Lettuce Production in Yuma:

Some noted differences (ag practices and environmental conditions) that might influence risk levels

Jorge M. Fonseca

Yuma Agricultural Center

Dept. of Plant Sciences

THE UNIVERSITY OF ARIZONA
TUCSON ARIZONA

Different Ag Practices

- **Preparation of Soil: Sterilization of soil (e.g. Vapam) is not done in Yuma.**
- **Irrigation Water: Overhead sprinklers is not commonly used in Yuma (exception is baby leafy greens, grown on 84” beds, and some romaine).**
- **Nitrogen levels in fertilization program seem lower in Yuma than in Salinas (observation).**
- **Phosporic acid is commonly used in the Yuma area.**

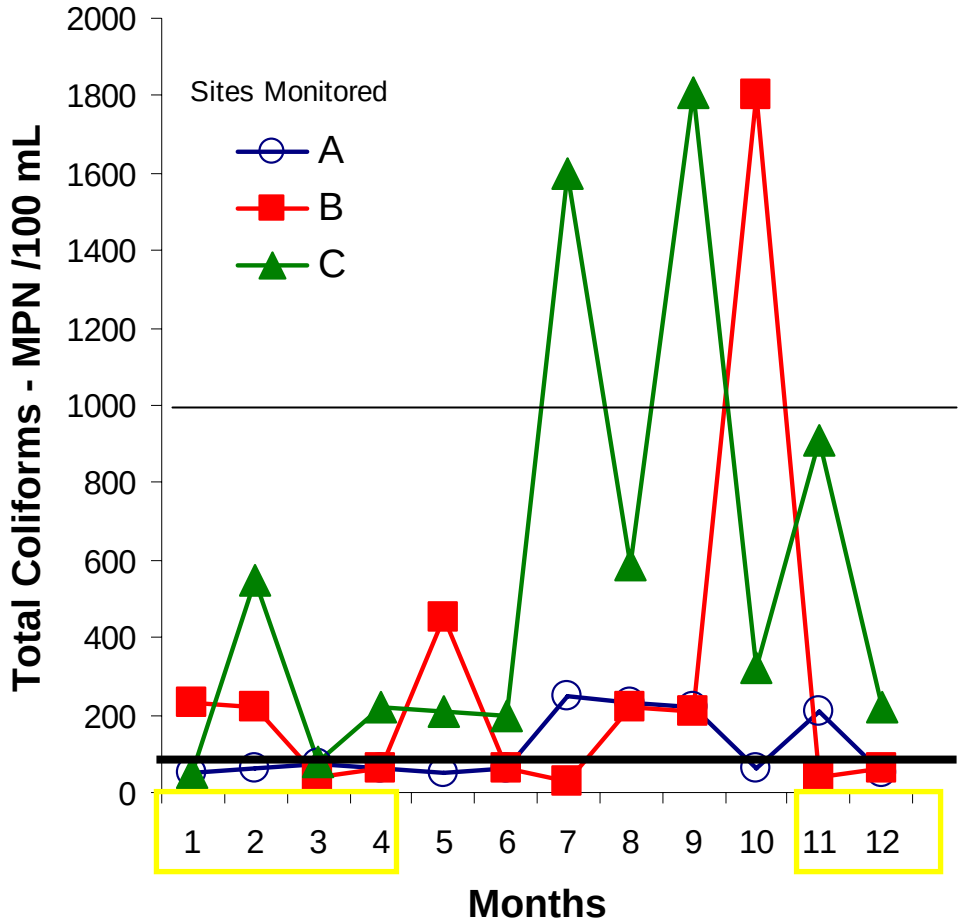
Yuma Lettuce Production: Some Facts

- **Yuma leafy greens never implicated with any outbreak (a melon outbreak in the 80s is mentioned, no information available).**

- **Based on FDA information over 70% of the outbreaks have occurred during the months of July through November.**

- **In 2003, in an informal survey to 10 top AZ growers (American Vegetable Grower) only 1 would monitor water quality. Currently, this has changed. Two local labs in place provide service for bacteria indicators analyses.**

Surface Water Quality (Imperial County)



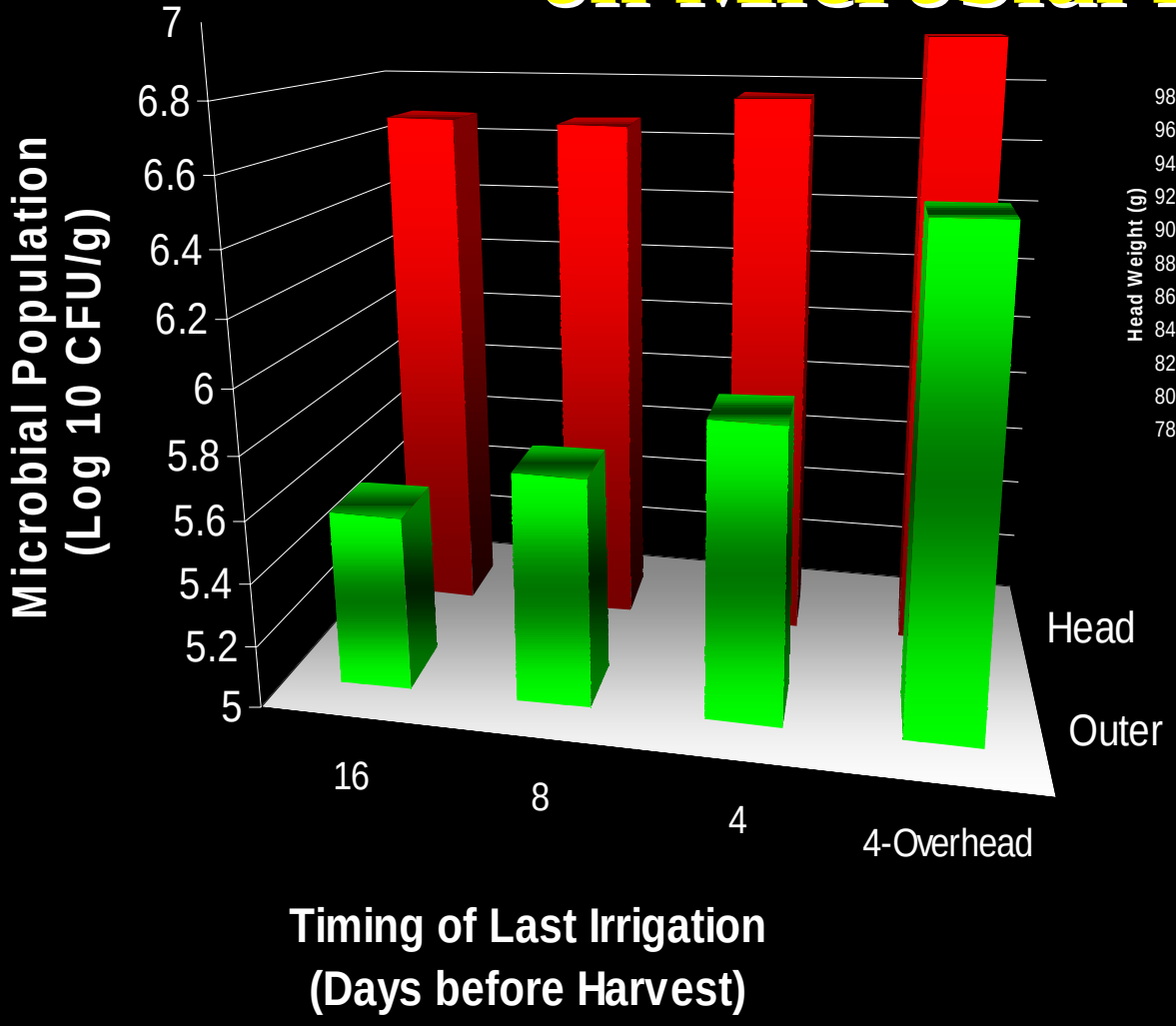
Source: T. Suslow, 2005

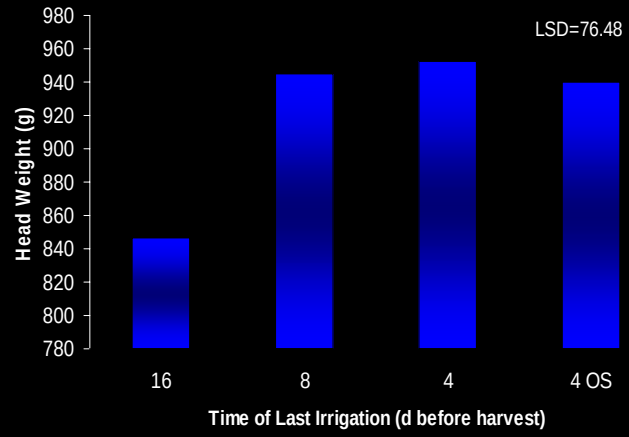
http://ucce.ucdavis.edu/freeform/UC_GAPs/documents/Extension_Presentations1920.pdf

Vegetable Production In Yuma

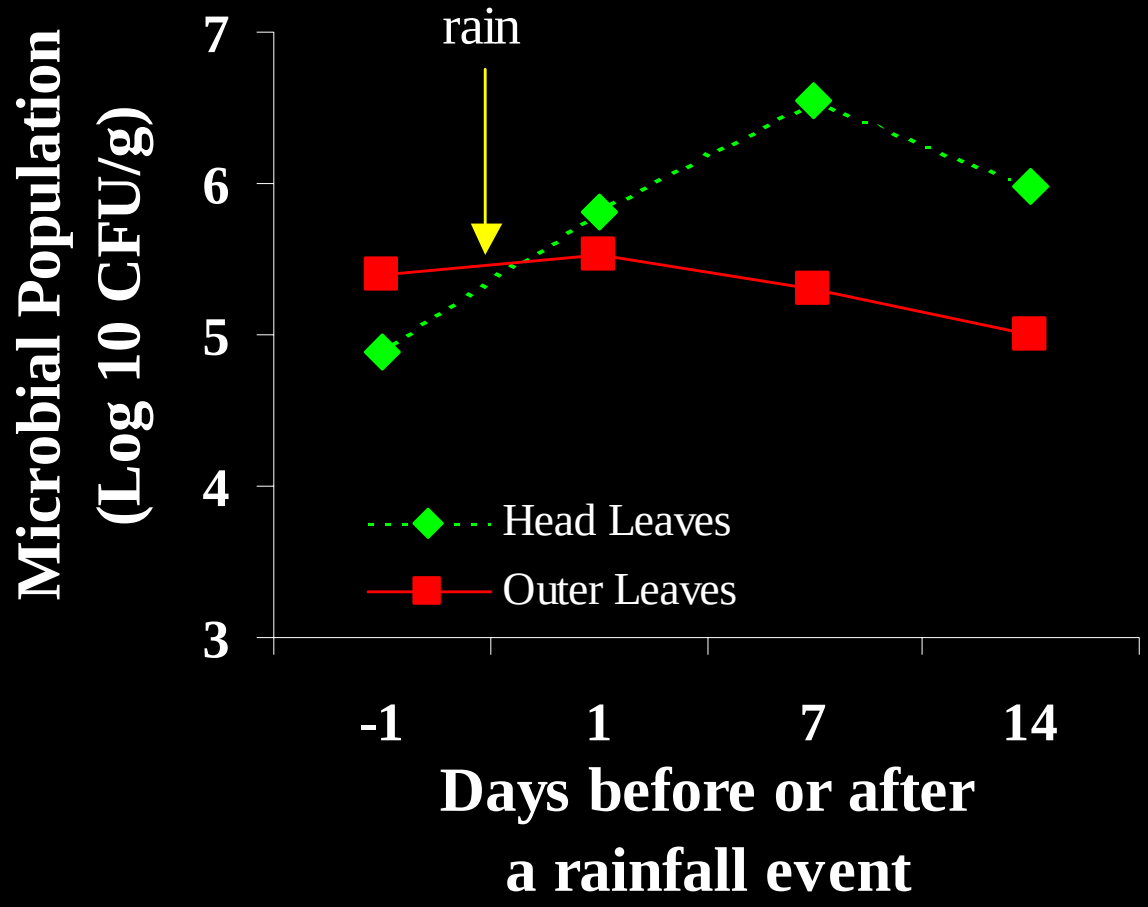
- With exception of migratory birds very few wild animals roaming fields (observation)
- No forest nearby fields
- Only one cattle ranch close to a land that is being farmed (but several sites with domestic animals nearby fields)

Effect of Termination Irrigation on Microbial Population



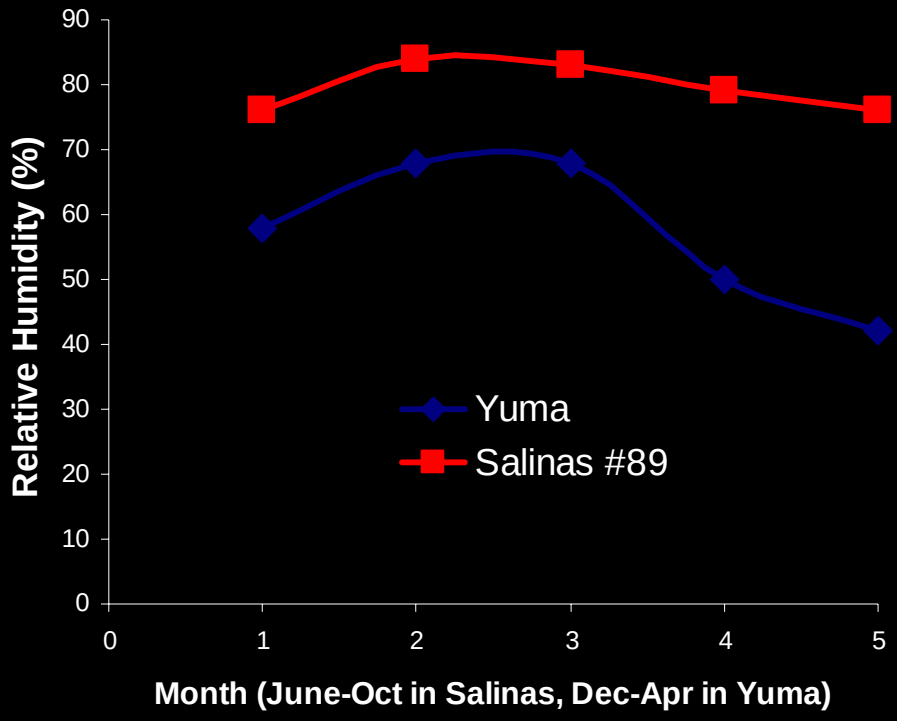


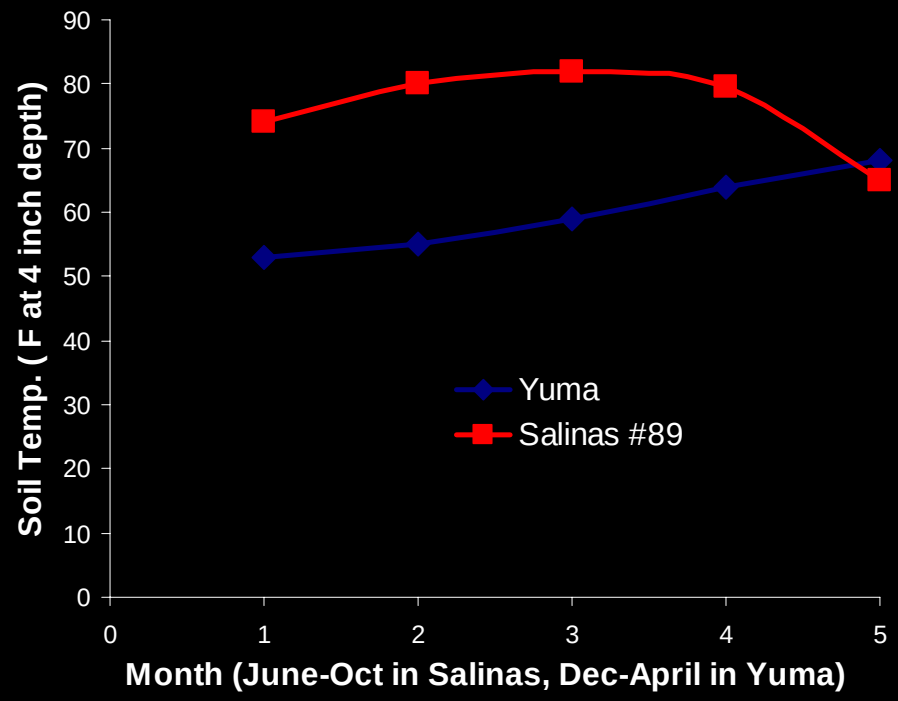
Effect of Rain on Mesophilic Bacteria Load



Environmental Conditions in Yuma differ from those in Salinas

Relative humidity and soil temperature in South Salinas and Yuma during the leafy vegetable season





Low temperature during December/January

'In Arizona crews had to wait up to six hours on some days to harvest because of ice on lettuce; this caused variable quality during December'
Jan., 2006 – US Dept. Agriculture

Environmental Conditions During Harvest Season in Yuma

- **Water quality: Almost 100% of the growers source water from Colorado river**
- **Water quality: High content of salt in water**
- **Daily sunlight in Yuma appear lower than most places but day length differs (effect?)**
- **In general soil temperature is lower in Yuma**
- **In general relative humidity is lower in Yuma**

On-going and Future Research

- **Study to monitor water in irrigation canals and determine any possible abiotic/biotic factors that correlates with bacteria population fluctuation**
- **Survival rate of pathogen under different conditions**
- **Sanitizing alternatives to chlorine**

Some Remaining Questions

- **No information about monitoring of E. coli O157.H7 in domestic animals in the Yuma area**

- **Private lab has not confirmed the rumor that E. coli O157.H7 was found once in the river/canal. Other pathogens have been found (work by Gerba et al.), but little is known about fate of pathogens in real conditions**

- **A feasibility study has not been done on the potential use of sanitizers in the water**