

# ILSI SEA REGION

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# Salads with some “extras” on the side



# The “Extras”



- Microbial profile of salad production process
- Water and its effects on contamination
  - Temperature
  - Water quality
- Recontamination
  - Biofilms
  - Ecology

# Information from SEA



# Typical Salad Production Profile



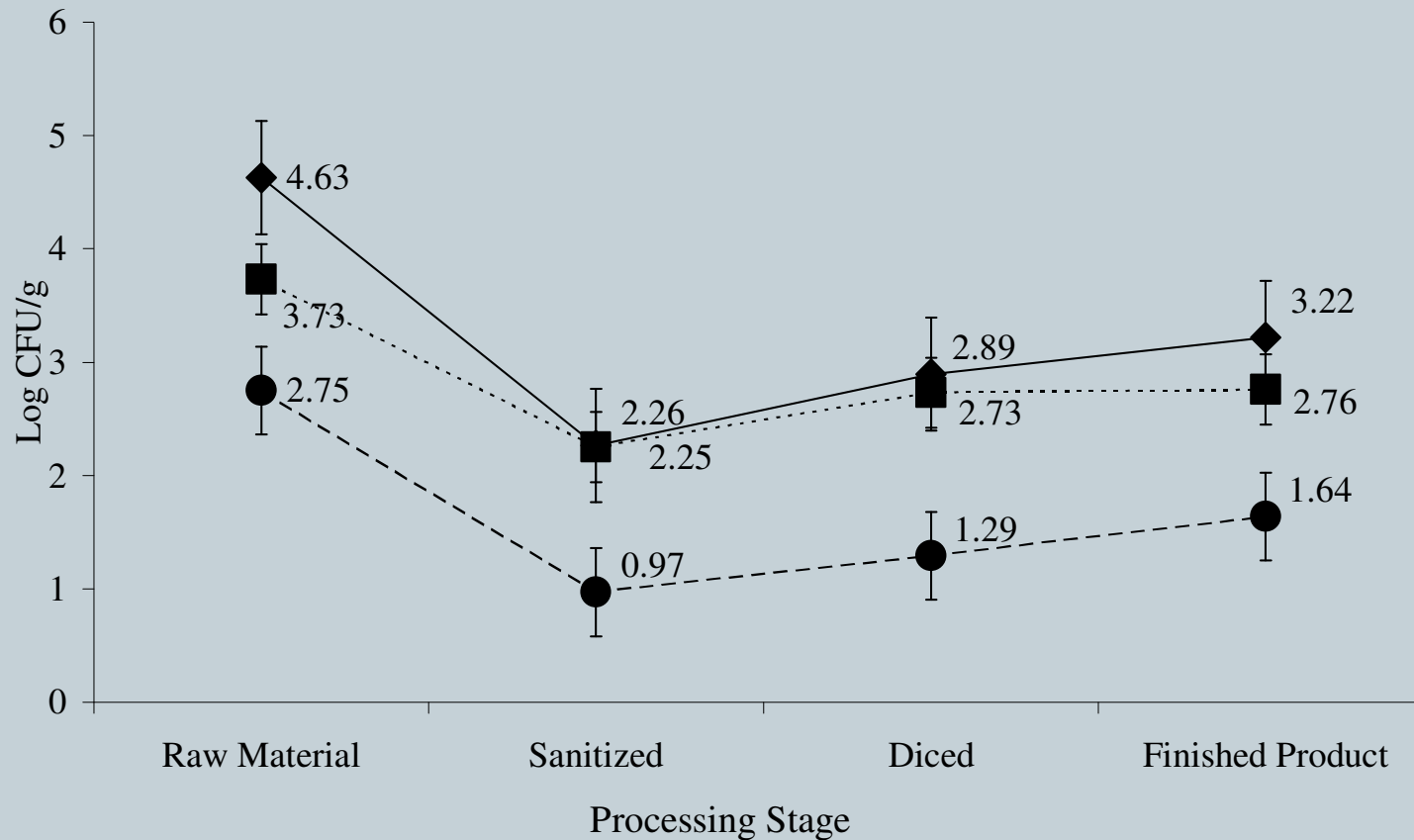
Trim/  
Quartered

Sanitize

Dice

Mix

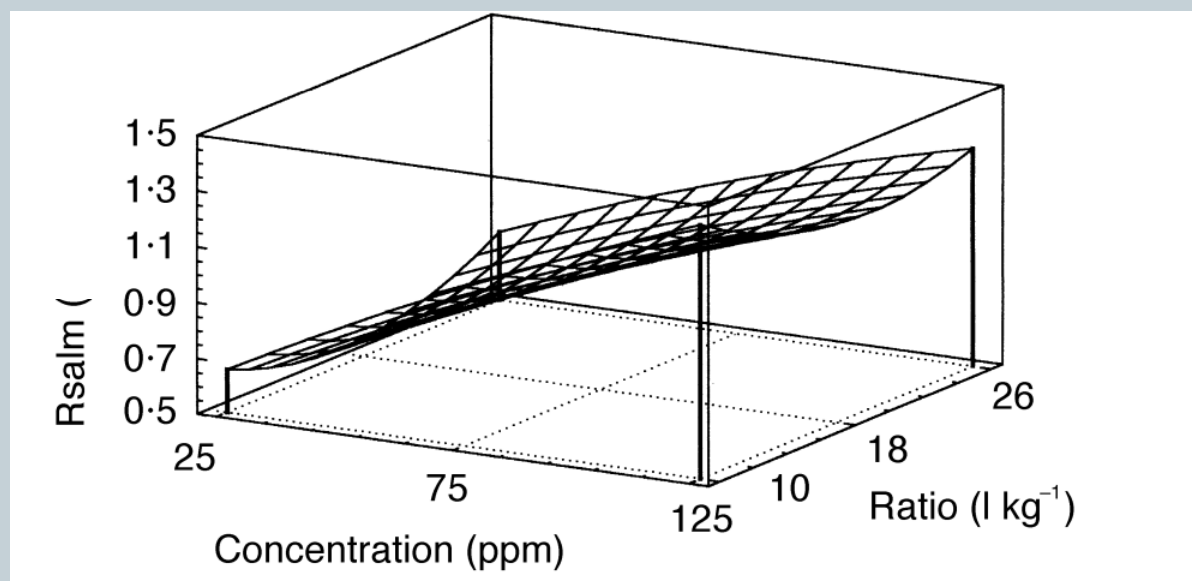
# Typical Profile



Log CFU/g of lactic acid bacteria (●), pseudomonads (□) and aerobic counts (♦) of salad in various processing stages in presence of 150 ppm active chlorine. (n=50)

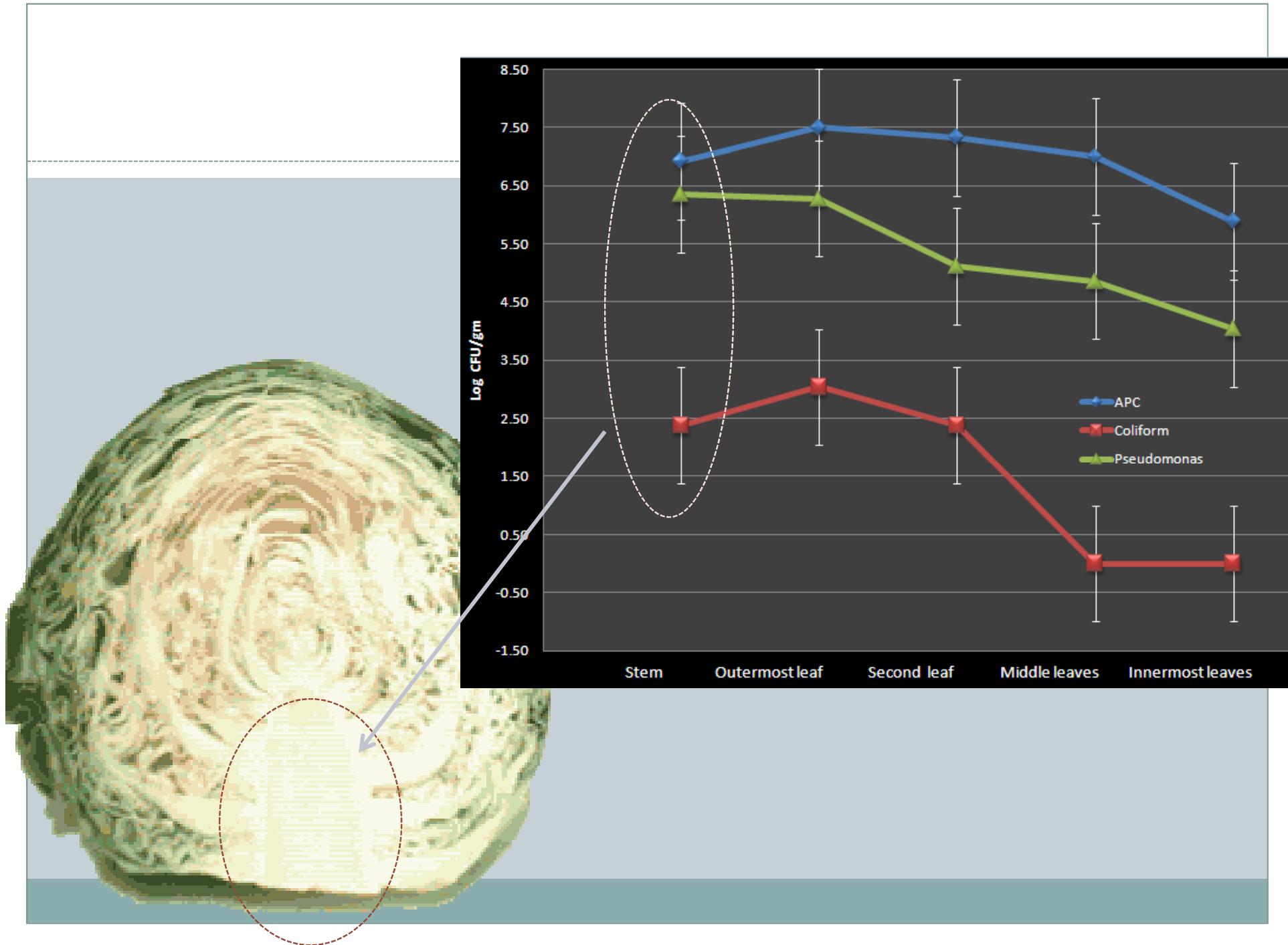


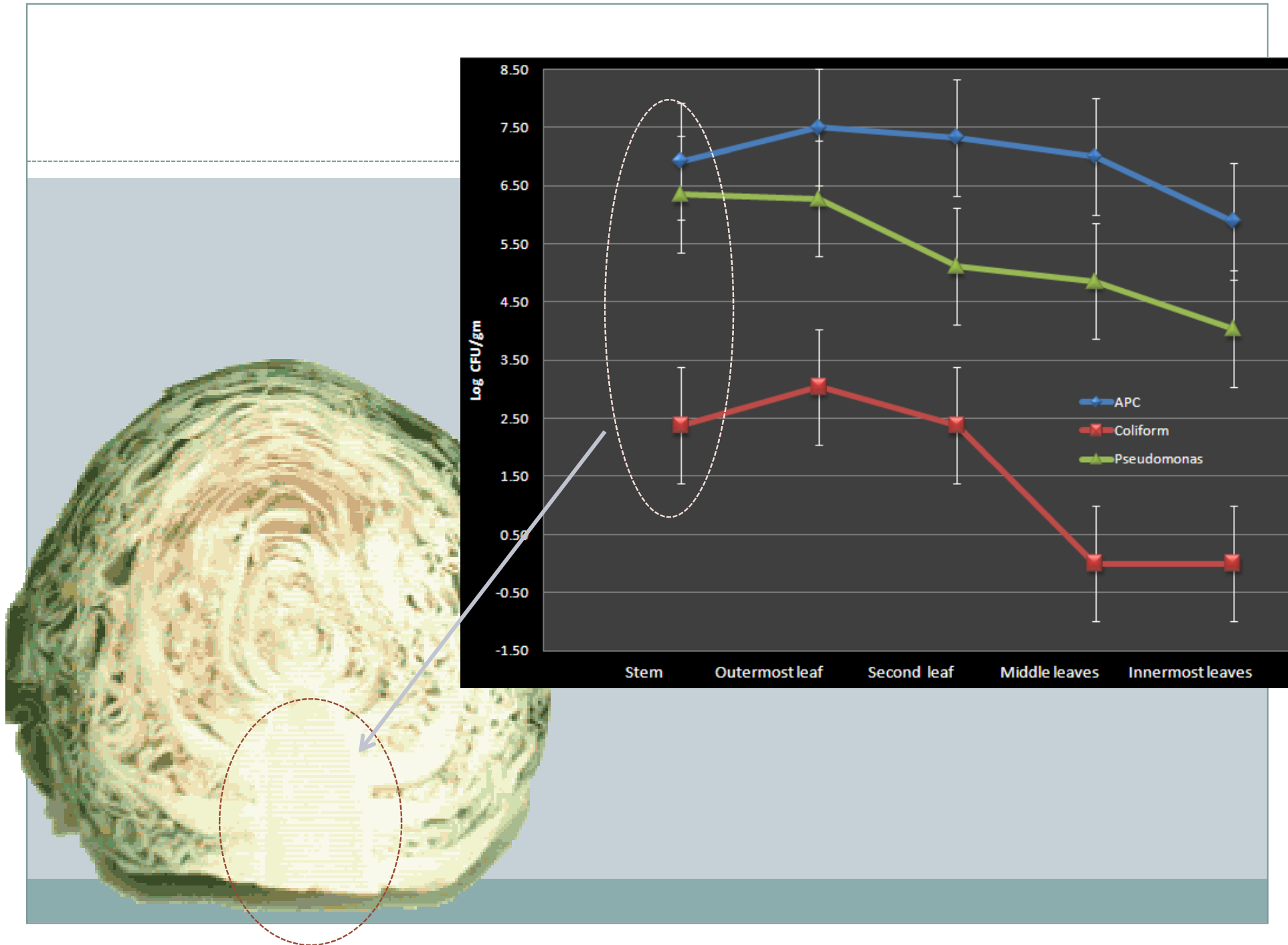
## Varying the amount of water had limited effect on the Log Reduction

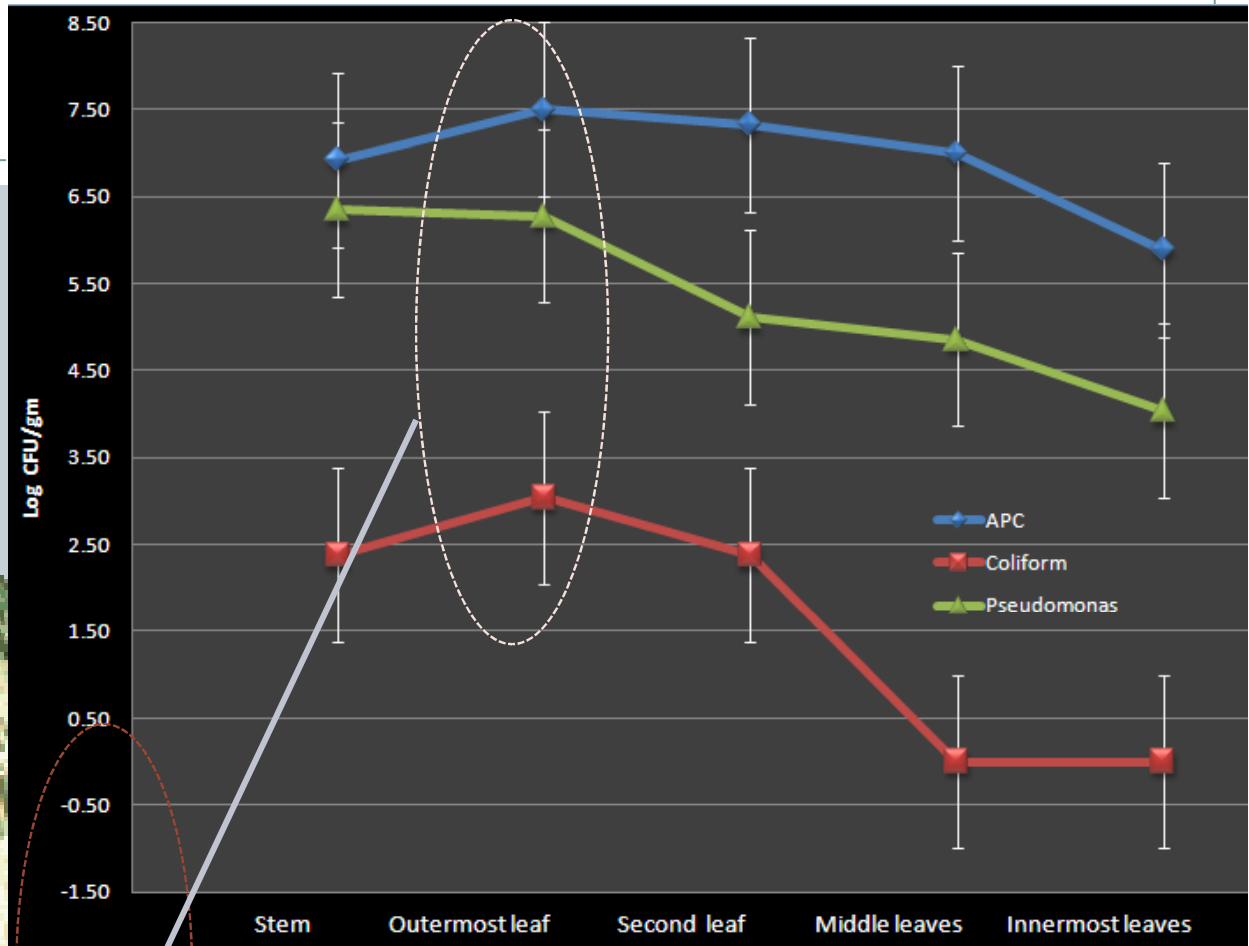
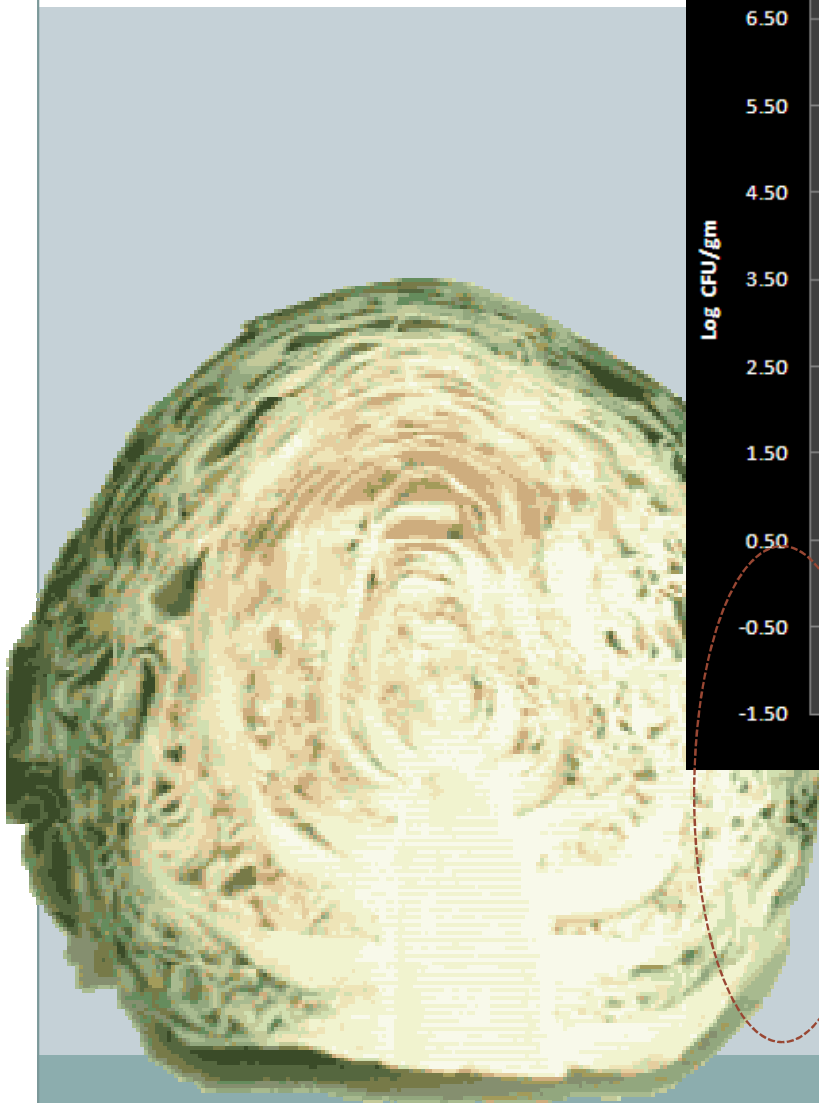


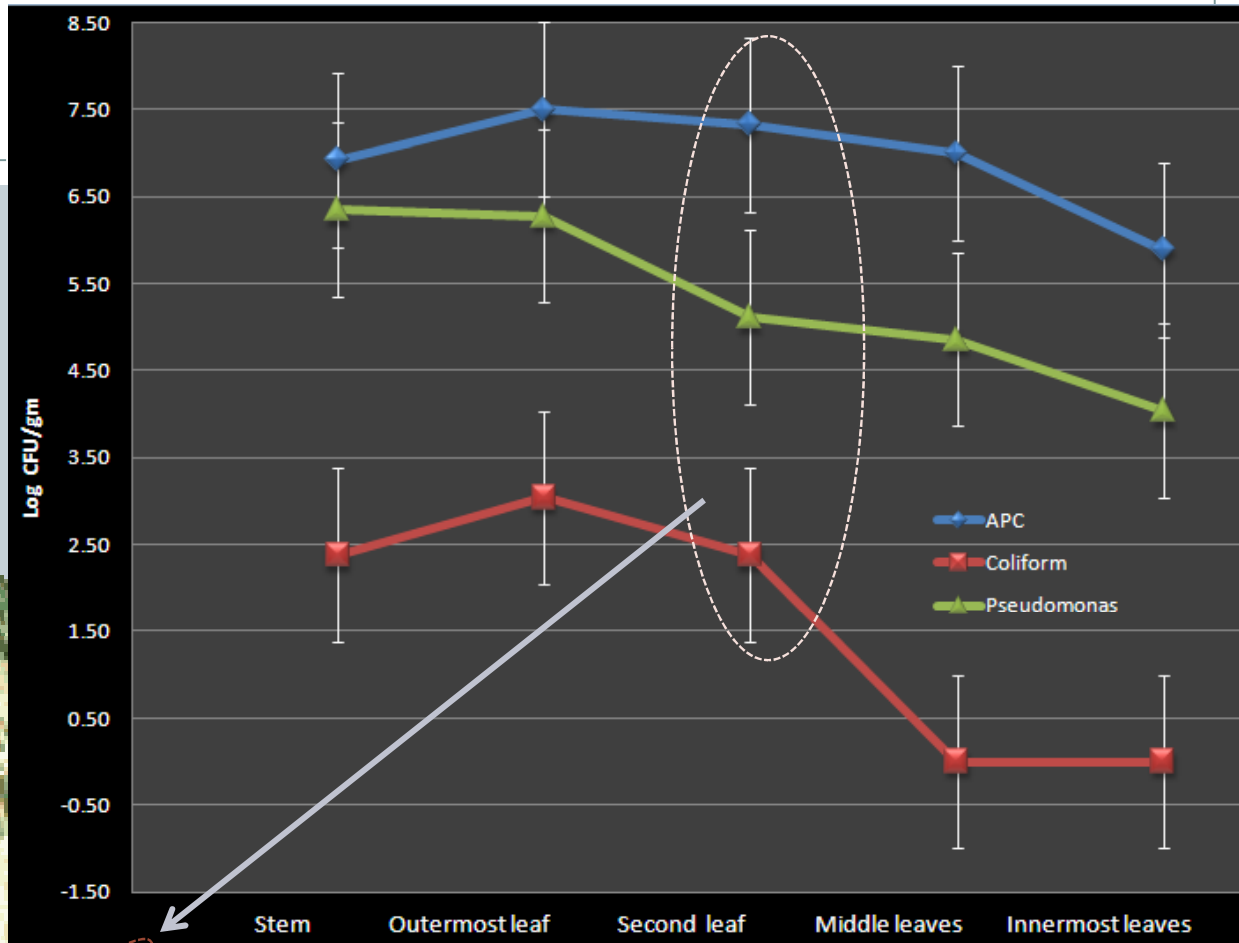
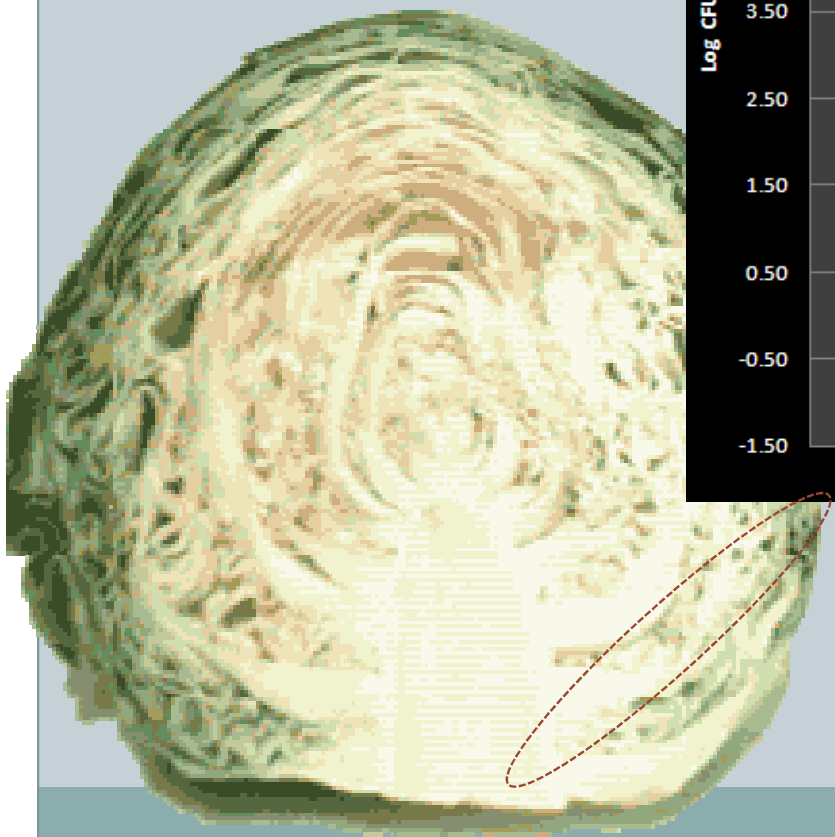


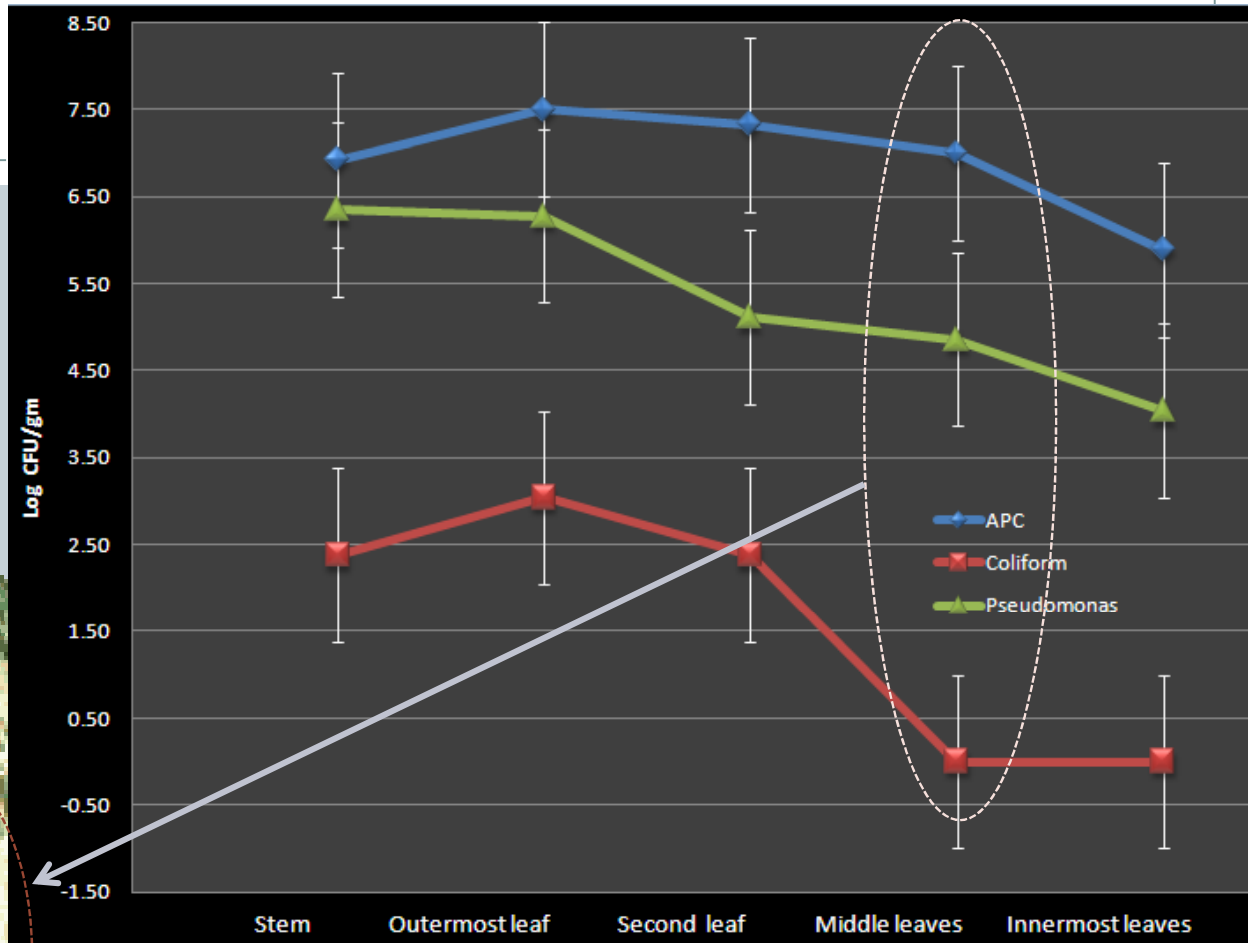
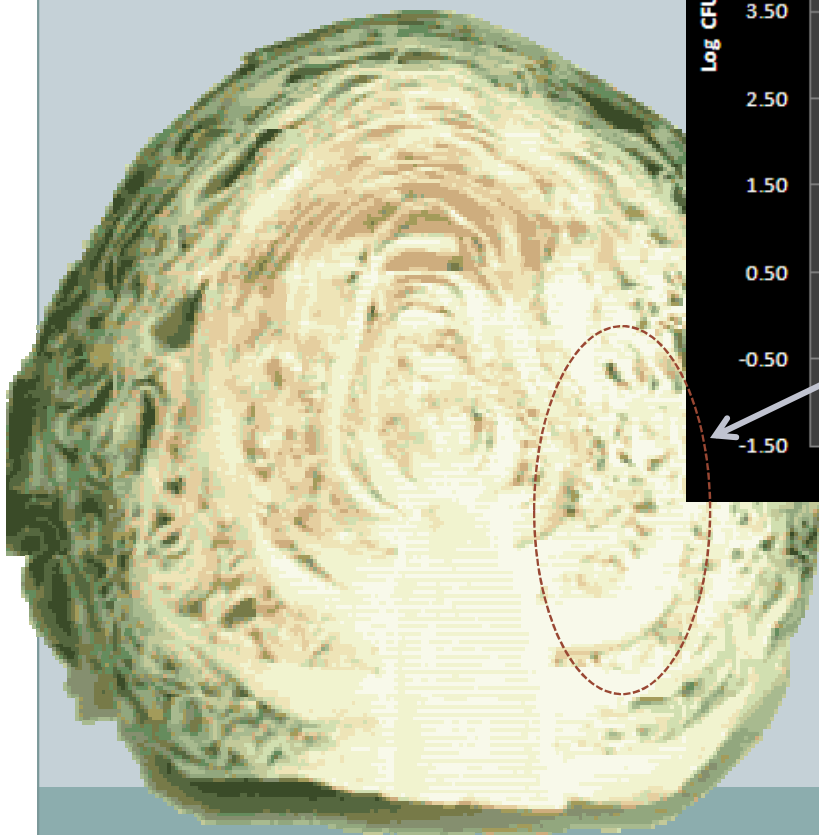
So where are they ??

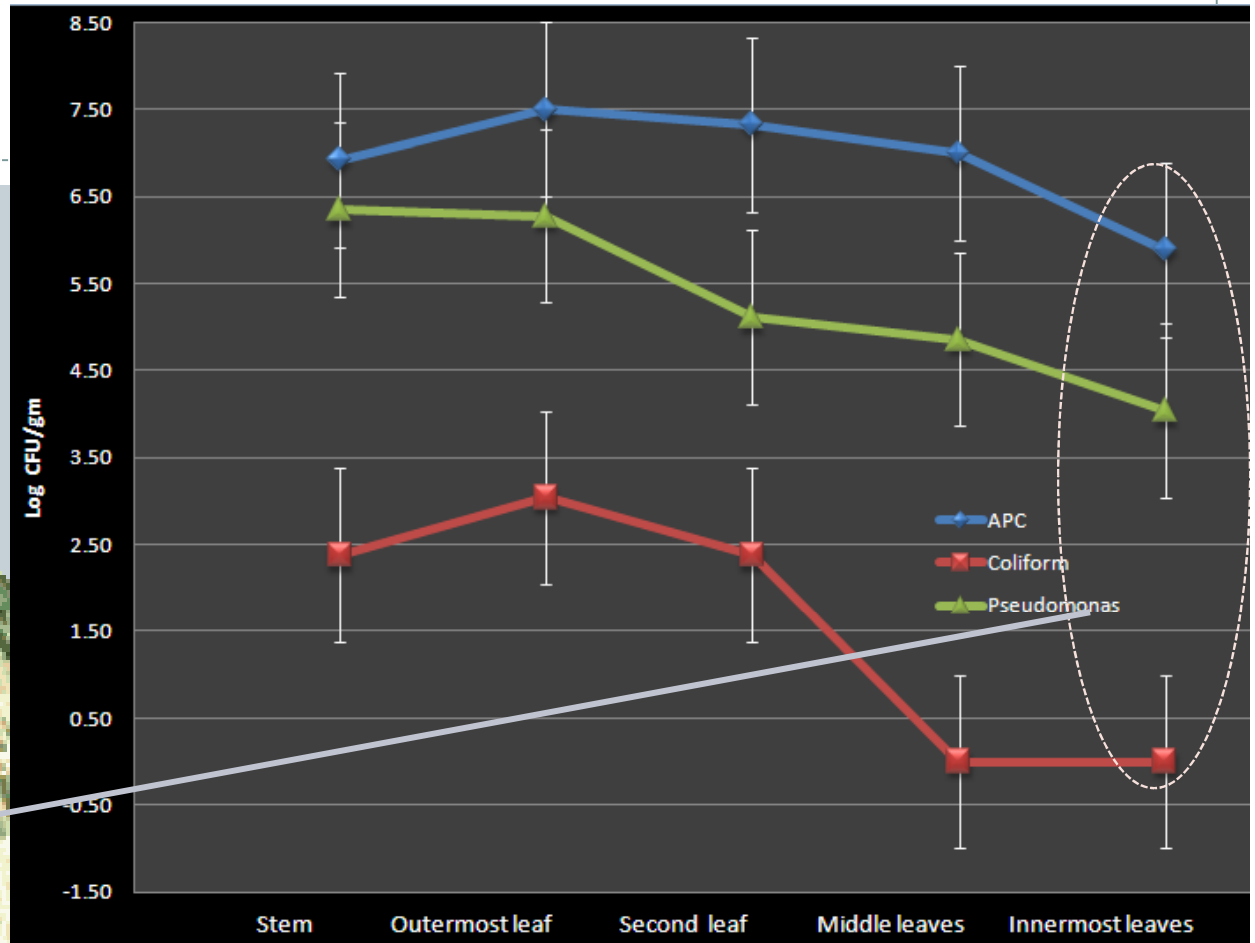
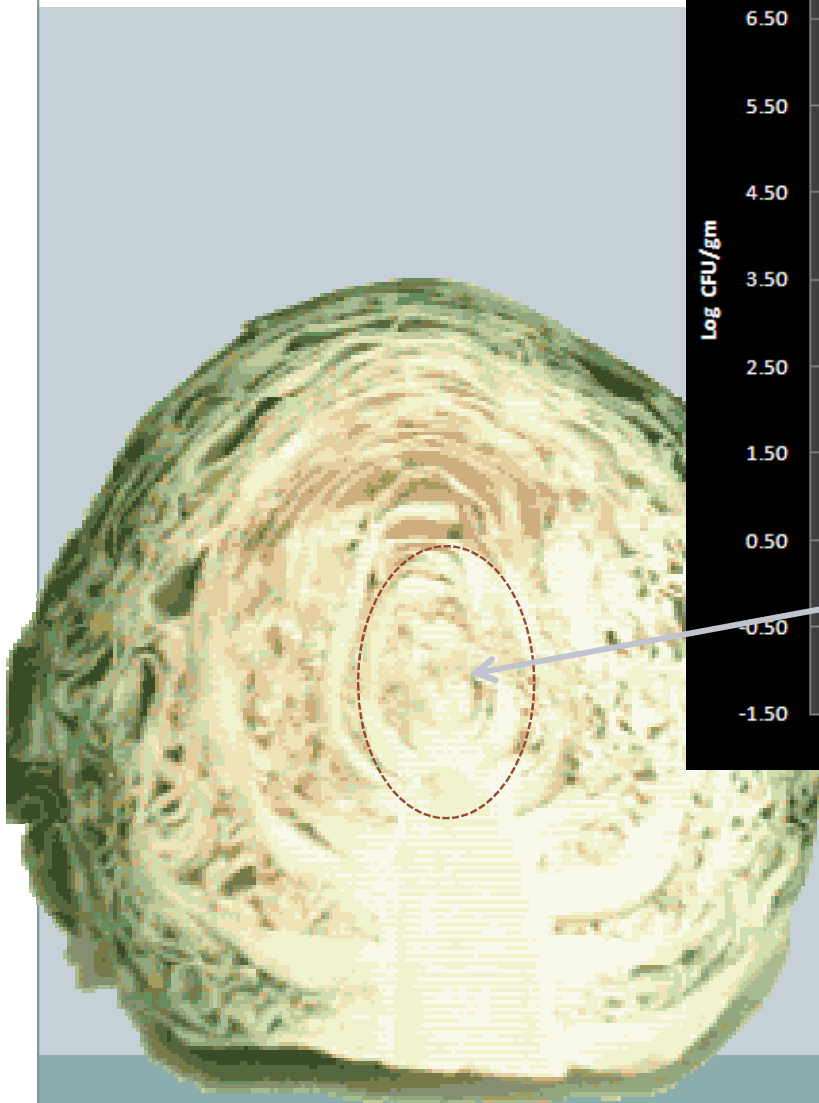












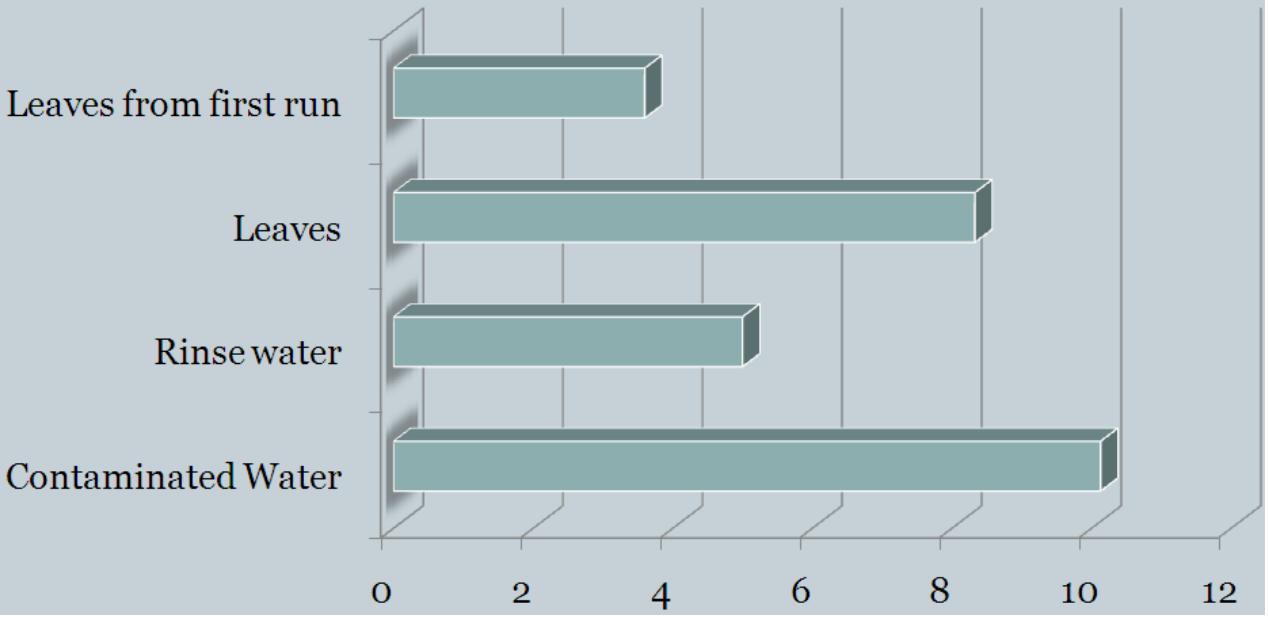


What happens with the water

# Garbage In Garbage Out



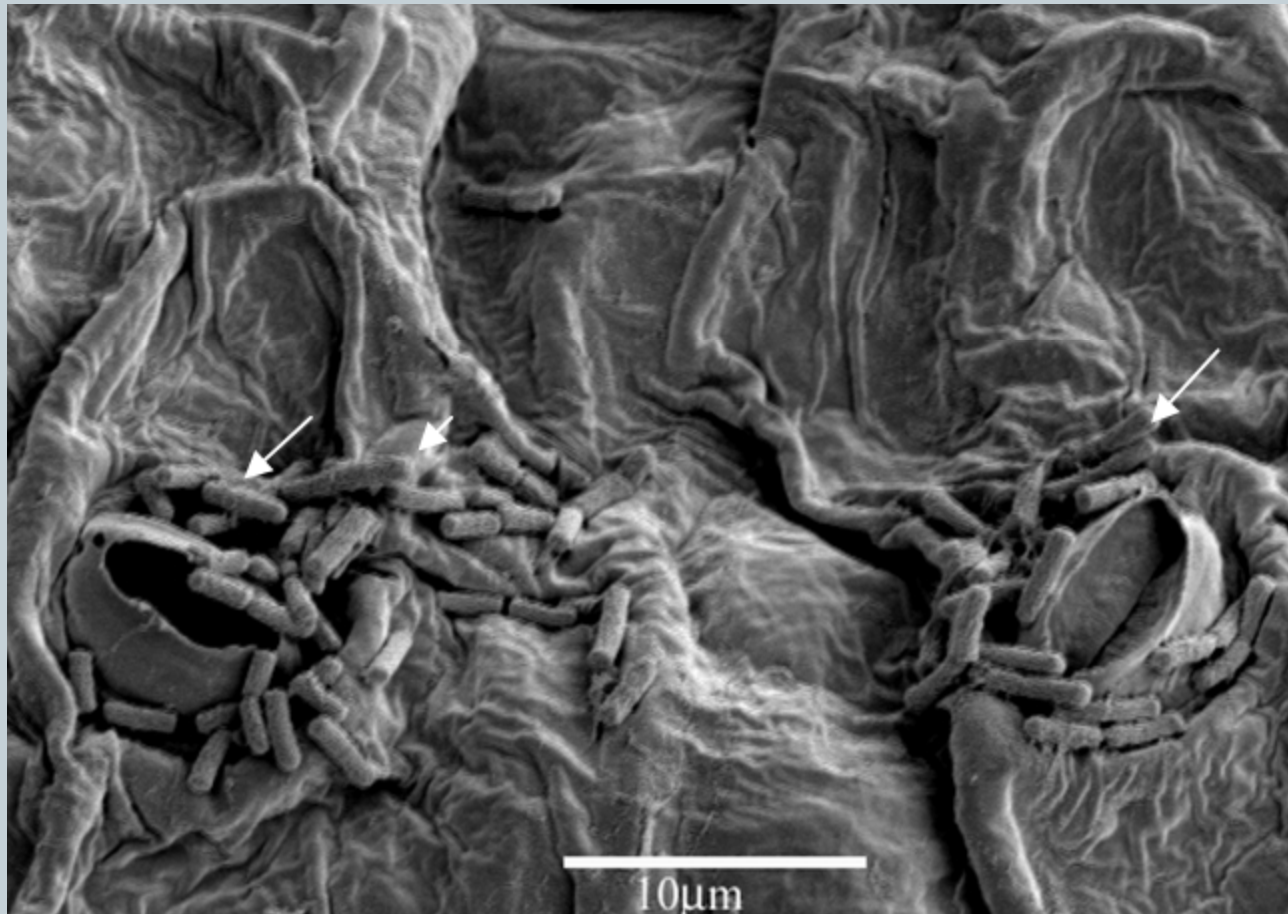
Counts (Log CFU/g)

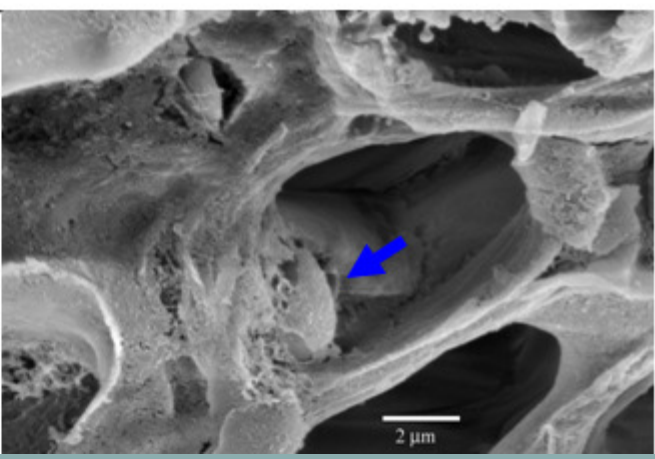
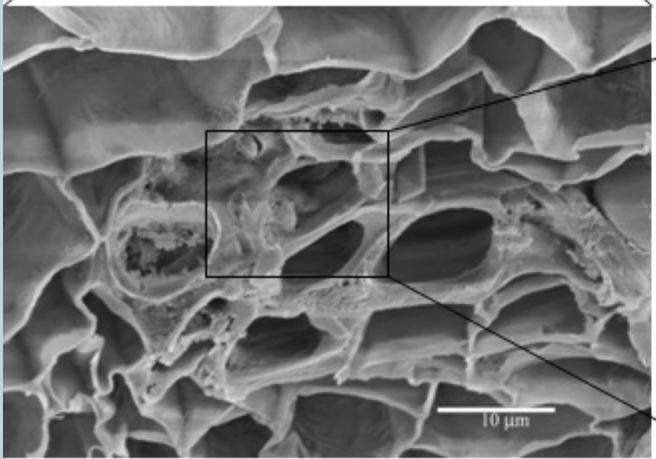
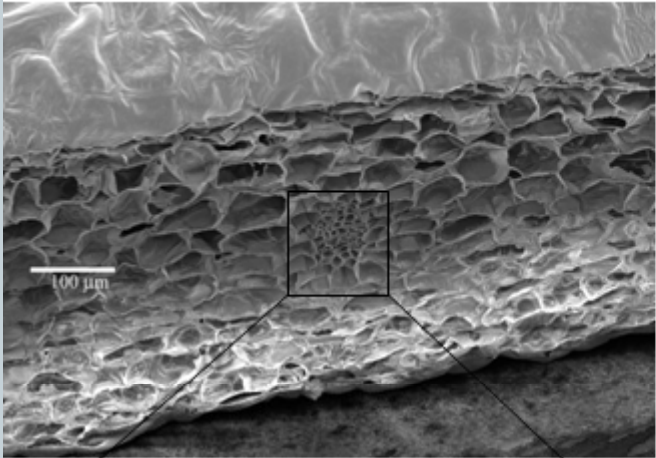


After batch 3

After batch 5

# Effects of contaminated process water





# Sources of contamination



- Contribution of natural flora
- Contribution from handling
- Contamination from wash and irrigation water and from equipment

# Issues



- Collating data (15 out of over 400 publications) have some mention of water
- Differences in methodology and equipment
- Supply chain
- Types of produce used



Thank you