

# ***Fertigation of apple trees affect fruit magnesium content, quality and storage life***

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***Resource Efficiency for Crop Production***

# Some facts



- Traditional apple orchards are being replaced by high-density irrigated systems in which fertigation is used to apply nutrients
- Among the factors that affect nutrient use efficiency are the fertigation rate, frequency of application and the irrigation regime
- Challenge is to improve water and nutrient use efficiency but also to maintain or improve marketable fruit yield and quality
- Magnesium requirements for apple growth are not particularly high; however can strongly compete with Ca and K uptake and transport, leading to apple storage disorders such as bitter pit.
- Fruit firmness is found to be negatively correlated with fruit Mg content



# Methods



- Three growing seasons: 2014-2016
- Varieties: Gala, Braeburn
- Treatments:
  - commercial fertigation;
  - broadcast fertiliser/irrigation
  - scheduled fertigation to minimise nitrate leaching;
  - scheduled fertigation/irrigation to match demand with supply



# Results



## Soil

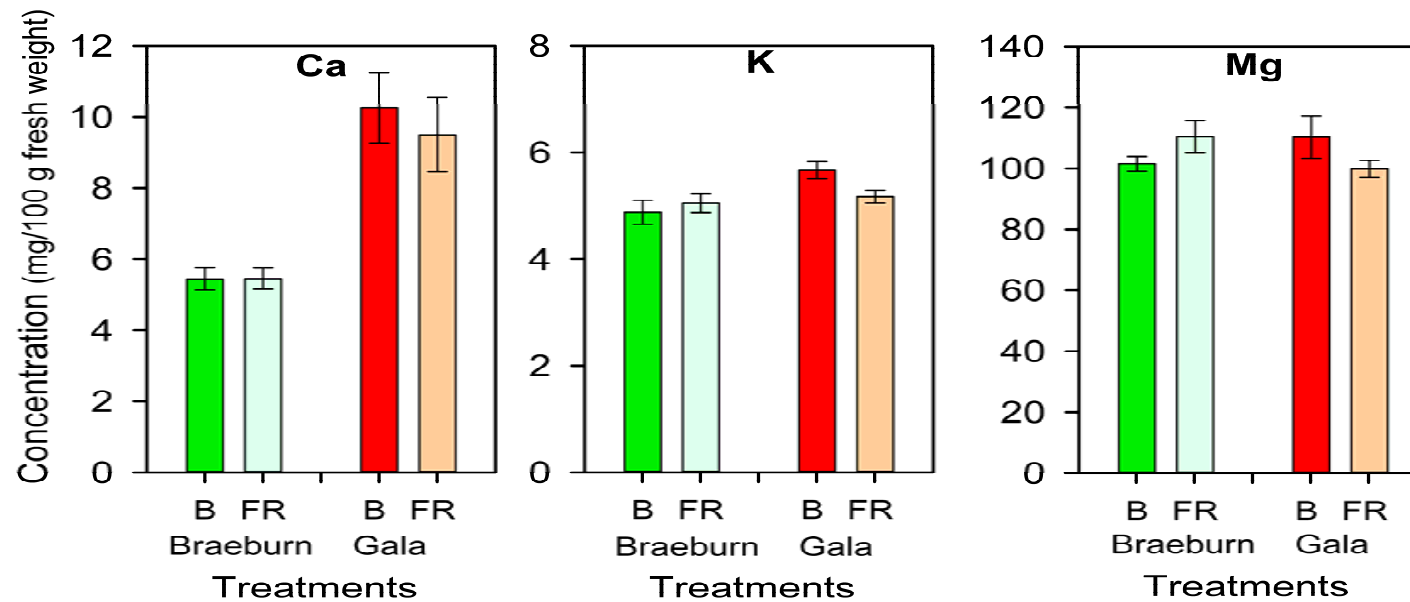
- Fertiliser treatments affected soil K concentration only under Gala
- Treatments did not affect soil Ca and Mg concentration for any variety
- Soil CEC and pH were unaffected by the treatments

## Leaves

- Leaf nutrient concentrations were not affected by the fertilisation treatments
- Braeburn had higher leaf Mg content



# Results



- Treatments did not affect fruit nutrient concentrations or quality characteristics
- Braeburn had higher K+Mg/Ca ratio than Gala

**Thank you**

