The Dairy Industry in the Netherlands

By: Sarah Atkins, Kelly Loewen, Michele Jones, Katie Kelly, Amanda Lee, Sarah Mac, Haley Reichenbach, and Carissa Truman

In the United States, feeding a total mixed ration, using antibiotics as dry cow therapy, housing in freestalls, and bedding with sand or sawdust are typical management practices. However, during a study abroad trip, 8 University of Kentucky students learned that on dairies in the Netherlands, producers manage differently. Although most of the visits centered around compost bedded pack barns and technology, the differences between the countries were noticed immediately. Housing with slatted floors, greater breed variability, cows bred more for milk components than production, consumers demanding minimal antibiotic use, feeding partial mixed rations, providing payment for grazing herds, and high technology adoption rates, begin to describe some of the major differences. Focusing on housing, physiology, genetics, nutrition, welfare, and technology, the students discovered how European and American dairy producers differed.

Like the United States, the main breed of dairy cows is the Holstein-Friesian with some Holstein crossbred cows. These crossbreds have a higher fat and protein content in their milk than the purebreds. When milk is sold based on components, the farmer receives more money for a higher fat and protein percent in the milk. The Netherlands cows tended to be smaller than most of the Holsteins in America. Additionally, Belgian Blue beef bulls were used on the lower production cows. These crosses cause a double-muscled calf and have more beef characteristics. These calves also go for a higher price at market.

Dairy housing systems were one pronounced difference between the Dutch and American industries. At almost every barn toured, some variation of a slatted floor was the preferred flooring type. These systems acted as a form of waste storage, while scrapers or scraping robots were widely used to push waste between the slats. The vast majority of the barns also featured 3 rows of freestalls with various mattress types or deep bedding with sand or dried compost. Additionally, most of the housing solutions being implemented currently focus on emission control. Strict laws regarding emissions from agriculture encourage the use of slatted floors and other innovations to regulate ventilation, including barn sides that can close, to control waste emissions. Because these changes may affect air quality, optional barn designs including fans and retractable barn walls, help to prevent poor air quality within the barn. The increased use of milking robots in the Dutch dairy herds also had an impact on barn design, which was notably different from the standard American dairy because they are designed with the efficiency of the robot in mind.

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Feeding strategies in the Netherlands are unique compared to traditional American feeding practices. On every farm visited, concentrate feeders provided additional dietary supplementation. Each cow was identified with an RFID reader and given her allotment of concentrate throughout the day. Each animal received concentrate based on her milk production and stage of lactation. If the herd used robotic milking systems, then cows also received concentrate during milking. The more sophisticated operations would stop feeding concentrate 2 hours before the cow would become eligible to be milked again. Therefore, the opportunity to access concentrate in the milking pen draws the cow to the robotic milker to be milked.

In the United States, corn silage is a major component of a total mixed ration (TMR). However, in the Netherlands, ensiled rye grass was the primary forage in addition to grazing. If the producer allowed the cows to have access to pasture for at least 6 hours per day, 120 days per year, producers were able to receive an additional $0.01 per L of milk produced. One farm fed a partial mixed ration (PMR) of ensiled rye grass and corn silage. They would then top dress with freshly cut rye grass (green chop). It was remarkable to see cows eating a vibrant green ration. Another farm we toured used the abundance of potatoes growing in the area to add additional starch to their TMR.

Some farmers capitalized on their nutrition program by investing in the Lely Vector robotic feeding system. The Vector system custom mixed the feed according to programmed group rations. Farmers with the Vector system were required to build a separate “kitchen” facility in which a partial mixed ration was prepared separate from the silage pile. The “kitchen” is equipped with a claw (Figure 3) which weighs and adds each feed component individually to create the TMR. The Vector (Figure 4) then mixes the feed and dispenses it along the feed fence. Along with feeding the Vector also pushes feed up to the cows and measures the feed height at the bunk. If the feed height at the bunk was below 2.3 inches, the Vector heads back to the “kitchen” to prepare more TMR.

Figure 3. Lily Vector Feed Claw Figure 4. Lely Vector Automatic Feed Delivery System
Both American and Dutch dairy farmers battle consumer perceptions of antibiotic use, organic versus conventional management practices, animal welfare, and genetically modified organisms. However, Dutch consumers have surpassed US consumers with their impact on management. One prominent example of such requests is the consumer demand for cows allotted time to graze naturally on pasture. Consumers have also shown a willingness to pay more for milk from grazed herds. However, when considering decreased production and the cost of land, producers must choose if an incentive is cost effective. Additionally, animal care demands dictate management practices, and ecological requirements, such as slatted floors with “anti-emission flaps” and phosphorous limitations, creating additional challenges for the Dutch dairy producers.

Although there is also debate over management practices, one producer suggested providing consumers with additional options. His proposed solution, “Free Walk Milk” (as it is translated), provides additional financial benefit to producers housing cows in open facilities (compost bedded pack barns) and small amounts of grazing time. To market his idea, this farmer hosts informational sessions focused on educating consumers about the dairy industry. The course, held in a room attached to his barn via a large glass partition, allows consumers to watch cows resting in the compost setting firsthand. By allowing consumers to see comfortable cows behaving in stereotypic natural behaviors, he believes that he is bridging the farmer-consumer gap and provides consumers with more motivation to demand and purchase “free walk milk”.

Of the farms visited, the majority incorporated technologies in their management practices including automatic milking systems, manure scrapers, feeders, calf feeders, and concentrate feeders. The brand of the technologies varied throughout farms. With automatic milking robots, a couple of differences between systems included their pre-milking routine and attachment of the milking equipment. Automatic milking systems allow cows to be milked individually and with greater frequency. Switching to automatic milking systems tended to increase milk production. Automatic manure scrapers were used to manage waste, while automatic feed pushers also help to reallocate time to manage other tasks while cows still were encouraged to visit the feed bunk. Automation was also incorporated into calf raising, with calves being introduced to automatic calf feeding systems after birth. These systems allowed for group housing, while allowing individual attention from recorded drinking data, including speed, volume, and number of visits. As with any investment, many considerations had to be made before deciding on the purchase, including cash flow analysis, financial feasibility, technician accessibility, and producer preferences.

Although all technologies mentioned are commercially marketed, there are infinite possibilities for future dairy technology. Some robot companies, such as Lely (Maassluis, Netherlands) are putting more emphasis on technologies designed to monitor dairy cows’ feed intake and better methods of monitoring health parameters through milk. Nonetheless, research in other areas is also a priority throughout the Netherlands. Dairy Campus (Leeuwarden, Netherlands) serves as a research institute for the Netherlands with current research focusing on the use of synthetic flooring, Nedap (Groenlo, Netherlands) locational tracking, and scraping with automatic robots. Synthetic flooring has the potential to decrease ammonia output, because the flooring absorbs urea. Cow positioning with Nedap’s Cow Position System is now only functional for cows housed within barns, but their goal is to adapt the system for grazing herds. Additionally, some companies have begun to focus more on training staff to promote animal well-being and health. CRV (a genetics company based in Al Arnhem, The Netherlands) is also working on a technology called Ovalert that combines different alerts to best advise the
farmer with advice regarding cow fertility. Together these products could help to make managing the dairy herd easier for producers.

Both health and longevity of cows are important considerations in running a successful dairy farm. In the majority of the farms visited, many cows presented a relaxed and approachable demeanor. Some farmers believed that the lack of bullying behavior could be attributed to installing automatic milking machines. Because cows come and go from the milker as desired, cows have more time to lie down, ruminate, eat, and drink. The producer also spends less time fetching or pushing all of the cows to the parlor, helping to reduce cow stress. Some farms are also starting to implement a system known as a cuddle box. Immediately after calving, the calf is taken from the mother and put in a box in front of the mother. The system is beneficial for the calf because it gets time with the mother, provides safety, reduces the risk of illness, and provides easier transfer of colostrum to the calf. The system may also benefit the dam by potentially reducing stress and may encourage the dam to eat sooner. On the majority of dairies, there were also automatic grooming brushes that activate when a cow rubs against it to provide additional enrichment.

We had a very enjoyable experience in the Netherlands. While many things were similar to the United States, they also differed. Largely, the European consumer has more influence on how agriculture is handled in their countries. However, American consumers are beginning to influence dairy systems in the United States too. Learning how European producers have handled dairy consumers’ demands in their countries could be useful for American dairy producers in the future.