



2009 Udder Health and Milk Quality On Organic Dairy Farms Notes from October 13th Workshop

9:00 am – 10:30 am - Linda Tikofsky, DVM (Quality Milk Production Services – Cornell University): Mastitis and Udder Health on Organic Dairy Farms
Handout: Powerpoint presentation in pdf format

What does the organic farmer need from their vet?

- Ideally, someone trained in complementary therapies
- Good diagnostician
- Open minded and supportive
- Able to evaluate therapies

Organic industry – history and development over time from Sir Albert Howard, Rodale, Rachel Carson, to regional and state standards and certification ... to the 1990 Organic Food Production Act of 1996 which began to set national standards.

Philosophy of Organic – Organic food production Act, 1996 “ Organic agriculture is an ecological production management system that promotes and enhances biodiversity, biological cycles and soil biological activity. It is based on minimal use of off farm inputs and on management practices that restore, maintain and enhance ecological harmony.

- 1991 to 2001 22.4% annual growth in organics
- 2008 sales were 23.8 billion
- Organic sales are just 3% of the market but 60% of consumers buy organic occasionally
- 73% of conventional grocery stores sell organic products
- Growth in 2007 all categories 21% and dairy 25%/yr
- Organic dairy was fastest growing category between 1994 and 1999
- 1997 est 12,897 organic dairy cows and in 2005 there were 87,082
- Currently about 300 in NY and 200 in VT

The national organic program

- Implemented October 2002
- All producers and handlers with annual gross sales over \$5000 must be certified by a USDA accredited certifier
- One national standard
- Sets clear labeling standards and offers the USDA seal
- Is a work in progress – rule and implementation being refined

The USDA

- Accredits certification agencies
- Develops additional standard on recommendations of the NOSB
- Enforcement

- Is complaint driven
- \$10,000 fine per violation
- Certification can be revoked

The NOSB

- Federal advisory board to the secretary of agriculture
- Has authority over the national list
- Representatives from different organic sectors

Role of Farmers

- Annually file an organic system plan (application)
- Annual update the OSP and notify the certifier of changes
- Document feed, production and health care practices
- Need to use only approved inputs and responsible for recording specific products in the OSP
 - Brand name, manufacturer, formulation, reason for use

Role of the certifier

- Annually review the farms OSP
- Evaluate practices and materials for compliance
- Physically inspect the operation to verify the OSP

Role of the Vet

- Advise farmers
- Promote animal welfare
- Treat animals in accordance with organic standards and treat as necessary if no organic options are available
- Encourage farmer to check with the certifier for product approval

Who polices the industry?

- Farmers
- Citizen watchdog groups
- Certifiers
- USDA

What organic is NOT

- Not simply eliminating the use of synthetics and farming by benign neglect
- Not simply substituting alternative meds for synthetic ones
- BUT realizing that complex biological interactions are the norm and taking advantage of those interactions to optimize the system

NOP rules – the basics

- Feed – 100% organic feed, pasture required for ruminants
- Living conditions to accommodate health and natural behaviors
- Health care practices – focus on prevention; Must not withhold treatment to maintain organic status

Livestock feed

- Ag commodities in feed must be organic
- FDA approved synthetic vitamins and minerals supplements are allowed

- Natural materials allowed as feed additives and supplements
- Synthetics prohibited unless they are included on the National List
- Carriers and additives must be organic

Some prohibited feed additives include bone, animal fats, feather meals, manure, urea, animal drugs (hormones or growth promoters) and preservatives such as BHT and ethoxyquin

Animal health: Focus on preventative medicine and nutrition

- Access to the outdoors and allow normal socialization and behavior
- Minimize stress
- No antibiotics, hormones and growth promoters
- All vaccines are ALLOWED

Synthetic substances allowed

- Aspirin
- Atropine
- Vaccines, Biologics
- Butorphanol
- Chlorhexidine
- Electrolytes
- Epinephrine
- Flunixin
- Furosimide
- Glucose
- Glycerin
- Iodine
- Magnesium hydroxide – Rx only
- Magnesium sulfate
- Oxytocin for post partum use only not for milk letdown
- Ivermectin only in breeder or dairy stock with a 90 day milk withhold
- Polaxaline
- Tolazoline
- Xylazine
- Topicals including copper sulfate, Iodine, Lidocaine, Hydrated Lime (not for liming stalls), Mineral Oil
- Most teat dips and udder washes are allowed, but some barrier dips are not allowed
- Propylene glycol not allowed internally but is allowed in topical treatments.

Is it feed (offered regularly) or a medical treatment (given during a specific window of time)? If feed it must be either certified organic or a synthetic on the national list. If medical it must be natural or a synthetic on the national list. Excipients are allowed in meds if FDA approved or if they are GRAS listed.

Health concerns of Organic Farmers

- Mastitis
- Repro
- Calf health

“They can’t use antibiotics so it must be “crappy” milk... right?”

- Studies (in the US and Europe) of udder health and milk quality on organic farms – slide graph for SCC and clinical mastitis data
- Studies in Maine showing a range of Standard Plate Count (SPC) and Somatic Cell Count (SCC) showed that the incentive payment by the milk buyer has a large impact on the milk quality for both organic and conventional farms.
- QMPS data showed no significant difference between organic and conventional farms in SCC.
- An analysis of five years of quality data of all herds shipping to one processor and one years data to two processors showed: conv SCC averaged over 300,000 and organic SCC averaged under 280,000. The majority of organic herds fell in the 150,000 to 250,000 range and under 3000 SPC.
- What really drives milk quality is the processors paying for high quality milk.
 - Most processors pay up to \$3/CWT for quality
 - Will not accept milk over 400,000
 - Put farm in WIP once they have 3 tests over 350,000
 - Premiums for quality can be a significant source of farm income

Reproduction

- No reproductive hormones or any 'synch' programs allowed
- Farmers report reduced dystocias
- AI is allowed

Reproductive studies show a larger number of organic herds use natural breeding, but most still do AI. Annual cull rates of under 30% (23% for organic herds versus 30% in conventional herds found in one study)

Young stock

- Whole milk only (no milk replacer)
- Many wean calves older (8 to 12 weeks)
- Pastures should be parasite free or low level of contamination
- Routine vaccines allowed
- Ivermectin is only parasiticide allowed
- Many types of rearing systems being used on organic farms
- Pasture in summer and outdoor access in winter is required after 6 months

Modes of Prevention for organic farms

- Lots of pasture
- Repro checks
- High forage diet
- Closed herd
- Proper building ventilation
- Plenty of whole milk for calves
- Testing as needed

Dr Tikofsky's herds average about 16,000 lbs/cow/yr but some are over 20,000lbs

- General Rule: All synthetics are prohibited unless they appear on the list; all natural substances allowed unless they appear on the list.
- PMO 15r: Animal drugs shall be stored in such a way that milk, milking equipment, wash vats and hand sinks are not subject to contamination. Animal drugs shall be properly

labeled and segregated, lactating from non-lactating. Unapproved drugs shall not be used.

- For example, Aloe Vera “never approved for treatment of disease or increase in milk production. Aloe vera products as a feed additive/supplement are ok but if it is in a container with a lid for use with a needle/injection, then it is not allowed
- Homeopathic is considered an unconventional form of vet practice and may be on the farm as long as they are labeled correctly.

Complementary Medicine Chest for Vets

- Thermometer
- Poly-serum (or other passive antibodies)
- Herbal tinctures
- Homeopathic remedies
- Vitamins A, D, E, B complex, B-12, C, Vit E and Selenium
- Colostral-Whey products
- Laxative bolus (mag oxide/mag hydroxide “pink pills”)
- Pill gun
- Syringes and needles
- Magnets
- Alcohol
- Calving chains
- Butane dehorner
- Calendula – Echinacea ointment
- Teat dilators
- Come along and beam hooks
- Calf electrolyte replacement and tube feeder
- Adult cow electrolytes
- Probiotics
- Calcium gel tubes – make sure they are allowed
- Infusion pipettes
- Calendula tincture for uterine infusion
- Mineral oil or vegetable oil
- Epinephrine
- Simplex
- Ketone/ph strips
- Immunoboost
- Rx materials on 7CFR 205.603

Immune stimulants

- Immunoboost (for ecoli scours)
- Colostral whey injectibles and pills – not all approved by milk inspector if it has an injectible type bottle lid
- Passive antibodies
 - Hyper immunized plasma
 - Bo bac 2x
 - Quatroacon 2x

Homeopathy

Botanicals – dried herbs, tinctures & salves

- Garlic

- Aloe vera

Vitamins

For Acute Mastitis:

- IV dextrose/vitamin B & C
- Ca electrolytes
- Hypertonic saline, lactated ringers
- Aspirin
- Vaccination
- Peppermint liniment
- Flunixin

Mild Clinical Mastitis

- Frequent stripping
- Udder salves – check to be sure they are approved
- Vitamin B
- Vitamin C

Management Schemes for Milk Quality

Solutions to High Bulk Tank SSC

- Short term high SSC animals need to be held out of the tank
 - Segregate and milk last
 - Monitor with CMT
 - Supportive treatment
- Long Term
 - % new infections should be reduced through preventative management changes
 - dry off individual quarters
 - chronic incurable animals should be culled

CASE STUDIES

- one herd lowered SSC to 184,000 by taking 3 cows out of the tank after testing the whole herd
- one herd with SSC of 400,000 tested and found 35% cows with staph aureus
 - rec changing inflations every 800 milkings
 - rec improving milking hygiene to id staph cows, segregate them, milk them last, wear gloves at milking and change to an iodine teat dip
 - over 5 years SSC has gone to under 200,000 and 10% staph.
 - They now culture all cows at freshening, use a delaval cell counter on fresh animals, milk staph last, dry off staph quarters.

Drying off quarters – iodine or chlorhexidine is allowed by some certifiers – check with your local certifier. Banamine can also be useful.

Conclusions:

Excellent milk quality is possible on organic farms.

90% of mastitis treatment is prevention.

Management of organic herd is even more important than on conventional dairy farms.

Individual cow attention

Resources:

www.nodpa.com

www.penndutchcowcare.org

www.nofany.org

www.nofavt.org

www.omri.org

www.ams.usda.gov

Suggestions of where to send tests for Fecals: Intervet does them: (www.intervetusa.com) or Dr Don Bliss from Mid America Ag Research in Wisconsin, 3705 Sequoia Trail Verona, Wisconsin 53593 608-798-4901 drbliss@chorus.net (www.midamericaagresearch.net)

11:00 am – 12:00 Noon - Nicole Dehne from VOF: Understanding Organic Dairy Certification Standards

Handouts: 1) NOP livestock health standards included accepted and prohibited generic ingredients, 2) VOF's Accepted Animal Health Products, Ingredients and Practices

Role of Certification Agencies

- Must be accredited by USDA NOP
- There are 98 accredited agencies

VOF is an accredited certifier in VT.

- 543 certified producers including 200 dairy and 60 livestock
- VOF has grown from 3 to 200 organic dairies from 1993 to 2009

If you are working as a vet in other states, contact the certifier to find out if they have a list of approved health care products and other resources for farmers.

Certification process as it relates to animal health: certifiers job is to verify that the farm is following the standards. Farm must fill out an Organic System Plan (OSP) annually and get an on-site inspection.

Standards as they apply to health care include:

- Herd health records – VOF provides forms, but farmers may use their own if they prefer. They must include animal's ID, date, treatment used, and outcome. Health records must include all treatments including dehorning, vaccinations, mastitis or high SSC treatments, etc.
- Health care product inventory – is a list of all the medications the producer has or plans to use if needed.
- Parasite management plan – VOF OSP has a section that the farmer fills out to describe how they will prevent parasite infection in their livestock. The efficacy of these plans is often not evaluated until the farmer has a problem and this is an area where farmers would benefit from working with their vet to gain an understanding of the life cycle of the parasite they are having an issue with and how to prevent reinfection.
- If an animal is treated with ivermectin they must be identified and cannot be sold as organic meat. The farmer is supposed to call the VOF office to report any animal that was treated.
- Other records would be medicine purchase invoices, and vet slips

Approved materials

- What is allowed, and how do they decide... the NOP and NOSB
 - If its non synthetic its allowed unless it is listed as prohibited (strychnine)

- If its synthetic its not allowed unless its on the national list 205.603. The items on 205.603 must be re reviewed every 5 years to remain on the list.
- Fenbendazole was reviewed by the NOSB and petitioned by Intervet in March 2007. It was reviewed by the NOSB at the may 2008 meeting. It has not yet been reviewed by the NOP. The review criteria are from the organic food production act. Each product must also be reviewed by the technical advisory panel (TAP). The NOSB meets twice a year and their decisions are non-binding recommendations which the NOP must make a final decision on. This is a public process, which takes a really long time. Recent additions of funding and staffing to the NOP may speed up the process but this isn't clear yet.
- Anyone can submit a petition for any product at any time! Go to NOP website and you can see all the materials that have ever been petitioned and all their supporting materials including the NOP decision.
- Only single substances – generic, not brand name – can be on the national list.
- OMRI (Organic Materials Review Institute) is a third party organization which does independent reviews of materials to see if they are allowed according to the NOP. They print a generic and a brand name materials list every year. Manufacturers pay OMRI to do the 3rd party review of their products.

In general, all herbs are allowed – tinctures & dry but other ingredients should be reviewed particularly for salves.

Antibiotics can be kept on the farm. Inspector will check and record the lot number and fill line annually and check this against the health care records.

Vitamins – some certifiers think the excipients must all be reviewed, while other certifiers feel all injectible vitamins are allowed as a whole category.

How brand name products are reviewed

1. Is it a health care product or a feed supplement? This is based on how often it is used. If it is fed daily it's a feed supplement. If it is just used temporarily to treat an issue then it's a medication/health care product.
2. If it's a feed supplement then ALL agricultural ingredients must be organic
3. If it's a health care product
 - a. Active ingredients must be allowed (natural and non GMO or organic)
 - b. and excipients must be GRAS or FDA listed or NADA

If its not OMRI listed, then the farm's certifier must review the brand name product.

NOTE that this review process has nothing to do with efficacy!

VOF only reviews products if a Vet or Farmer asks for the review... not based on manufacturers request.

Helpful role for vets from a certifier perspective

- Put good details on the vet slips including which cow was treated, date of treatment and product used.
- Make sure farmer is recording treatments in daily health care log
- Make sure farmer is calling the certifier to report use of restricted materials such as ivermectin or an antibiotic.

1:00 pm – 2:00 pm -Vet Panel Discussion with questions and discussion from other vets in the audience (Dr. Rick Bartholomew, Dr. Mark Catlin, Dr. Will Barry)

- Rick Bartholomew from Cold Hollow Vets in Enosburg Falls Vermont. All the vets in the practice work with both organic and conventional herds. They've had Dr Karreman come up and spend time traveling around to look at herds with their vets and also do some meetings for producers. Overall doesn't think there's any biological difference between his organic and conventional herds.
- Dr. Will Barry – solo practice in Brookfield VT. Has been working with more smaller farms these days. He has used Dr Karreman's treatments for fevers with good results. Has used it on coliform mastitis cases and respiratory infection. The procedure is described in his book: banamine, high dose of Vit C in hypersaline, herb tincture mix (see book for specific herbs he uses) in dextrose.
- Dr. Bartholomew has also used this treatment with success. He said he kept a bottle of epinephrine handy in case of reaction but has not had one.
- Dr. Mark Catlin practices in the Montpelier area. He has a large animal vet practice and has in the past also worked as a consultant and nutritionist for herds. About ¼ of the herds he works with are organic. Overall doesn't think there's any biological difference between his organic and conventional herds. He has found a lot of the products, both FDA approved conventional products and "complementary" treatment materials that don't work. He doesn't use treatments on his conventional herds that he wouldn't also use on the organic herds since he's found that prevention and supportive therapy is what works best. Prevention and risk management is the core of his practice to control the degree of disease on the farm.
- Questions about lice, tailhead mange. Dr. Bartholomew finds many of his farms mostly ignore the lice problems as they are minor and none of the products tried have been particularly effective.
- Dr. Bartholomew has tried nematox from Agri-Dynamics for coccidiocis in organic herds. There is some anecdotal info that it may have some effect.
- Dr. Catlin said sanitation of calf pens and pastures is an easy effective way to prevent most parasites. Putting calves in clean pens with clean food and water can turn around early coccidiocis/parasite issues.
- Dr. Barry and Dr. Catlin said the stocking rate being too high in calf and heifer pastures is a very common problem leading to parasite problems.
- Question from a vet on how to find scientific information on which of these complementary products work, which ones are safe or NOT safe, which ones do come through in the milk and should really have a milk withholding. Dr. Bartholomew commented that when working with a farmer you are constantly making decisions and need to consider if you are helping the farmer, treating the cow or keeping the milk supply safe and all these must be included in the decision making process.
- There is not yet a lot of peer-reviewed research on the efficacy and safety of some of the complementary/alternative treatments.
- Discussion of what your treatment/action level would be on farms. At what point do you "do something" in cases such as lice. How do you know what will go away on its own.
- Dr. Catlin said the vet is usually called in to "fix" a problem on a farm, and he's found it helpful whenever possible to step back and look at the big picture of the farm and the research and to note that role for preventative medicine and management systems is the key to the majority of the problems you are called into "fix".
- Comment from a vet that the NOP rule allowing all "natural" products are allowed unless specifically prohibited (only strichnyne is prohibited).
- Question from the audience about what drugs you like – vet answers
 - High dose vitamin C

- Fluids for sick animals
 - Immuno-stimulants such as immunoboost
 - Cleanliness with obstetrical work
 - Has used some phytomast (product from Dr Karreman) and some tinctures and has been trying to source tinctures which are made consistently.
 - Using fluids to lavage a uterus with retained placenta or infection
 - One of the three vets are using homeopathic remedies, one is open to the idea and the third is not convinced it is an effective treatment method.
 - Acupuncture, particularly for down cows was reported by two of the vets to work. Also banamine for down cows and move them to soft ground. Lift them in a floating device if possible. Pack them with ice if it is right after a difficult calving.
 - Blue cohosh for retained placenta
 - Apple cider vinegar for close up cows to prevent milk fever
 - Heat seek boluses (Dr. Karreman) were reported to be having some effect on cystic ovaries and cows not coming into heat. Another vet has also used some acupuncture for cystic ovaries.
 - Pink eye does seem to respond well to keeping the animal indoors during early phase. Also suggestion of shuteye patches. Calendula spray or eyewash in early stages.
 - Respiratory disease in weaned calves – all the vets said the first step was to do is check ventilation and fix that... then look at treatment for ones that need it. Protocol in Dr. Karreman's book which is Vit C, Muse, banamine, IV fluids, extim & immunoboost and two of the vets have used this with good results.
 - Vaccinations
 - No great ideas on how to treat contagious mastitis... prevent, cull to prevent spreading. But also comment that there are few conventionally effective treatments either.
- Seems that the early adopters of organic dairy farming used a lot more homeopathy than more recently transitioned farms.
 - A comment that some of the injectible whey products have shown adverse effects including swellings and high fevers.
 - All the vets said they'd like to see more research on the safety and efficacy of many of these treatments.
 - Question and discussion about Johnes... It seems to take several years of testing to determine if there is Johnes in the herd, and lower stress herds seem to show less of it so it may be that the lower levels seen on organic dairy farms is due to lower stress on the animals but they may show Johnes if sold to a farm with a different management system.
 - How can vets stay in communication with each other about current useful information about product safety and effectiveness. Would it be possible to set up a discussion list.
 - One of the vets made some comments including: "Most of the things I thought worked I know now don't work."
- And why is it that we think we need to give antibiotics at the first sign of illness. Most illnesses get better on their own so the decision making process of when to give antibiotics needs to take that into account. Particularly with mastitis, when to give antibiotics needs to be carefully considered. As vets we tend to use antibiotics when they are not needed or even going to be effective.
- Most of the plants that are potent enough to treat an illness probably do come through in the milk. Suggest that you do withdraw milk anytime you use the more powerful medicinal herbs.

Immunity is one of the most important things in organic herds. Nutritional management in many herds seems to be marginal, partly because the nutrition doesn't support the amount of milk the herds are giving. So improved nutrition is important and needs to be improved on many of the organic herds they work with. Environment is also something that needs to be addressed on many of these farms. Drugs are all secondary to management of nutrition and environment.

2:30 pm – 3:45 pm - John Barlow DVM – University of Vermont: Findings from UVM Research: 'Mastitis Control on Organic Dairy Farms'

Handouts: 1) Study: Management of mastitis on organic and conventional dairy farms, P.L. Ruegg, Department of Dairy Science, University of Wisconsin, Madison 53706
2) Udder Health and Milk Quality on Organic Dairy Farms, Power point handout

- Requested input from vets to give him guidance on what topics to do research on to help support vets needs in their work with organic farms. (*Survey handed out in the morning and results incorporated within his presentation that afternoon*) John.barlow@uvm.edu 802-656-1395
- Has been monitoring SCC in 9 organic herds in VT. Median SCC is 219,833 with range from 81,000 to 418,667.
- Thoughts on unique risk factors on organic farms.
 - In pasture based systems, NZ research shows *Strep uberis* is prevalent in early lactation
 - In UK data on farms with no dry cow therapy, chronic infections with major gram positive pathogens – *Strep uberis* and *Staph aureus*
- Dry period infections – may be what is seen most commonly in organic herds. Fresh cows with mastitis, which may actually have a high spontaneous cure rate. May be *Strep Uberis*. By using PC dart data you can compare the previous lactations last SSC test with the first test of the new lactation to see what is happening during the dry period. This shows you which cows are new infections that occurred during the dry period or during the beginning of the current lactation between calving and the first test. John's data shows that 18.8% of cows on farms had new IMI/high SCC after the dry period. Some herds this was as high as 30%.
- Some data from NY showed the impact of the season of the year that cows were dry on new incidence of IMI/high SSC. Cows calving Dec through May had higher SSC. This could indicate that the indoor housing during dry period raised risk of elevated SSC. However John looked at the VT data on this and found the opposite results for just one years data – not clear if this is an issue with this particular season (extremely wet summer)?
- DHIA/PCdart data can be sorted for any given farm so you can look at SSC in fresh cows in each month of the year or seasonally to help in looking at when the highest level of risk of new infection is occurring in dry cows.
- Data from the 9 VT herds of first calf heifers had 20.7% of first lactation cows is over 200,000SSC. This is similar to previous data on conventional VT herds, but still higher than ideal! For likely major pathogens, see Compton et al. 2007 JDS.
- Research on treatment practices on 11 VT organic dairy farms shows
 - Aspirin is most common treatment followed by, vitamins and topicals which are then are most closely followed by garlic
 - Next is homeopathy, whey based products, multivit/nutrient supplements
 - Then banamine and aloe vera
- These farmers when asked what their satisfaction rate with treatments are had 50% somewhat satisfied 30 were satisfied, 10 not satisfied and 10 very satisfied

- Group discussion about coliform mastitis and strep ag. Strep ag has been controlled in some organic herds through segregation, culling and continuous attention to following a carefully designed milking protocol. However if attention to milking protocol lapses they will likely have strep ag again within a year.
- Staph Aureus discussion – good use of teat dips and milking protocol can allow a low level of this to stay in the herd without spreading. However if teat end hygiene becomes lax or there is an issue with the milking system/equipment it can spread.
- Myco and CNS don't seem to be coming up as major pathogens in organic herds.
- Discussion of how protecting normal “flora” on teat ends may protect against mastitis infection.
- Strep ag seems to have a fairly low rate of self cure in the dry period
- Dr. Barlow's data showed that there is not a higher incidence of SSC elevation on organic herds. Question from a vet that if that's true, then why are dry cow treatment with antibiotics still routinely used on conventional herds? Not using the dry cow treatment on every cow in a conventional herd requires a different type of management because you are asking them to make a decision about which cows to treat or not treat. Selective dry cow treatment is done in smaller herds where that management is easier.
- Questions and discussion about PI count. Linda stated that she thinks an occasional spike doesn't necessarily mean anything, but consistently high PI's does indicate an issue. Very rarely cow shedding is the issue – so first thing to look at is always hygiene/sanitation. Using a PI count taken every 1 to 3 days for several months is the best way to determine if there really is a problem with PI.