



United States Department of Agriculture

Veterinary Services

National Animal Health Monitoring System Layers 2013

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Animal and Plant Health Inspection Service
Veterinary Services STAS
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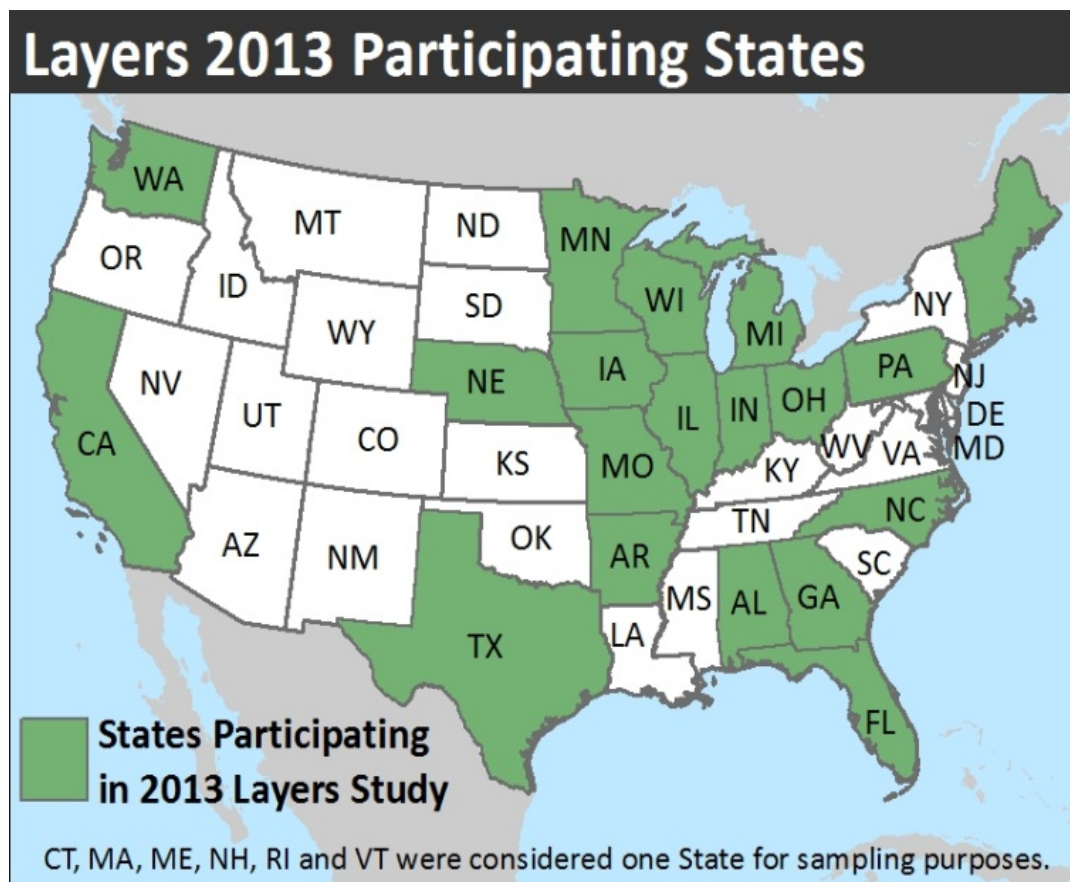


Objectives

- Update previously collected information on layer farm management practices relevant to SE
- Estimate the prevalence of SE on layer farms
- Investigate risk factors for SE on layer farms

Methods

- Sample of farms with 3,000 or more laying hens in 19 States selected from FDA list of registered premises



Methods

- In-person interview
- Questionnaire addressed management practices relevant to SE: biosecurity, rodent control, molting, and vaccination
- Questions regarding pullet rearing, SE testing, and vaccinating were primarily answered by a company representative
- Questions relating to day-to-day layer management were primarily answered by farm personnel

Methods (cont'd)

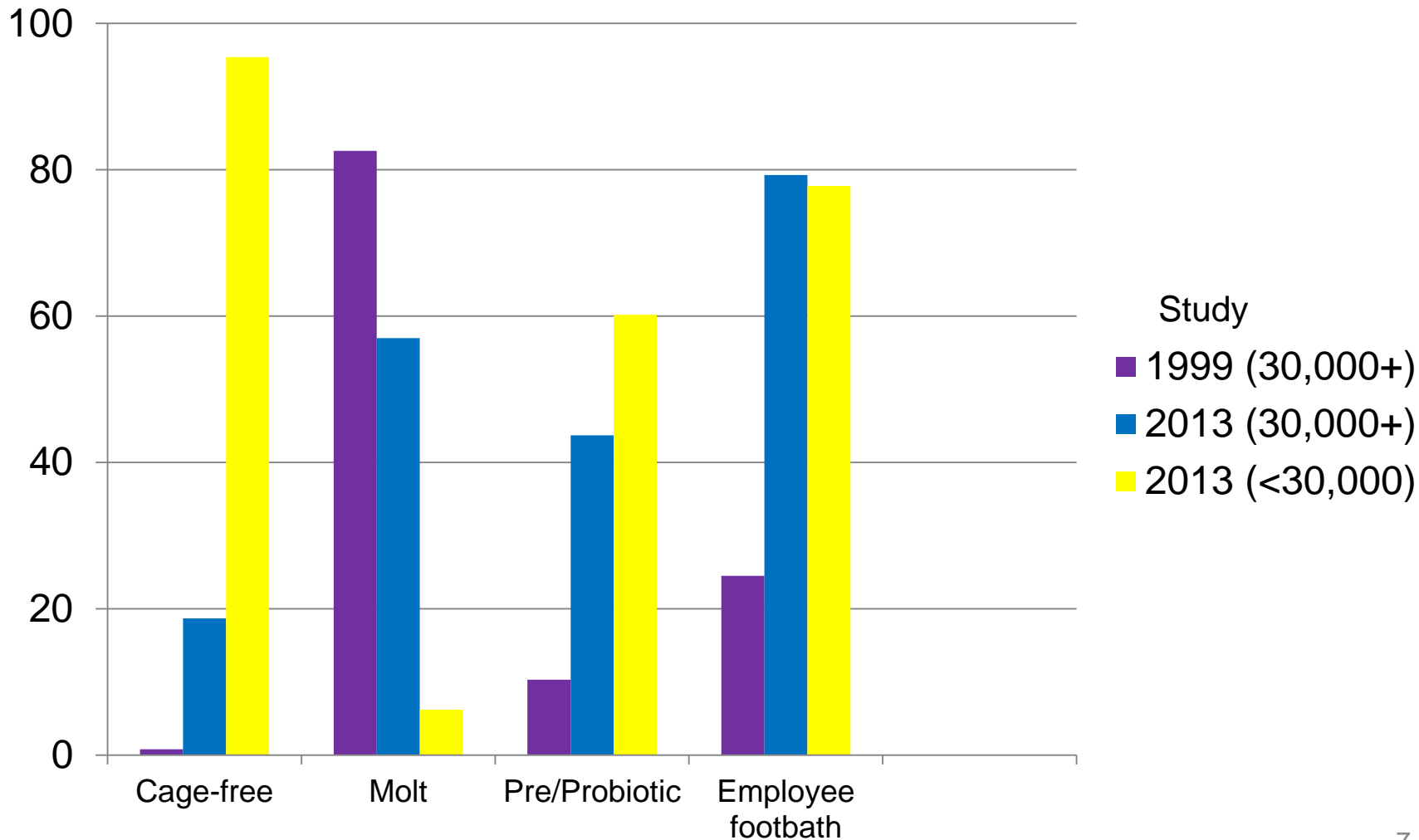
- No biologic samples were collected. Producers were asked about testing for SE in the layer house environment from June 1, 2012 through May 31, 2013
- Data were weighted to reflect the population
- Confidential and voluntary

Comparison of 1999 and 2013 NAHMS layer farm studies

	1999 study	2013 study
List frame	NASS	FDA
Inference population	Operations with 30,000 or more laying hens in 15 States	Farms with 3,000 or more laying hens in 19 States (subset of farms with 30,000 or more laying hens for comparison with 1999 study)
Testing	Swabs of layer-house environment collected one time by data collector for culture	Producer-reported test results for 1 year. Tests included culture, PCR, and other rapid tests
Rodent assessment	One-time data collector observation	Producer-reported typical level of problem for 1 year

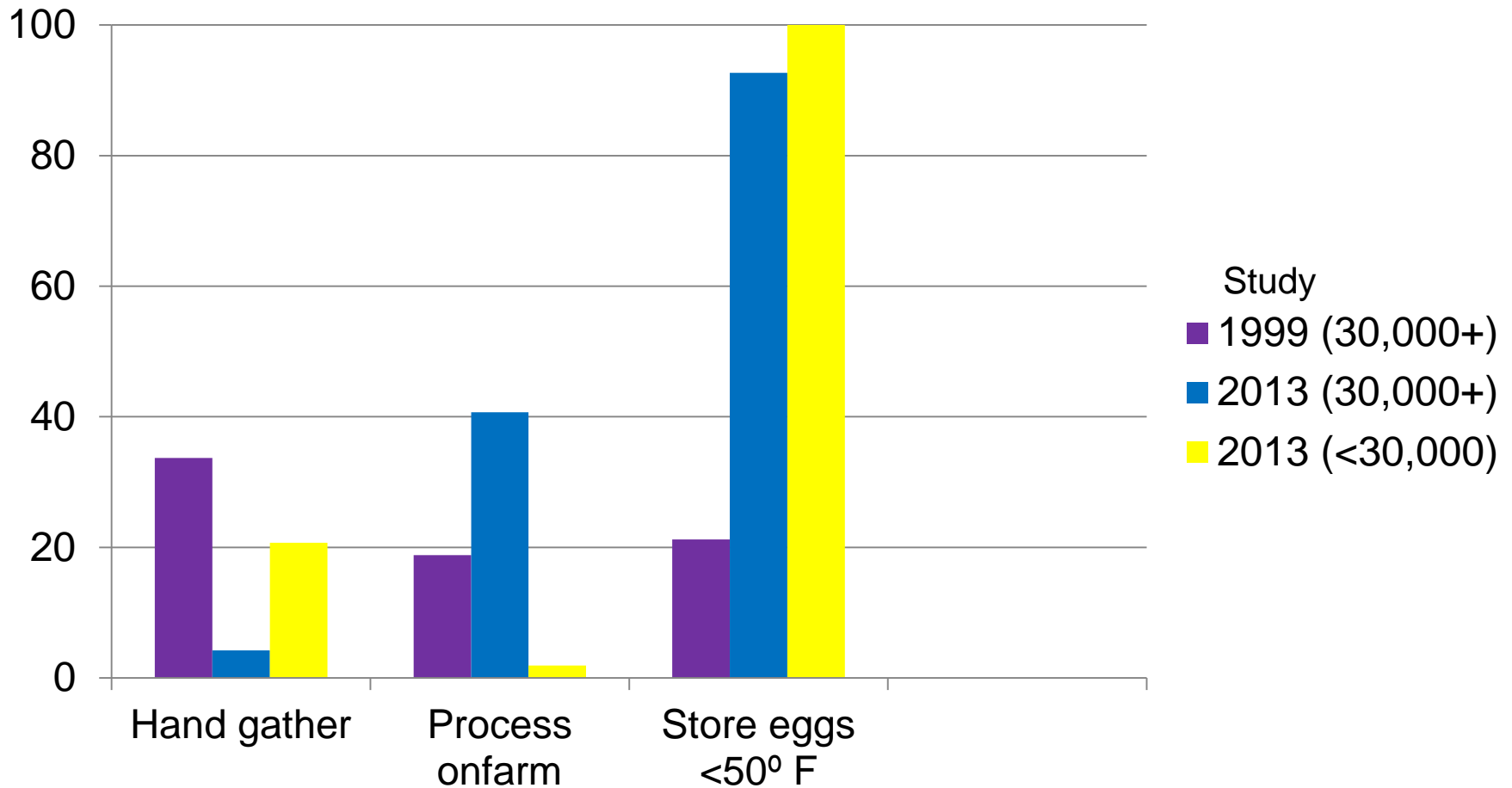
Results

Percentage of farms by management practices



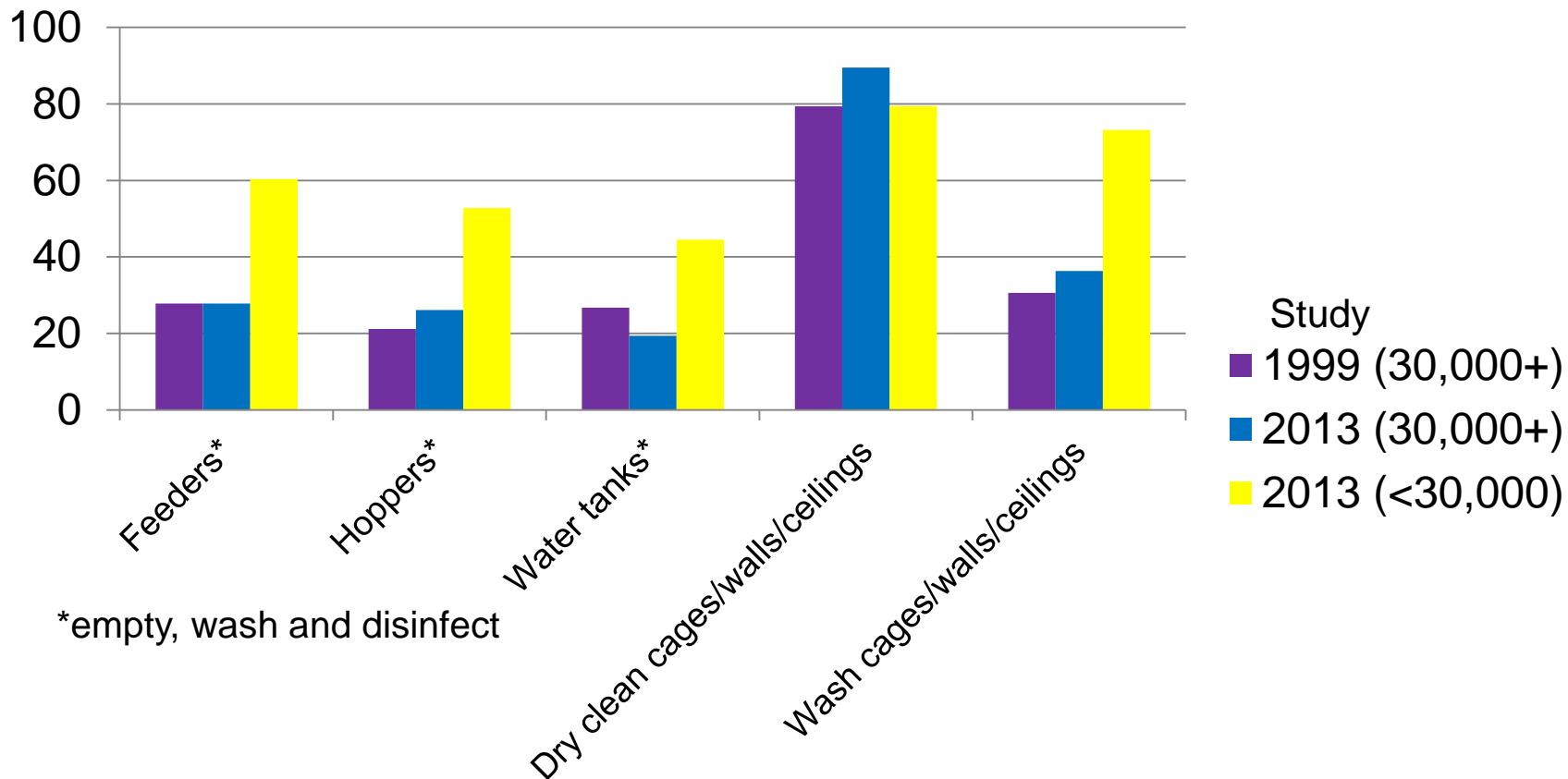
Results

Percentage of farms by egg-handling practices



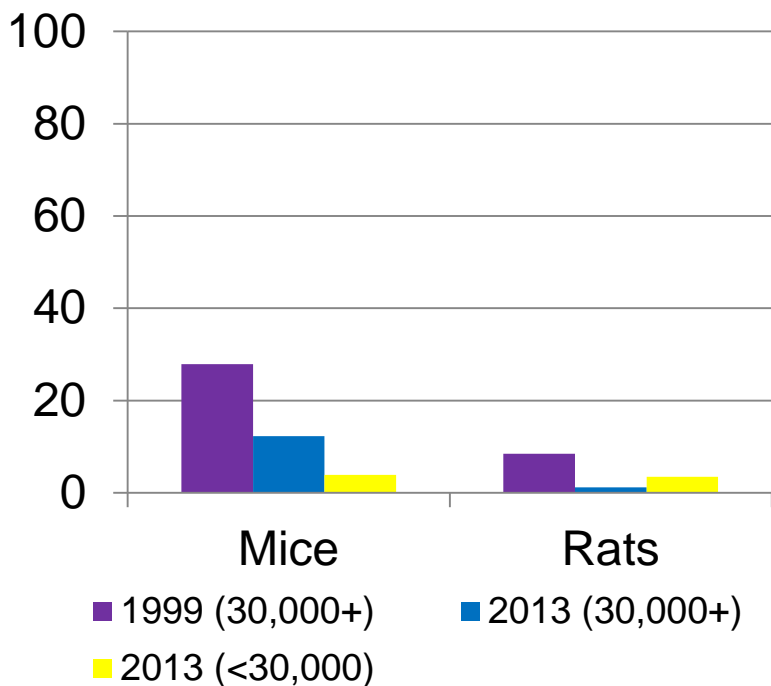
Results

Percentage of farms by C&D procedures after every flock

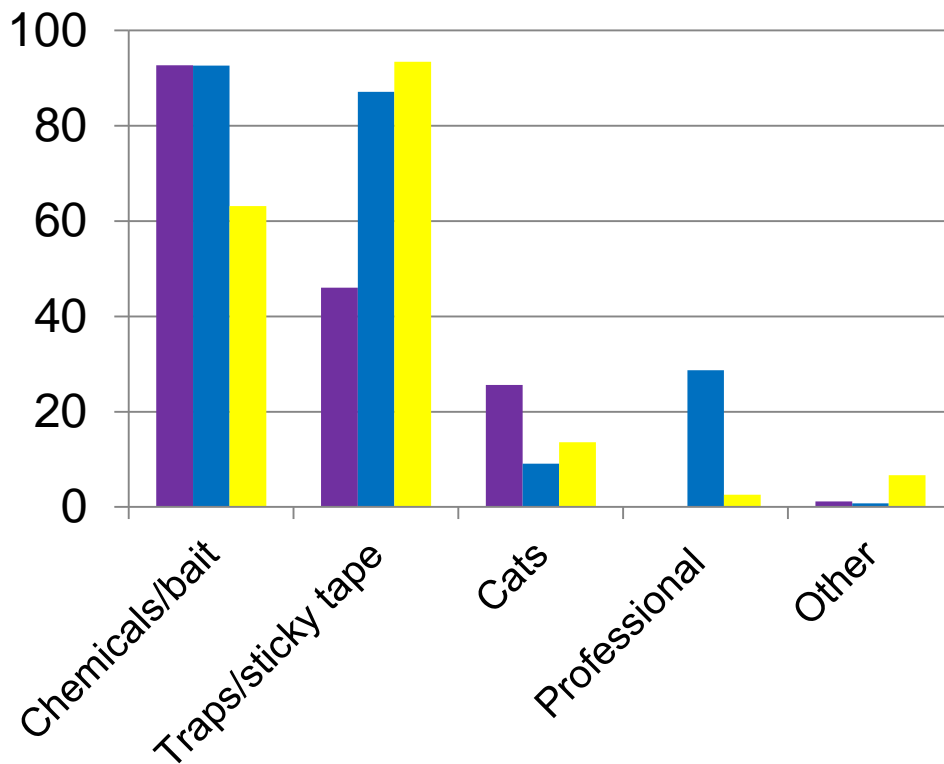


Results

Percentage of farms with moderate to high rodent problem

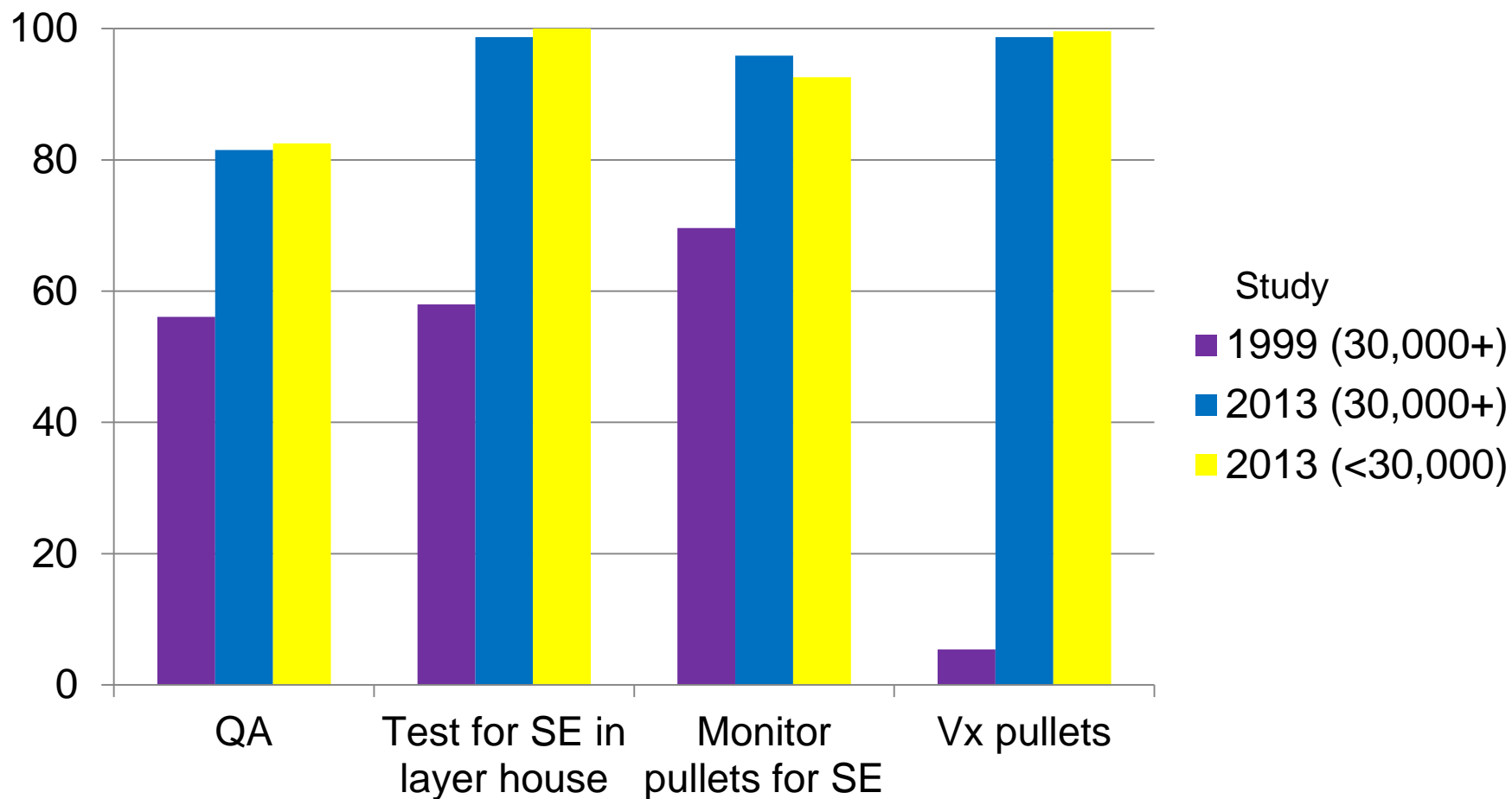


Percentage of farms by rodent-control practices



Results

Percentage of farms by SE control practices



Results

Percentage of farms by SE vaccination protocol

1 st vaccine	2 nd vaccine	3 rd vaccine	4 th vaccine	Percent farms
Live spray	Live spray	Bacterin injection		39.0
Live spray	Live water	Bacterin injection		9.7
Live spray	Live spray	Live spray	Bacterin injection	8.4
Live spray	Live spray	Live spray		7.8
Any other combination				35.1

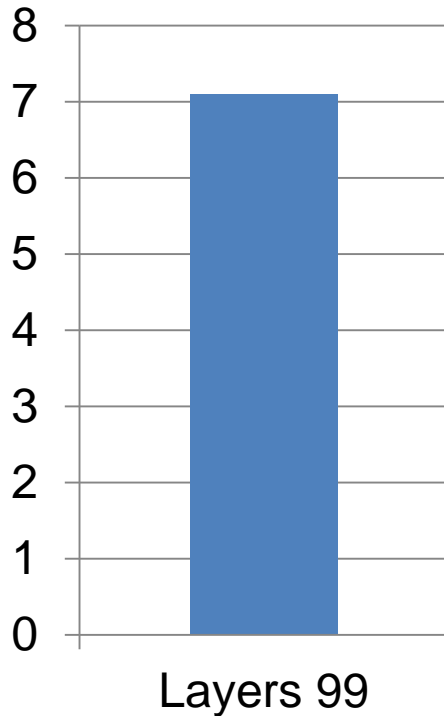
53.1 percent of farms administered the first vaccine in the hatchery

9.1 percent of farms vaccinated hens in lay

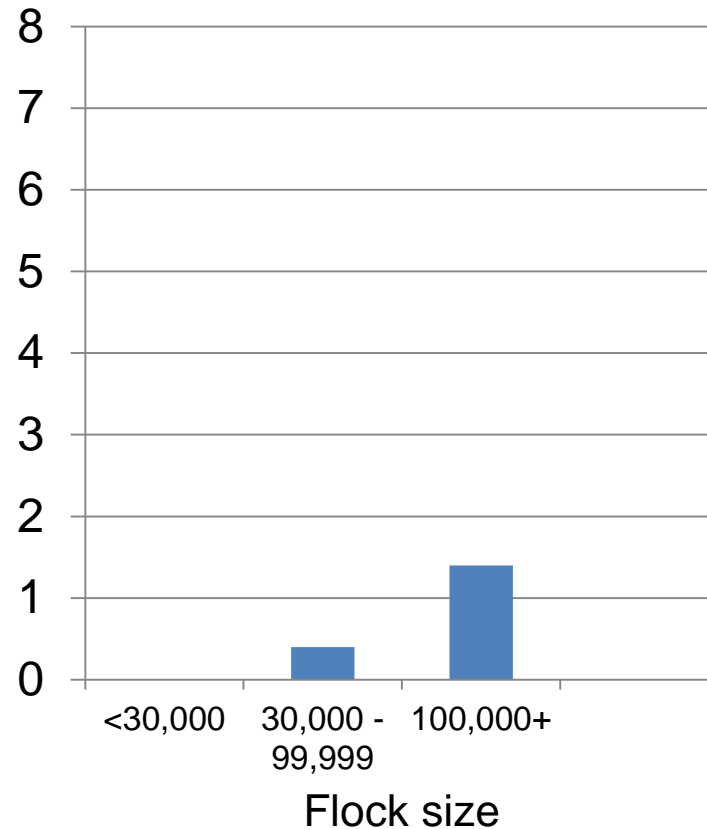
Results

Environmental testing

Percentage of houses positive for SE-1999



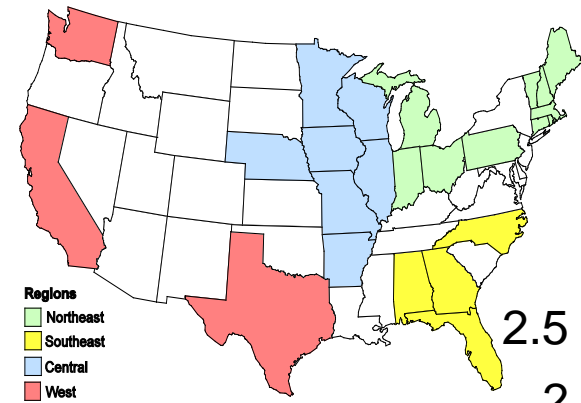
Percentage of flocks positive for SE-2013



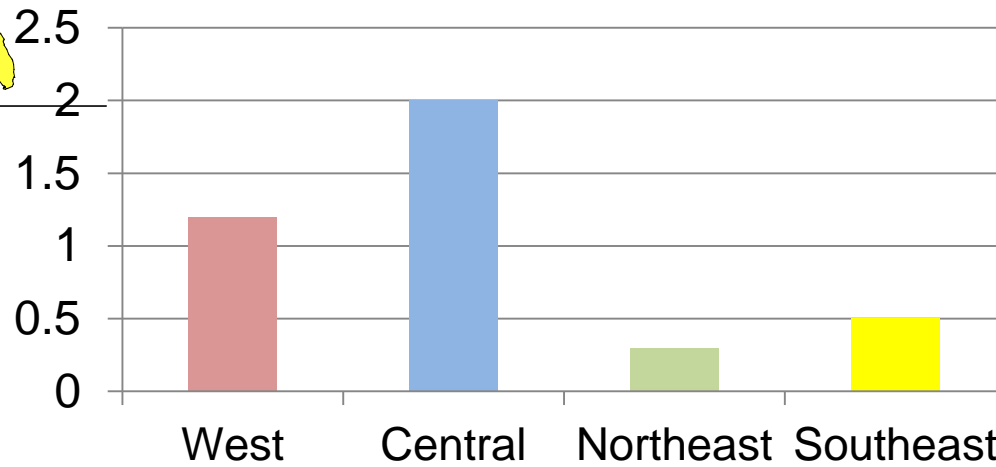
Results

Environmental testing

Layers 2013 Participating States



Percentage of flocks positive for SE, by Region



Risk Factor Analysis Methods

- **Farm level**
 - Positive farm = at least one environmental test positive for SE between June 1, 2012 and May 31, 2013
- **Flock level**
 - Most recent positive flock versus most recent negative flock
- **Each variable screened individually**
 - Region as covariate
- Backward elimination logistic regression model

Risk Factor Analysis

Farm level Factor	Odds Ratio
Central Region	5.9
Rodent index 11 or higher	4.3
Routinely molt	3.9
Downtime (10 days or less)	3.8

Flock level Factor	Odds Ratio
Central Region	8.1
Flock vaccinated for <i>Salmonella</i> as pullets	0.09
Postmolt test	3.7

Conclusions

- Risk factors
 - Molting
 - Fewer producers molt
 - Rodents
 - Producers report fewer problems with rodents
- Protective factors
 - Vaccinating
 - Nearly all producers vaccinate pullets
- Environmental Prevalence
 - 1999: 7.1% of houses (one time test)
 - 2013: 1.2% of flocks over one year



Questions?