

Seedling Quality

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“The quality of planting stock is the degree to which the stock realises the objectives of management (to the end of the rotation or achievement of specified sought benefits) at minimum cost.

Quality is fitness for purpose.”

Willen and Sutton (1980)

Early seedling grade

Longleaf 1935 (Wakeley)

Grade	Usual needle lengths	Stems
1	12 to 18 inches	3/16 to 1/2 inch
2	Intermediate	Intermediate
3	6 to 8 inches	Very slender

Early seedling grade

Loblolly 1935 (Wakeley)

Grade	Usual heights	Stems
1	8 to 14 inches	Stout woody
2	Mostly less than Grade 1	Spindling to moderately stout
3	All less than Grade 2	Spindling succulent

Early seedling grade

Slash 1935 (Wakeley)

Grade	Usual heights	Stems
1	10 to 16 inches	Stout woody
2	Mostly less than Grade 1	Spindling to moderately stout
3	All less than Grade 2	Spindling succulent

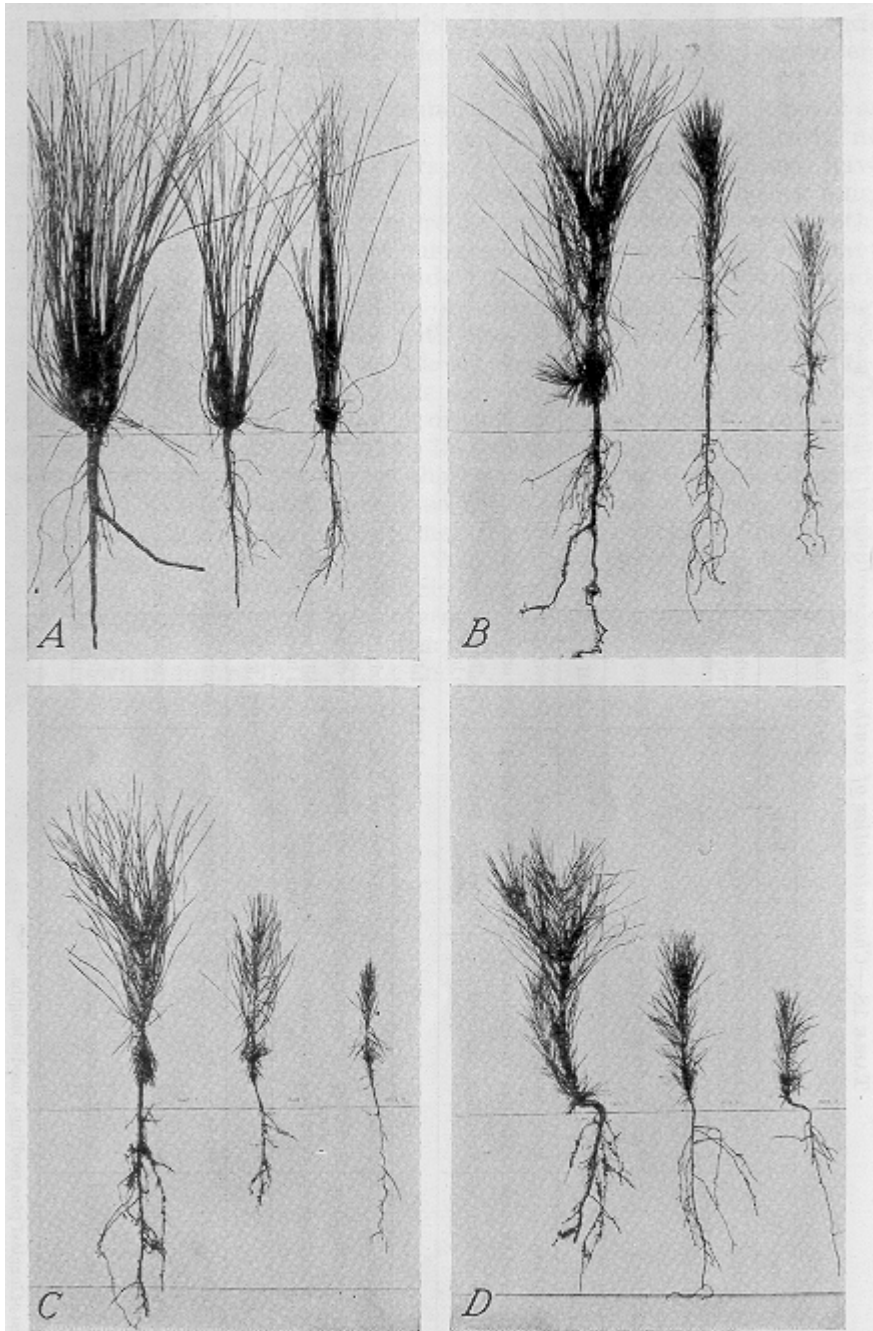
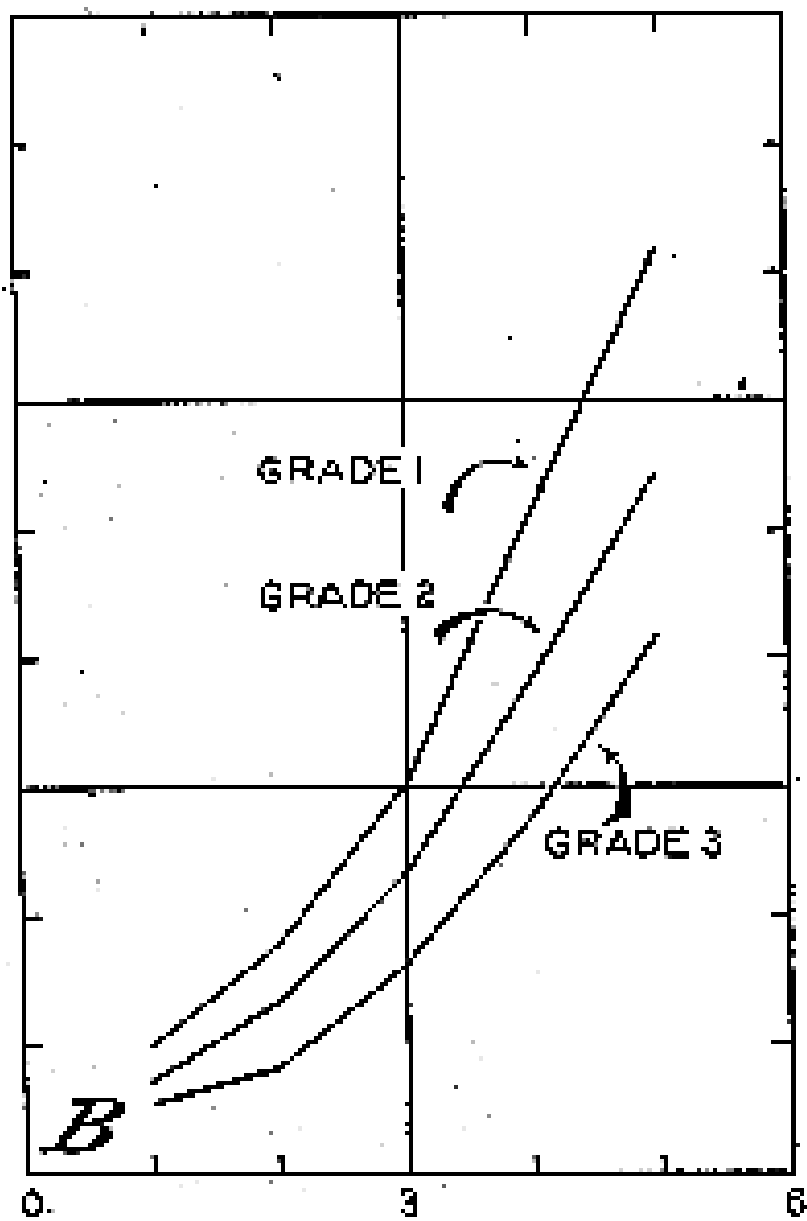
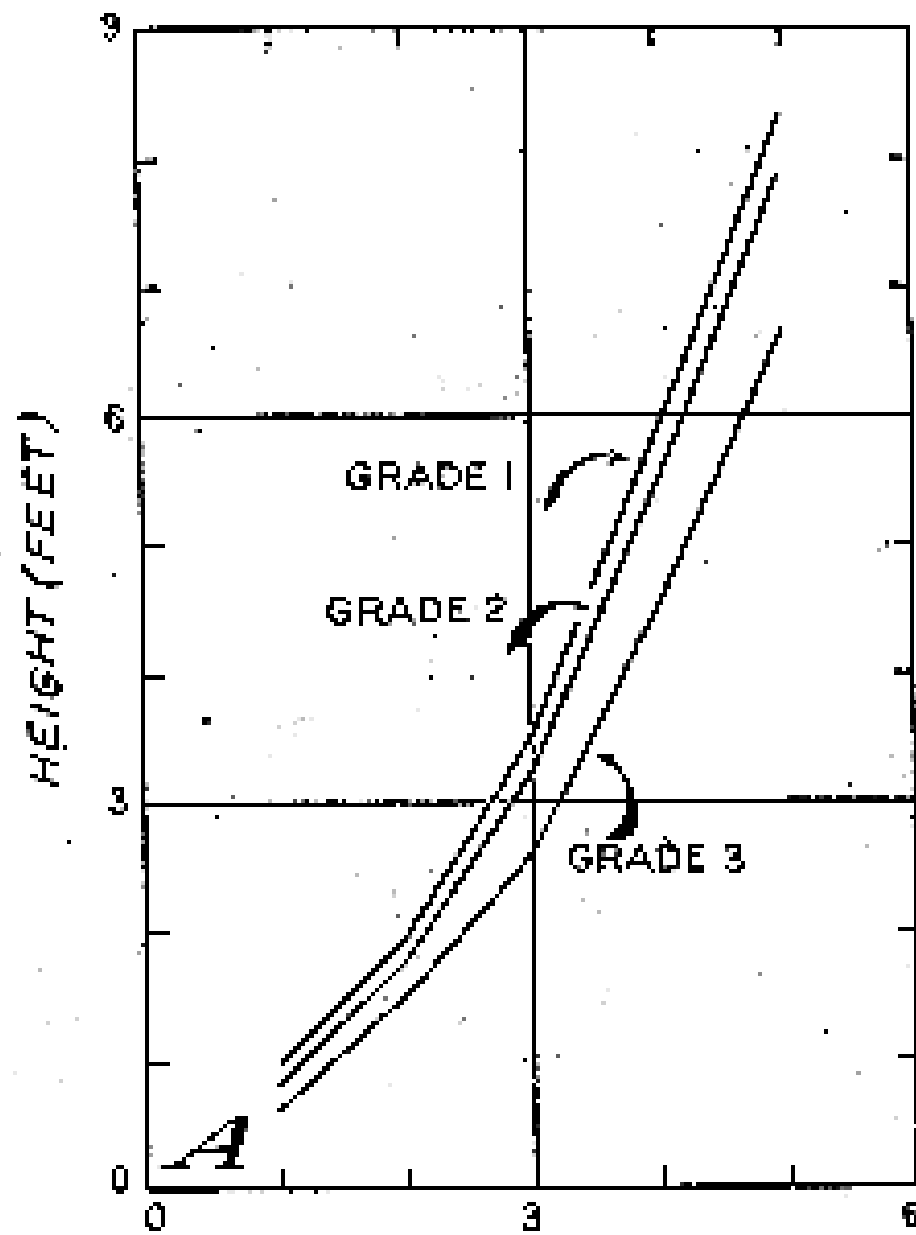


FIGURE 13.—Graded seedlings of southern pines, grades 1, 2, and 3 (from left to right):
A, Longleaf; B, slash; C, loblolly; D, shortleaf.



Updated seedling grade

Longleaf 1984 (May)

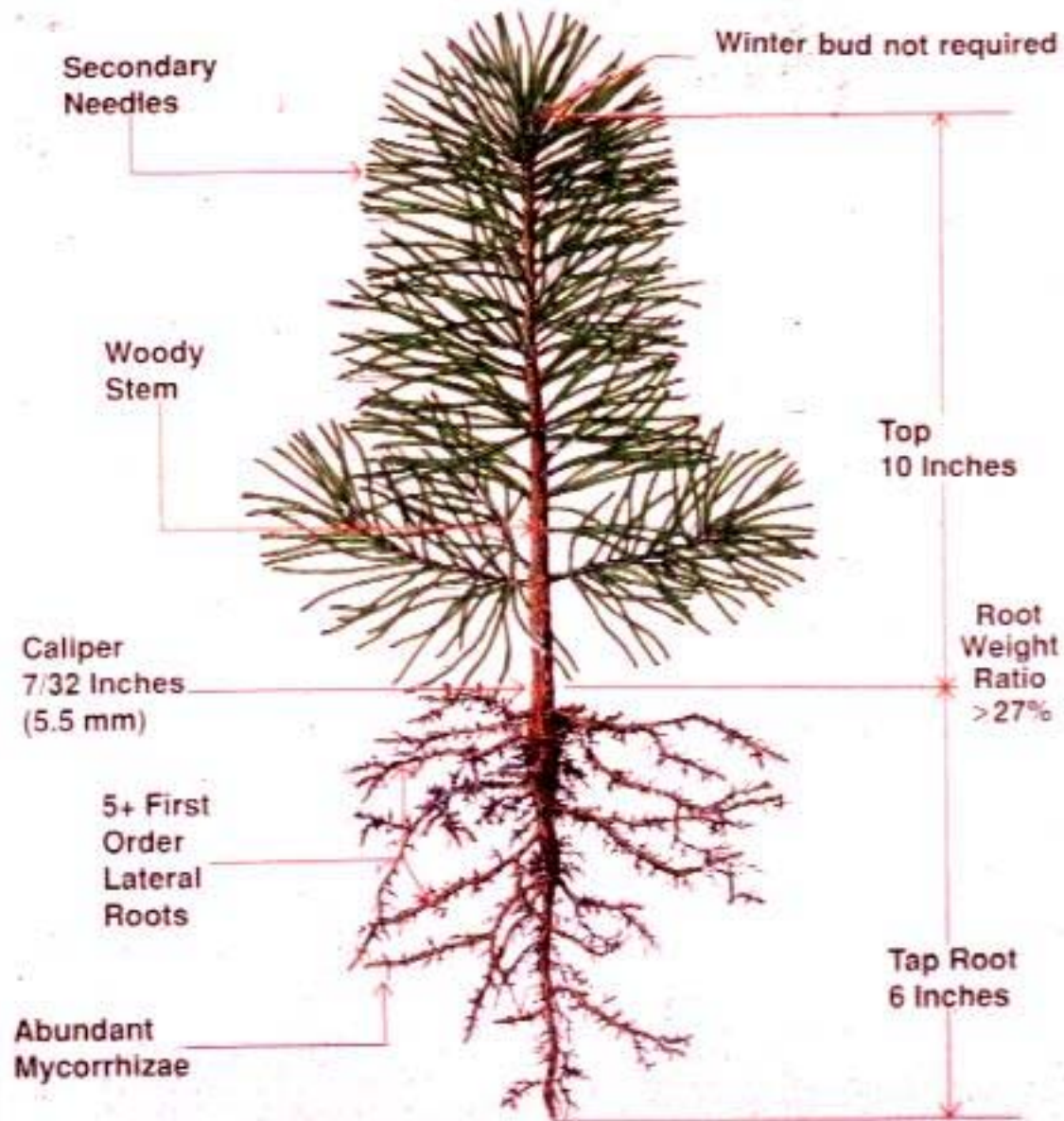
Grade	Usual needle lengths	Stems
1	6 to 8 inches clipped	11/16 inch
2	6 to 8 inches clipped	1/2 inch
3-cull		< 1/2 inch

Updated seedling grade

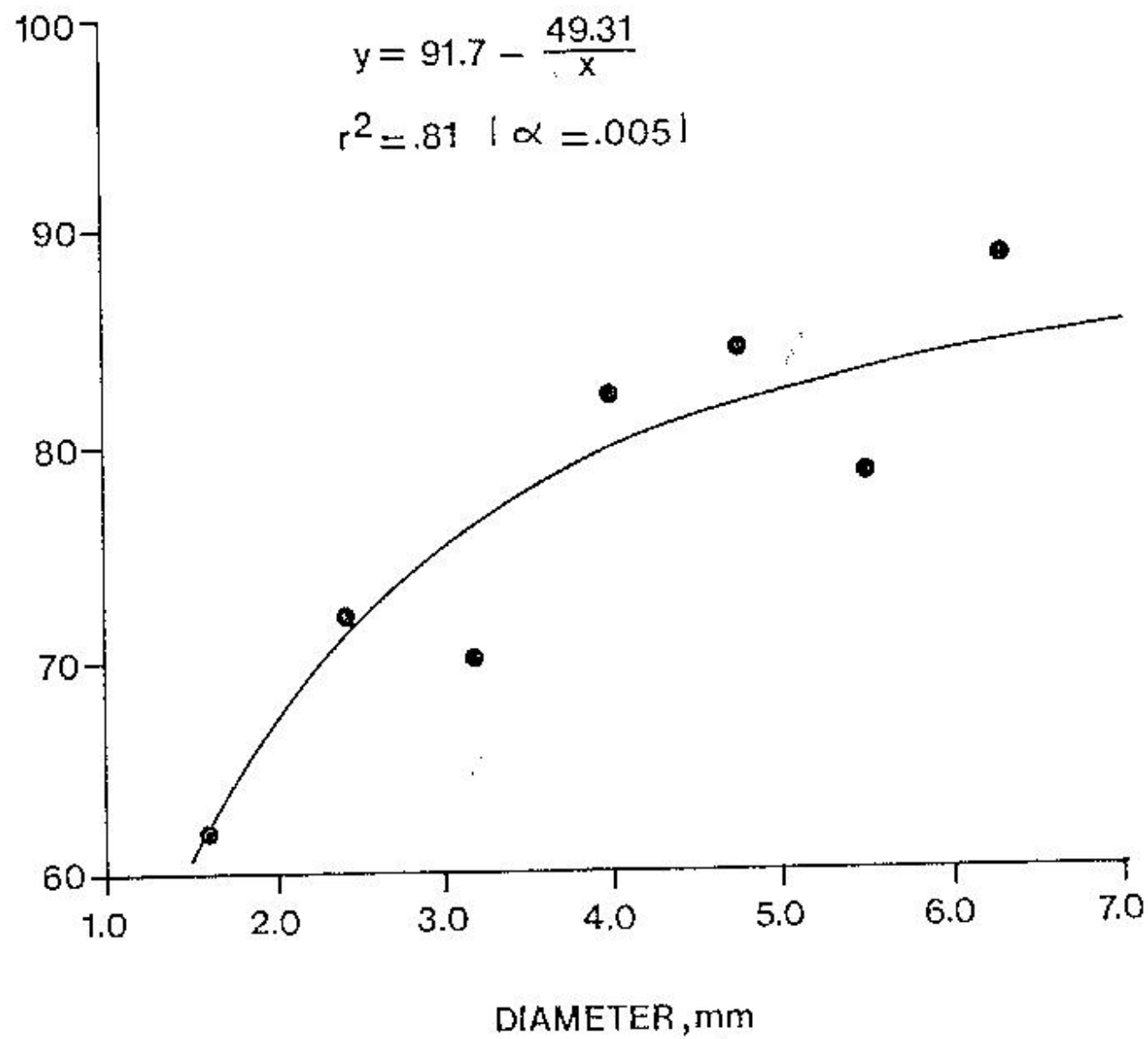
Loblolly and Slash 1984 (May)

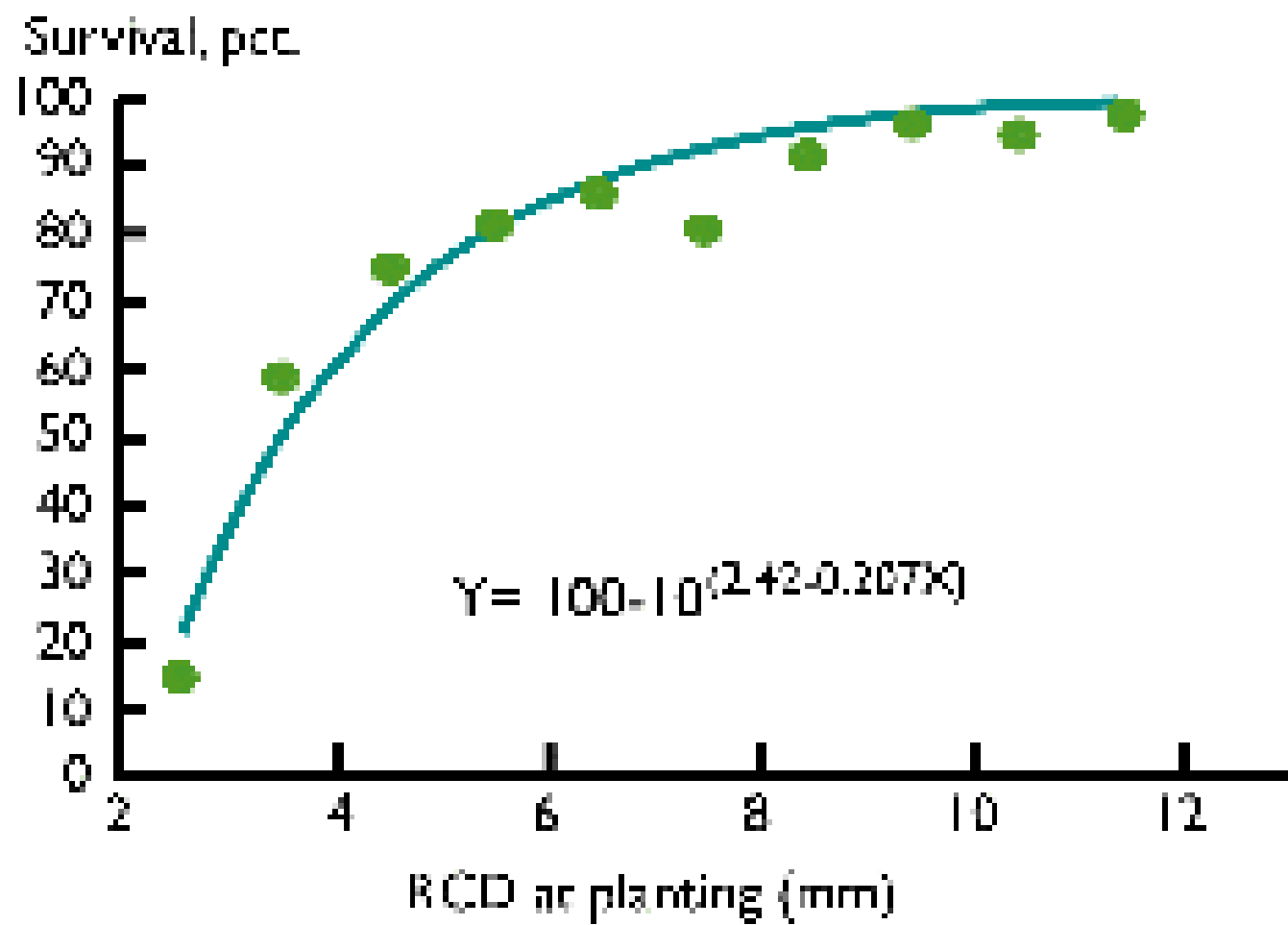
Grade	Usual heights	Stems
1	9 to 12 inches	3/16 – 5/16
2	6 - 10 inches	1/8 – 3/16
3	3 – 12 inches	< 1/8 inch

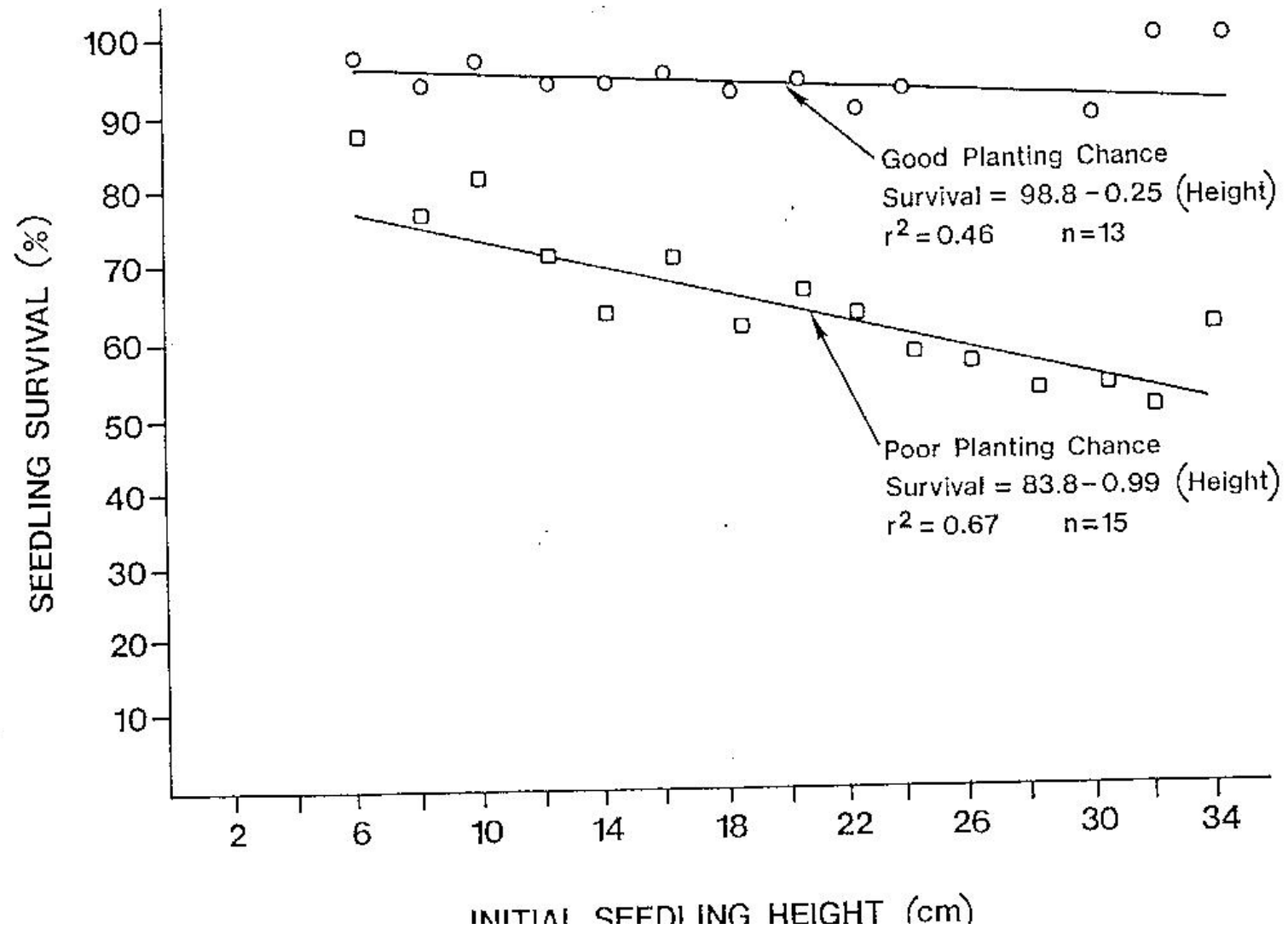
THE OPTIMUM LOBLOLLY PINE SEEDLING

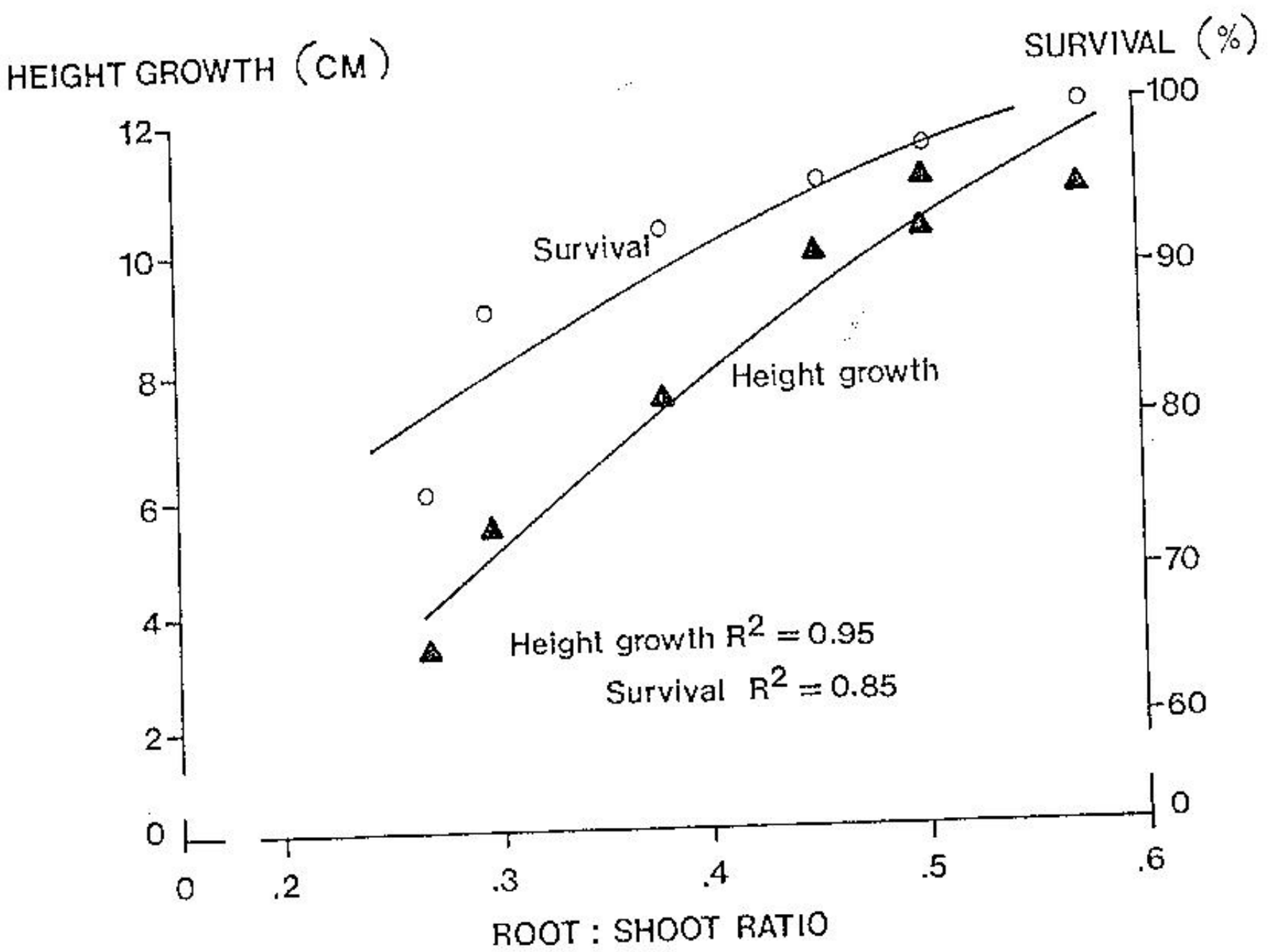


SURVIVAL (%)









SURVIVAL (%)

100

80

60

40

20

0

≤ 2

3-5

6-8

9-11

12-14

15-17

> 17

PRIMARY LATERALS (#)

○ = LOW FIBROSITY

△ = MEDIUM FIBROSITY

□ = HIGH FIBROSITY

$$y = 22.8 + 2.7x$$

$$y = 53.4 + 1.8x$$

$$y = 75.4 + 0.6x$$

$$r = .96$$

$$r = .85$$

$$r = .59$$

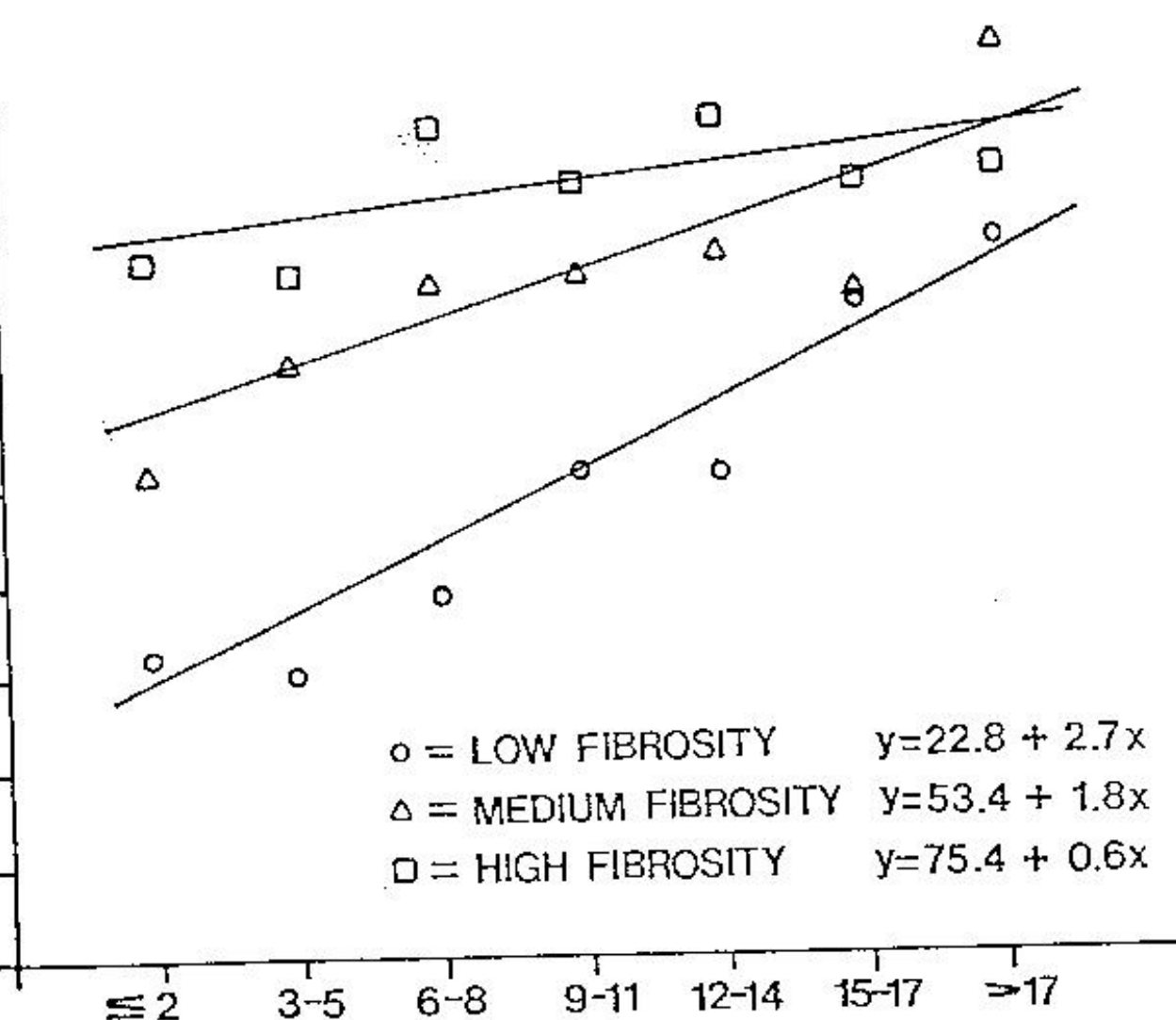
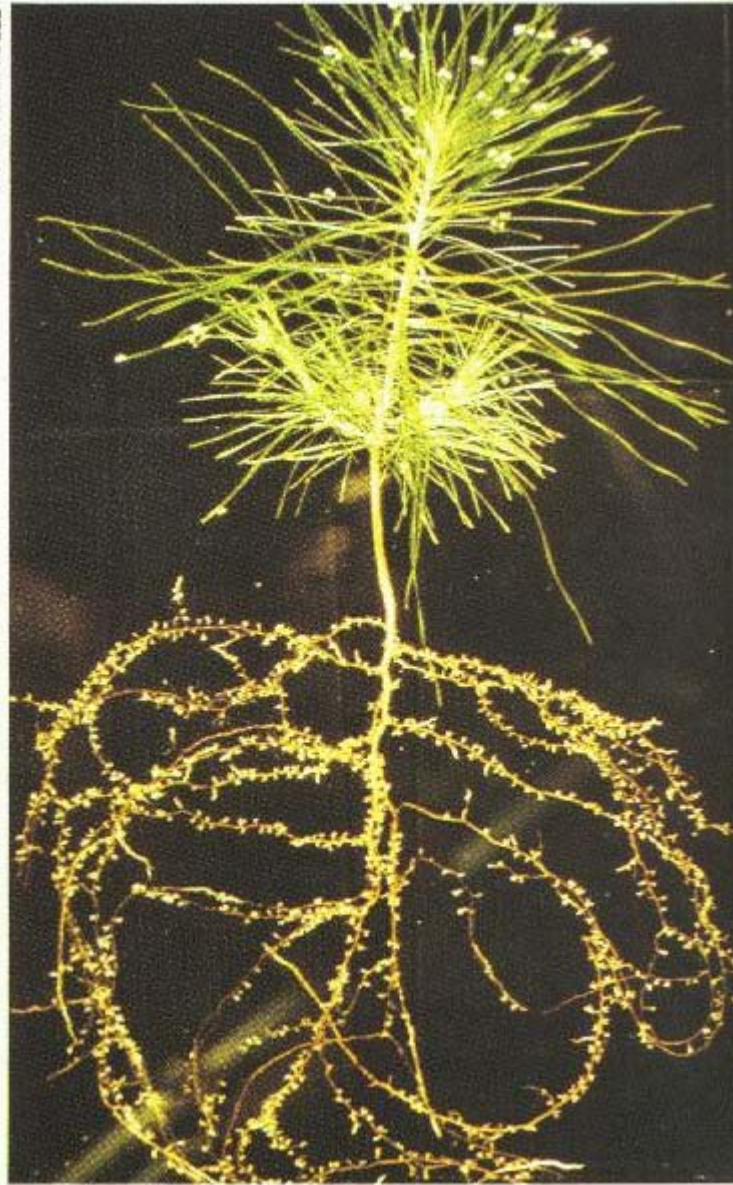
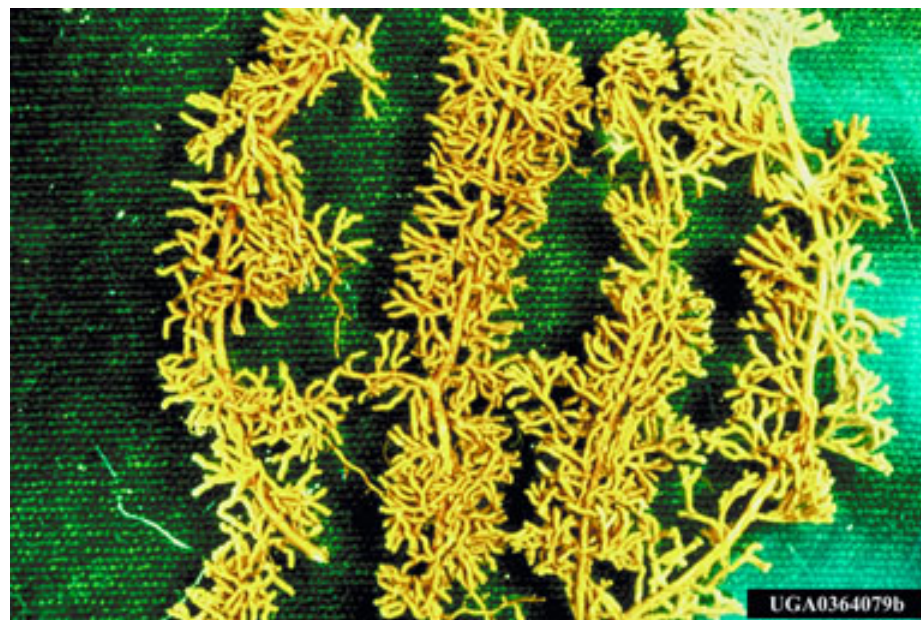
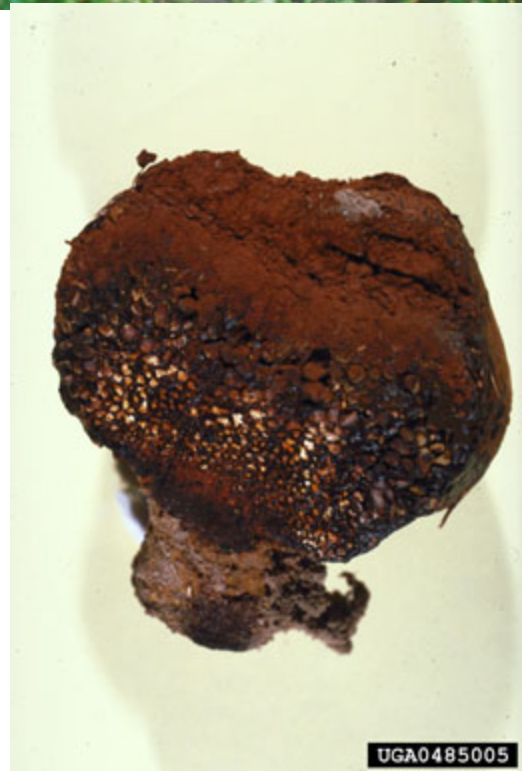


PHOTO: ED CORELL



High-quality seedlings have dense, fibrous root systems.



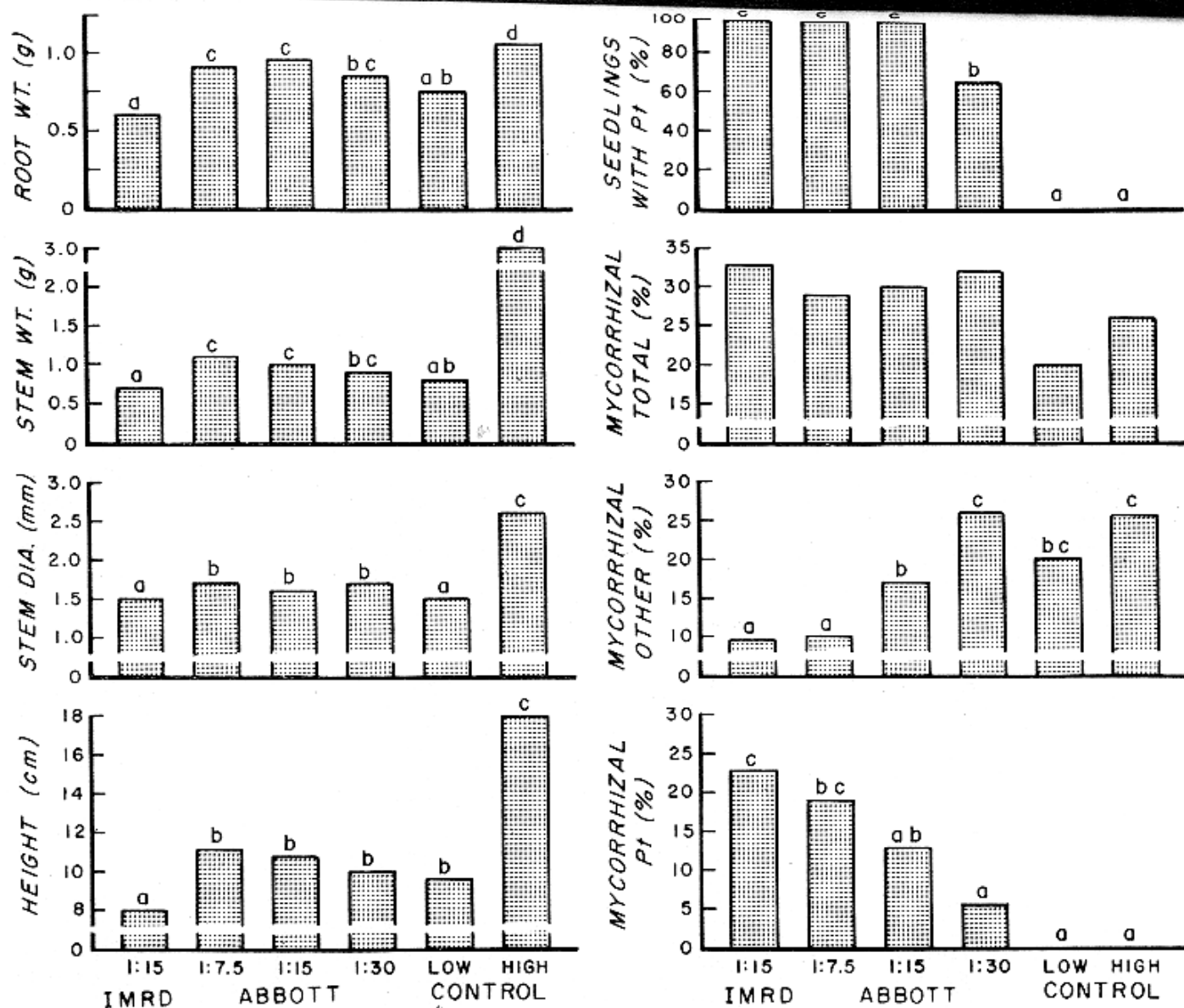


Figure 1.--Shortleaf pine seedling characteristics at the time of outplanting (July 1978). Separately for each seedling characteristic, treatments with the same letter are not significantly different at the 0.05 level.

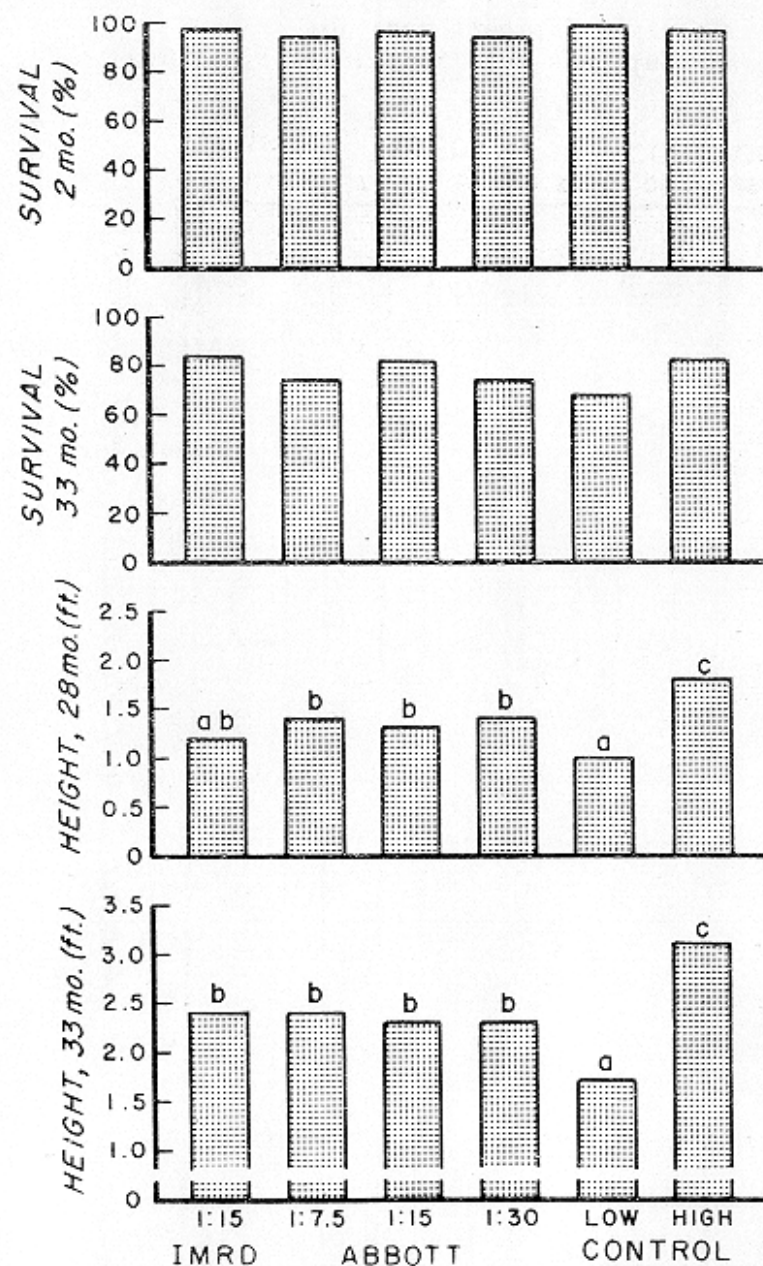


Figure 2.--Summary of shortleaf (left) and loblolly pine seedling survival and height at 28 and 33 months after outplanting. Separately for each letter are not significantly different.





Figure 1--Interim specifications for longleaf pine container seedlings.

Characteristics	Preferred	Not Acceptable
Needles		
Length if not top clipped	8 to 12 inches	< 4 inches
Length if top clipped	6 to 10 inches	< 4 inches
Fascicles	Many present	None present
Color	Medium to dark green	Yellow or brown
Roots		
Root collar diameter ^a	$\geq \frac{1}{4}$ inch	< $\frac{3}{16}$ inch
Color	Light brown with white tips	Black (diseased)
Mycorrhizae	Present (the more the better)	
Evidence of disease	None present	Any present
Root spiraling	None present	Any noticeable amount
Buds		
Present	Present on 90 percent of crop	
Color	Green to brown	Yellow or chlorotic
Container size (per plant)		
Diameter	≥ 1.5 inches	< 1 inch
Length	≥ 4.5 inches	< 3.5 inches
Volume	≥ 6 cubic inches	< 5.5 cubic inches
Other important attributes		
Firmness: Plug stays intact when extracted and during handling; no loss of potting medium.		
Moisture: Root plug is always moist, never dry.		
Pests: No competing weeds or insects are present.		
Sonderegger: Buyer specifies whether to cull Sonderegger seedlings.		

SUMMARY

Some seedling quality attributes can be supported with data from research studies....

However, some claims regarding the importance of various seedling quality attributes are based on intuition and guesses.....