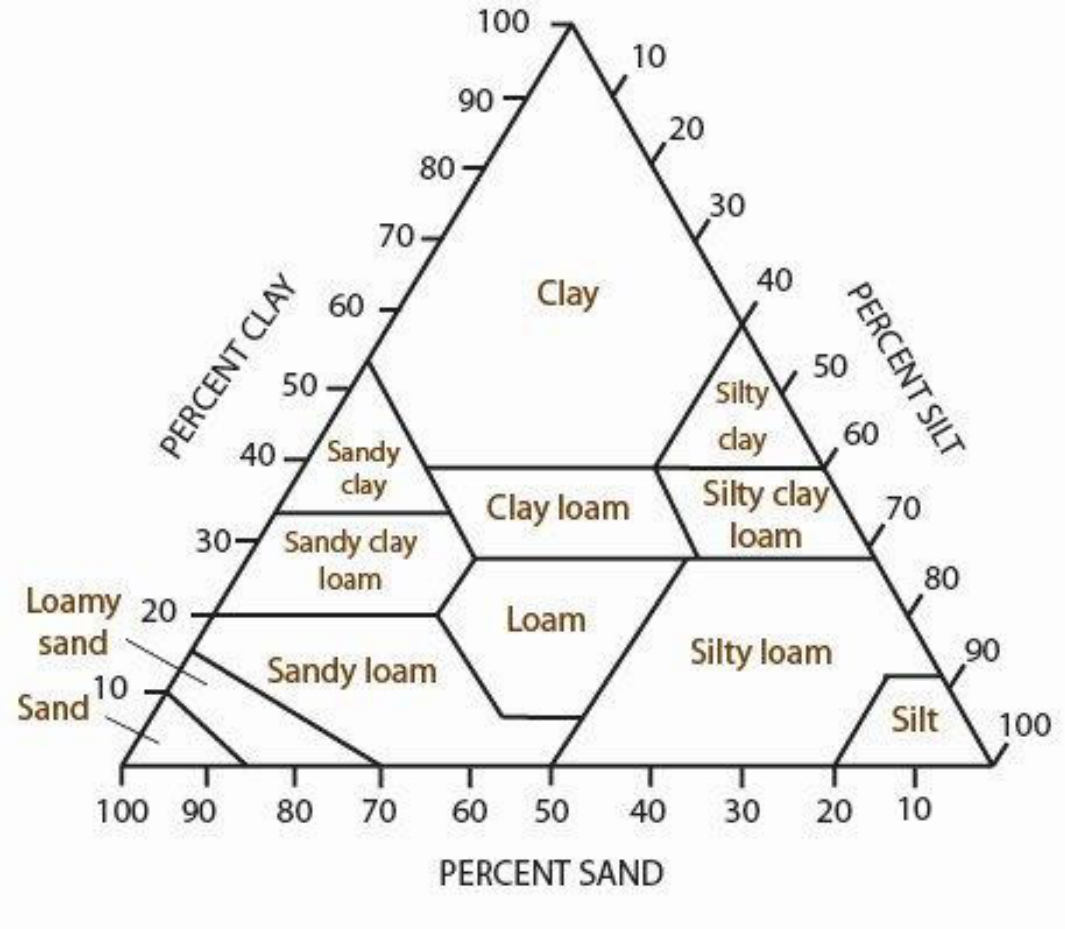
Tree Biology



Determining the texture of soil is important, because soil texture influences the performance of soil for water retention, water movement, and soil stability under compression."

Amelia Murtha

Tree Biology

- Tree Growth and Development
  - –Genetic potential
  - –Environmental conditions
    - Responces to light, gravity and temperature
      - –Plant growth regulators or hormones

Tree Biology

Tree Biology

Tree Biology

TABLE 1: Flood Tolerance of Selected Trees

-- Tolerant --	-- Moderately tolerant --	-- Intolerant --	
Silver maple	Red mulberry	American ash	Shortleaf pine
Sweetgum	Swamp chestnut oak	Chinkapin oak	Virginia pine
Persimmon	Hackberry	Mockemut hickory	Eastern red cedar
Green ash	Winged elm	Shagbark hickory	Eastern redbud
Honeylocust	Hawthorn	Black locust	Black walnut
Overcup oak	Osage orange	sassafras	Swamp hickory
Eastern cottonwood	Boxelder	Flowering dogwood	American beech
Water hickory	Loblolly pine	Sourwood	Tulip poplar
Black willow	River birch	Southern red oak	Yellow buckeye
Tupelo gum	American elm	American basswood	Sugar maple
Bald cypress	Sycamore	Blackjack oak	Post oak
	American holly	Black cherry	

Tree Biology

- Plant hormones
  - –Auxins (tropisms)
  - –Gibberellins
  - –Cytokinins
  - –Ethelyne
  - –Abscissic acid

Tree Biology

- Plant hormones
  - –Functions
    - Cell division
    - Cell elongation
    - Flowering
    - Fruit ripening
    - Leaf drop
    - Dormancy

Tree Biology

- Abscission zone
  - Enable leaf drop
  - Protect the stem against desiccation and pathogen entry

Tree Biology

- Apical dominance
  - –Decurrent
    - Maturity
    - Environmental conditions
  - –Excurrent
    - Environmental conditions

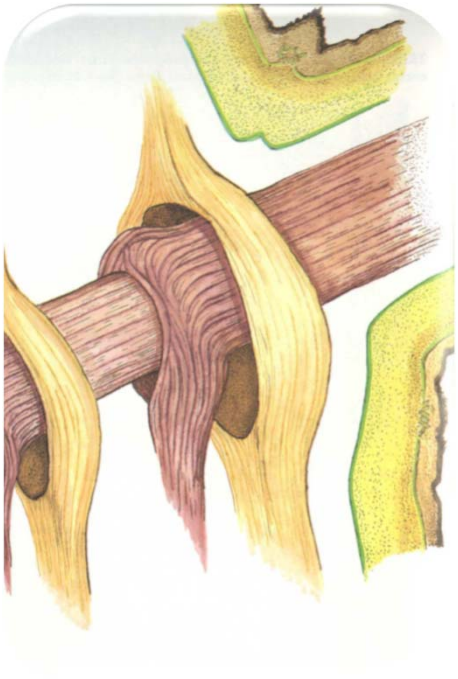
Tree Biology

Tree Biology

- Tropisms
  - –The turning of all or part of an organism in a particular direction in a particular direction in response to an external stimulus.
    - Geotropism
    - Phototropism
    - Gravitropism
    - Hydrotropism
    - Thermotropism
    - Chemotropism

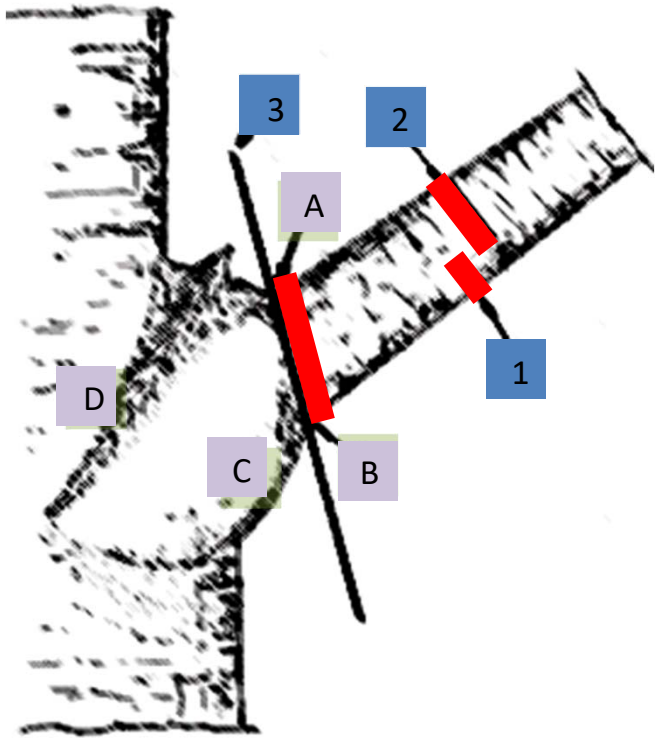
Tree Biology

Branch Collar: a "shoulder" or bulge formed at the base of a branch.



Tree Biology

Branch attachment and making the cut



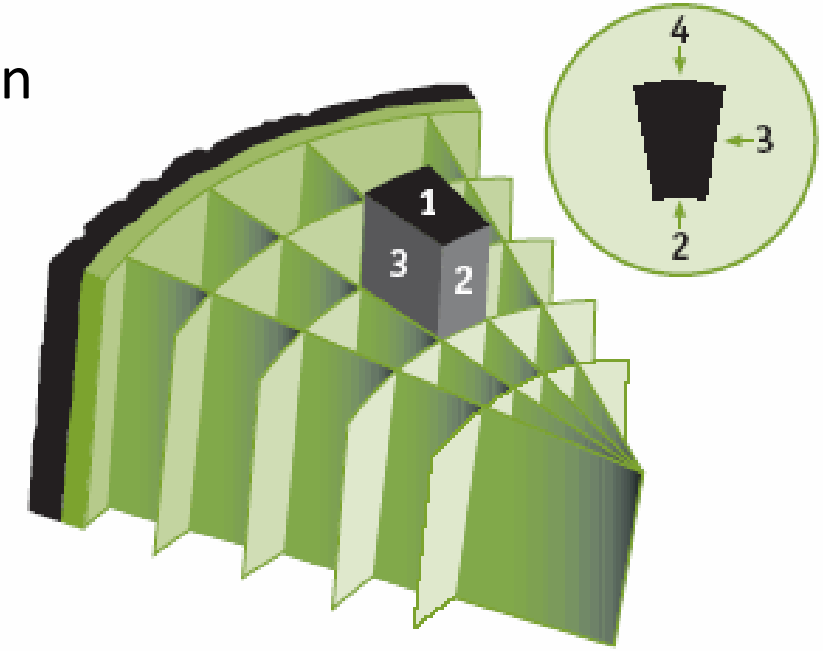
A Edge of branch collar
B Edge of branch collar
C Branch collar
D Branch bark ridge

1 Undercut
2 Overcut
3 Final cut

Tree Biology

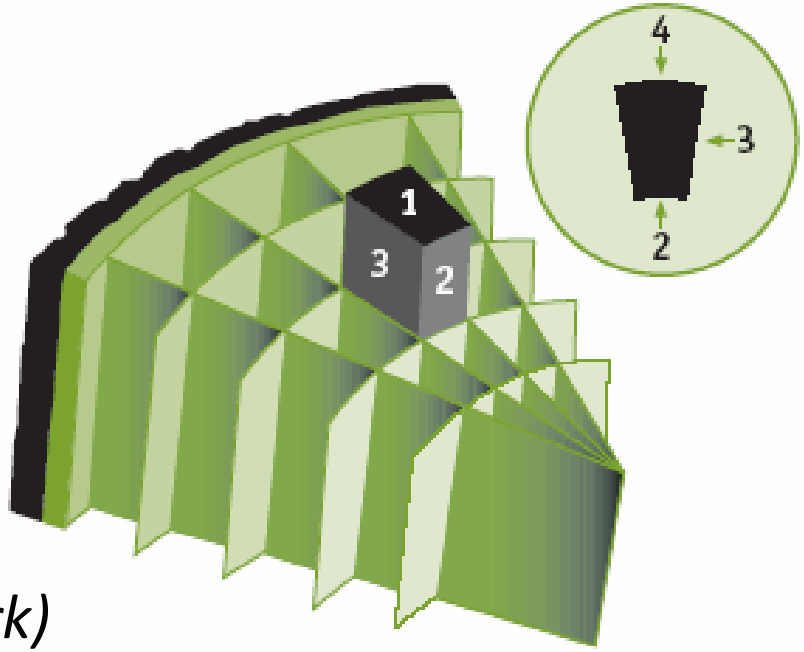
C.O.D.I.T.

Compartmentalization
Of
Decay
In
Trees



Tree Biology

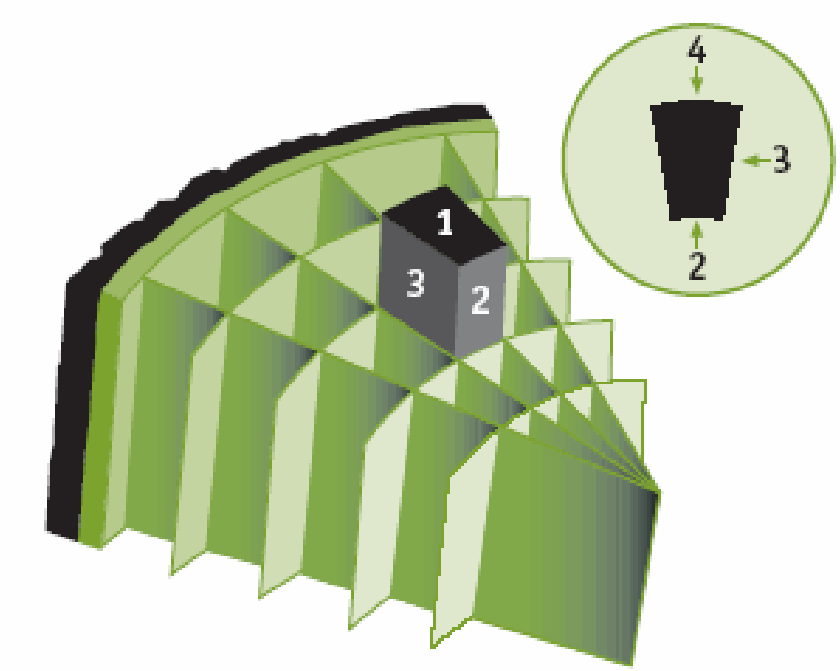
C.O.D.I.T.



1. Stops Vertical Spread
2. Stops Inward Spread
3. Stops Lateral Spread
4. New growth closes wound
(this is what we see on the bark)

Tree Biology

- Wall 1 – weakest
- Wall 4 – strongest
- Common for walls 1-3 to fail and decay expand.
- Walls 1-3 is called the **Reaction Zone.**
- Wall 4 is new wood growing over the wound (barrier zone)
- Wall 4 strong chemically but weak structurally.



Tree Biology

Tree Biology

- Tropical Trees and Palms
  - Tropical tree species
    - Tens of thousands
    - Very diverse
      - Anatomy
      - Physiology
    - Lack annual growth rings
    - Large foliage, flower and fruit
    - Buttress roots
    - Aerial roots
    - Rapid growth rates

Tree Biology

- Tropical Trees and Palms
  - –Palms (monocots)
    - Vascular bundles and establishment period
    - No secondary growth
    - One primary bud
    - Groups of flowers
    - Root initiation zone and root mat
    - Reproductive structures below crown
    - Leaves produced sequentially

Tree Biology

Tree Biology

Tree Biology

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