

# **Evaluation of Fusarium wilt survival in tomato as influenced by rotational crops of flooded rice and dry-farmed crops**

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**University of California**  
Agriculture and Natural Resources

# Background

- 2018, most farm calls were Fusarium wilt (Fol)
- Sutter Basin-rice rotations
  - What is the influence of flooded rice on Fol?



# Objectives and Goals

- **Test inoculum bag concept**
- **Long-term: determine if summer flooding of rice crops, or dry farming of other rotation crops reduces Fusarium pathogen in subsequent tomato crops**



# In-field Procedures



- Rice field was tomato in 2018 with history of Fol
- Tomato field as positive control



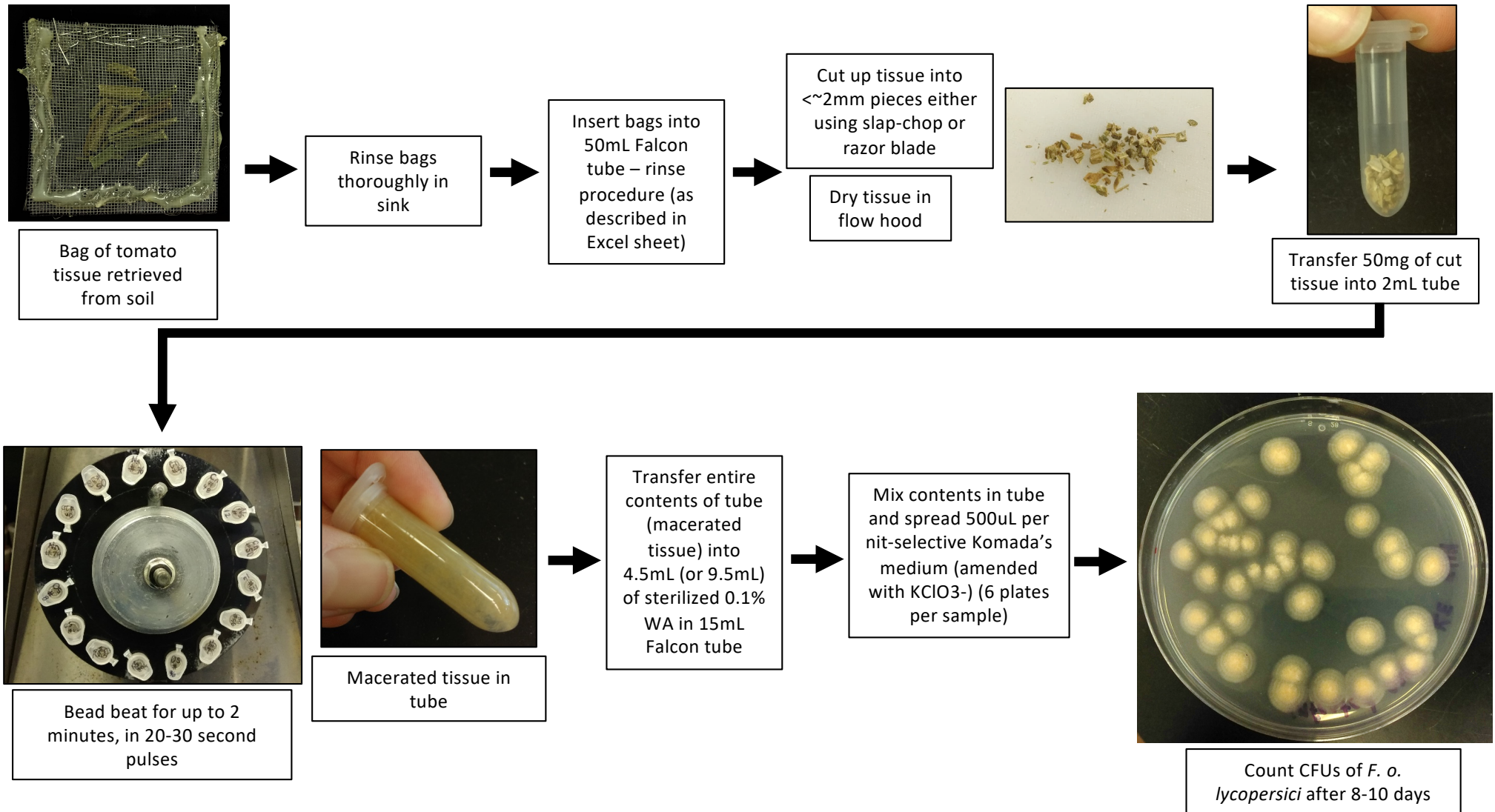
# In-field Procedures



- **Collected 6 bags from the rice field each month (4 time points)**
- **3 bags from tomato field at last two time points (August and September)**



# Lab Procedures



# Results

- **At all time points, Fol NOT recovered from tomato residue buried in rice field**
  - No spore development (0 CFU)
- **Fol was recovered from tomato residue buried in tomato field**
  - 150-3,750 CFUs/g of Fol tissue

Time	Sample	CFU/g	
		Rice	Tomato
June	1	0	
June	2	0	
June	3	0	
June	4	0	
June	5	0	
June	6	0	
July	1	0	
July	2	0	
July	3	0	
July	4	0	
July	5	0	
July	6	0	
August	1	0	483
August	2	0	3750
August	3	0	650
August	4	0	
August	5	0	
August	6	0	
Sept.	1	0	2083
Sept.	2	0	150
Sept.	3	0	1317
Sept.	4	0	
Sept.	5	0	
Sept.	6	0	



# What does this mean?

- **Anaerobic conditions of flooded rice lead to no spore development of Fol (at least in 2019)**
- **However, this does not mean Fol will not develop once field is back in tomato**
- **Long-term—get a picture of what is happening each year**



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- **Swett lab**
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# Season Review: Colusa/Sutter

- Abiotic issues??
- Southern blight
  - Only farm calls from Colusa Co.
- Fusarium diseases
  - First year *F. falciforme* confirmed in Sutter Co.
  - Fol in June



# 2018-2019 Farm Call Summary

	2018	2019
Alfalfa mosaic virus, necrotic strain	1	
Alfalfa mosaic virus, yellowing strain		1
Bacterial canker	1	1
Corky root rot		
Fusarium crown and root rot	2	1
Fusarium falciforme		2
Fusarium wilt	17	5
Root-knot nematode		1
Southern blight	2	3
Verticillium wilt	1	1
Dual infections: 2018-Fusarium wilt and bacterial canker; 2019-southern blight and F. falciforme, bacterial canker and F. falciforme		

# Update on Pest Management Strategic Plan (PMSP)

- Planning document detailing pest-management issues and management practices in a particular crop directly from stakeholders
  - Needs Assessment
- Currently no PMSP for processing tomatoes
- Priority research, regulatory, and education needs for California processing tomato
- Anticipated publish date as Spring 2020



# Questions?

