

# Relationship between carbohydrate reserves and the recovery of urban trees after pruning

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Urban trees are impacted by adverse man-induced or naturally occurring **stressors** that reduce their rates of photosynthesis, growth, and survival.

**Carbohydrate reserves are the main source of energy for plants.**

They are produced in leaves and then translocate to areas where they are needed or stored.

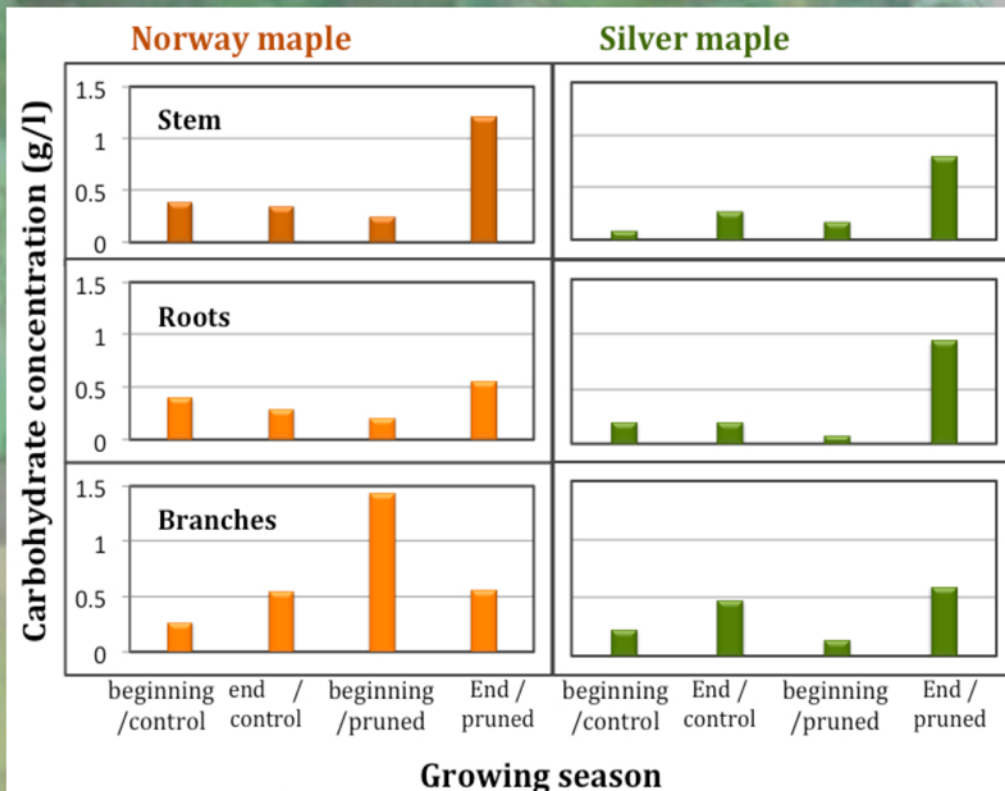
Branches, trunk, and roots store carbohydrates and are involved in translocation of carbohydrates between sources and sinks.

Up to 40% of tree's dry mass is comprised of mobile carbohydrates.

Question: How do carbohydrate reserves are related to the recovery of urban trees after pruning and what is the influence of pruning in the seasonal dynamics of carbohydrate reserves?

Sampling:

- Montreal, Quebec
- 20 trees. *Acer saccharinum* (silver maple) and *Acer platanoides* (norway maple)
- Four trees of each specie were pruned in December 2010 (treatment)
- Trees sampled in 2011: spring and fall
- Samples of stem, branch and root wood
- Sample processing and non-structural components analysis



• **Branches act as a carbohydrate reserve, so pruning lead to a depletion of reserves in stem, roots and branches compared to unpruned trees (control)**

• Pruning caused an increase in the concentration of carbohydrate reserves at the end of the growing season that could **increase tolerance against future stresses**

• Response to pruning varied between norway and silver maple suggesting that **some species may be more tolerant to urban stresses than others**

• The **change in the content of carbohydrates** indicates the ability of trees to overcome stressful conditions since **carbohydrates can be mobilized to favor recovery and survival**