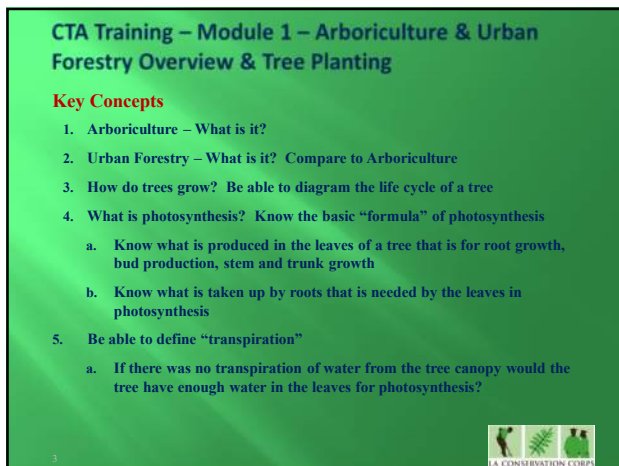




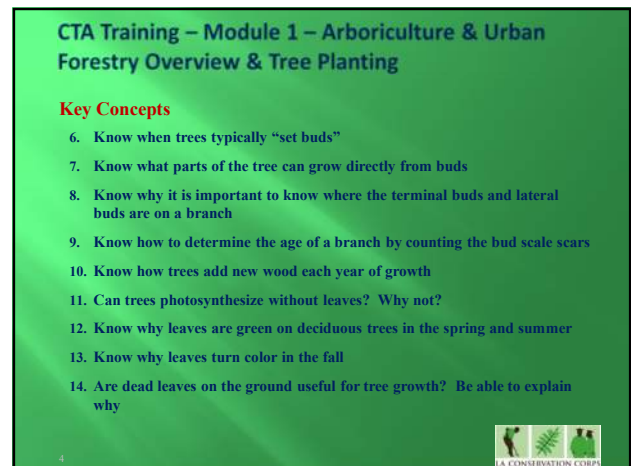
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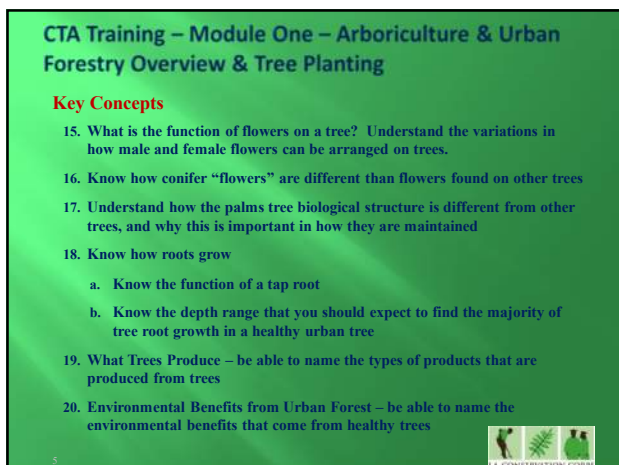
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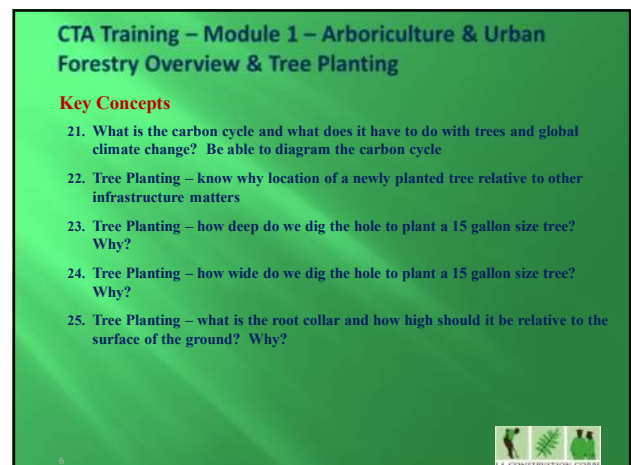
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### CTA Training – Module 1 – Arboriculture & Urban Forestry Overview & Tree Planting

**Key Concepts**

26. Tree Planting – staking – when we plant a 15 gallon size tree, do we keep the nursery stake on the tree once it is planted? Why or why not?
27. Tree Planting – staking – For “standard form” trees do we add new stakes at the time the tree is planted? If so, how many and where are they located? If not, why not?
28. Tree Planting – staking – For “natural form” trees do we add new stakes at the time the tree is planted? If so, how many and where are they located? If not, why not?
29. Tree Planting – mulch – How thick of a layer of mulch should be added to a newly formed water basin at the time the tree is planted?
30. Tree Planting – mulch – Should mulch be placed right up to the tree trunk at the time of planting? If yes, why? If no, why not, and how far should the mulch be kept from the tree trunk?



7

### Arboriculture – What is it?

**Involves the planting and care of both single trees and those in small groups**




8

### Urban Forestry – What is it?

**Management of both naturally occurring and planted populations of trees in urban areas**




9

### Arboriculture & Urban Forestry In Practice


- ▣ 3.8 billion trees in urban areas
- ▣ 74.4 billion trees in metropolitan areas
- ▣ 80% of U.S. residents in metropolitan areas
- ▣ 25% of nation’s canopy cover in metropolitan areas
- ▣ Arborists & Urban Foresters Care for These Trees



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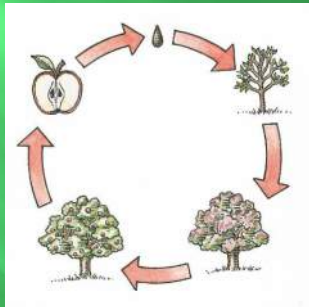

### Arboriculture – Basic Tree Biology

- ▣ How trees grow – The Life Cycle of a Tree
- ▣ Photosynthesis – Where It All Begins
- ▣ Transpiration
- ▣ Crown Development
  - Bud Formation and Growth
  - Stem or Shoot Growth
  - Leaves
- ▣ Tree Reproduction
  - Flowers
  - Fruit & Seeds
- ▣ Root Development

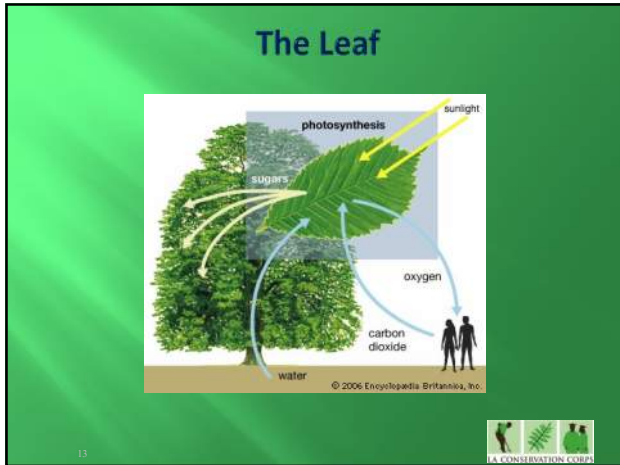


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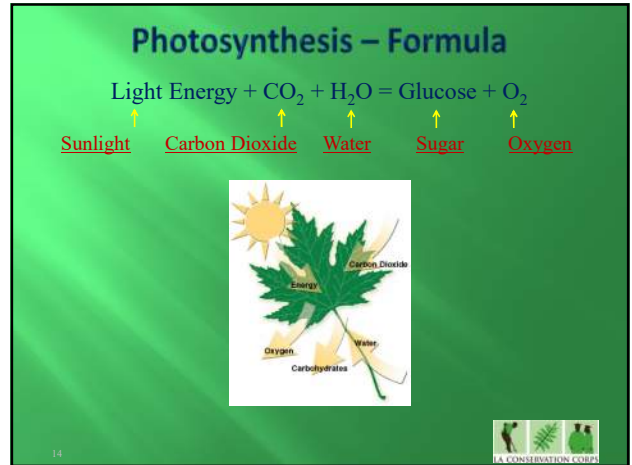
### Life Cycle of a Tree

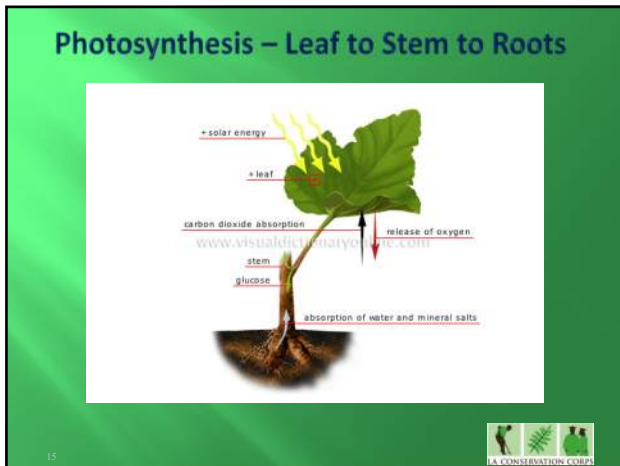
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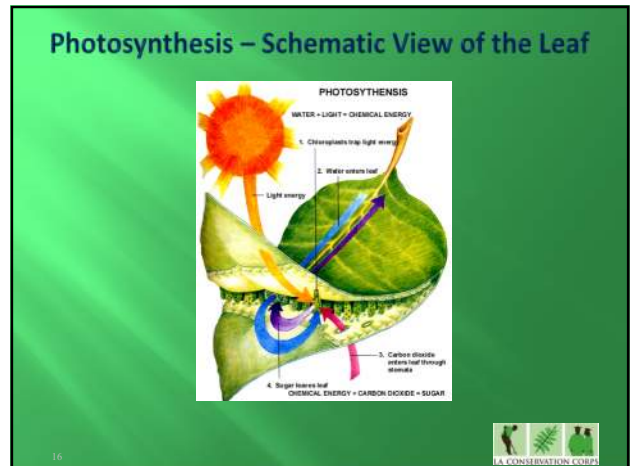
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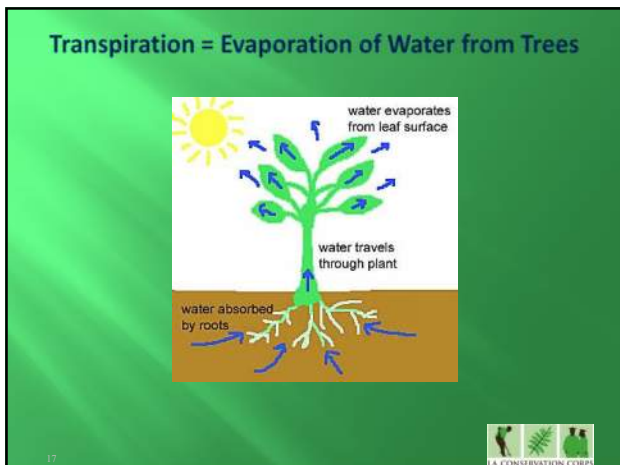
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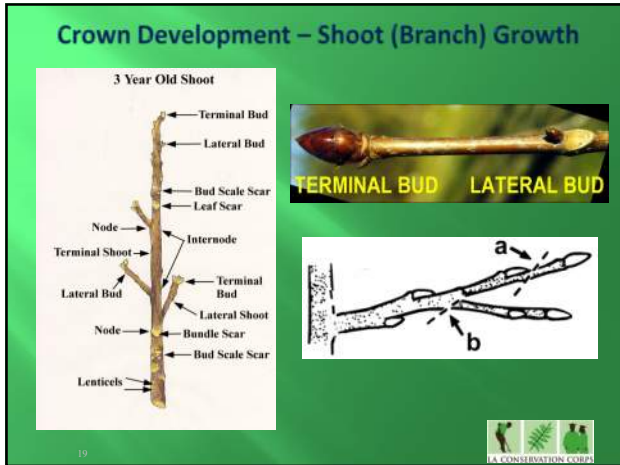
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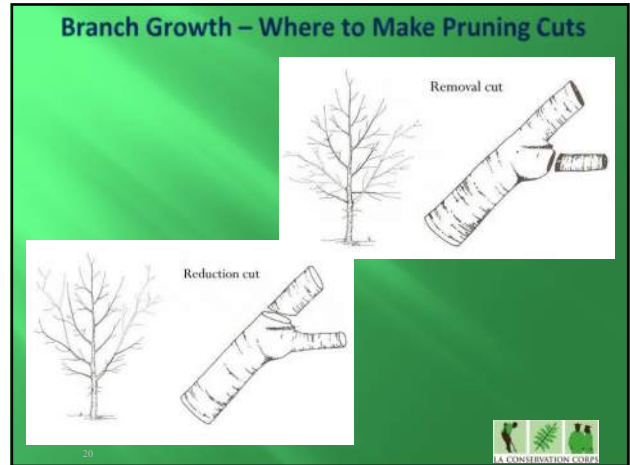
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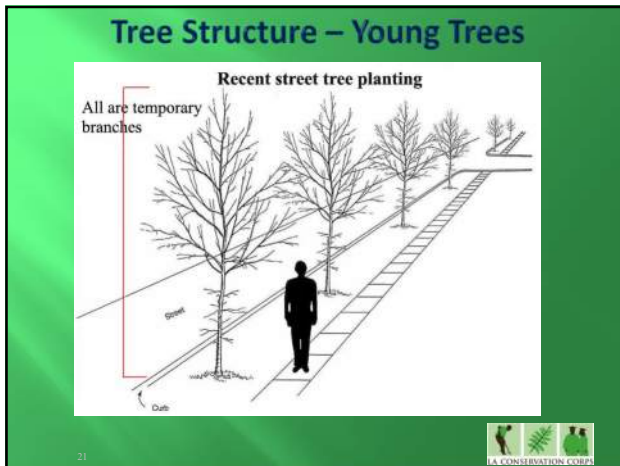
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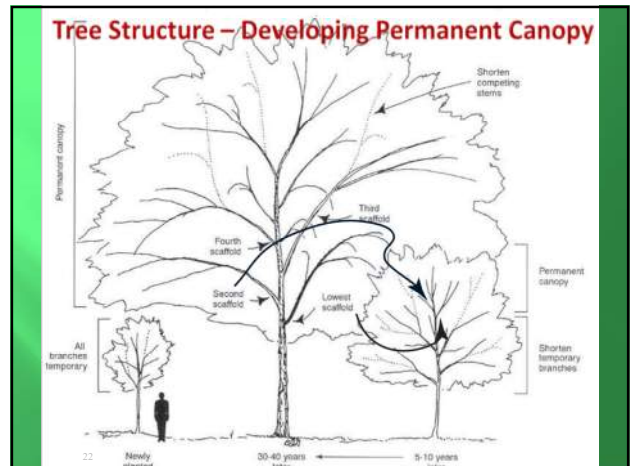
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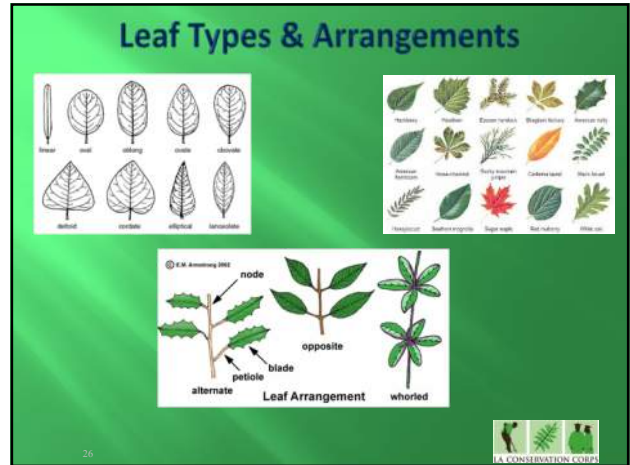
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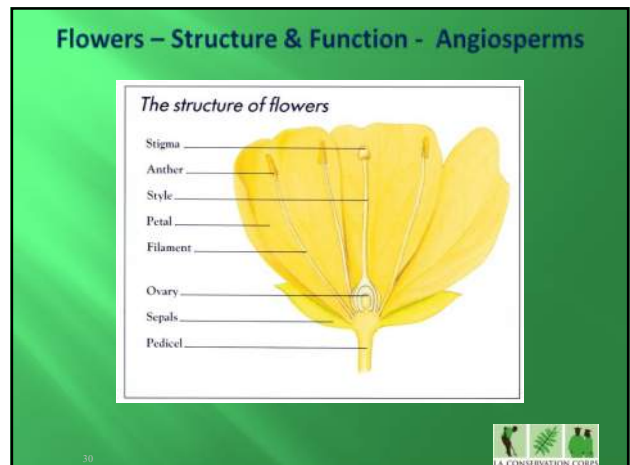
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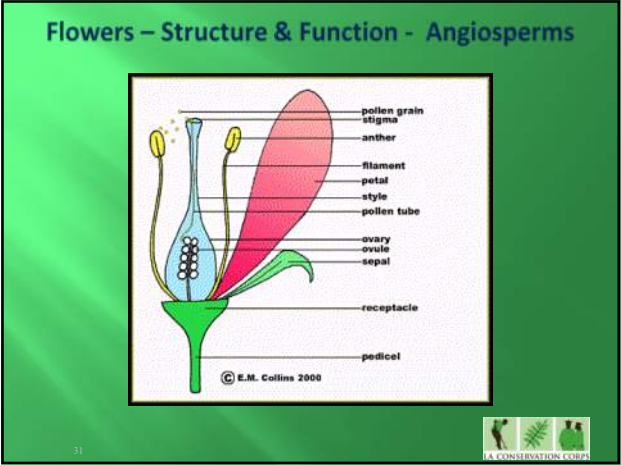
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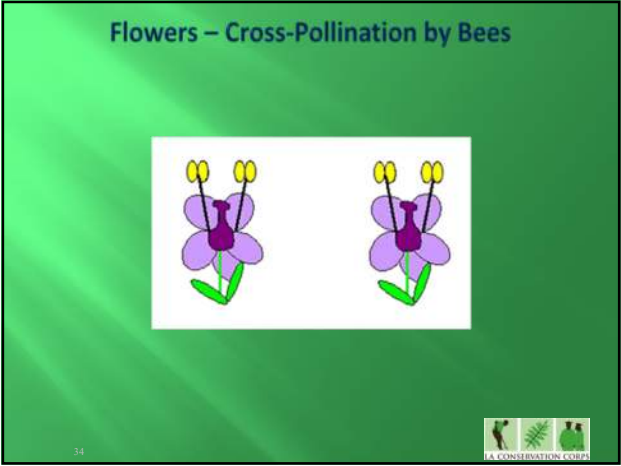
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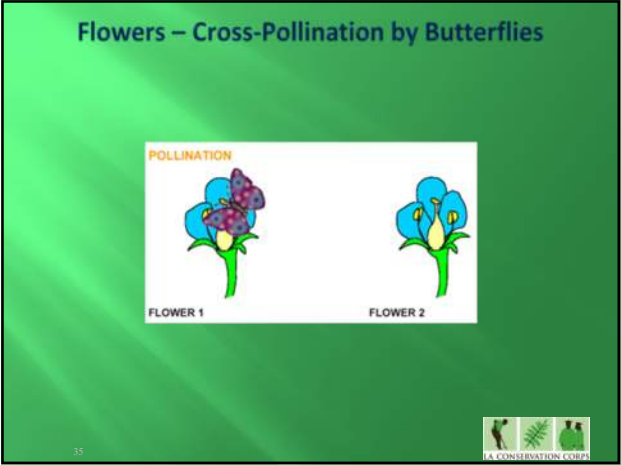
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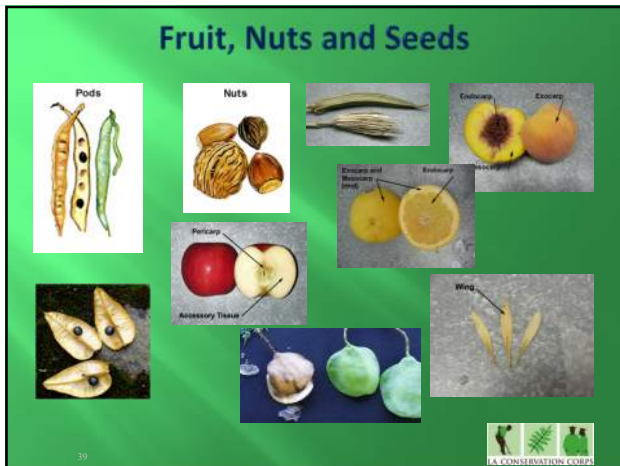
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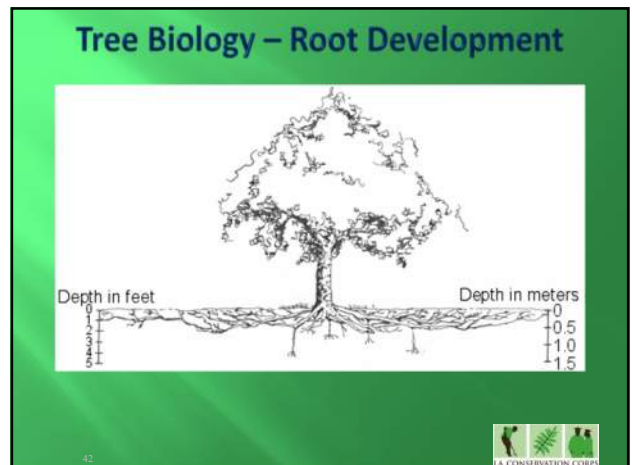
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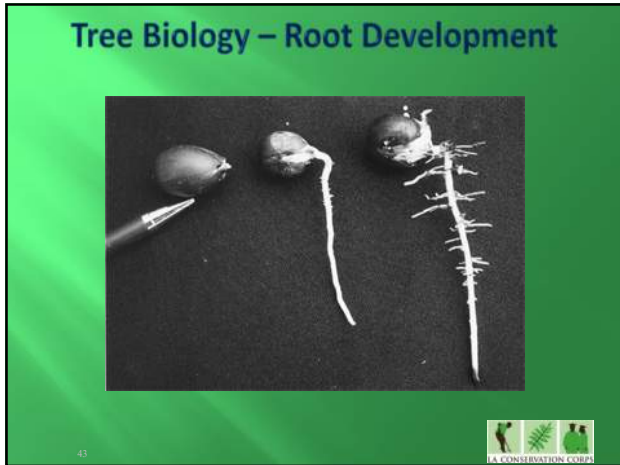
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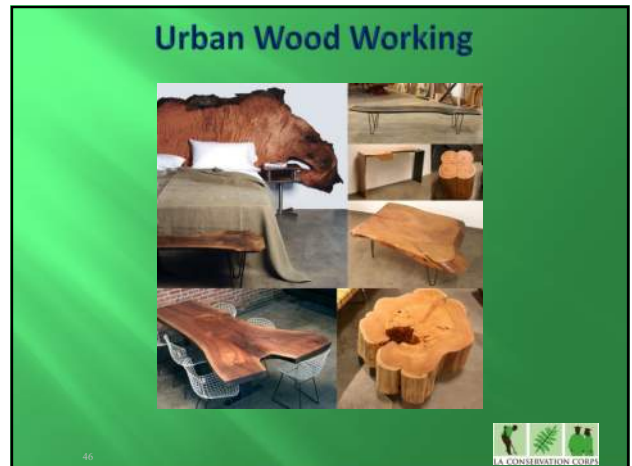
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### Trees – Why are they important?

**Environmental Benefits:**

1. Clean water
2. Increased local water supply
3. Clean air
4. Cool air (Mitigates Heat Island Effect)
5. Improve soil
6. Provide Habitat [for birds, insects, reptiles and mammals]
7. Help conserve energy

**Other Benefits:**

8. Beautify streets, parks, home yards
9. Make your home more valuable

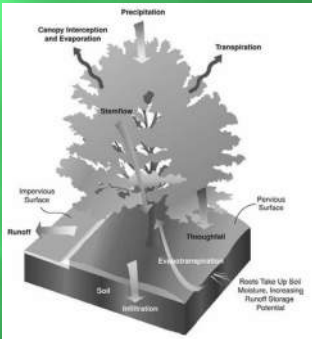

**Carbon Cycle Benefit:**

10. Trees store carbon



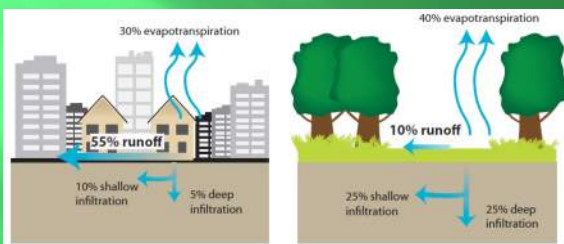

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### Benefits – Clean Water – Rainfall Intercepted by Tree Canopy

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### Benefits – Increased Water Storage – Urban Forest Canopy

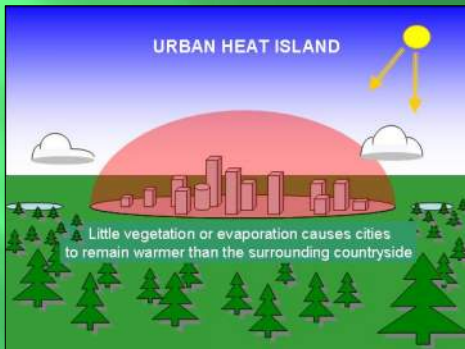

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### Tree Benefits – Clean Air




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### Tree Benefits – More Tree Cover Mitigates Heat Island Effect

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54

### Tree Benefits – Mulch from Tree Litter Improves Soil

- ▣ Improves soil structure
- ▣ Increases oxygen capacity of soil
- ▣ Moderates temperature
- ▣ Conserves moisture in soil
- ▣ Reduces soil compaction
- ▣ Increases nutrient content of soil
- ▣ Suppresses grasses and weeds
- ▣ Helps prevent damage to trees from mowers and weed whackers
- ▣ Properly applied, mulch can give landscapes a handsome, well-groomed appearance.



55

### Tree Benefits – Well Developed Tree Root Systems Provide Erosion Control




56

### Tree Benefits – Trees Provide Habitat




57

### Tree Benefits – Energy Conservation




58

### Tree Benefits – Beautification

**“No town can fail of beauty though its walks were gutters and its houses hovels, if venerable trees make magnificent colonnades along its streets”**

*Henry Ward Beecher 1887*



59



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### Tree Benefits – Improves Property Value



Price increase	Condition
2%	mature yard trees (greater than 9-inch dbh)
3-5%	trees in front yard
6-9%	landscaping
	good tree cover in a neighborhood
10-15%	mature trees in high-income neighborhoods




65

### Tree Benefits – Carbon Storage



**ECOMETRICA EXPLAINS... THE ONE-TONNE CARBON TREE!**

LEAVES: 100 CO<sub>2</sub> TO 1000

BRANCHES: 100 CO<sub>2</sub> TO 1000

STEM: 200 CO<sub>2</sub> TO 2000

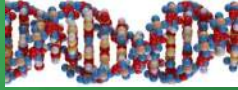


ROOTS: 200 CO<sub>2</sub> TO 2000



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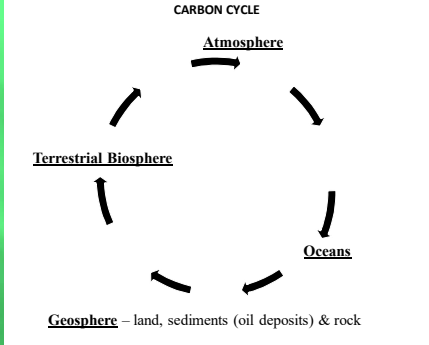

### Carbon Cycle – Carbon As Basis of Life

It's the element that anchors all organic substances, from DNA to fossil fuels

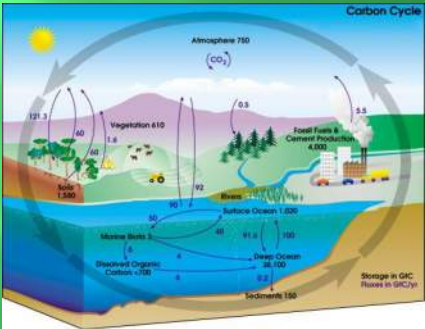

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### Carbon Cycle – Major Components



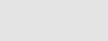
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### Carbon Cycle – Global View/ Role of Oceans

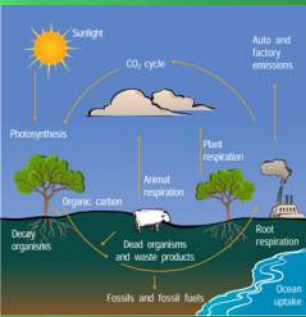

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### Carbon Cycle – What does 1 ton of CO2 look like?

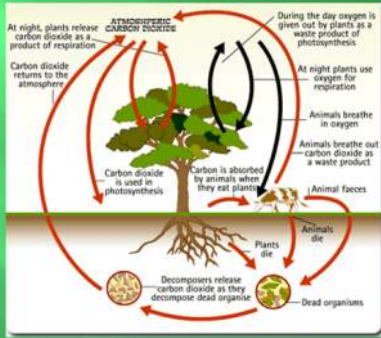

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### Carbon Cycle – Role of Organisms

71

### Carbon Cycle – Role of the Tree

72

**Carbon Cycle Video – Carbon Cycle & Global Warming - Wydea Wonder’s Channel**

<http://www.youtube.com/user/WydeaWonders#p/u/0/1o40DWMZq5U>



73

**CTA Training – Module One – How to Plant a Tree**



74

**Tree Planting: Step 1 - Have the Right Equipment & Materials**




75

**Tree Planting: Step 2 - Right tree planting location relative to surrounding infrastructure**




76

**Tree Planting: Step 3 - Prepare to Dig the Hole the Correct Diameter**




77

**Tree Planting: Step 4 - Determine the Correct Depth to Dig the Hole**




78

### Tree Planting: Step 5 - Digging the Hole



79



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### Tree Planting: Step 6 - Remove the Tree from the Container



80



80

### Tree Planting: Step 7 - Check the Rootball



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81

### Tree Planting: Step 8 - Center Tree in Hole and Level Root Collar with Top of Adjacent Soil



82



82

### Tree Planting: Step 9 - Backfill the Hole with Soil



83



83

### Tree Planting: Step 10 - Compacting the Soil



84



84

**Tree Planting: Step 11 - Clearing the Root Collar**




85

**Tree Planting: Step 12 - Create a Water Basin**




86

**Tree Planting: Step 13 - Add Water**




87

**Tree Planting: Step 14 - Add Mulch to Water Basin**




88

**Tree Planting: Step 15 - Clear Mulch from Root Collar**




89

**Tree Planting: Step 16 - Stake the Tree**




90



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92

### Tree Planting – Resident Outreach & Education

- ▣ **Questions that can come up during canvassing:**
  - What kind of trees are you going to plant?
    - What kind of flowers to they have?
    - What kind of fruit to they produce?
  - Will these trees make a mess on my sidewalk and driveway?
  - How big will these trees get?
  - Do I have to prune the trees also?
  - I don't want that species of tree; why can't I get a different tree?

93

### Tree Planting – Resident Outreach & Education

- ▣ **Questions that can come up during planting:**
  - I don't want that tree to be planted in front of my house
  - How come you're not planting a tree in front of my house
  - How come you're not planting a tree in front of my house? I see the same white stripe on the curb in front of my house as my neighbor who is getting a tree
  - Can I get more than one tree planted in front of my house
  - What species of tree are you planting?
  - How big will it get?
  - Can I get a tree planted in my front yard also?

94

### Tree Planting – Resident Outreach & Education

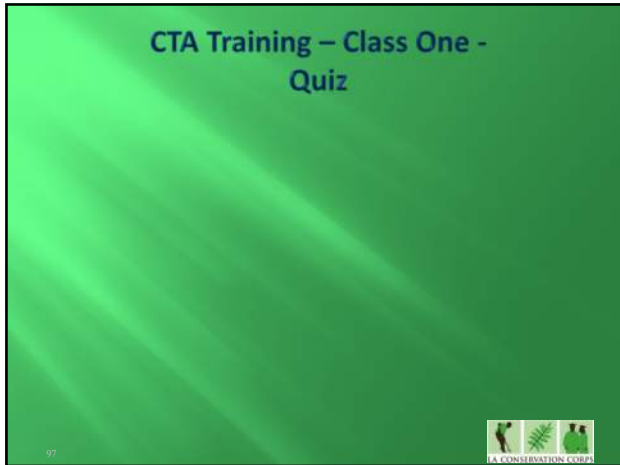
- ▣ **Ideally, everyone who is out on a project site, can talk to the tree planting principle of:**  
 RIGHT TREE RIGHT PLACE RIGHT WAY
- ▣ **Today you learned the RIGHT WAY to plant a tree**
- ▣ **Modules 2 and 3 will address: RIGHT TREE RIGHT PLACE [and more] RIGHT WAY (Pruning)**

95

### CTA Training – Class One - Tree Planting Field Exercise

96





97