An Overview over the Organic Dairy Industry in Minnesota
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Background

The organic agricultural industry has grown exponentially over the past decade. The philosophy behind organic production is that it is meant “to respond to site-specific conditions by integrating cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity” (USDA, 2012). In other words, organic farmers regard their farm as a holistic entity and that all management practices are aimed to ensure a healthy and sustainable system. When talking to organic producers they often state that this starts with healthy soils: Healthy soils → healthy plants → healthy animals → healthy people → healthy earth (Riddle & Diffey, 2012).

In the United States, the Agricultural Marketing Services (AMS) of the USDA oversee the National Organics Program (NOP). The National Organic Standards Board (NOSB) is the Federal advisory board to the AMS regarding regulation changes to the NOP. The NOSB has 15 members, who are appointed by the Secretary of Agriculture, and several subcommittees. The NOSB members receive suggestions for rule changes from the public. The NOSB then suggests those NOP rule changes to the USDA. Rule changes do not become policy until they have been approved and adopted by the USDA. The NOP defines the production standards and lists the substances that are allowed during organic production. Third party certifiers audit farms or certified entities (e.g. processors) whether they comply with those standards. Therefore, an organic certificate only attests that the product was produced compliant with NOP standards, but it cannot and does not make any claims about nutritional status or other health benefits of the product. Non-compliance with the NOP regulations results in the permanent loss of the organic license and fines of up to $11,000 per violation (USDA, 2012).

For dairy production, the main requirements of the NOP are: feed and bedding, because it could be ingested, need to be organic, absolutely no antibiotics and no hormones with the exception of a possible use of Oxytocin in the post-partum period. The use of dewormers (Ivermectin, Fenbendazol or Moxidectin) is only allowed in emergency situations in non-lactating animals with a 90 day withhold time on meat and milk. Despite the limited availability of otherwise commonly used therapies, the NOP also explicitly states that a) an effective treatment must not be withheld from an animal to keep its organic status and b) that the rules of the Federal Food, Drug and Cosmetics act about drug use in food producing animals still fully applicable to organic produced animals. Therefore, any drug or feed additive used in organic livestock
production needs to in accordance with the Federal Food, Drug and Cosmetics act and withhold times need to be followed.

Lastly, there is the “pasture rule”, which came in effect in July 2010. It states that all ruminants over 6 months of age need to receive, on average, at least 30% of their dry matter intake (DMI) through pasture over the grazing period or a minimum of 120 days per year. Those 120 days do not have to be subsequent and the minimum of 30% DMI is an average: so some days may be lower than 30% as long as other days have more than 30% DMI through pasture. The organic dairy producer always has to document any treatment and the compliance with the pasture or any other NOP rule (USDA, 2012). Because of those strict rules, higher feed prices and the additional work to document their compliance with the rules, organic dairy farmers receive a higher and more stable milk price and higher premiums than their conventional farming peers. In 2012, the average milk price for organic farms without a premium was between $26 and $30 per hundred weight (cwt), while conventional dairy producers received around $20 per cwt (DairyStar, 2012).

Herds that want to transition from conventional to organic farming have to go through several steps in order to achieve this goal. The entire process takes 36 months during which producers have to transition the land and produce in accordance with the NOP, but they do not receive an organic premium. To become certified, producers have to select an USDA accredited certifying agent, develop an auditable organic systems plan, pay the certification application, and go through inspection with their certifier. Based on the certifiers review they will then receive an organic certification – or not. A herd of cattle has to be managed organically for 1 year before their products (meat and milk) can be certified organic or calves born to dams, which were organically raised for at least the last third of gestation, also can be considered organic. Once a herd is certified organic, any treatment of animals, including calves, with non-approved drugs, such as antibiotics or hormones, will immediately lead to the exclusion of that animal as organic livestock. The animals need to leave the herd to ensure that their products will not enter the organic food chain. Organic and conventionally raised animals cannot come in the same herd and having a conventional herd besides an organic herd, to send treated animals to, is frowned upon by certifiers. Therefore, for veterinarians and producers it is always best to clarify in advance, if certain treatments are allowable under the certifiers interpretation of the NOP to avoid that producers lose their organic license over an accidental misinterpretation of the NOP.

After produce, dairy is the second largest sector of the organic market. In the United States, the number of organically certified cows has 6-fold increased 38,196 in 2000 to 249,766 dairy in 2008. Despite this increase, organic herds are still a minority and represent roughly 3% of dairy herds in the US or in Minnesota. At this point, approximately 1,848 dairy herds are certified organic dairy herds in the United States (NASS, 2012).
Advocates of organic agriculture claim that the animals are healthier. Opponents of organic agriculture argue that the lack of antibiotics poses a potential animal welfare risk and possible public health risk as well. At this point both sides predominantly have only opinions. Little data exists from the United States and therefore, this pilot study was conducted in Minnesota in the summer of 2012. The objective of that study was to collect baseline data and to compare management practices and cattle health parameters between organic and conventional herds in Minnesota.

Materials & Methods

All organic (ORG) dairy herds in Minnesota were contacted (n=115) and invited to participate. A convenience sample of conventional herds, which were raising their heifers on site and pasture-based or not, were also enrolled. Herds were visited once between June and November 2012. At the herd visit, the farmers were asked a survey that focused on herd demographics, housing, nutrition, reproduction and diseases as well as therapies used. The questionnaire was largely based on 3 surveys of the Dairy 2007 study of the National Animal Health Monitoring Services (NAHMS) with several organic specific questions added. At the farm visit, the researchers also collected fecal samples from 20 breeding age heifers (12-24 months) for the detection of gastrointestinal parasite eggs, 6 environmental fecal composite samples for the detection of Mycobacterium avium subsp. paratuberculosis (MAP) and bulk tank samples from up to 3 different bulk tanks. In addition, lameness (1-5 scale), hygiene score (1-4 scale) and hock lesions (1-3 scale) were assessed from at least 20% of the mature herd, including dry cows.

Because some conventional herds were substantially larger than the organic herds, the conventional herds were split into large conventional herds (LC, ≥ 200 cows) and small conventional herds (SC, <200 cows), so that the SC herds and ORG herds were comparable in size. Appropriate non-parametric statistical tests were employed to compare differences in all parameters among herd types. Unless otherwise stated, the median (25th-75th percentile) are reported.

Results & Discussion

In the end, 63 dairy farms participated (ORG: 35, SC: 15, LC: 13). There was no difference among herd types regarding the duration that the farm had been established or since when the participants had been farming. LC and ORG herds were more likely to use a milking parlor or gloves during milking than SC herds. Organic herds had more designated pasture, produced less milk per cow and were more likely to have a higher percentage of cross-bred cows and cows in their third or higher lactation compared to the other herd types.
Organic and SC herds reported an almost stable herd size over the previous 10 years (ORG: 5 (4-9); SC: 4.5 (0-19)), while LC herds had added significantly more cows to their herd (50 (25-73)). Interestingly, ORG herds reported to cull a lower percentage of cows (19.2% (15.2%-27.8%)) than conventional herds (SC: 33.9% (28.6%-46.5%), LC: 30.3 (27.0-38.7%)). Although ORG herds were less likely to remove cows for production reasons, the cull reasons or their distribution did mostly not differ between herd types. The destination of cull cows also did not differ between farms and interestingly ORG livestock was generally not sold for an organic premium. The latter was most likely due to the fact that organic animals must be slaughtered in abattoirs that use NOP approved disinfectants. Because of the overall small number of organic slaughter animals, a) only a few small slaughter houses tend to slaughter organic cows and b) those can only accept organic slaughter animals on certain days of the week or with a few days of notice to accommodate cleaning with NOP acceptable disinfectants in advance. All of this combined poses a hurdle to sending organic cull cows to slaughter in the hopes of a premium.

All conventional herds fed corn, corn silage and alfalfa to their lactating herd, but with the exception of pasture, there was no feed stuff that was fed by all ORG herds. However, a large number of ORG herds (82.9%) added Kelp to their lactating herd’s ration, which was not fed on any of the conventional herds.

Compared to conventional farms, fewer ORG farms reported to vaccinate their animals or that they would use the veterinarian as primary resource of cattle health management. Reported dystocia and stillbirth rates and death rates in mature cows were lower on ORG than conventional farms. Considering that ORG herds tended to have a higher proportion of ≥3 lactation cows than the conventional herds, lower dystocia and still birth rates could be expected.

In addition, ORG producers reported to see fewer cases of various cow (in particular metabolic diseases) and calf diseases than conventional herds. The gastrointestinal parasite counts in collected fecal samples was in general similar across herd types. The only difference was that ORG herds (6.6 ± 2.1, mean ± SEM) had significantly higher strongyle type egg counts than conventional herds (SC: 0.5 ± 0.3; LC: 0.8 ± 0.7, P = 0.01). However, the fecal parasite egg counts were overall very low and the hygiene scores did, on average, not differ between herds.

Lameness was also reported to be significantly lower on ORG herds than conventional herds. However, although the hock lesions scores were better on ORG herds, the actually assessed lameness prevalence of cows did not differ between herd types and on all herd types, roughly 25% of cows were lame, i.e. lameness score ≥ 3. More information is needed on the distribution of foot lesions in ORG systems to understand which risk factors apply to this pasture based system and how lameness can be prevented under these management practices.
Most ORG producers did not perceive mastitis as a major challenge for their farm, which was opposite of reports from LC and SC herds. However, the reported annual bulk tank somatic cell count average and the bacterial counts of collected bulk tank samples did not differ among herd types. Lastly, ORG (42.9%) and SC herds (46.7%) were less likely to have MAP on their farm than LC herds (92.3%). The proportion of infected ORG and SC herds is lower than the national reported average of 70% infected herds (NAHMS, 2008).

This pilot study provided a first glimpse into animal health and management practices on organic herds. Overall ORG and LC herds had many similarities in management practices. Although in general similar, several differences in disease occurrence between ORG and conventional herds were reported or observed. Future studies will need to investigate more in depth the association between management practices and disease on ORG farms.

References


