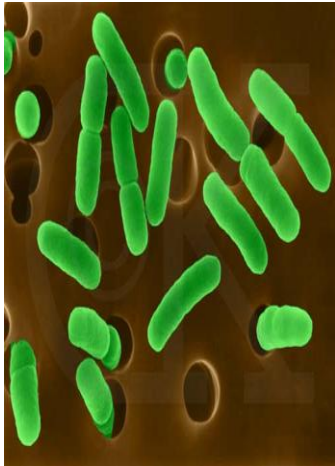


Bacterial sampling and analysis from a RMS Rainwater Harvesting system:

Goins Farm cistern, Prospect VA



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Sarah Lucento

Timothy Smith

Dept. of Biological/Environmental Sciences

Longwood University

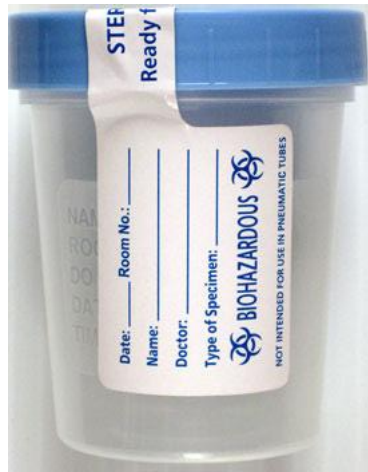
Thursday, Sept 29, 2011

Prince Edward Natural Resources – Agriculture Bldg

Farmville, VA

Sampling method for bacteria

- ▶ Clean caught samples
 - Using surface sterilized weighted sampler with sterile collection bottles (120 mL) from cistern tank
 - Hand caught from surface sterilized spigot fixtures with sterile collection bottles



Sample preservation and processing

- ▶ Samples and duplicates placed on ice and transported to Microbiology lab at Longwood
- ▶ Sampling locations at Goins Farm project:
 - Tank x 2
 - Pumphouse x 2 (Before UV sanitization)
 - Barn spigot x 2 (After UV sanitization)
- ▶ Processed for **Total coliform bacteria** and *E. coli* using Colilert® Defined Substrate media
- ▶ Incubated at $35^{\circ}\text{C} \pm 0.2^{\circ}\text{C}$ for 24 ± 2 hrs
- ▶ Enumerated by restrictive MPN analysis

Colilert Defined Substrates Assays

Mix reagents with sample,
pour into incubation tray



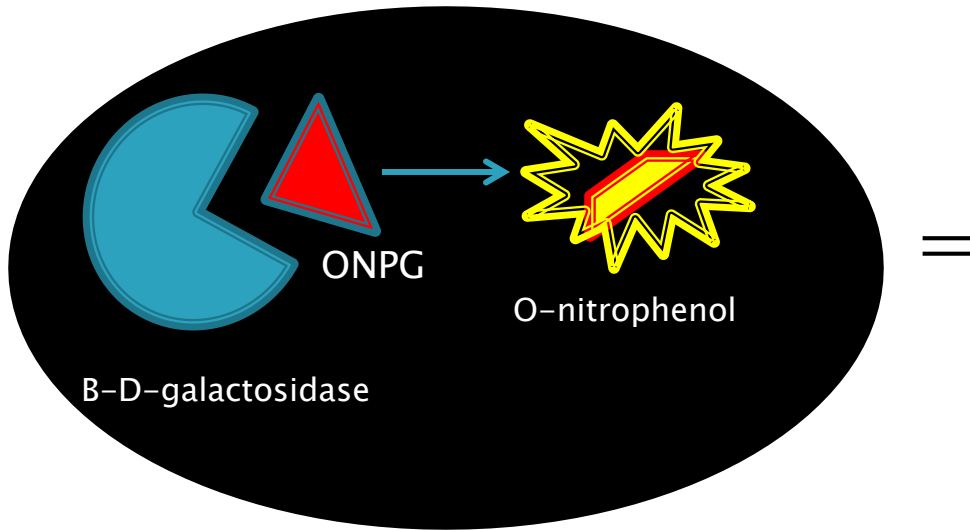
Count yellow cells as
total coliform; florescent
cells as *E. coli*.



Seal, incubate

**Pictures courtesy of Idexx Corp., Westbrook, Maine
Colilert Quanti-Tray/2000®**

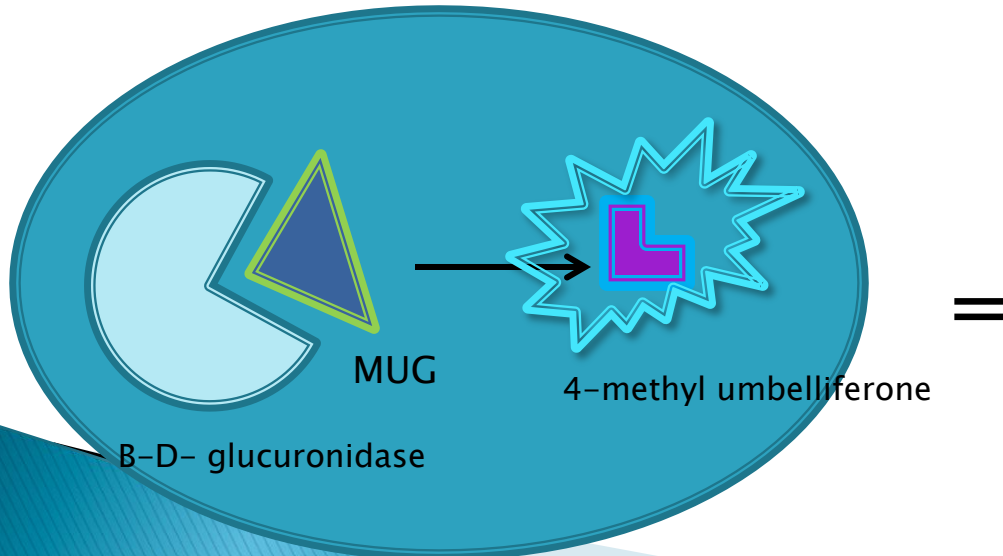
Coliform bacteria response:



The Test results:

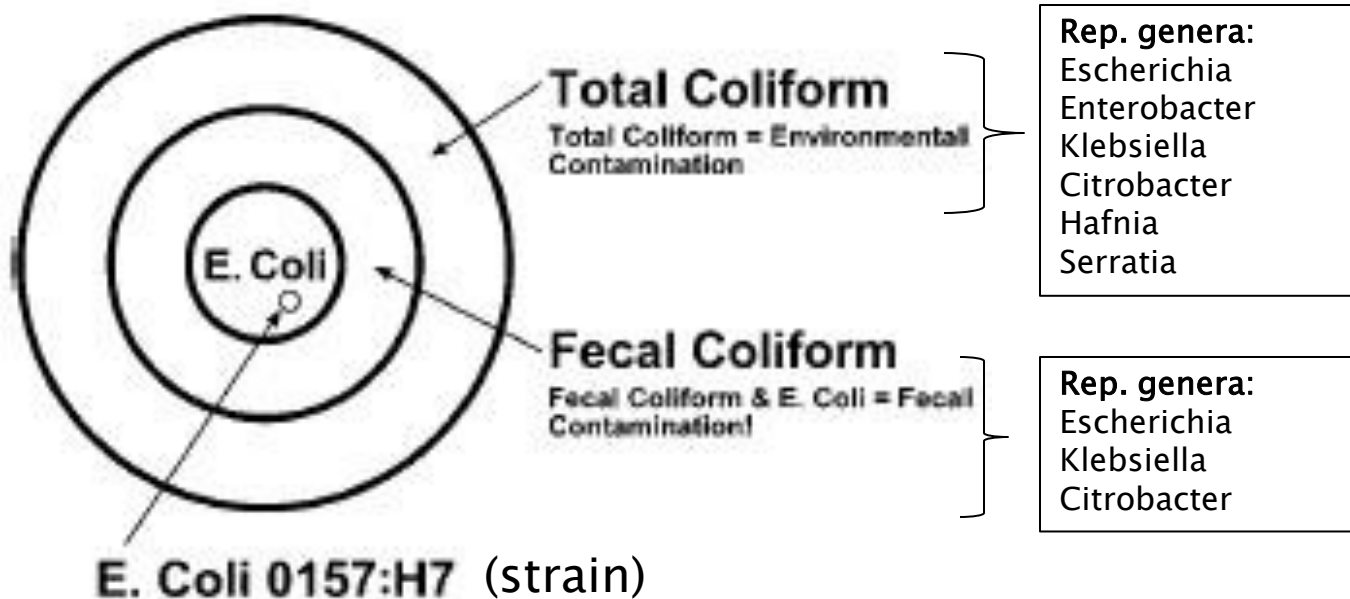


Escherichia coli response:



The wide world of Coliform bacteria

TOTAL COLIFORM, FECAL COLIFORM AND E. COLI



E. coli Results (#/100 mL)

Field Duplicates

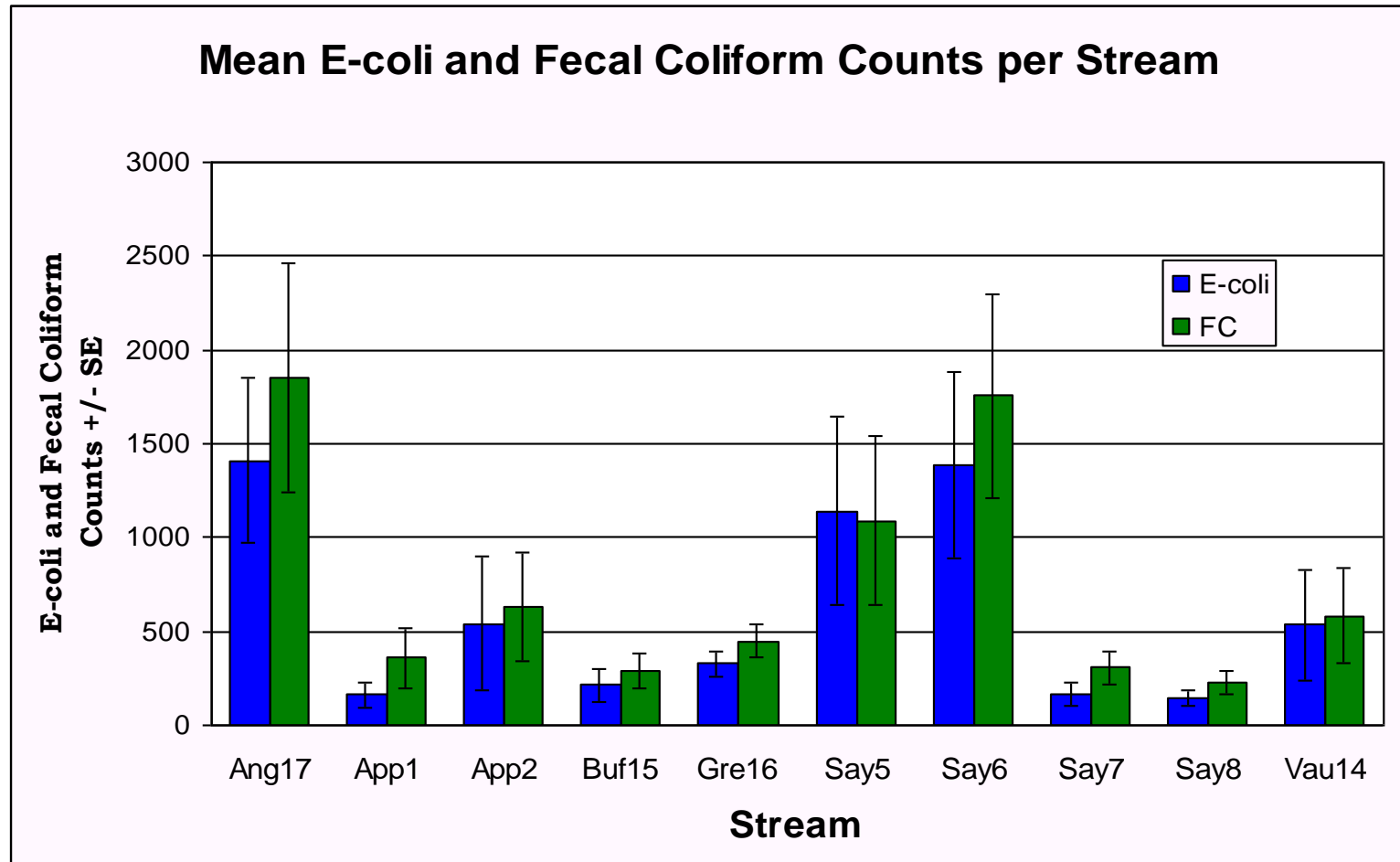
Date	Tank	Pumphouse (Before U-V)	Spigot (After U-V)
25-Jul-11	0	0	0
8-Aug-11	0	24 and 20	**low water/pump off
17-Aug-11	0	0	0
30-Aug-11	trace <1	0/trace	0
15-Sep-11	3	3 and 4	0

**Total Coliform
results
(#/100 mL)
Field duplicates**

Date	Tank	Pumphouse (Before U-V)	Spigot (After U-V)
25-Jul-11	0	16 and 0	0
8-Aug-11	0	84 and 140	**low water/pump off
17-Aug-11	56 and 20	8	0
30-Aug-11	27 and 41	15 and 23	0
15-Sep-11	67 and 101	199 and 225	2 and 9

As a comparison:

Recent analysis of area stream sites





Questions?