

EGG SAFETY ACTION PLAN RESEARCH NEEDS



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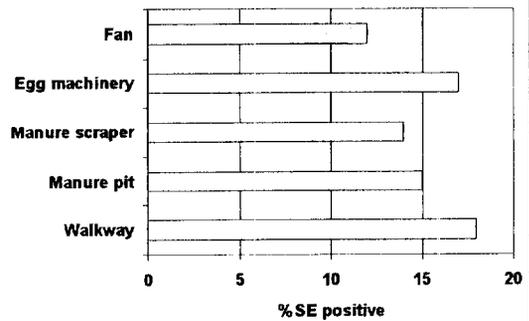
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Objective 7.3 -
Conduct research to improve testing methodologies for SE on the farm and in eggs

- Sampling protocols
- Screening tests
- Development of rapid tests
- Molecular methods for subtyping SE
- Identification of virulence factors

Sampling Protocols: Environment *PEQAP*

- Manure pit
- Manure scrapers
- Egg machinery
- Walkway

Environmental Sampling of Layer Houses for Salmonella (SEPP, 1995)



Sampling Protocols: Environment *NAHMS*

- Manure pit
- Manure scrapers
- Egg machinery
- Walkway

Sampling Protocols: Environment *FDA Traceback*

- Manure pit
- Manure scrapers
- Egg machinery
- Fan
- Walkway
- Feed

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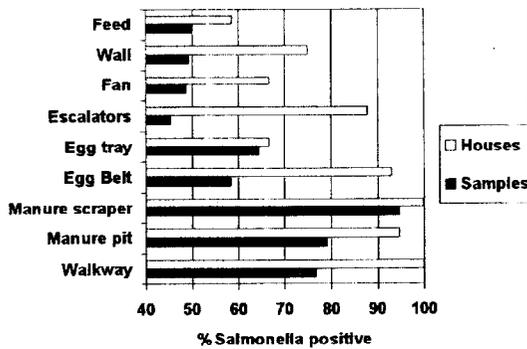
**Sampling Protocols:
Environment
FDA Traceback**

- High rise pit
- Shallow pit, one story with scrapers
- California style, one story w/o scrapers
- One story with scrapers and lagoon, water flushing under cages
- Suction pit
- One story with single tier rows
- One story with manure belts
- Houses with egg belts
- Houses w/o egg belts, hand gathered

**Sampling Protocols:
Environment
Waltman et al.**

- Manure pit
- Manure scrapers
- Egg machinery
- Walkway
- Fan
- Feed
- Other

**Environmental Sampling of Layer
Houses for Salmonella**



**Research Needs:
Sampling Protocol - Environment**

- Comparative study of SE positive houses to determine which sample source or sources are best
- Comparative study to determine how to sample different house types equivalently
- Determine optimum number of samples
- Determine the effectiveness of pooling samples

**Sampling Protocols:
Eggs**

- PEQAP sanitize shell surface with alcohol and iodine solution; aseptically crack eggs and pool contents of 20 eggs into bag; total of 480, 1000, or 4000 eggs
- FDA Traceback same as PEQAP except a total of 1000 eggs

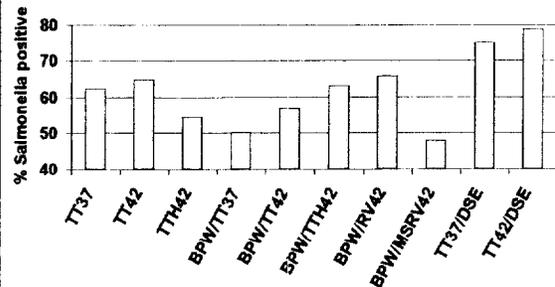
**Screening Tests:
Environment
PEQAP**

- 100 ml TTH added to each sample
- Incubate 42 C for 18-24 hrs
- Inoculate BG and XLD agar
- Screen 3-5 colonies
- If negative re-incubate TTH for 24 hrs

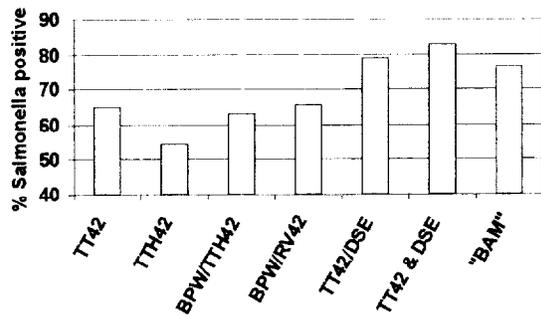
**Screening Tests:
Environment
FDA Traceback**

- Add 10X volume with TBG
- Incubate 41 C for 24 hrs
- Inoculate BGN and XLT4 agar
- Screen up to 5 colonies

**Methods for Isolating Salmonella
from Layer Houses**



**Methods for Isolating Salmonella
from Layer Houses**



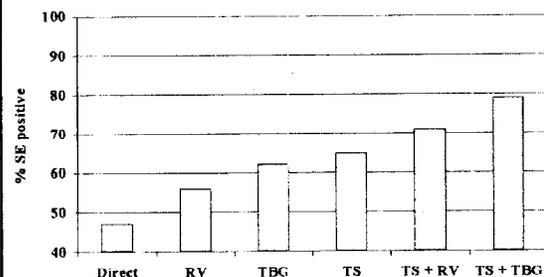
**Screening Tests:
Eggs
"Challenges"**

- Humphrey et al., 1989 <10 SE/egg
- Humphrey et al., 1991 72% had <20 SE/egg
- USDA Risk Assessment 1 in 20,000 eggs contaminated
- Several studies SE contamination is intermittent and sporadic

**Screening Tests:
Eggs**

- Pools of 20 eggs are mixed thoroughly and incubated at room temperature for at least 3 days
- Sample of culture is inoculated onto 2 selective agar plates
- If heavily contaminated, inoculate selective enrichment

**Screening Procedures:
Eggs
Gast, 1993**



**Research Needs:
Molecular Methods for Subtyping SE**

- Acceptance of a standard method of molecular typing
- Reference laboratory responsible for testing