

FACT SHEET

1972
SMF

Cpt. 28 - BIRCH REGENERATION STUDY
Bartlett Experimental Forest, Bartlett, N. H.
USDA - Forest Service

BACKGROUND:

50 acres clearcut May to Sept. 1967. Original stand old-growth northern hardwoods, averaging 91 sq. ft. per acre in trees over 5.0 inches d.b.h. Beech predominated, BA 42%. Yellow birch BA 10%; Paper birch BA 2%. 6 log products harvested (46%), plus birch boltwood (4%) and pulpwood (50%). Product yield averaged 12 M bd. ft. per acre, having a mill-delivered value of \$688 per acre.

STUDY OBJECTIVE:

Determine effect of clearcutting and post-logging cultural work on establishment and growth of yellow and paper birches.

TREATMENTS (in addition to logging and T.S.I. down to 2 inches d.b.h.):

- A - Scarification of about 50% of area (using root rake on a D-7).
- B - Scarification, plus 2 tons lime, plus 1/2 ton 15-10-10 (NPK) per acre
- C - Control

DESIGN AND AREA:

Randomized Block: 20 acres in 3 blocks with 3 treatments each. Plots average 2 ch. x 11 ch. or about 2.2 acres.

THREE-YEAR RESULTS (1968-1970):

Seedlings per acre in thousands:

Treatment	YB	PB	Other Comm'l	Sub-Total	PC	Other Weeds	Sub-Total	Total
A	19	8	12	39	11	43	54	93
B	8	6	11	25	14	49	63	88
C	9	6	17	32	18	37	55	87

% Birch stocking (based on at least one seedling per 1/4-milacre (3 ft. x 3 ft.):

Treatment	YB	PB	Either Species
A	71	56	76
B	47	45	60
C	51	40	58

Height of birches (inches):

Treatment	Yellow birch				Paper birch			
	F-1	F-2	AV. Tall-est	Tall-est	F-1	F-2	AV. Tall-est	Tall-est
A	50	42	47	94	53	41	50	99
B	64	38	47	103	67	53	60	100
C	50	31	43	91	60	38	54	95

(F-1 = Free to grow; F-2 = Not free to grow)

Height of pin cherry (inches):

Treatment	Average	Tallest
A	86	136
B	116	168
C	83	146

FACT SHEETIntensive Culture and Fertilization in Seedling Stands of Birch

Bartlett Experimental Forest, Bartlett, N. H.
and
Massabesic Experimental Forest, Alfred, ME.

Objective

To determine if control of stocking level and fertilizer treatments will stimulate height and diameter growth of birch seedlings.

Background

The Bartlett location of this study is in the Birch Regeneration Study Area in Compartment 18. It is on the "B treatment" which was clearcut, scarified, and direct seeded with 1 kg/ha yellow and .5 kg/ha paper birch seed in the spring of 1968. The soils are well to moderately well drained sandy loams derived from granitic glacial till. The Massabesic location is in a 4 ha block that was clearcut and prepared as a planting site in 1970 on the northern unit of the forest. The soils are well drained sandy loams derived from water worked glacial till derived from granitic plus fine-grained sedimentary rocks. At both locations 10- x 10m plots were established and birch crop trees were selected on approximately 2- x 2m spacing. In May, 1975 all vegetation except crop trees was mowed using Husqvarna 165R brush clearing saws. Crop trees were lightly pruned using hand pruning shears.

Treatments

		1976 Diameter Growth	
		Massabesic	Bartlett
O	- Control; no weeding and thinning or fertilizer	.49a	.35a
W&T	- Weed and thin only	.53ab	.58ab
L	- W&T + 3.6 metric tons/ha dolomitic limestone	.52ab	.51ab
N	- W&T + 400 kg/ha nitrogen	.88cd	.92cd
NL	- W&T + N + L	.93cd	.94cd
P	- W&T + 200 kg/ha phosphorus	.61abc	.71bc
PL	- W&T + P + L	.50a	.56ab
NP	- W&T + N + P	1.21de	1.15d
NPL	- W&T + N + P + L	1.16de	.88cd
NPK	- W&T + N + P + 100 kg/ha potassium	1.18de	1.13d
NPKL	- W&T + N + P + K + L	1.42e	1.15d
NPKLX	- N+P+K+L + release from overstory competition only	.83bcd	.84cd

Lime applied by hand to surface in fall 1975; fertilizers, spring 1976. Design is randomized complete block with 3 replications at Bartlett and 5 at Massabesic. Measurements are 10 central crop trees per plot. Mowing will be repeated as needed to keep competing vegetation down.

Average tree dimensions at the start of the 1975 growing season were:

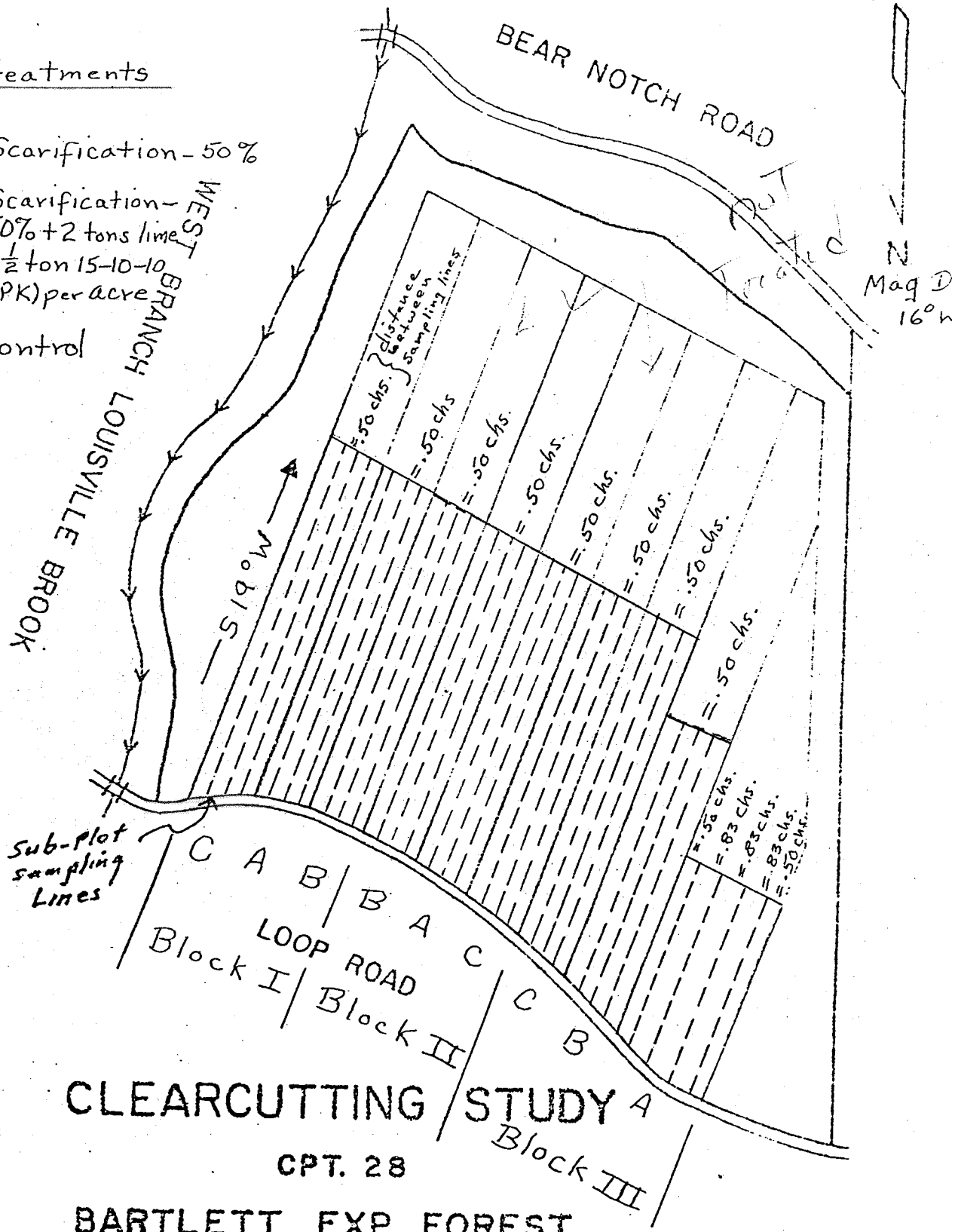
	Height, m	Diameter, cm	1974 Height growth, cm
Bartlett	2.9	1.6	38
Massabesic	2.0	1.0	27

Treatments

A - Scarification - 50%

B - Scarification - 50% + 2 tons lime + 1/2 ton 15-10-10 (NPK) per acre

C - Control



CLEARCUTTING STUDY A

CPT. 28

BARTLETT EXP. FOREST

1967

SCALE 1" = 5 CHAINS

Gross Area = 50 Acres
Study Area = 20 Acres

REDEFINITION

REHABILITATION STUDY

CPT. 18 & 20

BARTLETT EXP. FOREST

1968

SCALE 1" = 2 CHAINS

Gross Area - 7.10 Acres

Study Area - 5.28 Acres

Plot Size - 1.1 x 4.0 Chains = 0.44 Acres

