42	16.75	16.9	17.15	17.3	17.5	17.85	17.95	18.25	18.55	18.75	19.10	19.20	3.02	Great top, growing open
Avg DBH	14.02	14.22	14.45	14.69	14.90	15.12	15.29	15.47	15.70	15.93	16.19	16.39	16.61	16.81	16.97		
Mean Growth (In)		0.20	0.28	0.25	0.21	0.22	0.17	0.18	0.23	0.24	0.26	0.20	0.23	0.20	0.16		

15 YEAR AVERAGE 0.215 inches/year

YEAR:	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Oak Tree	Apr-2016	Apr-2018	4/1/2017	4/10/2018												2017 Notes:
1	12.10	12.2	12.30	12.40												2 seams (2') on butt
2	18.90	19.2	19.40	19.60												no change
3	13.78	13.9	14.00	14.10												no change
4	18.75	19	19.10	19.30												no change, 16' veneer
5	18.65	18.95	19.10	19.30												20' veneer
6	19.65	19.9	20.00	20.10												4' seam
7	20.00	20.25	20.35	20.50												2 12' veneer
8	15.65	15.95	16.10	16.30												25' veneer
9	14.60	14.75	14.90	15.00												12' veneer
10	19.45	19.7	19.85	20.00												
Avg DBH	17.15	17.38	17.51	17.66												
Mean Growth (In)	0.19	0.23	0.13	0.15	-17.66	0.00	0.00	0.00								

4 YEAR AVERAGE 0.174 inches/year

# of Sides Released	5-Year DBH Growth Increase*
1	0.25
2	0.4
3	0.59
4	0.8

*Versus unreleased crop trees
Lamson et al. (1990)

	Years to:	
	12”	16”
Crop Tree Thinning	52	68
“B-Line” Thinning	62	82
No Thinning	79	105

Dr. Jeffery Ward, Connecticut Agricultural Experiment Station

Table 2. Annual growth of northern red oak 5 years after crop tree release (Miller 1997).

Age	Treatment	Height		Dbh		Crown diameter		Clear stem	
		Initial (ft)	Growth (ft/yr)	Initial (in)	Growth (in/yr)	Initial (ft)	Growth (ft/yr)	Initial (ft)	Growth (ft/yr)
16	Control	28.1	1.17	3.4	0.16	8.6	0.37	12.1	0.92
	Released	29.3	1.09	3.3	0.26	8.8	0.92	13.0	0.40
55	Control	84.8	1.43	15.2	0.21	22.9	0.30	43.4	0.40
	Released	84.4	0.52	15.1	0.28	24.9	1.10	44.2	-2.38
80	Control	102.6	0.26	22.7	0.21	43.4	0.27	48.7	0.31
	Released	101.5	0.02	23.7	0.31	41.7	0.76	46.1	-0.47

CROP TREE GROWTH

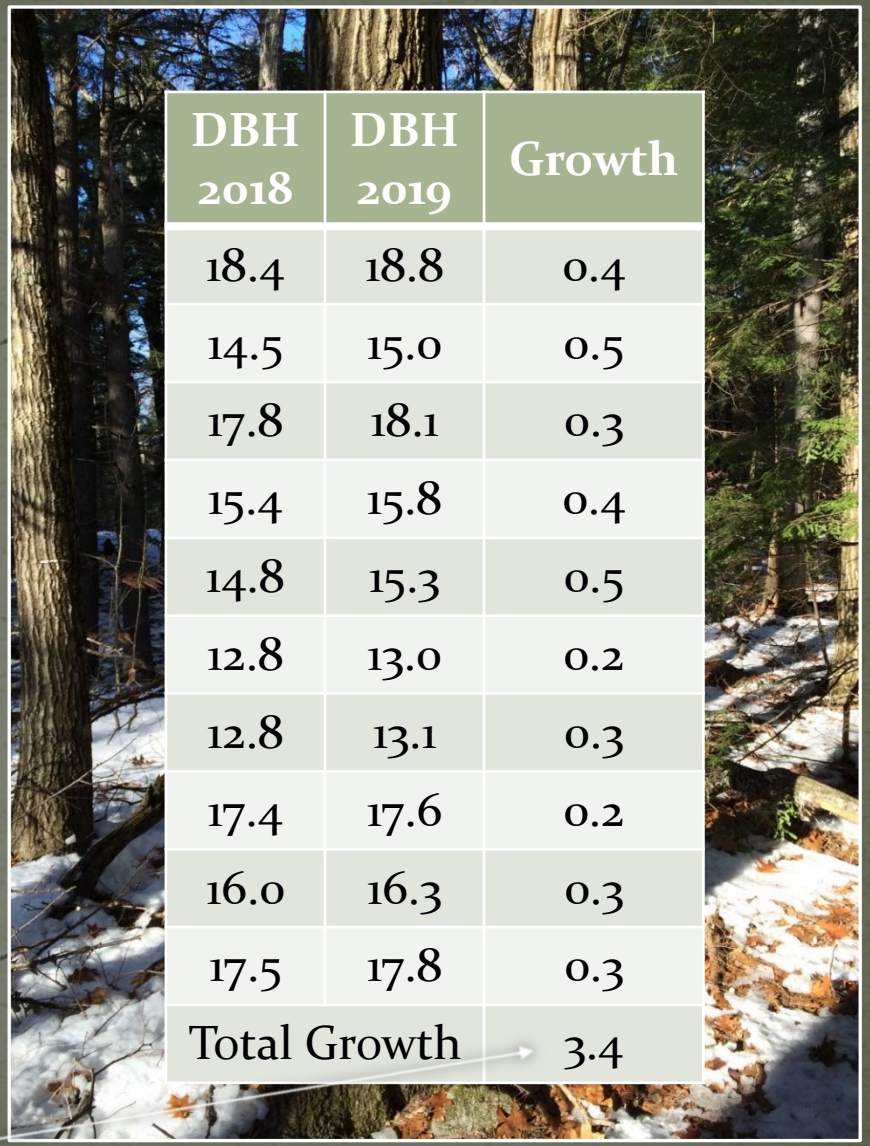
(See Instructions on Back)

LANDOWNER: DATE:

STAND HISTORY:

STAND NUMBER: ACRES: AGE:

TREE	SPE-CIES	FTG	DBH 20	DBH 20	GRO	DBH 20	GRO	DBH 20	GRO	DBH 20	GRO	DBH 20	GRO	TOTAL GRO
TOTALS														



DBH 2018	DBH 2019	Growth
18.4	18.8	0.4
14.5	15.0	0.5
17.8	18.1	0.3
15.4	15.8	0.4
14.8	15.3	0.5
12.8	13.0	0.2
12.8	13.1	0.3
17.4	17.6	0.2
16.0	16.3	0.3
17.5	17.8	0.3
Total Growth		3.4

Estimated annual DBH crop tree growth in in./decade.


LEFT HAND TURNS PROHIBITED, TO
EXIT SITE ON TO ROUTE 4, DURING
THE HOURS OF 4PM TO 6PM, MON
THRU FRI., AND SAT. 11AM TO 1PM,
AND DURING THE TWO EXCESSIVE
TRAFFIC RACE WEEKENDS IN
LOUDON N. H. EACH YEAR AND FOR
MOTORCYCLE WEEKEND