

### INCREMENT

Rate at which a tree/ crop increases with age

Girth/ Dia increment primarily dep. upon 1. quality of locality; 2. Crown size; 3. age; 4. Origin and treatment

Height increment primarily dep. upon 1. quality of locality; 2. species; 3. age; 4. Origin and treatment

Zone of optimum gives best increment

Optimum space for optimum growth

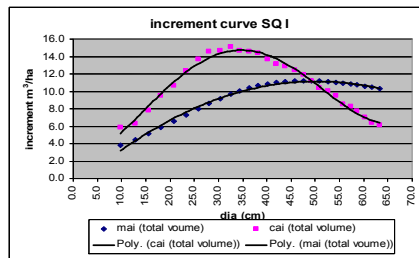
1. CAI – actual increase in volume each year
2. Vol. at any age = sum of CAI for each yr upto that year
3. MAI = total I upto any specific age/ that age
4. MAI at any age = volume at that age/ that age
5. Final MAI = MAI for whole rotation  
= yield from the final crop + thinning/ the rotation

CAI – small in seedling stage  
becomes progressively greater  
and after attaining a max., drops till mortality occurs

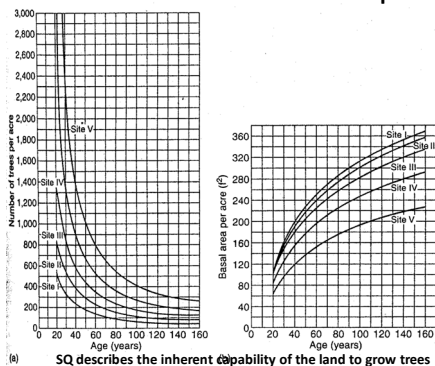
### MAI and CAI

- MAI – Average growth of a stand upto a particular age
  - Rises gradually
  - Below CAI at the beginning
- CAI – Annual growth during a particular year.
  - CAI rises, peaks, and declines
  - Above MAI when MAI is rising
  - Equals MAI, when MAI is maximum
  - Below MAI when MAI declines

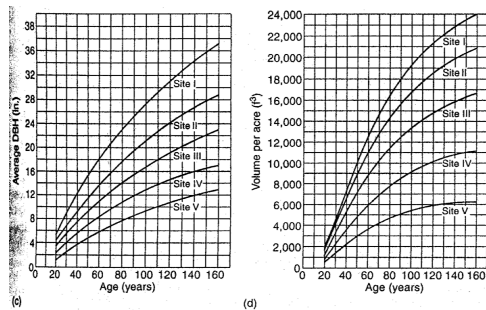
### Increment Curves for SQ 1 Sal



### Stand structure and Site quality



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### I. Increment %

If 'V' is the present volume of the crop;  
'v' is the volume of crop 'n' years ago

$$CAI = \frac{V-v}{n}$$

The average vol. producing this CAI =  $\frac{V+v}{2}$

The proportion of the growth to the volume at different ages during life of a crop

Increment Percent (p)

Pressler's formula

$$\frac{\text{Increment}}{\text{Volume}} \times 100 = \frac{V-v}{n} \times \frac{2}{V+v} \times 100 = \frac{V-v}{V+v} \times \frac{200}{n}$$

Any intermediate yield obtained during the intervening period (n) is to be added to V to get the correct result

IP is large at the early life but decreases thereafter rapidly.

IP for the year (r) in which MAI culminates (CAI = MAI)

$$p = \frac{100}{r}$$

Schneider's formula

(applicable only for ring porous wood)

$$p = \frac{400}{n D}$$

P = annual increment;  
400 is an empirical figure (to be used for mature trees whose height growth has ceased);  
D is dbh in inches;  
n is no. of annual rings in the last inch of the radius.

### II. Quality increment %

$$p = \frac{K-k}{K+k} \times \frac{200}{n}$$

k is the value of unit volume rising to value K during the course of 'n' years

### III. Price increment %

$$p = \frac{P_2 - P_1}{P_2 + P_1} \times \frac{200}{n}$$

P<sub>1</sub> - price of a unit vol of wood 'n' years ago  
P<sub>2</sub> - present price

Growing stock, AGs ....