UT Extension
W184

Tennessee Quality Milk Initiative

Factsheet

Quick Guide to Mastitis Culturing Programs

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A variety of culturing programs are available to identify mastitis pathogens. There is not a one-size-fits-all program. Determine which of these components will have the greatest impact and benefit on your farm.

Bulk Tank Milk Culturing

- Recommended for all farms
- Use to determine the presence of contagious bacteria (*Strep. ag, Staph. Aureus, Corynebacterium bovis* and *Mycoplasma spp*.) and/or identify prominent bacterial groups.
- MUST be performed on a regular and frequent basis
- Sampling over consecutive days is best
- DO NOT use sampling tubes with preservatives
- DO NOT freeze samples
- *Mycoplasma spp*. analysis must typically be requested
- Disadvantages
  - Relative numbers of pathogens are poorly related to infection prevalence
  - Sources (other than contagious pathogens) are not indicated

Culturing Clinical Cases

- Recommended for all farms
- Will reveal pathogens causing clinical mastitis
- Future infections with similar symptoms will be easier to identify and treat properly
- Freeze samples for up to one month unless testing for *Mycoplasma spp.*
- Disadvantages
  - Cows with contagious mastitis may not show clinical symptoms and may not be identified
  - Results not available for immediate treatment decisions

Culturing All Lactating Cows (Whole-herd Culturing)

- Collection of composite samples from every cow in the herd on same day
- Will identify major pathogens and most individual cows with contagious pathogens
- MUST be performed regularly (at least 4X per year)
- Disadvantages
  - Lack of research regarding frequency of testing (Best recommendation at this time is 4X/year.)
  - Cost of testing an entire herd; better for smaller herds
  - Composite samples do not indicate which quarter is infected

Culturing Late Lactation & Early Lactation Cows

- Collection of composite samples at dry-off and shortly after calving (after colostrum clears)
- Will reveal if dry cow therapy is effective
- Will reveal if new infections are occurring during dry period
- Disadvantages
  - No indication of which quarter is infected with composite samples; quarter sampling is best
  - Low sensitivity of cultures for *Staph. aureus*; sampling over consecutive days is best
  - May be cost prohibitive for large herds

Culturing Herd Additions

- Recommended for all farms that purchase animals
  - Purchased springing heifers, dry cows and lactating cows may be infected with contagious pathogens
- Request bulk tank milk cultures and individual cow cultures prior to purchase
- If culturing before purchase is not available:
  - Gather background information as a precautionary measure
  - Culture all additions and segregate from herd until results are available

Culturing High SCC Cows

- Two situations may require this:
  1) To identify new contagious infections
  2) To respond to an immediate need to lower infection rate

The most critical aspect of any culturing program is the collection, storage and shipping of samples. Great care must be taken when collecting, storing and shipping samples. Failure to carefully follow recommended sampling procedures carefully may lead to misleading results, useless results due to contamination, and overall, a loss of time and money spent testing. See full publication on Mastitis Culturing Programs for detailed instructions.

Interpreting Results

Bulk Tank Milk

- If positive for contagious pathogens, individual cows must be identified and cultured
- Environmental pathogens listed may be from cows with mastitis or bulk tank contamination
- High or very high levels of environmental pathogens indicate problems with milking hygiene and/or equipment cleaning

Individual Cow Culture Results can yield four possible results.

1. Correct Result = bacteria isolated in the sample is cause of infection
2. Contaminated Sample = growth of three or more pathogens and is impossible to interpret
3. False-Positive Result = pathogen is isolated but not due to infection (contamination during collection or processing). Use SCC data or cow history to reduce over-interpretation.
4. False-Negative Result = no growth occurred, but quarter is in fact infected. More than 30 percent of results are "No growth." This is not a lab error, but rather due to intermittent bacteria shedding or reduction of bacteria numbers from somatic cells or use of antibiotics.

Antibiotic Sensitivity Tests

- Antibiotic sensitivity testing will reveal which antibiotic therapy is best for the specific pathogen found in culturing results.
- Farm results may differ from lab results, and care must be taken if the decision is made to treat cows off-label. This must be done under direction of the herd veterinarian.