

What's New in N.Hd. Silviculture??

By
WBL

N. HD. Stand Conditions

- The dominance of beech, striped maple, and other noncommercial tree species in the sapling size class in hardwood forests raises concerns about the future forest resource in the New England. Our silvicultural objective is to regenerate and grow a diversity of quality hardwoods: good for timber production, market flexibility, wildlife diversity, and environmental impacts!

Table 21: Summary of Silvi methods

(Gen.Tech Rep. NRS 132,2014)

- 1. Single-tree selection
- 2. Group \patch: includes group release and shelterwood groups
- 3. Clearcutting
- 4. Overstory removal
- 5. Standard shelterwood
- 6. Low-density shelterwood
- 7. Deferred shelterwood
- 8. Irregular shelterwood
- 9. Precommercial thinning
- 10. Commercial thinning
- 11. Stand improvement
- 12. Rehabilitation
- 13. Ecological forestry
- 14. Natural disturbance silviculture

Regen Composition (%) by Harvest Method

<u>Tolerance</u>	<u>Clearcut</u>	<u>Patch</u>	<u>Selection</u>
Tolerants (Be, Sm)	43	62	92
Intermediates (Yb+)	19	34	7
Intolerants (Pb, Asp)	38	4	1

Soils Are Important

- Sand/gravel/bedrock: Softwoods, low-quality n.hdwd including oak
 - Wet pan: Softwoods, yellow birch, red maple
 - Sandy till: Beech, red maple, birches
 - Fine till: Beech, sugar maple, yellow birch
 - Enrichment (base-of-slope): white ash, sugar maple
- Also: bedrock source, e.g. granite vs calcareous
(Check: "Why Trees Grow Where They Do": WBL

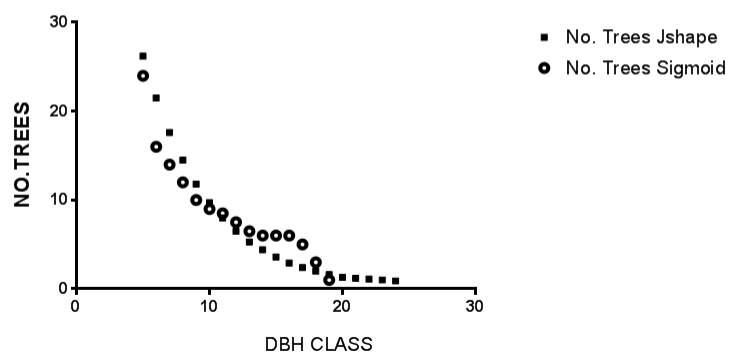
Single-tree Selection

- 1. Flexible dbh distribution: less emphasis on J-shaped.
- 2. Lower stocking levels: stand-level and sawtimber (60-80 BA total, 25-50 BA saw).
- 3. Still regenerates tolerants: OK for good sites (esp. rich bedrock sources). Dense beech regen on moderate/poor sites.



J-Shape vs Sigmoid Distribution

App. 78 sq.ft.BA /acre



Rates of Value Increase: SM

Mendel et al, Res. Paper NE-250

<u>Dbh</u>	<u>Annual Rate \$ Increase</u>
• 12	15-21 %
• 14	9-19 %
• 16	7-13 %
• 18	6-11 %
• 20	5-10 %
• 22	4-8 %
• 24	3-7 %

D.B.H. Max Size Objectives

(Financial Maturity)

<u>Species</u>	<u>D.B.H. Objective</u>
• SM, YB, RO, WA	18-24 (good site)
•	16-18 (moderate site)
• RM, BE	16-18
• PB	12-14



Group/ Patch Pluses and Minuses

- 1. Produces a range of species. Especially useful where beech and other less desirables are aggressive.
- 2. Using rough area control, the system easily ensures a sustainable, regulated forest.
- 3. Efficient marking and harvesting.
- 4. Works best, most efficiently, where the stand is somewhat patchy with groups of mature/overmature/defective trees.
- 5. Mark/harvest between groups/patches? At least mark along access roads.



Percent BA: 50-60 Year-old Groups/Patches

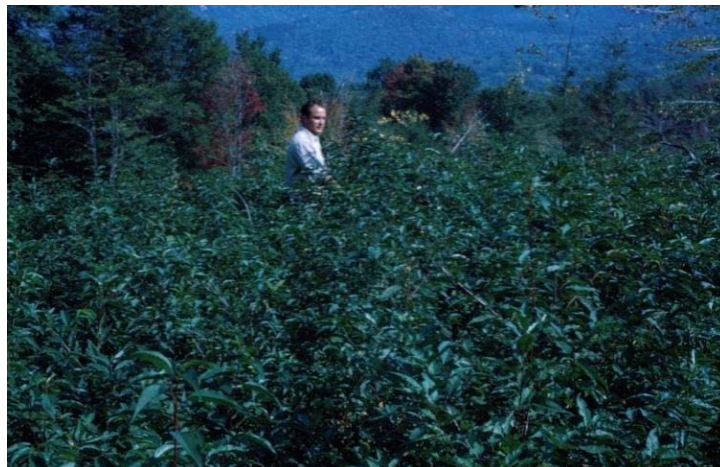
- Drainage Be Yb SM Rm Pb Wa Other
-
- Well 26 15 11 14 26 2 6
- Mod. 16 15 31 5 19 11 3



Percent Basal Area: 80-Year-Old Clearcut

<u>Be</u>	<u>Sm</u>	<u>Rm</u>	<u>Yb/Pb</u>	<u>Wa</u>	<u>Aspen</u>
4	19	10	53	7	7









Clearcutting Pluses/Minuses

- Advantages: produces good/diverse regeneration of northern hardwoods; efficient harvesting; wildlife habitat advantages.
- Latest info: no evidence of nutrient depletion.
- Disadvantages: excessive removal of potential quality; esthetics in certain locations.



Advantages/Applications of Releasing Advance Regen

- 1. For species that seed infrequently or regenerate slowly:
 - Pine, oak, sugar maple. (Group/patch release).
- 2. In areas where logging disturbance produces abundant nuisance vegetation such as ferns, buckthorn, etc.

What to do In Young Sapling/Pole Stands?

- 1. Precommercial (crop-tree) thinning: an investment. Perhaps 50-75 crop trees.
- 2. Commercial Thin: when shortlived species mature (paper birch, aspen) take them out.
- (Called “dominant-tree thinning”).

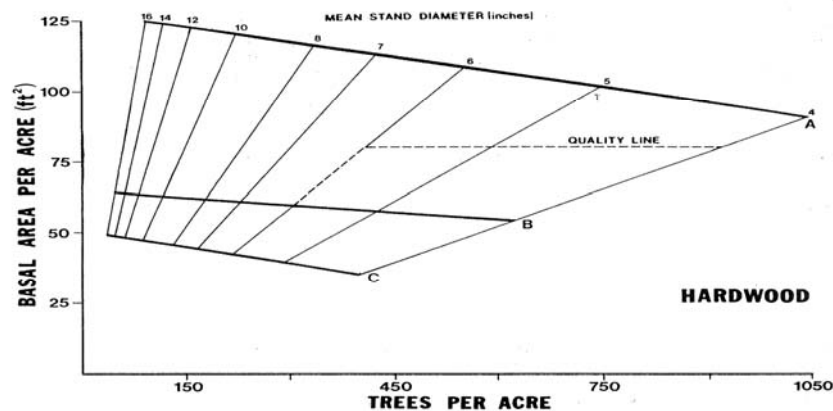
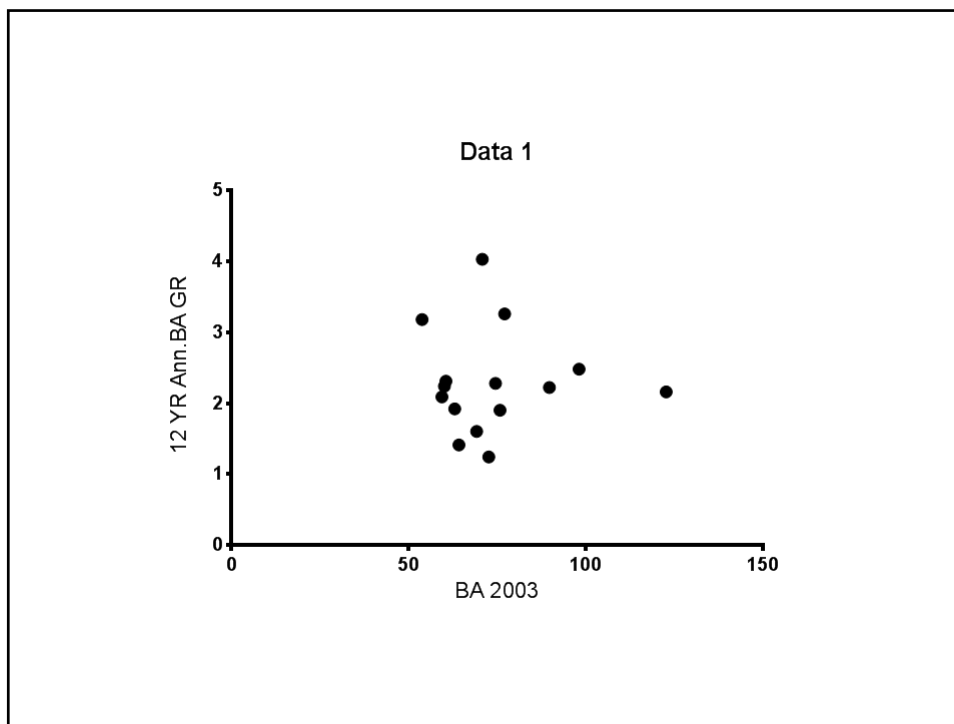


Figure 6.—Stocking guide for main crown canopy of even-aged hardwood stands (beech-red maple, beech-birch-maple) shows basal area and number of trees per acre and quadratic mean stand diameter. The A line is fully stocked, the B line is suggested residual stocking. The C-line is minimum stocking. The quality line is the density required to produce high quality stems of beech, sugar maple, yellow birch, and red maple.



Types of Shelterwoods

- 1. Standard: residual of 60-70 sq.ft.: removal in 5-10 years. Abundant tolerant regeneration.
- 2. Low density: 20-30 sq. ft residual: provides more diverse regen, more ground disturbance, less damage during final removal.
- 3. Deferred/delayed (final removal): useful where a component of the overstory is not mature – still growing quality wood.
- 4. Irregular: where conditions of overstory maturity/quality (and regeneration) are irregular. (We also list “rehabilitation” harvests where stand conditions are heterogeneous – lack of uniform stand conditions).



Prescription Key

- Based on a walk-thru' or cruise:
- 1. Determine percentage of points that fall in groups/patches containing >50% mature/overmature/defective trees.
 - a. If patchiness > 50% of area: clearcut (poor advance regen) or overstory removal (good advance regen).
 - b. If patchiness is 10-50% of area: group/patch or group release.
 - c. If patchiness is < 10% of area: partial cuts e.g. single-tree, shelterwood, commercial thinning.



Chemical Applications

- Glyphosate: to eliminate beech (and other vegetation) but maintain a component of sugar maple.