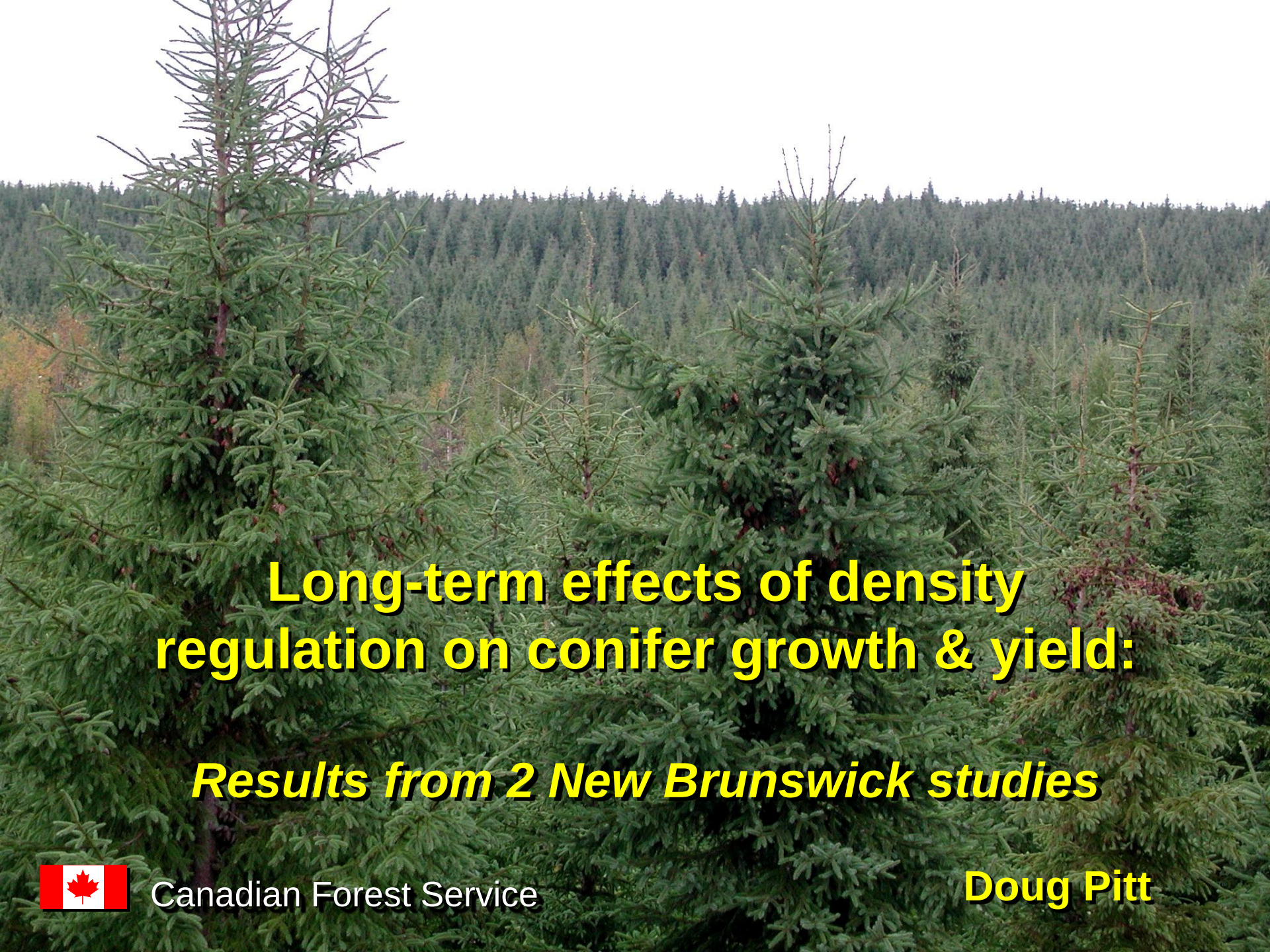


Long-term effects of density regulation on conifer growth & yield:

Results from 2 New Brunswick studies

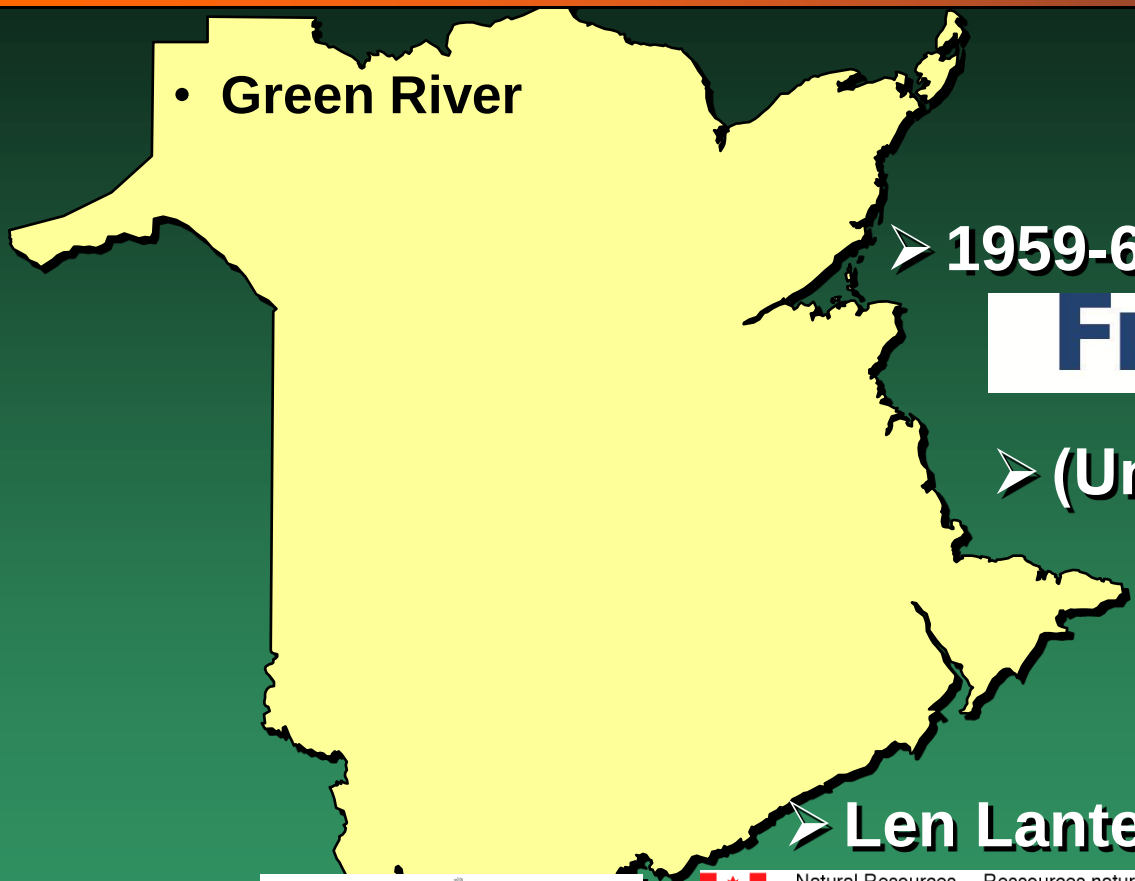
Canadian Forest Service

Doug Pitt

Precommercial Thinning (PCT)

- 2 M ha ON, eastward
- 200 k ha/yr
- Optimize stem growth & per ha production
- Manipulate species comp.
- Prepare stands for CT

PCT – The "Green River Study"



- 1959-61 Gordon Baskerville

FraserPapers

- (Unthinned, 4', 6', 8') x 6
- Bf and Sr, age 16, 8 years post-cut
- Len Lanteigne, CFS - Atlantic

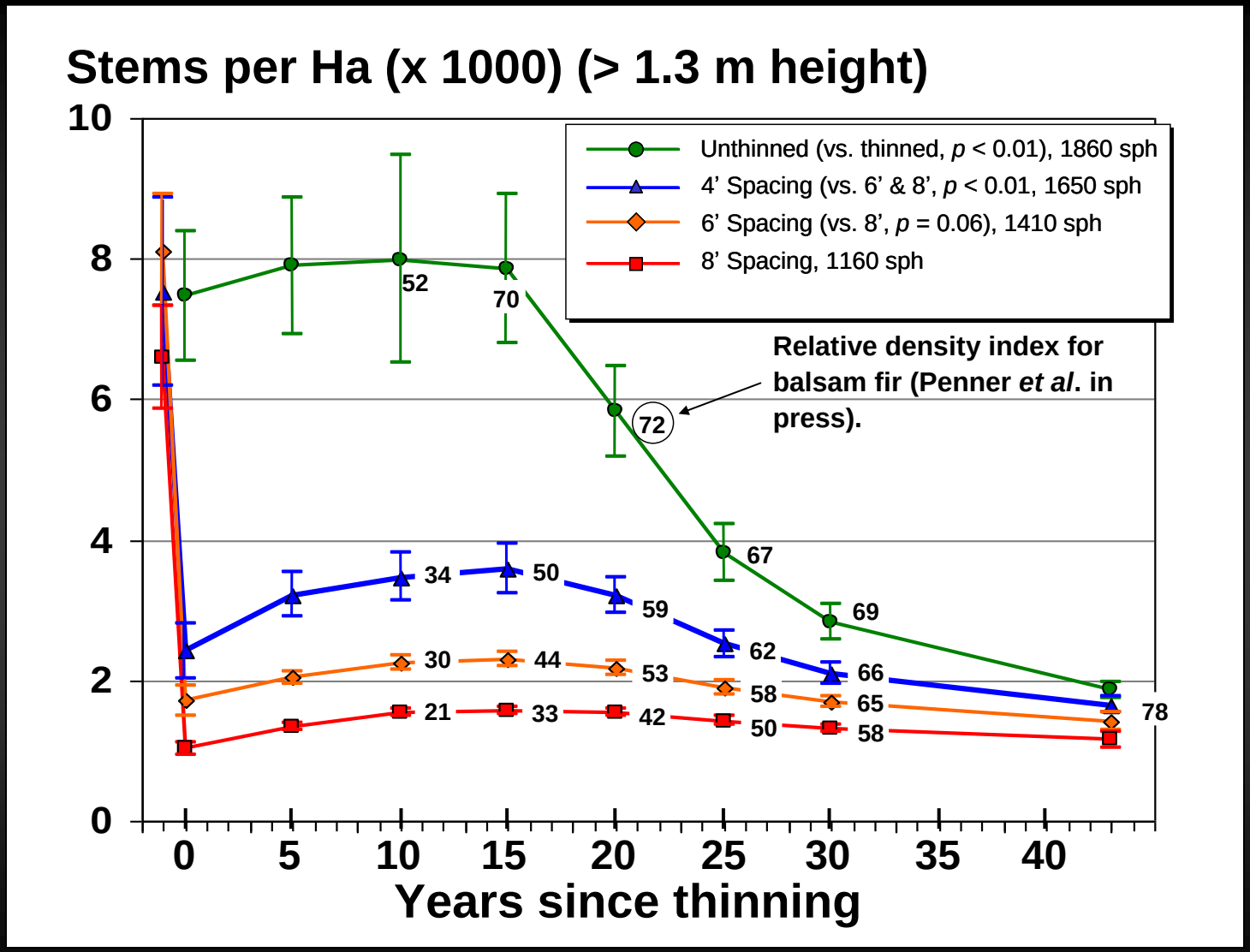
NB Growth & Yield Unit

Natural Resources Canada | Ressources naturelles Canada
Canadian Forest Service | Service canadien des forêts

New Brunswick Natural Resources

The Canadian Ecology Centre
Partenariat pour la recherche forestière
FORESTRY Research Partnership
Centre écologique du Canada

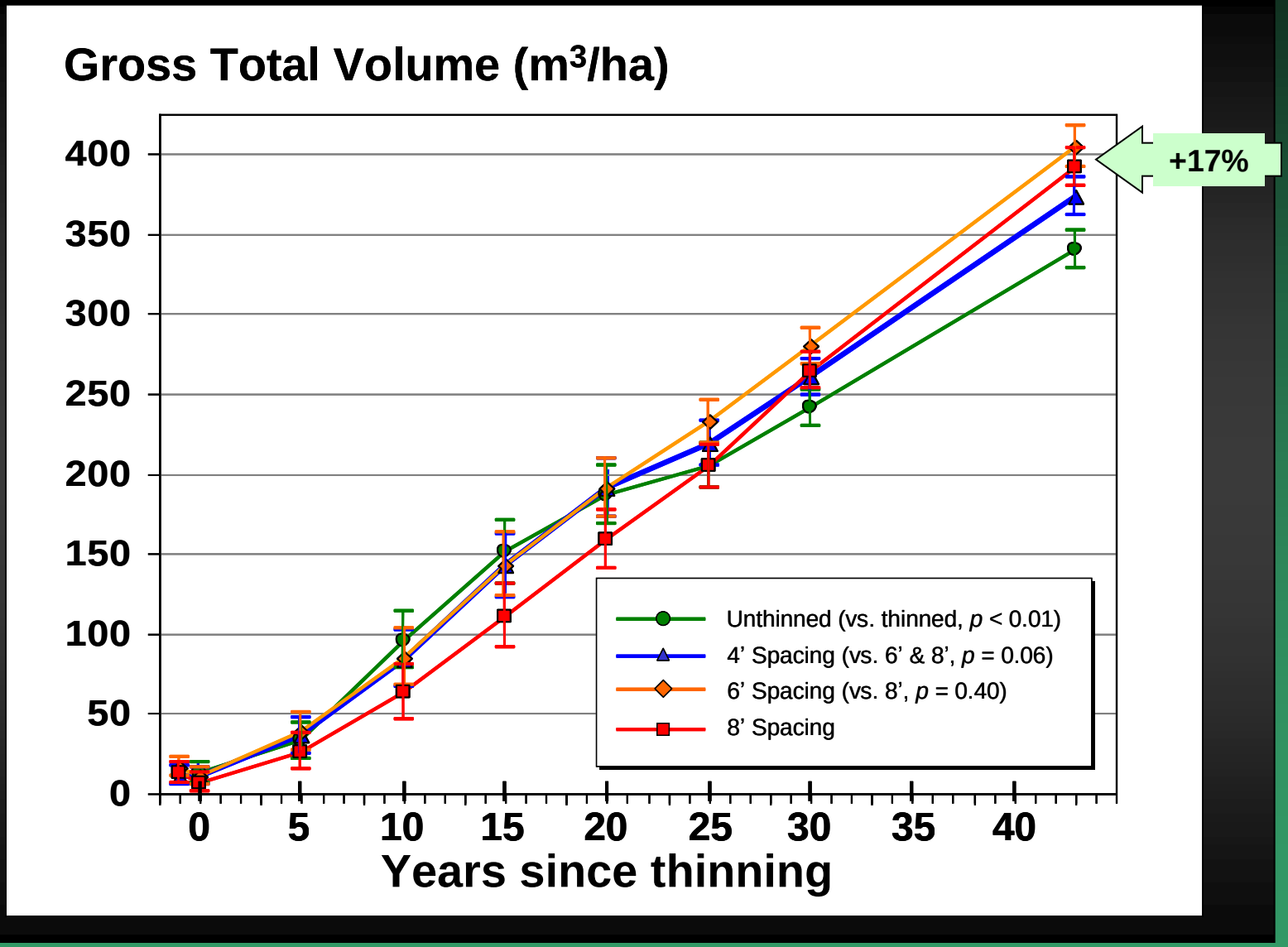
PCT – The "Green River Study"



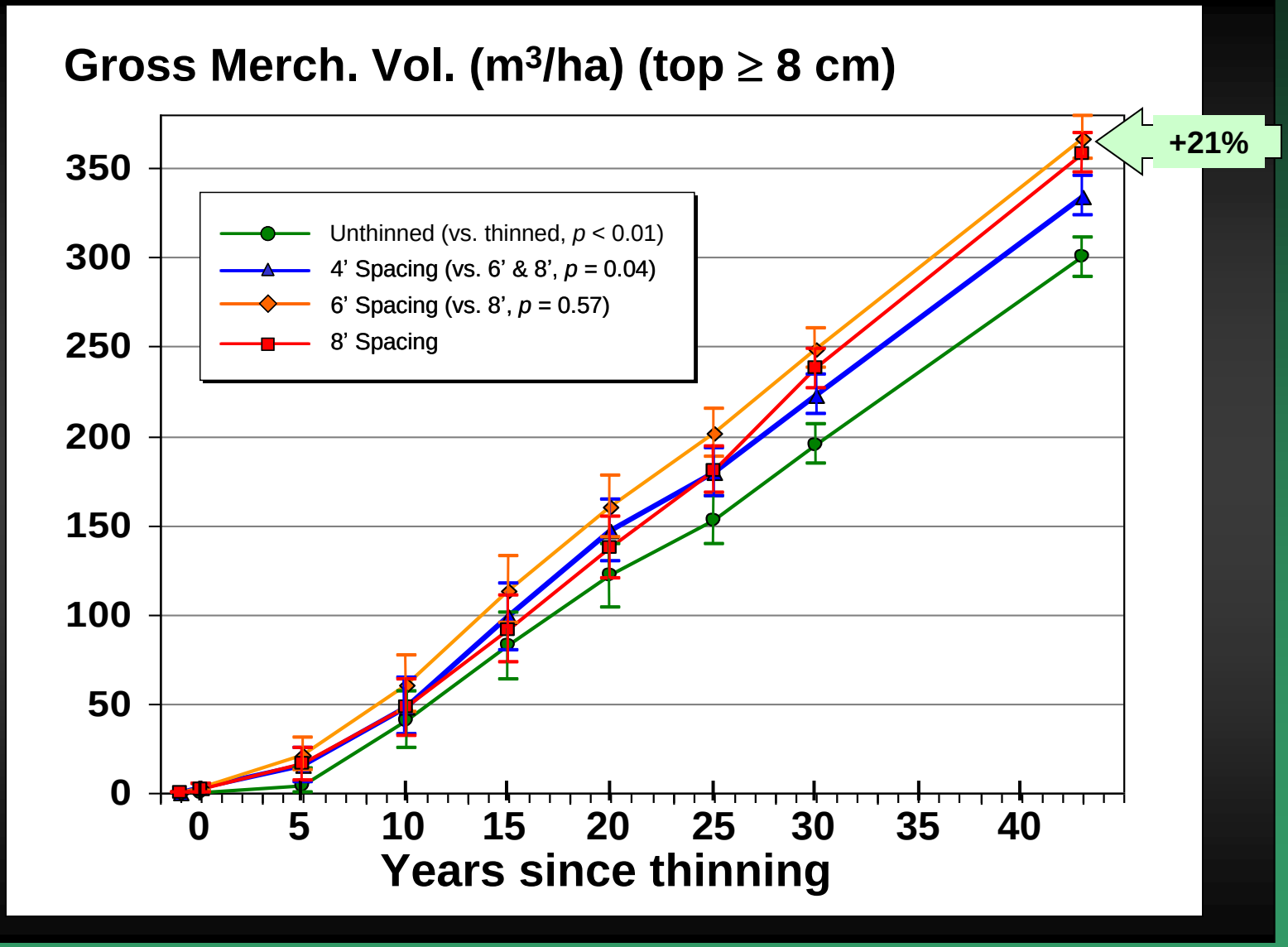
PCT – The "Green River Study"

Lower Belone 8' x 8'

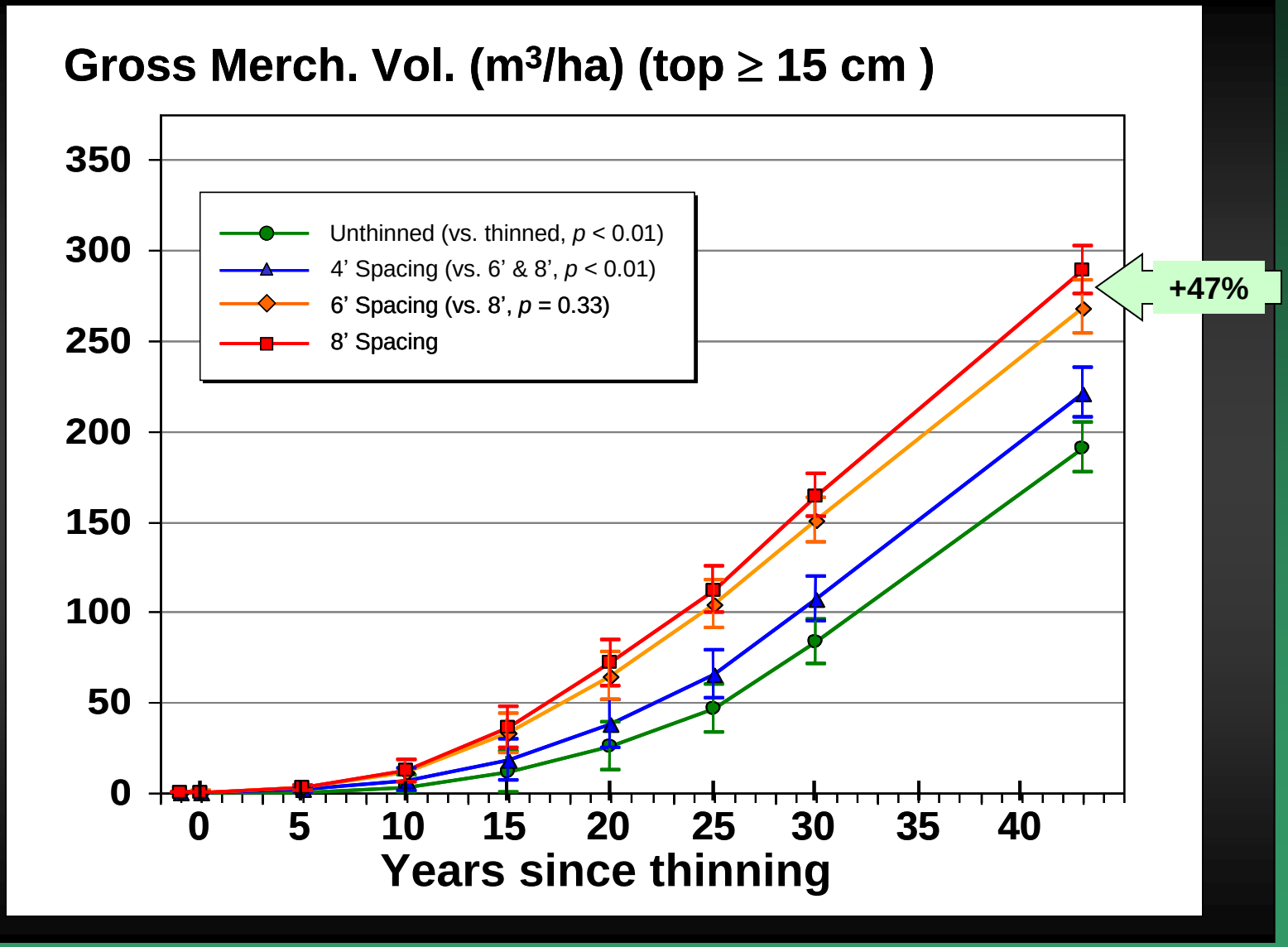
PCT – The "Green River Study"



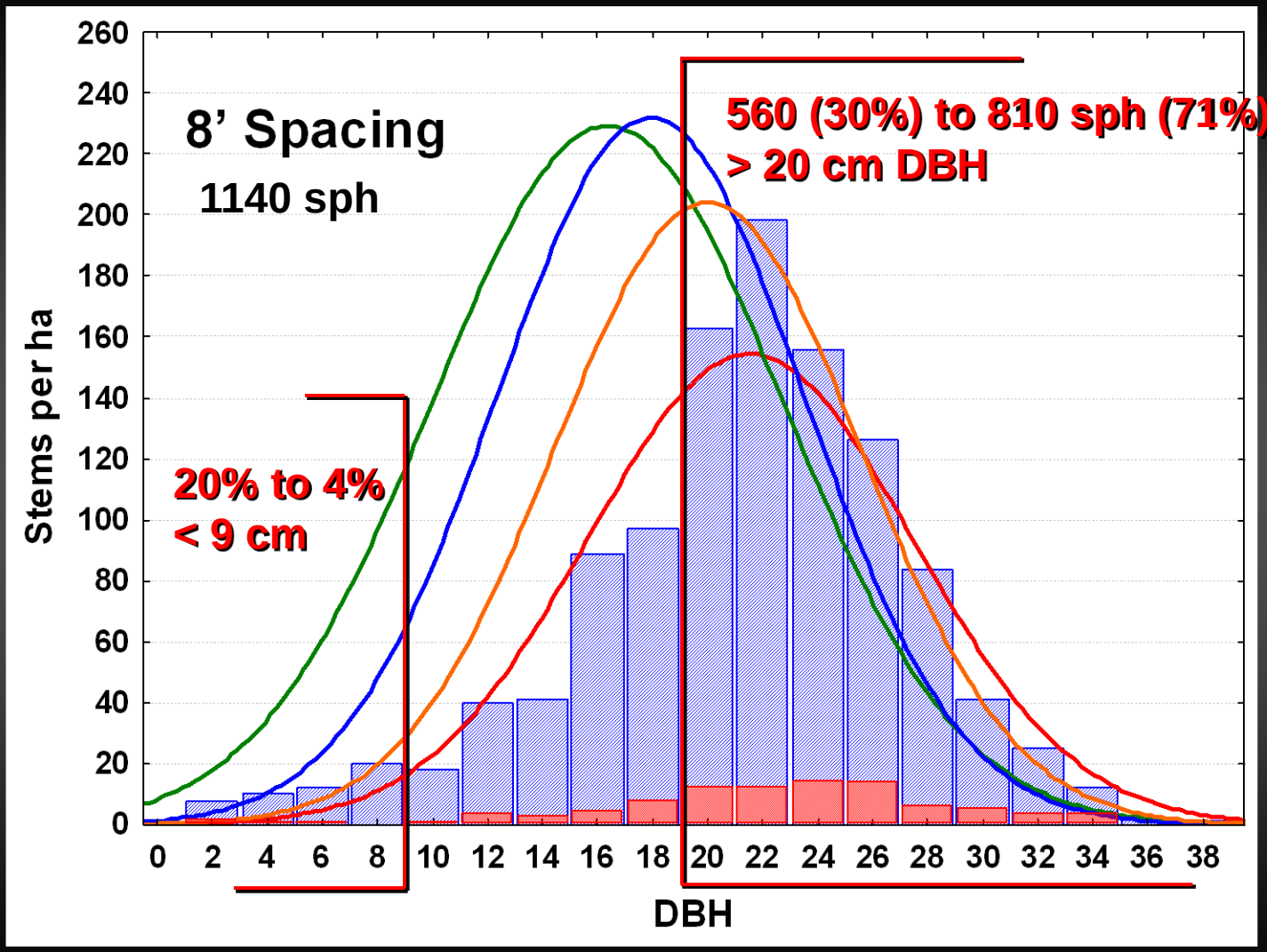
PCT – The "Green River Study"



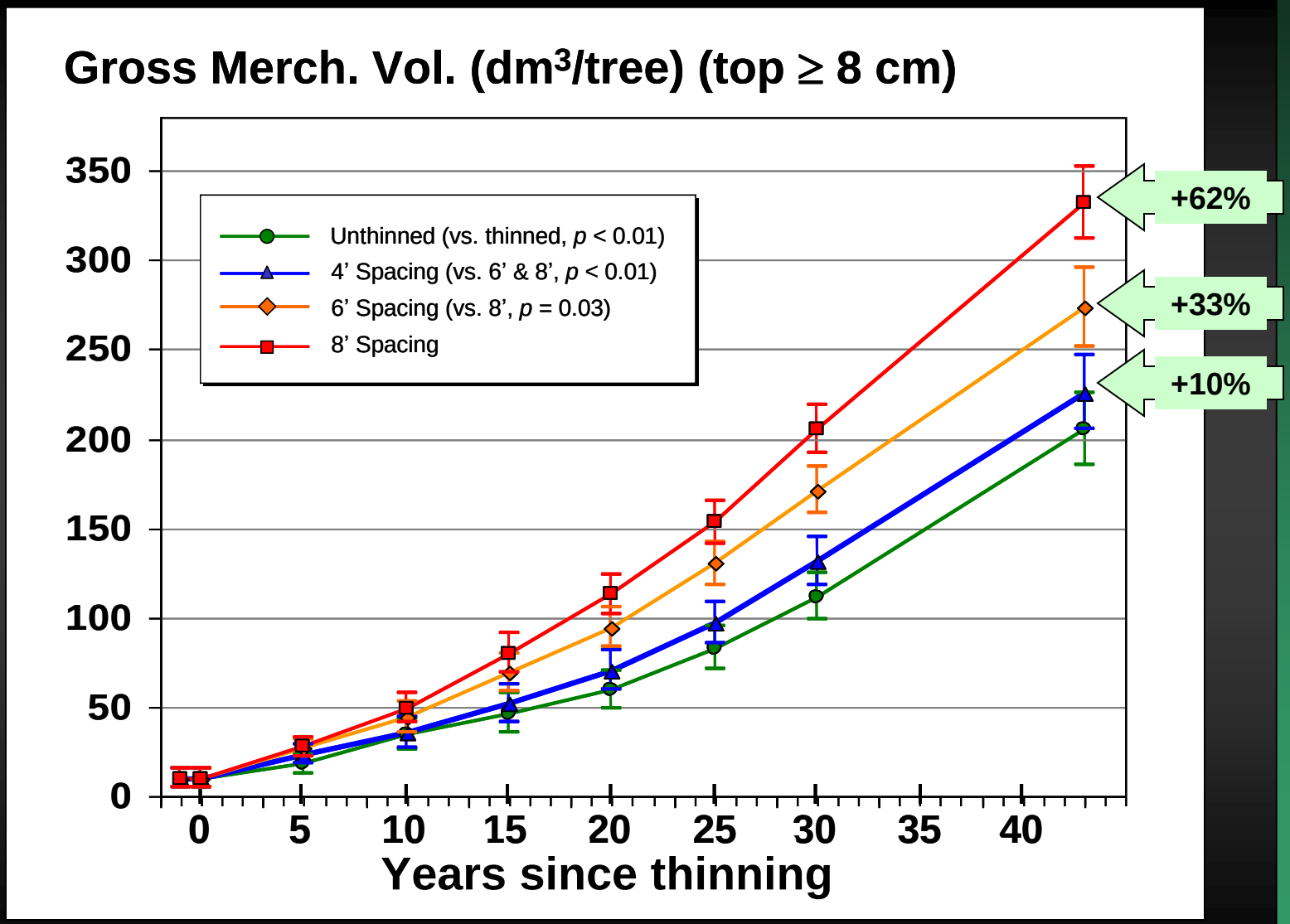
PCT – The "Green River Study"



PCT – The "Green River Study"



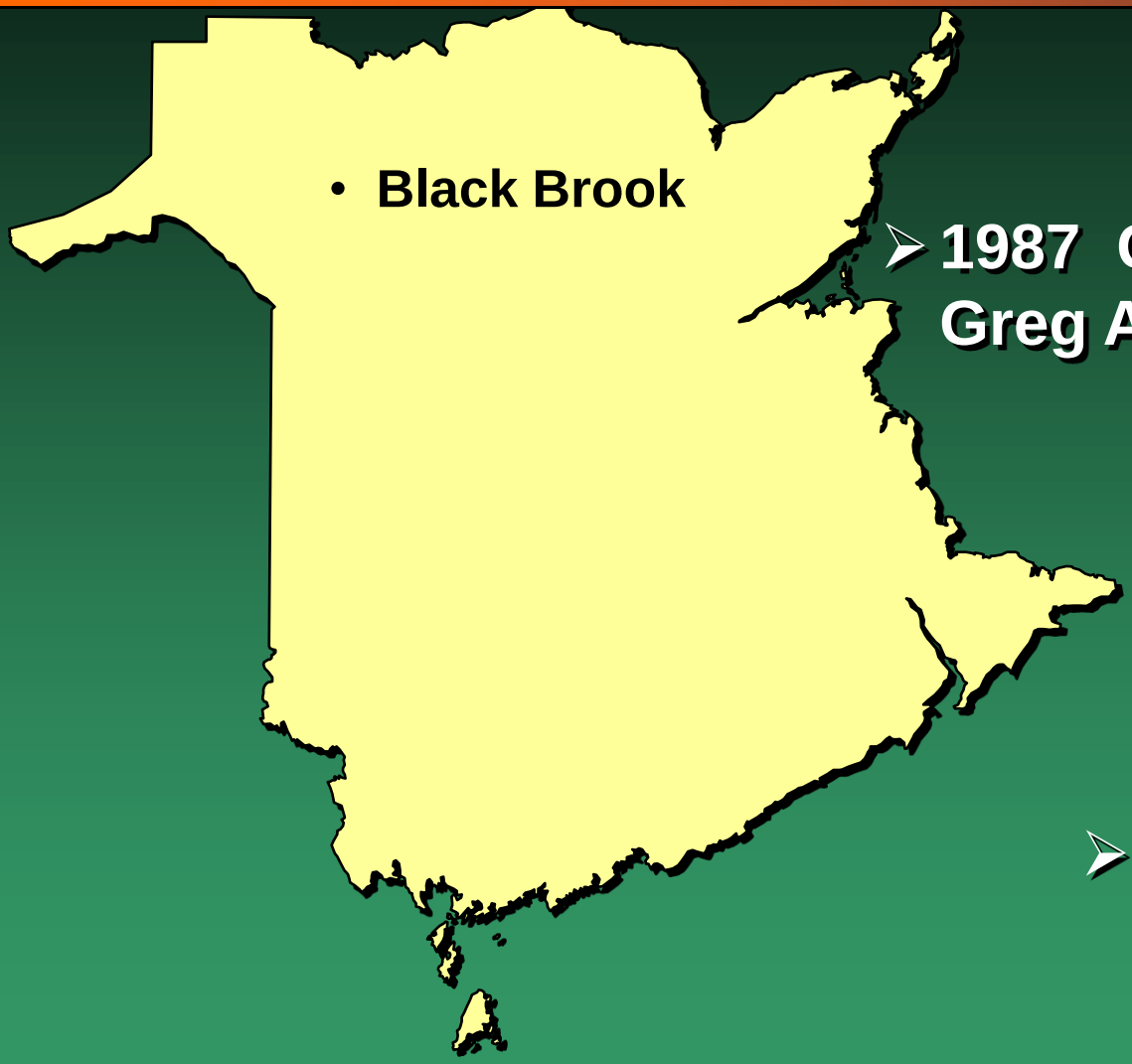
PCT – The "Green River Study"



Commercial thinning (CT)

- 40 K ha
- 5 K+ ha/yr
- Optimize stem growth & per ha production
- Manipulate species comp.
- Extract mid-rotation volume.

CT – The "Black Brook Studies"



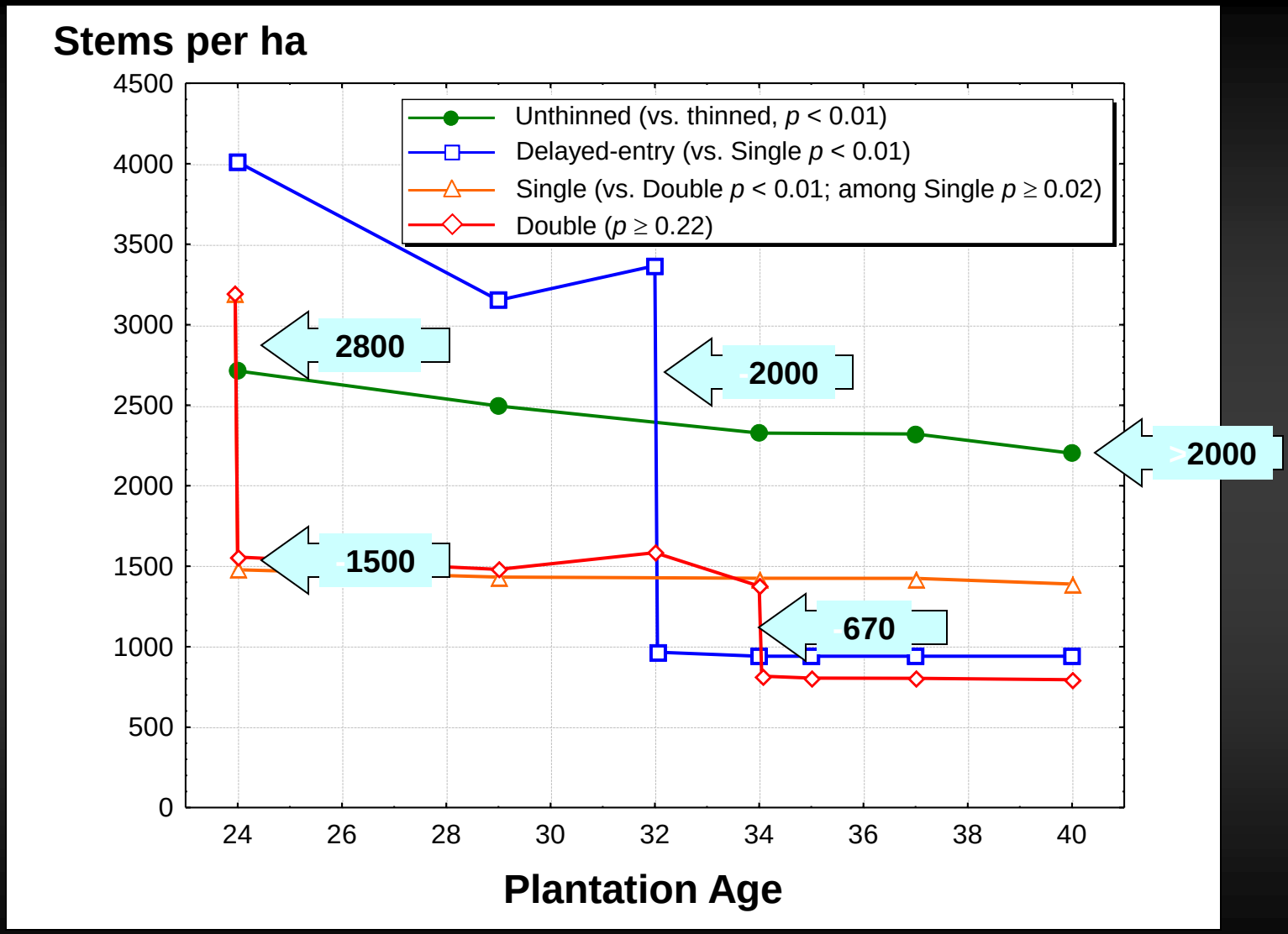
- 1987 Gaetan Pelletier & Greg Adams

- Planted Sw ages 19 and 24

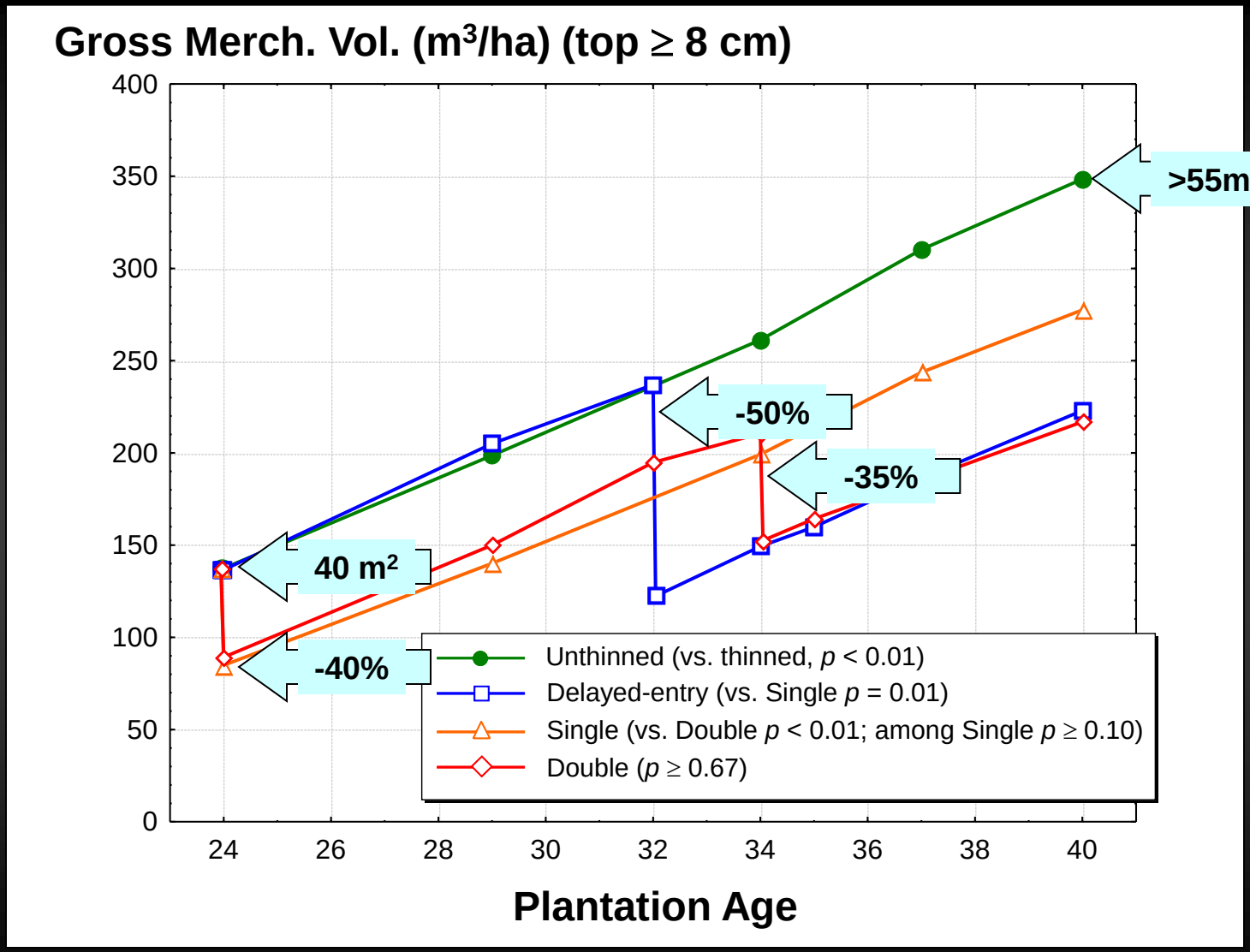
Thinning from below

No thinning

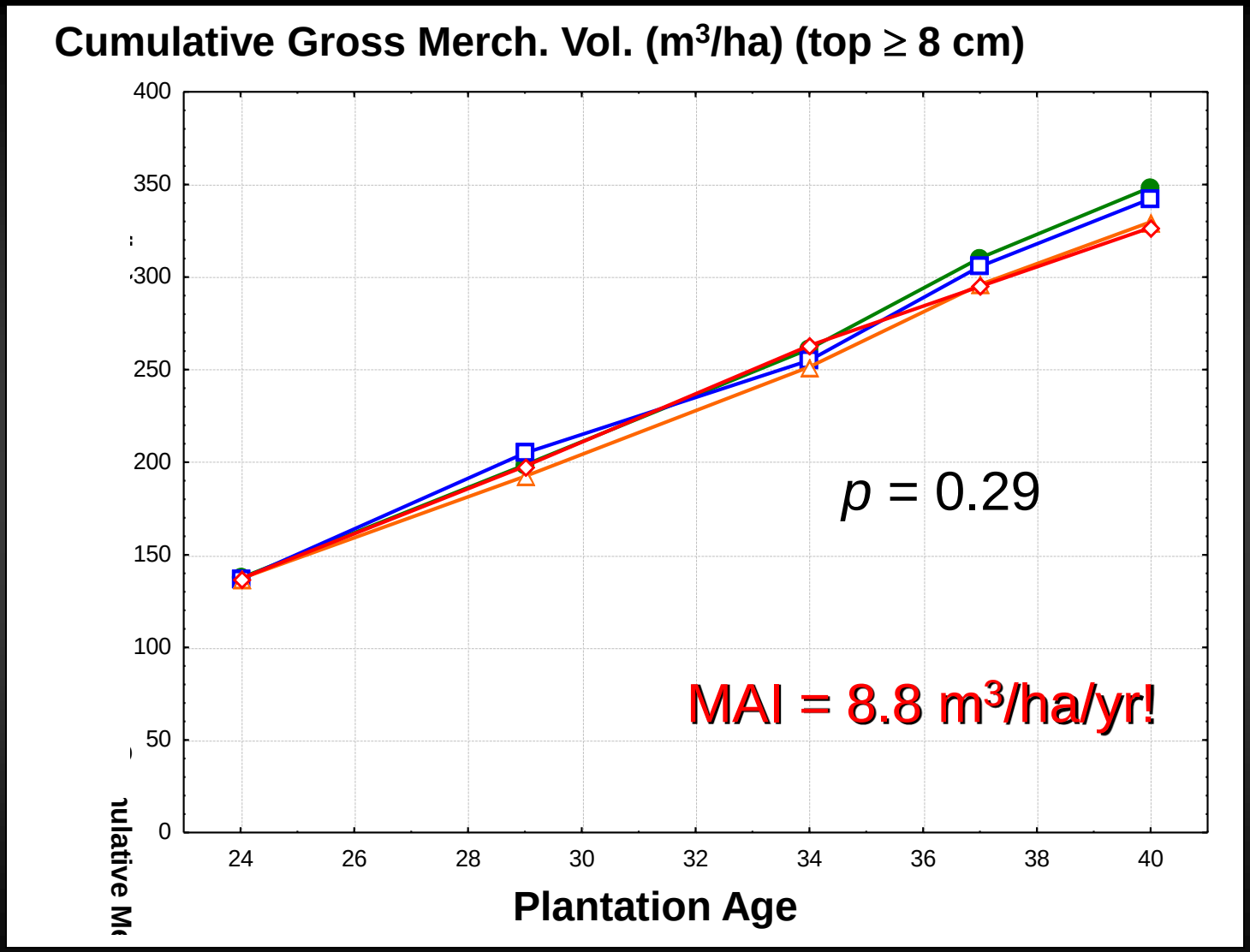
CT – The "Black Brook Studies"



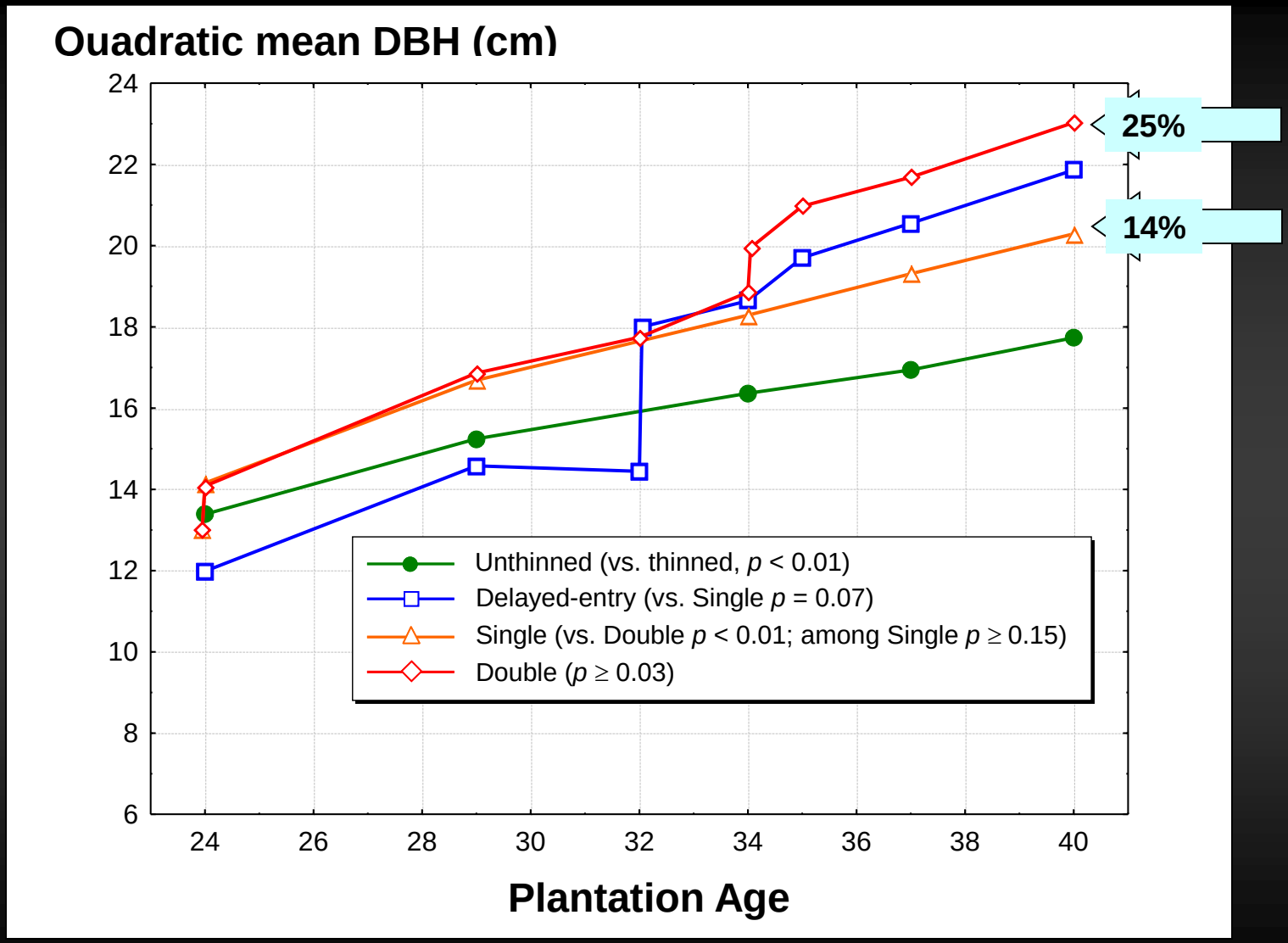
CT – The "Black Brook Studies"



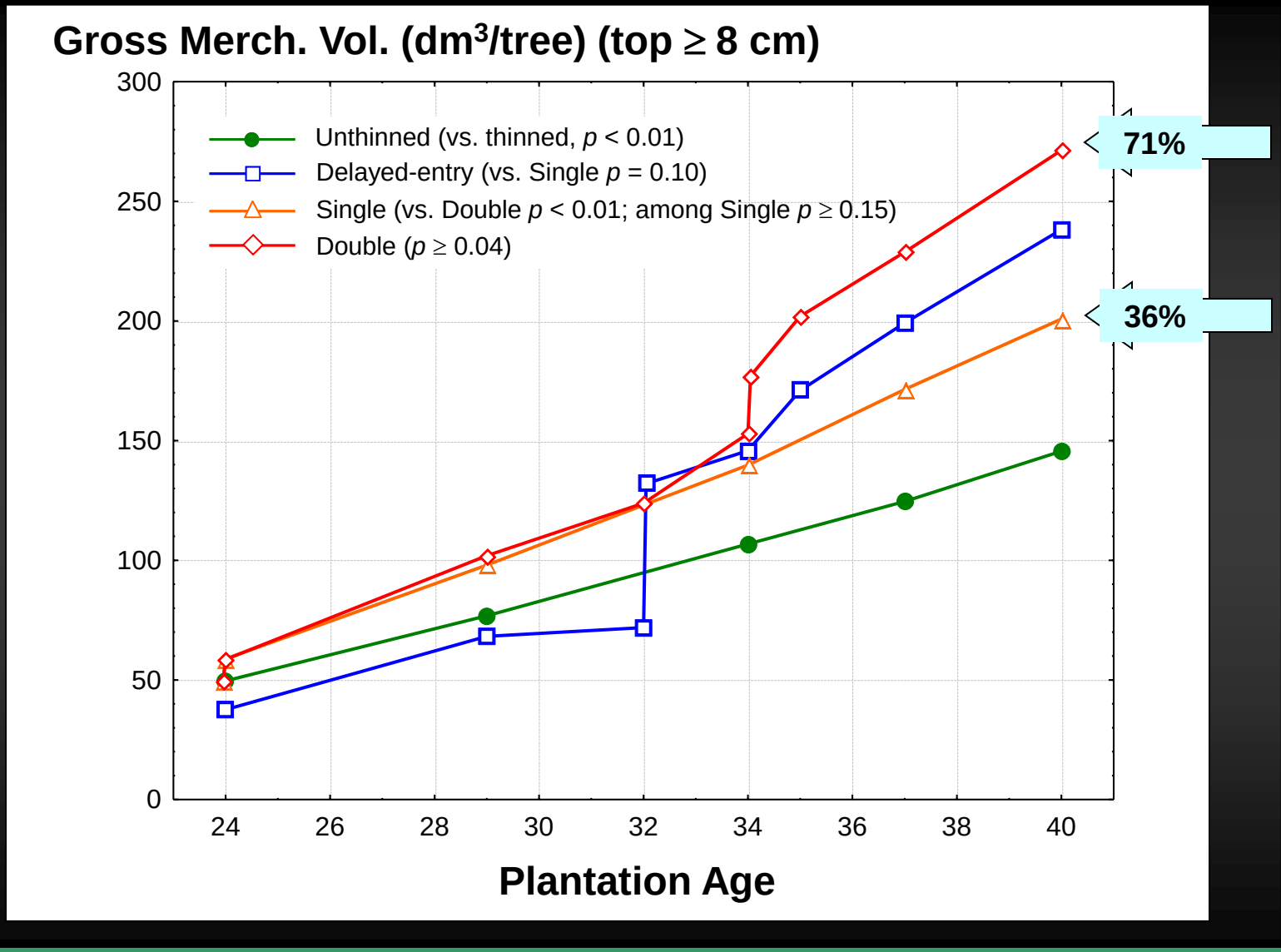
CT – The "Black Brook Studies"



CT – The "Black Brook Studies"



CT – The "Black Brook Studies"



Take-home points

- **May be significantly underestimating G&Y of managed stands.**
- **Thinning may not increase total production but DOES increase yield. Caveat: merchantability standards must be defined*.**
- **Thinning allows extraction of mid-rotation volume without affecting total production*.**
- **Thinning reduces technical *R**.**

*** Must have a crop plan!**

Take-home points

- More long-term data are needed.
- Studies such as this will continue to support the “logical extrapolation” of our existing models.
- Look for papers on these two studies in the near future!

Perspective:

- SI 20 Bf; 20 Sw
- Boreal-GLSL transition
- Latitude 47° 40-50’
- Annual precip. 100 cm
- Growing season (180-190 days)
- Start of growing season - late May
- Frost free days (100-120)


Studwood 3” top; pulpwood 2” top, < 8’

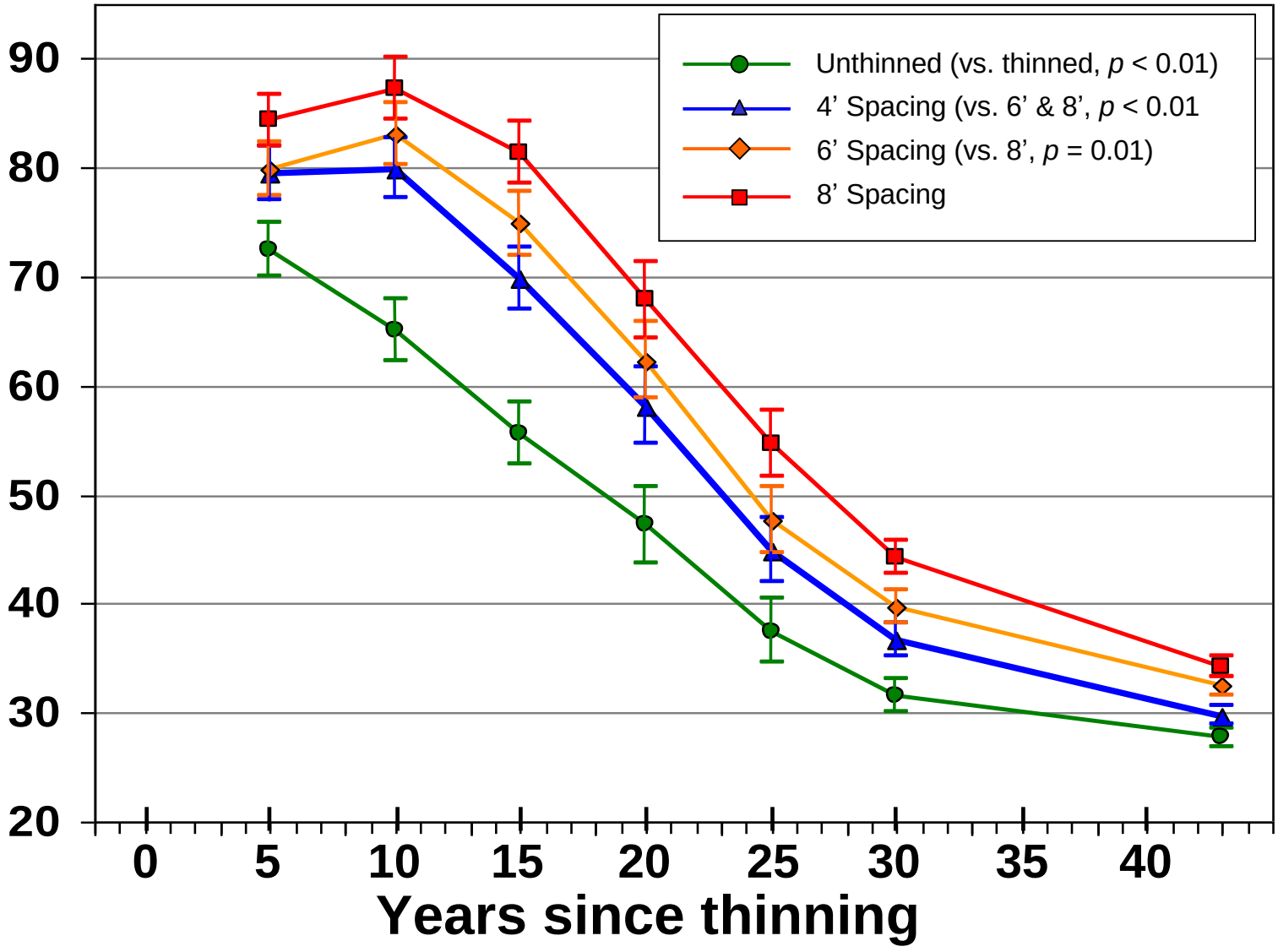
Rottne forwarder
2.8 m wide

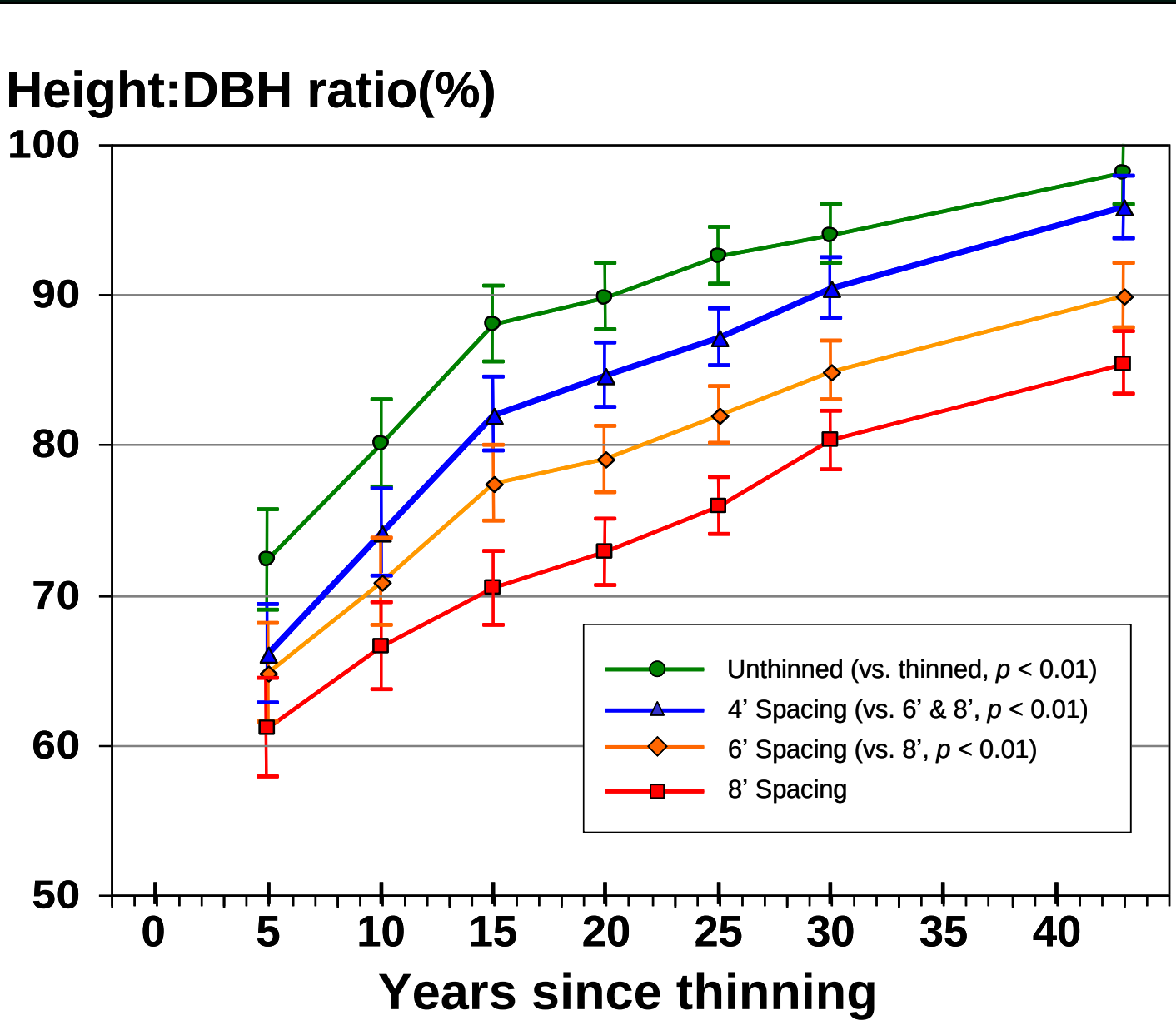

➢ 10-12 m in height (< age 35)
➢ 35 % of BA
➢ 50 – 75 m³/ha
➢ Natural stands; no PCT = no CT
ghost trail
main trail <

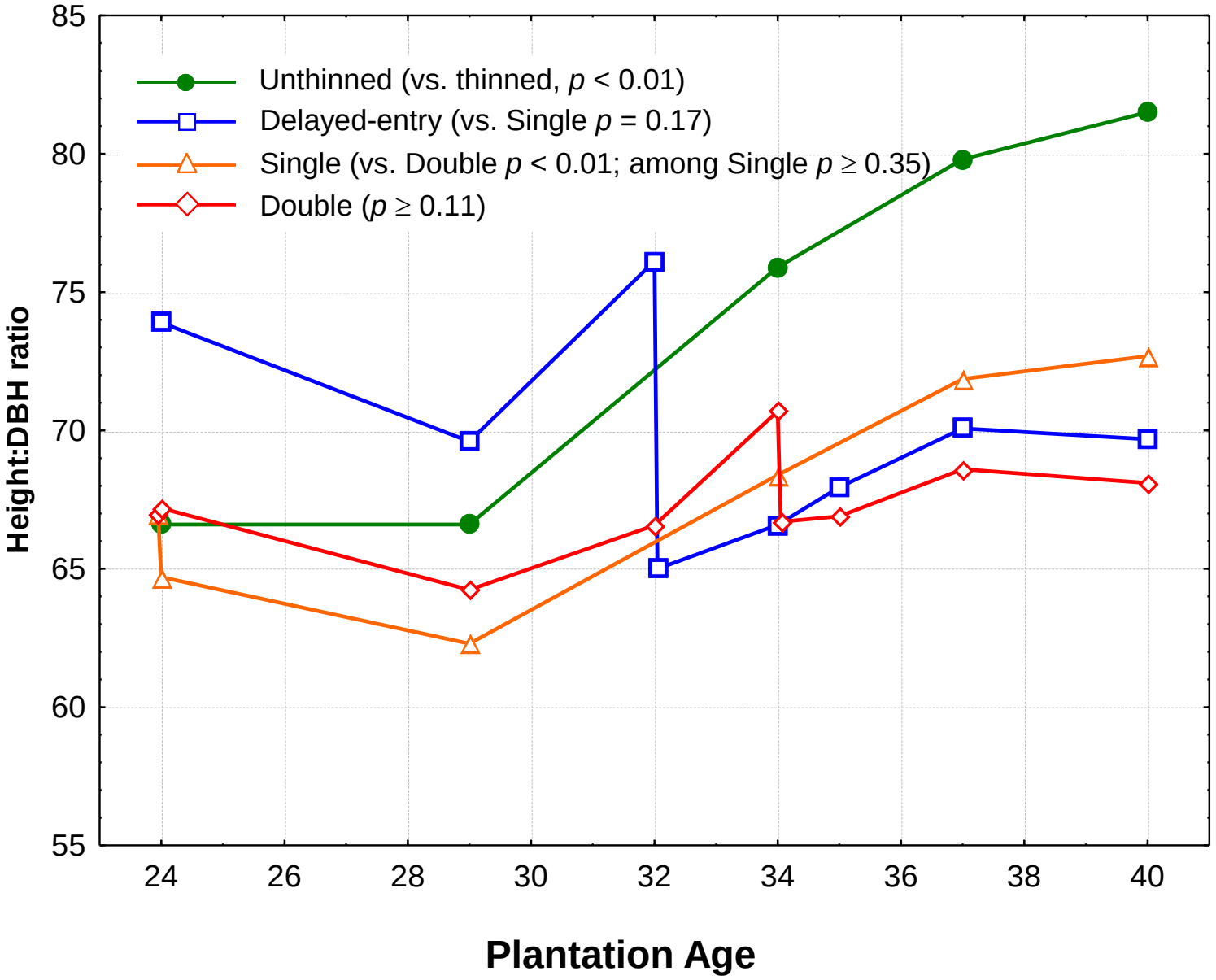

main trail
Main trails virtually disappear after 2nd thinning

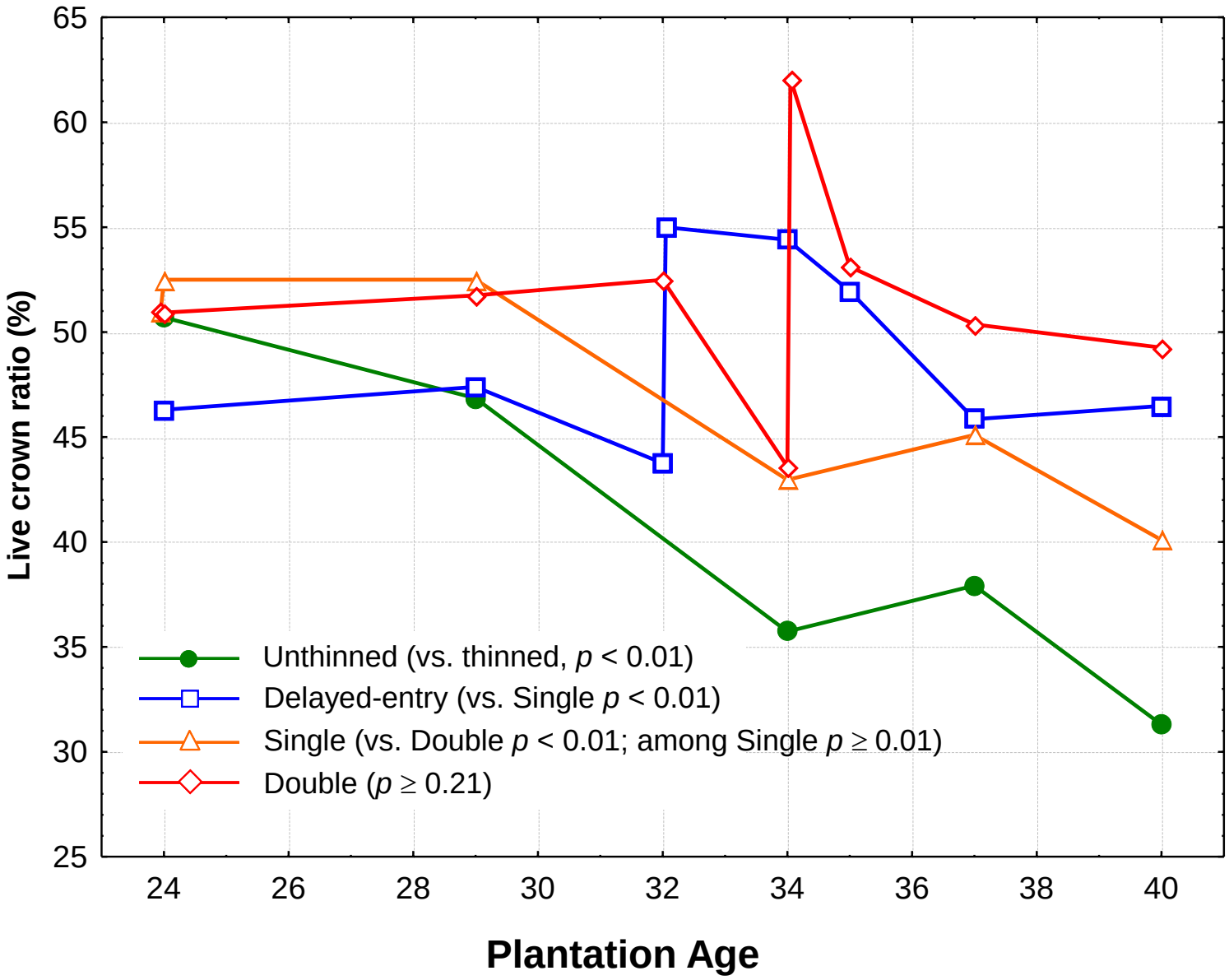

Red Spruce

Live crown ratio (%)

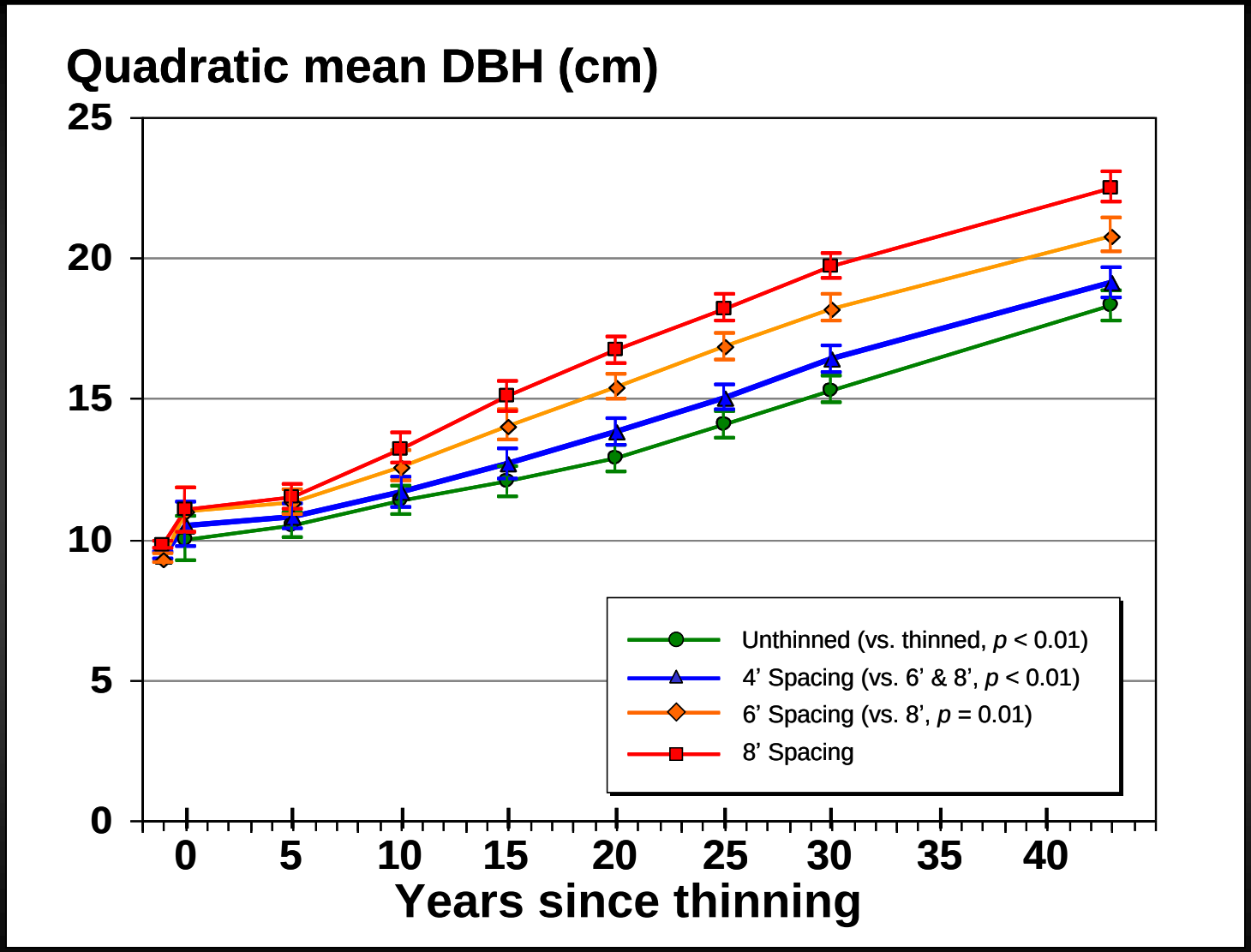



Height:DBH ratio(%)
100
90
80
70
60
50
0
5
10
15
20
25
30
35
40
Years since thinning
Unthinned (vs. thinned, p < 0.01)
4' Spacing (vs. 6' & 8', p < 0.01)
6' Spacing (vs. 8', p < 0.01)
8' Spacing


Unthinned (vs. thinned, p < 0.01)
Delayed-entry (vs. Single p = 0.17)
Single (vs. Double p < 0.01; among Single p ≥ 0.35)
Double (p ≥ 0.11)
Height:DBH ratio
85
80
75
70
65
60
55
24
26
28
30
32
34
36
38
40
Plantation Age


Live crown ratio (%)
65
60
55
50
45
40
35
30
25
24
26
28
30
32
34
36
38
40
Plantation Age
Unthinned (vs. thinned, p < 0.01)
Delayed-entry (vs. Single p < 0.01)
Single (vs. Double p < 0.01; among Single p ≥ 0.01)
Double (p ≥ 0.21)

PCT – The "Green River Study"



Take-home points

- **We may be significantly underestimating G&Y of managed stands.**