Meeting challenges for organic dairy production in North Carolina

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Objective:

The intent of this presentation is to discuss challenges associated with development of organic dairy production in North Carolina over the past several years.

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Acknowledgement

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USDA Certified Organic

- Transition: 3 years (land),1 year (cattle)
- 100% organic feed
- 120-day minimum grazing season with 30% DMI from pasture annually
- No antibiotics or hormones can be used; however – can't withhold conventional treatment from sick animals just to maintain organic status
- Emphasis on prevention

Organic dairying in NC

- **First herd certified organic in 2006.**
- **Five more herds certified in 2007.**
- **Herd number 7 not added until 2014.**
- **Most farms did not transition to organic from a position of financial strength.**
- **Not all land was certified at the start on some farms.**
- **North Carolina faced a serious drought in 2007 which further limited access to organic forages.**

Organic dairying in NC

- **Demand for organic milk is much higher in NC and the region than is production**
- **Herds are not large nor concentrated in one area for efficiency of milk pickup and processing**

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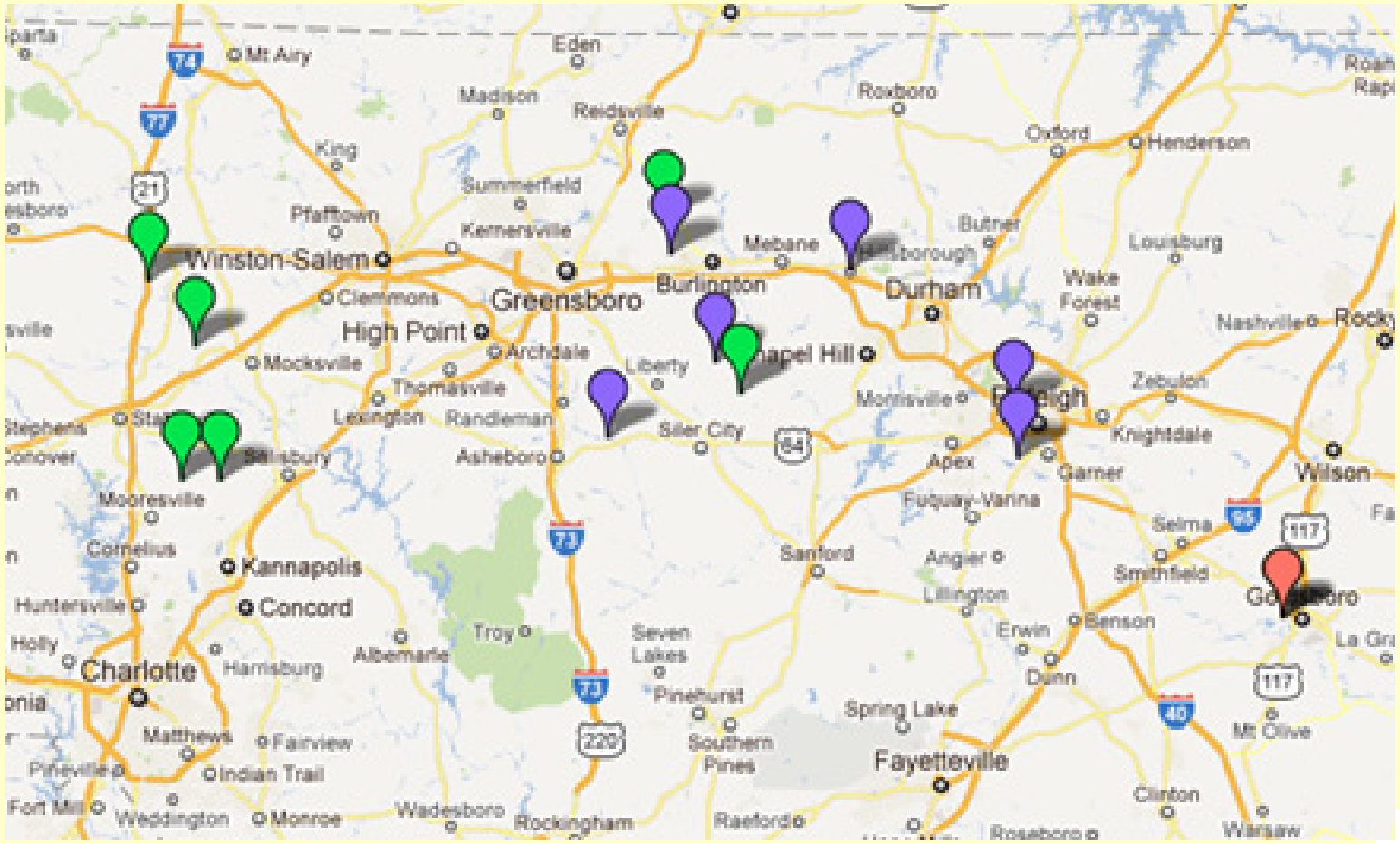
Farm Locations



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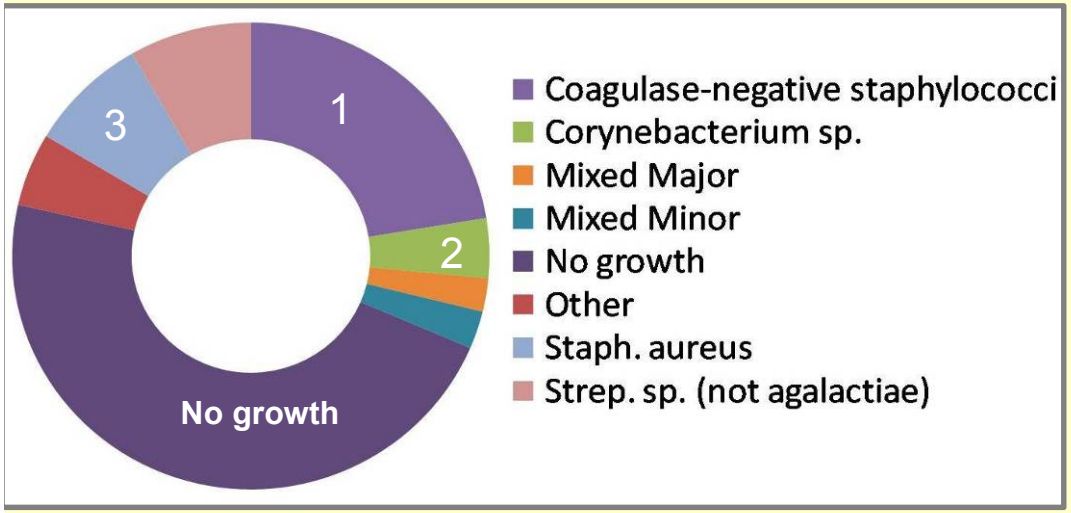
Comparison of mastitis organisms in conventional and organic cows

Conventional (652 cows-7 farms) Diagnosis Summary:

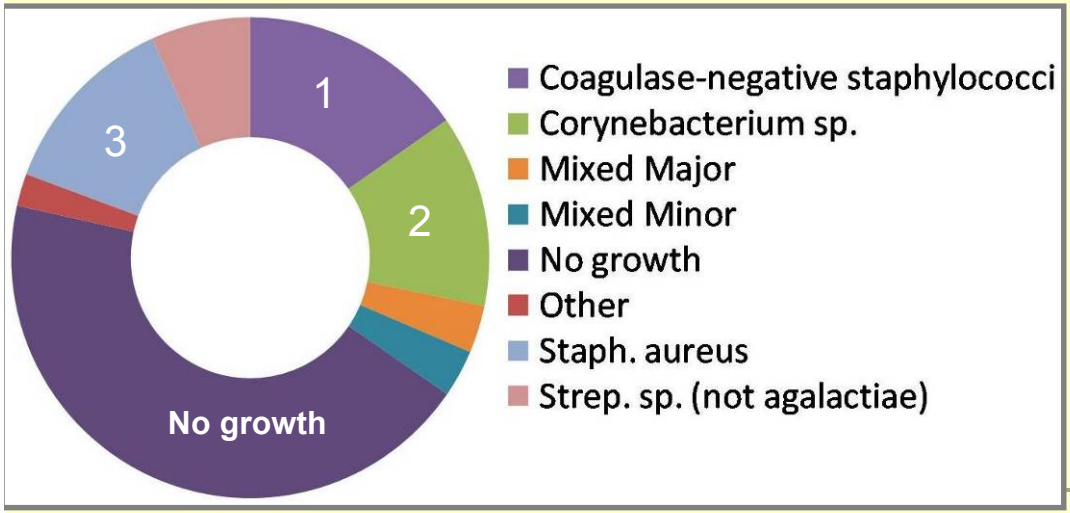


Milk culture results and SCC were similar between organic and conventional North Carolina dairies compared for this study.

Bacterial species percentages differed slightly between conventional and organic dairies, notably:

1) *coagulase-negative Staphylococci,*
2) *Corynebacterium sp*. and
3) *Staphylococcus aureus.*

Organic (595 Cows- 7 farms) Diagnosis Summary:



Adapted from Keena Mullen, et al., J. Dairy Sci. 2013

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Discussion and Conclusions

- Similar SCS between organic and conventional as seen previously in the U. S. (Sato et al., 2005; Pol and Ruegg, 2007b; Stiglbauer et al., 2013)
- Organic farms had no greater prevalence of mastitis-causing pathogens despite management differences
- Higher *Staph. aureus* and *Corynebacterium* spp. prevalence on organic farms = increased SCS

Mullen et al., J. Dairy Sci. 2013

An in vitro assessment of the antibacterial activity of plant-derived oils

Bacteria included: Staphylococcus aureus, Staphylococcus chromogenes, and Streptococcus uberis.

Plant-derived oils evaluated were Thymus vulgaris (thyme), Gaultheria procumbens (wintergreen), Glycyrrhiza uralensis (Chinese licorice), Angelica sinensis, and Angelica dahurica.

Thyme oil at concentrations ≥2% completely inhibited bacterial growth in all replications.

Other plant-derived oils tested alone or in various combinations were not consistently antibacterial and did not show typical dose-response effects.

Only thyme essential oil had consistent antibacterial activity against the 3 mastitis-causing organisms tested in vitro.

Mullen et al., J. Dairy Sci. 2014

Fly pests commonly associated with pastured cattle include:

Horn flies feeding on the back, sides, and belly.

Stable flies feeding on lower legs of a calf.

Face flies feeding on the eyes and muzzle.

Denning et al., J. Dairy Sci. 2014

Vacuum fly trap mounted to an exit chute at the Center for Environmental Farming Systems (Goldsboro, NC).

Components include:

(A) vacuum box housing,

(B) upper vacuum inlet,

(C) fiberglass screening,

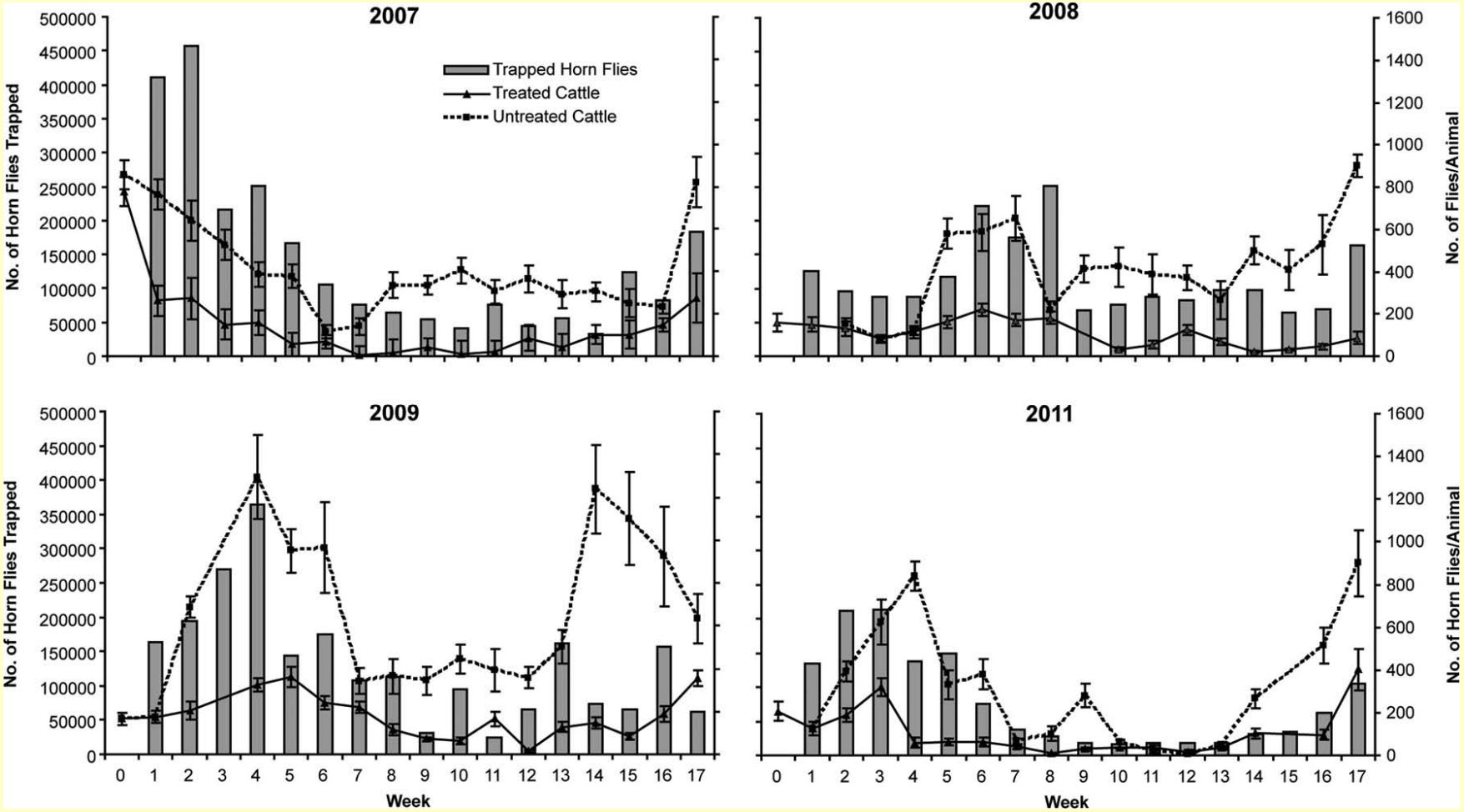
(D) exhaust air pressure port,

(E) lower vacuum inlet port,

(F) fly collection chamber, and

(G) dead fly container.

Denning et al., J. Dairy Sci. 2014



Denning et al., J. Dairy Sci. 2014

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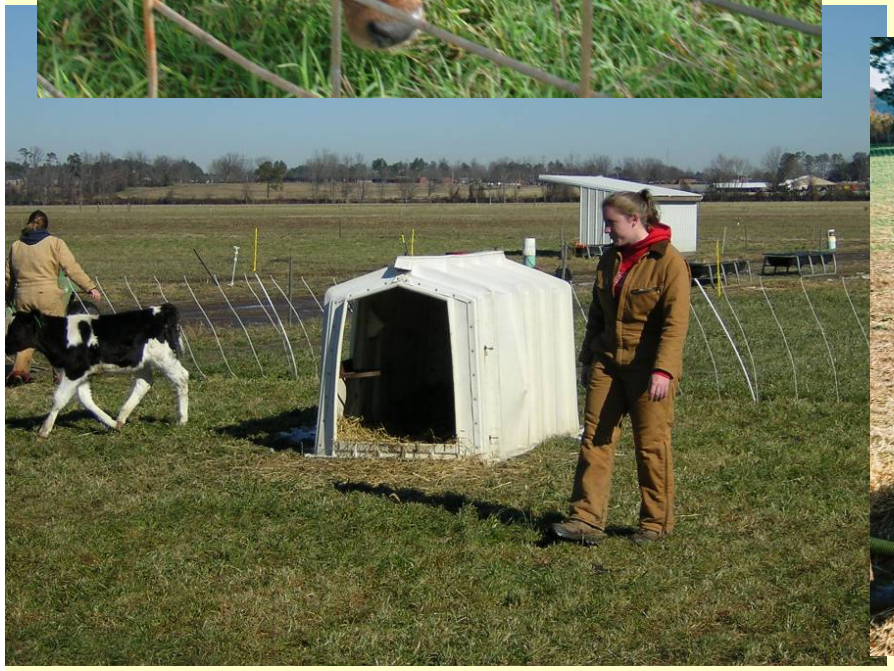
Managing calves without use of anthelmintics was a concern



Effects of milk feeding period and anthelmintic treatment on fecal egg counts and growth in pastured dairy steers

Trt1-6wk wean: Ivermectin Treatment
Trt2-6wk wean: No Treatment
Trt3-12wk wean: Ivermectin Treatment
Trt4-12wk wean: No Treatment

Although steer calves that were not dewormed had higher FEC and differing ADG during parts of the trial, their overall performance was similar to those that received 4 doses of ivermectin.

A key factor was that calves were always started on pasture that had not had older animals present for several months.

Bianca Thompson, MS Thesis 2005

Alfalfa/grass mixtures managed organically at CEFS

Bathyplectes anurus
(parasitoids of alfalfa weevil)

Eileen Balz – M.S. thesis project - 2011

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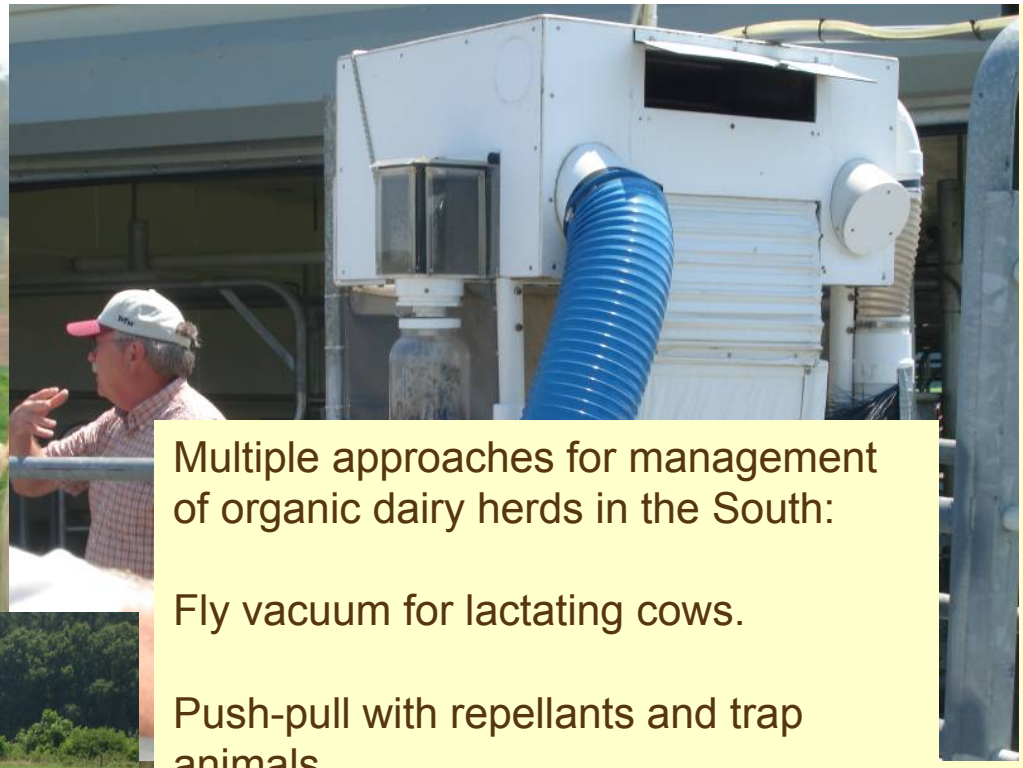

Multiple approaches for management of organic dairy herds in the South:

Fly vacuum for lactating cows.

Push-pull with repellants and trap animals.

Chickens following cattle to disrupt habitat.

Mixed species grazing for weeds and parasites

Alternatives for mastitis control

Organically managed forages

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Thank You

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