

Understanding carbohydrate and nutrient storage and remobilisation in fruitlet abscission for sweet cherry

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The large scale of premature abscission of immature fruits is a common phenomenon that has been reported in a number of fruit-bearing tree species. Although this phenomenon have many adaptative roles, abscission of flower buds, flowers, and fruits is an important yield-limiting factor.

Yet, limitations in our knowledge and understanding in the physiological mechanisms impair our ability to implement management tools.

We propose to investigate to the extent of fruit abscission by manipulating the source and sink strength of organs of two cherry variety: Kordia and Sweetheart. The treatments consists of branch girdling and total defoliation.

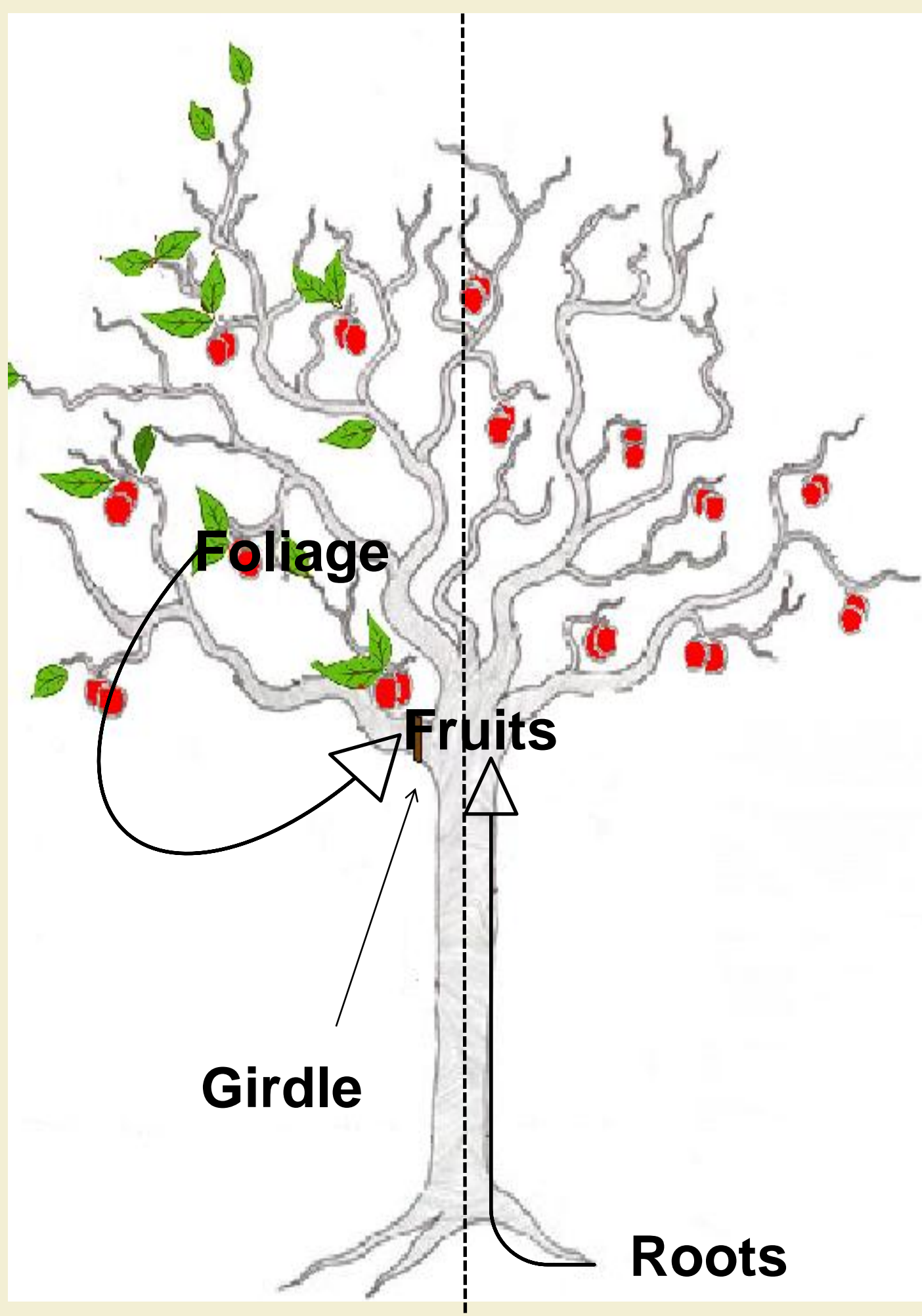
Questions:

- How do the treatments affect the source-sink balance of the tree?
- How the change in carbohydrate and/or nutrient supply affect abscission rate and fruit quality?
- Does sugar/nutrient shortage induce hormonal signals controlling abscission?

Branch girdling

Transitory blocking of phloem transport from leaves to roots that may increase availability of sugars and hormones above the girdle.

Enhancement of carbohydrate availability from foliage is associated with an improvement of fruit set and yield.



Total defoliation

Leaves are the primarily source of carbon for the fruit.

Following 100%defoliation, it is believed that fruit will draw sugars from stored organs such as roots.