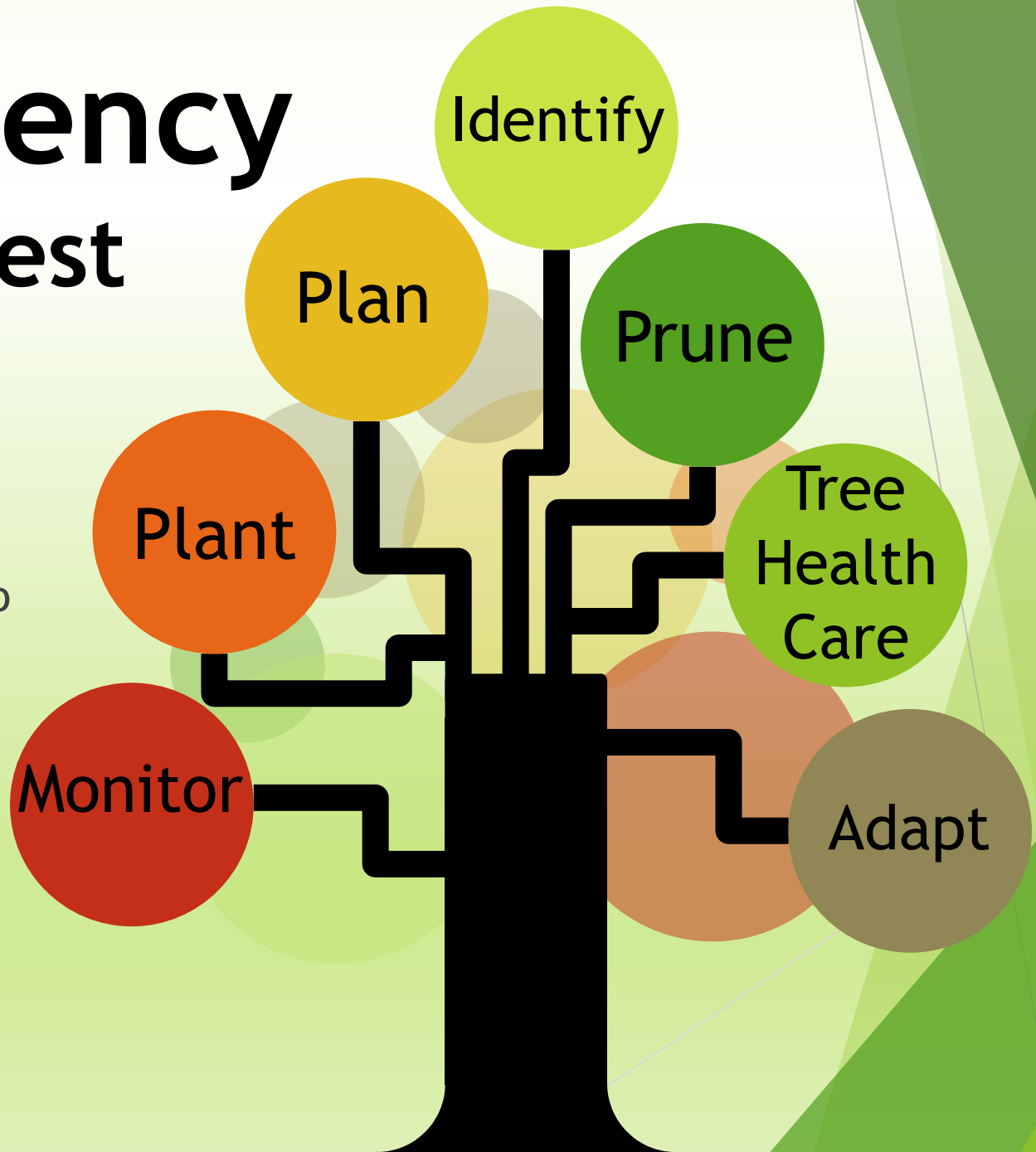
Storm Resiliency
in the Urban Forest

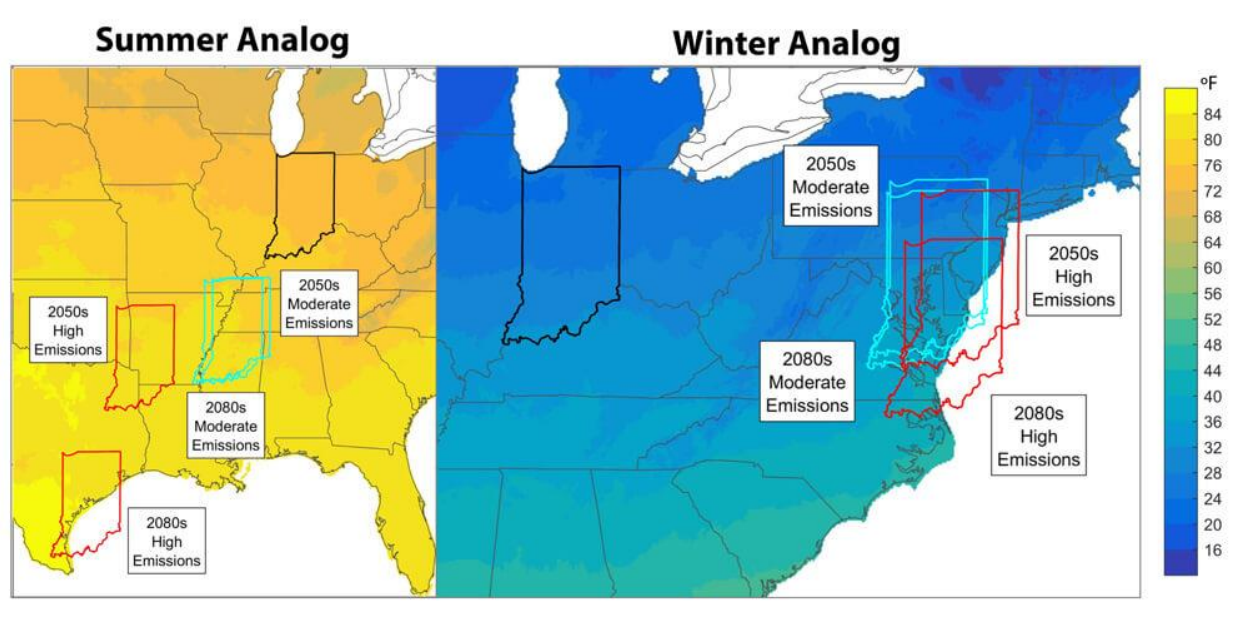
All trees have risk, there are ways to reduce the levels of risk during the life of the tree, but the only way to eliminate the risk, is to remove the tree.

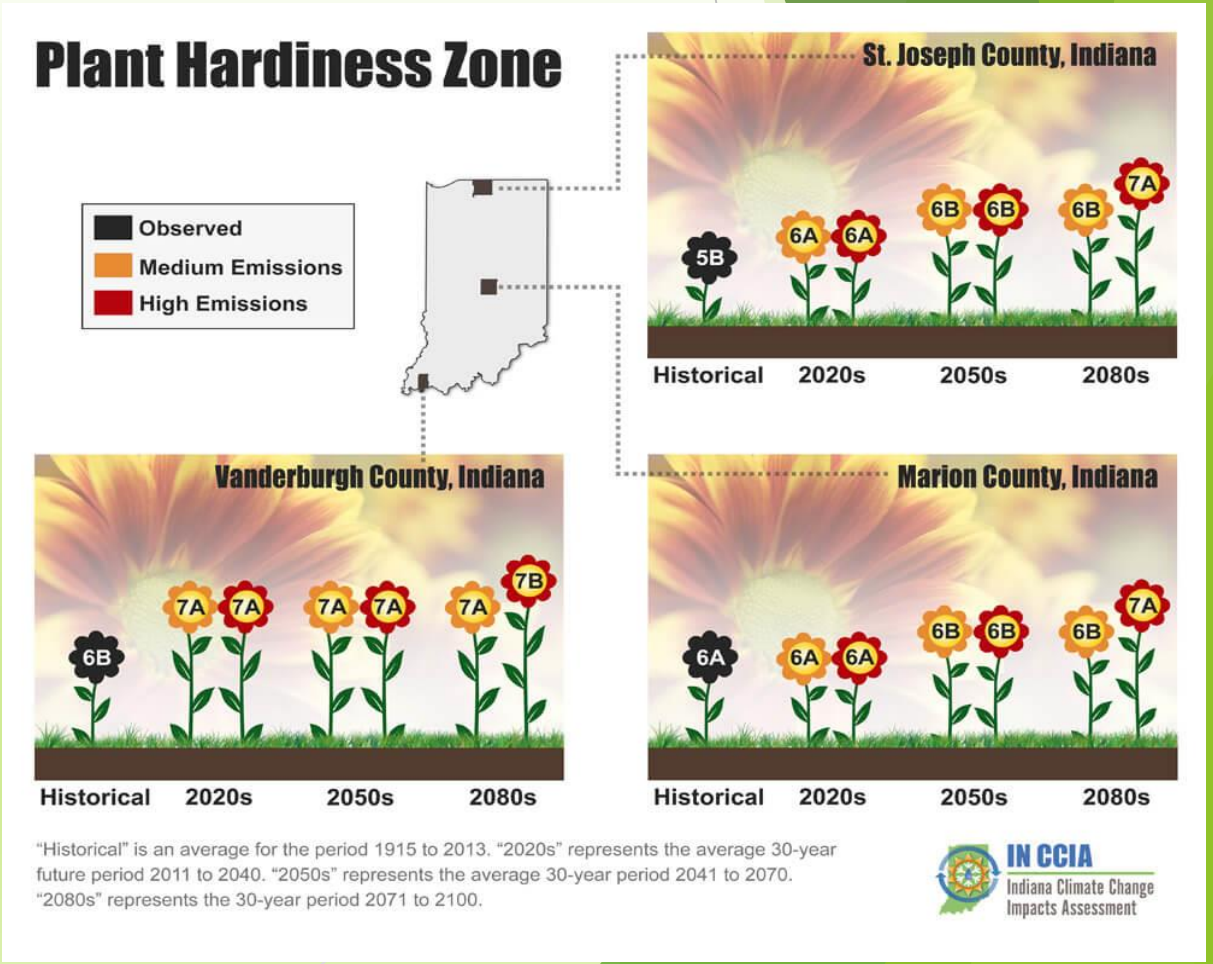


Climate Change and Resiliency

Climate change is defined as a long term shift in average weather patterns

Resilience is the ability to withstand or recover quickly from difficulties





Identify

Existing Trees

- Species: Native/Non Native, Deciduous/Evergreen
- Location: Targets if the tree or tree part fails, proximity to vital functions, protected/open
- Size: Small/medium/large, maximum growth
- Natural Defects: Crossed branches, girdled roots, codominant stems
- Pest, Disease or Fungal Infections
- Past Failures? Does it look like it should? Previously topped, phototropism,

Potential Planting Sites

- Purpose: Why are you planting this tree?
- Soil condition and volume, what happened in the past, what's likely to happen in the future?
- Light availability, moisture availability, protection from prevailing wind?
- Pest, Disease or Fungal Infections nearby?
- Underground/above ground utilities
- Maximum growth potential

Plan

Who, what, when, where: This step will be highly variable, and unique to every tree or site. May include a plant health care program or not, but this is your “jumping off point”.

Ex 1

- Existing tree has been identified to have a defect.
- Defect is codominant stems on a red maple next to the garage
- The tree is too large for me to comfortably do the work, so I’m contracting it out.
- Contractor advises a reduction prune and a dynamic cable.
- Tree should be re-evaluated in a year for response growth, two years to check on the cable system.

Ex 1

- I planted a swamp white oak in my yard two years ago.
- It has grown considerably in this time, and appears to have some poor branch unions.
- I’m going to prune back one of the leaders, and remove the poor union now while the tree is young.

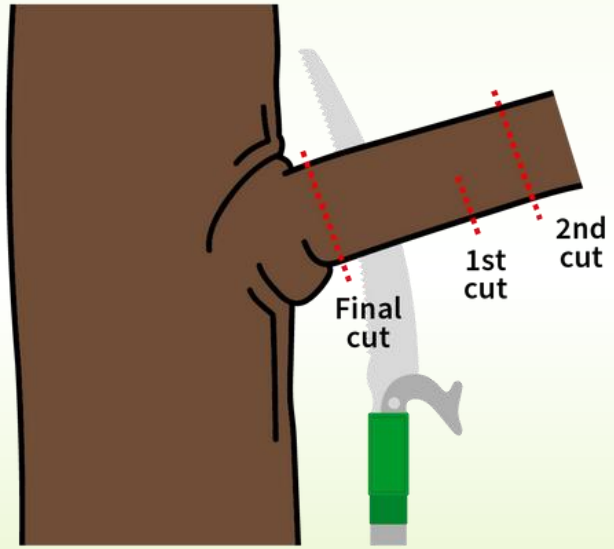
Prune

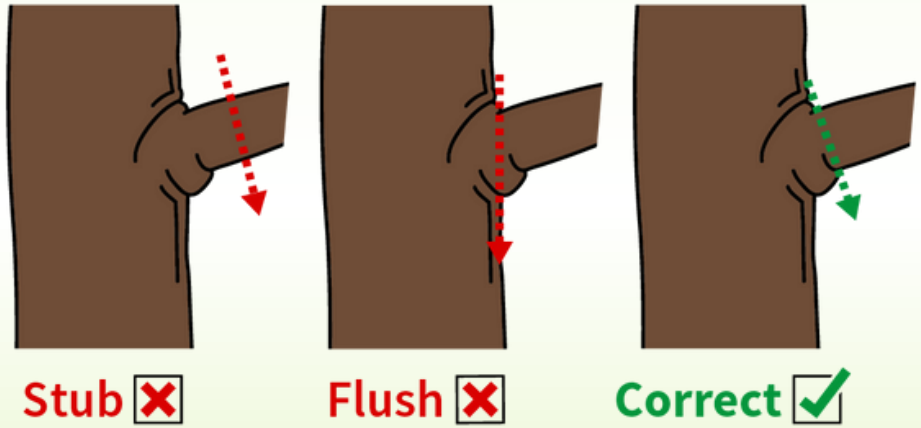
Clean/sanitize/Sharpen your tools! Time your pruning correctly

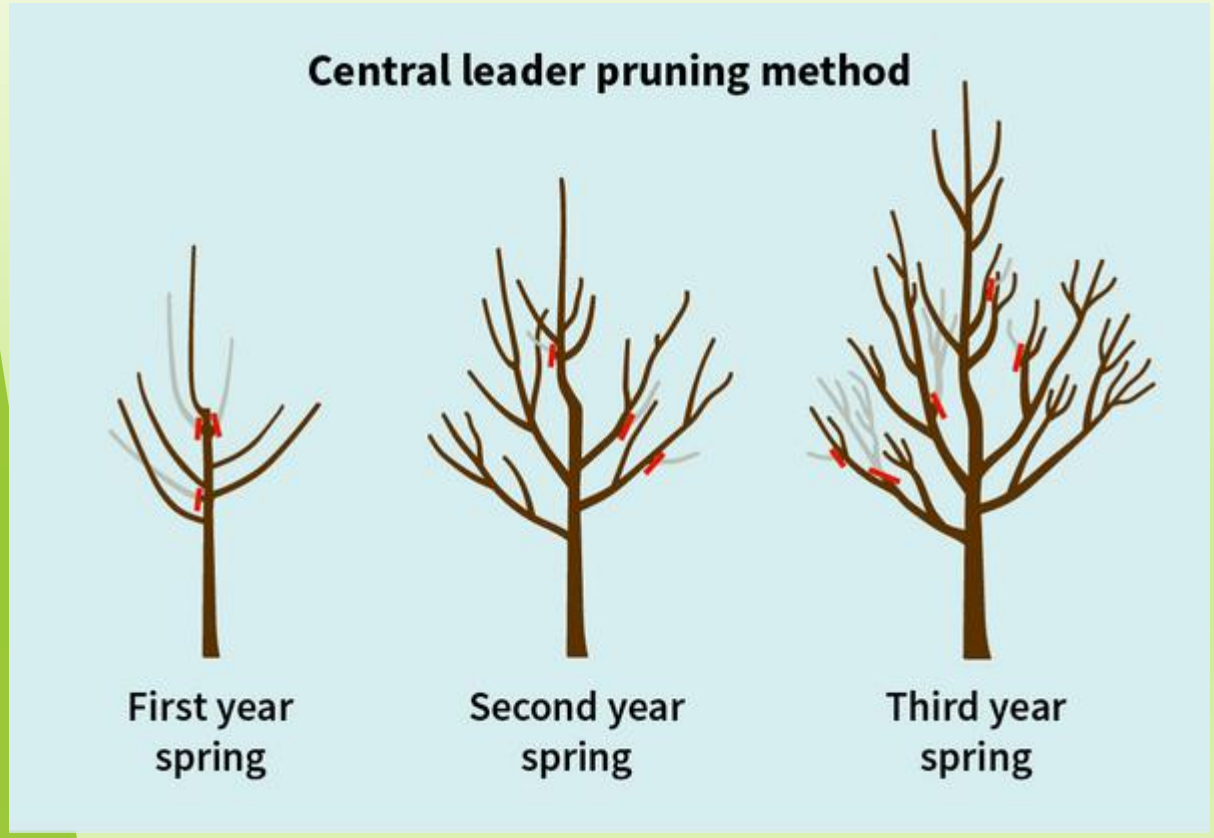
Types of pruning:
THINNING: remove a side branch back to the larger parent branch or trunk. Thinning cuts reduce the canopy density but generally have little impact on height. Thinning allows better light penetration into the canopy, which encourages growth of interior branches. This improves trunk taper and increases the general vigor of primary branches and trunk. Thinning cuts reduce the weight on large branches, giving the tree resilience to snow loading. Avoid Lion Tailing (long limb with all the smaller limbs away from trunk)

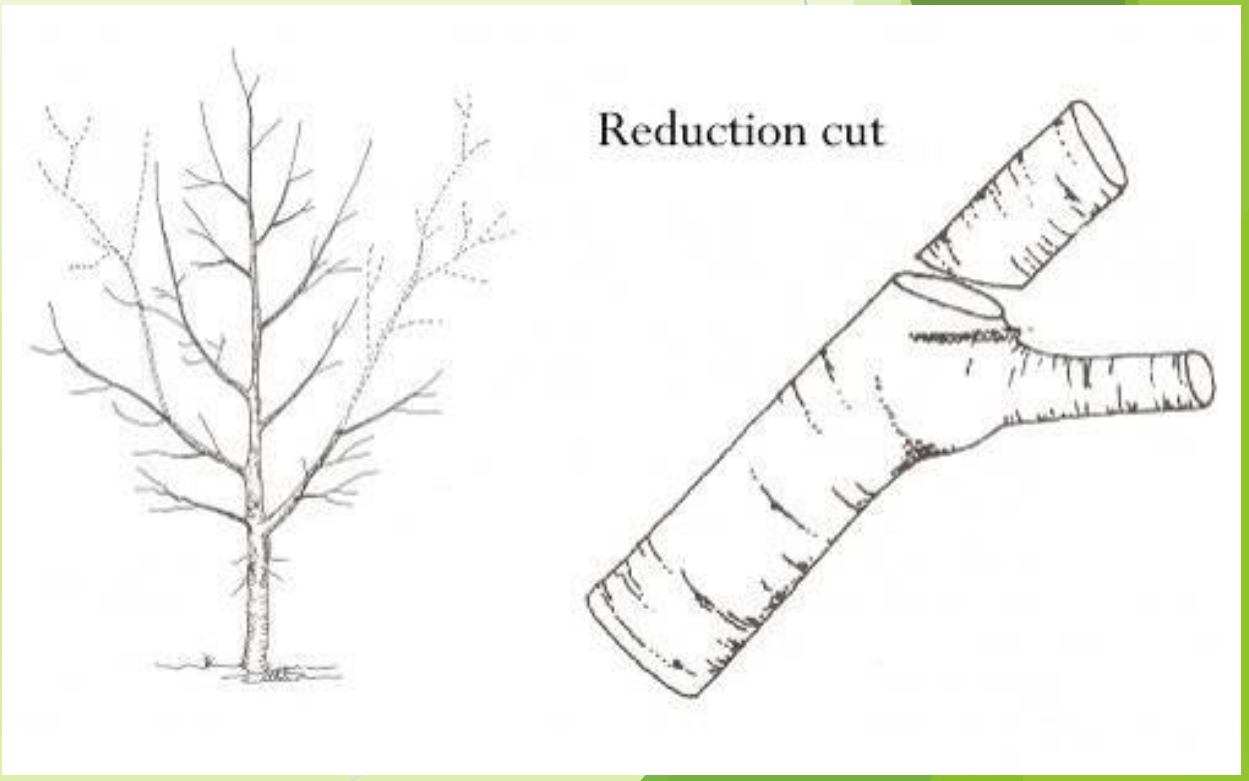
HEADING: remove the growing tip of a branch. This releases the side buds to grow resulting in a more dense growth at the point of pruning.

REDUCTION: removes a larger branch or trunk back to a smaller-diameter side branch. Reduction cuts are commonly used in training young trees. They are also the only type of cut that will significantly lower a tree's height.


Final cut
1st cut
2nd cut


Stub
Flush
Correct


Central leader pruning method
First year spring
Second year spring
Third year spring

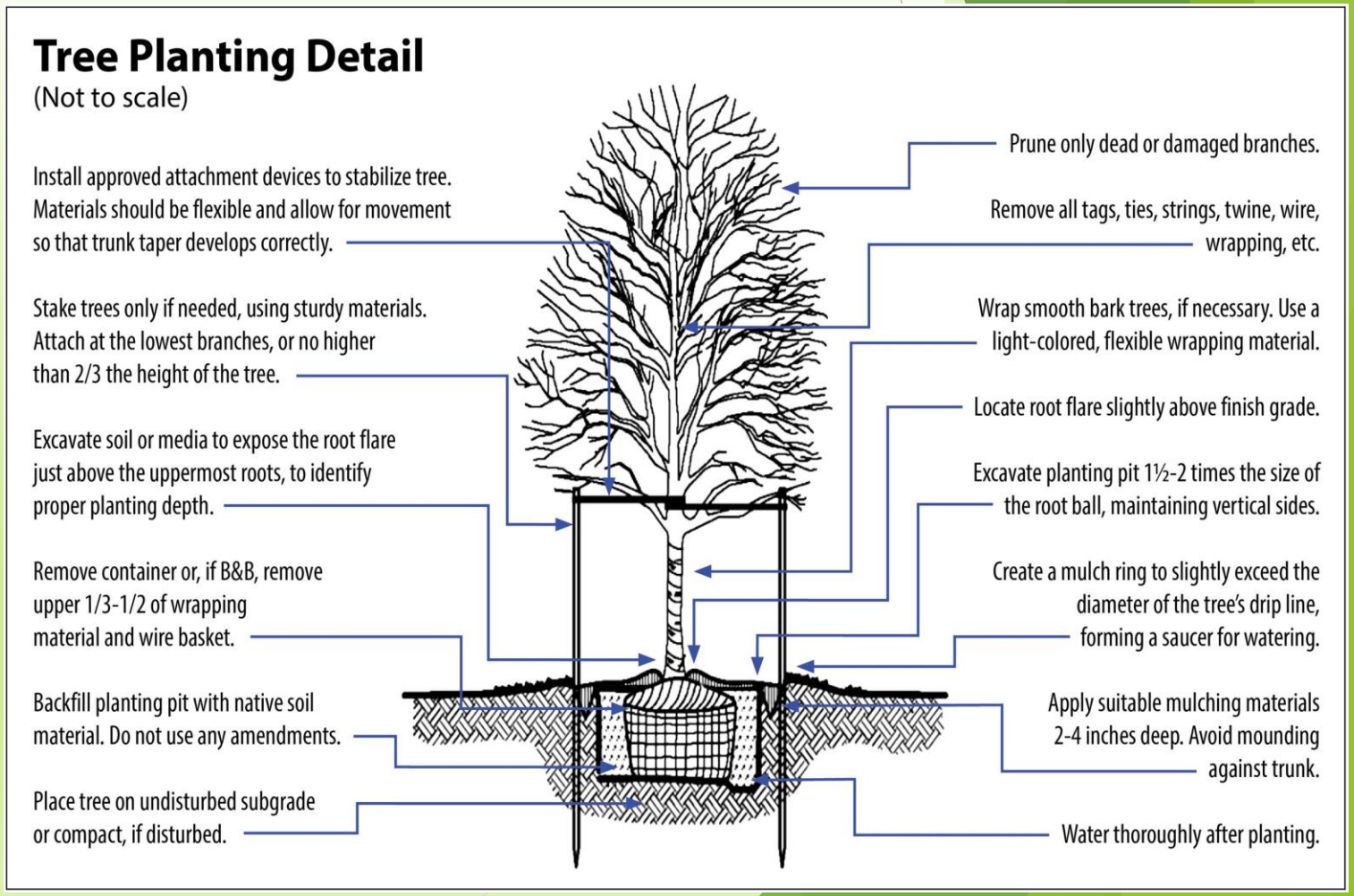

Reduction cut

Plant

Tough Trees: Will depend on age of Tree

American sweetgum -Liquidambar styracifula
River birch - Betula nigra
Bald cypress Taxodium distichum
Catalpa – Catalpa spp. (or cultivars)
Hickory - Carya spp.
American persimmon - Diospyros virginiana
American Hornbeam – Carpinus caroliniana
Ironwood - Ostrya virginiana
Eastern red cedar - Juniperus virginiana
Blackgum - Nyssa sylvatica
Kentucky coffee tree - Gymnocladus dioicus
Most Oaks

Truth is, most trees can be storm resilient if enough preventative measures have been taken.



Tree Health Care

A healthy tree is a resilient tree

Does it have everything it needs? What did you find during the ID process?

- Is there a lack of water, too much water?
- Is the soil PH poor for this species, is the soil compacted?
- Are there epicormic sprouts?
- Are the Macro/Micro nutrients available for the tree to absorb.
- Is there a fungal infection? Which one?

Organic materials are going to be your best friend. Try to mimic the forest.

A soil test is going to tell you better than guessing, usually available for a nominal fee and is highly recommended.

Monitor

Look at the tree, Inspect, play detective!

Take time once a year, or after a weather event to inspect the tree.
Is the tree growing at a normal rate year over year?
How did it respond to the last time it was prune?
How did it respond to the PHC program it's on?
Are there new defects?
Does the ground around the tree look different?
Is there a random dead branch one day?
If you've got a known defect, has it got worse?

Adapt

Climate Change = Uncertainties

- Be ready to one day be wrong: Science is only as good as the current research.
- Adapting to an unpredictable environment is going to be difficult, but not necessarily impossible.
- Be a detective! Study the area you're planting in, or maintaining. Get a soil test, use the surroundings to guide you to picking a tree suited for that location.
- Planting a climate resistant cultivar, such as one with a better tolerance of drought stress, or cold tolerance. Requires fewer chilling hours and may have disease resistances.
- Being prepared to cover or uncover young trees prior to early/late frosts.
- Diversify if you can, do not plant all of the same species
- Plant in protected areas, or consider an accompanying buffer planting
- Consider companion plantings
- Keep learning, and researching!



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Conclusion

- Not everything needs to be fixed or can be fixed
- You have to find out what level of risk you are comfortable with
- Address the big issues that will cause the big problems
- Right tree, right place, and being proactive will save you down the road
- We’re likely to see some species migration in the near-ish future, plan accordingly when selecting a tree to plant
- A living tree with a major defect is more likely to fail in a wind event than a dead tree.

Questions, Comment or Concerns?

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