Herd Management

Dairy Unit

The DRTC's Dairy Unit is located at the Edmonton Research Station. The DRTC, along with swine, poultry, and crop research facilities, sit on two-quarters of land on the U of A's South Campus. The Dairy Unit has a herd of about 150 Holstein Cows housed in a 350-foot long barn with 146 tie stalls. On average, 125 producing cows and 25 close-up dry cows are accommodated in stalls. Dry cows and heifers are moved to stalls 21 days prior to their due date.

Milking

The milking system is a pipeline system; milking is done in the stalls with a Surge Westfalia milking system on a DeLaval track, featuring Metraton milk meters and auto take-off cylinders. This system cuts cow movement and reduces milking time by about three hours a day, which creates a more comfortable environment for the cows, barn staff, and researchers at the DRTC. The DRTC has also kept its old milking machine, which is a single-8 herringbone-milking parlor. This milking parlor is used for teaching or if there is an experimental requirement for a parlor system. A dry cow facility was also built recently that can accommodate 30 dry cows. All of our milk is sold commercially and we are subject to the same quality regulations as commercial farms.

Manure Handling

The barn also features a 700-foot gutter cleaner, manure pump, and an efficient ventilation system. Manure goes to an 18-inch diameter Magnum Houle Pump system, which is pumped 240 feet underground to the university's new compost facility. A computerized record keeping system monitors daily intake, production, and health data for the herd.

Feeding

A newer aspect of the facility is a feed room with total mixed ration (TMR) mixing capabilities for alfalfa silage, barley silage, chopped hay, and specialized concentrates which are mixed at the on-site feedmill. Six Data Rangers automated feed wagons deliver the TMR to each stall. Cows are fed a TMR once a day. They are fed to appetite with five per cent leftover. Feed intake is adjusted every 2-3 days by a stockperson according to the previous feed intake values. Cows are fed at 8:00 a.m. and leftovers from the night before are removed at 7:00 a.m. The herd is divided into three groups according to the stage of lactation and level of production. These receive either an early, mid, or late-lactation rations. Cows are also grouped based on milk production. If a cow is at 200 or more days in milk and producing more than 30 litres of milk, she would stay in the high group; otherwise, she would move to the low group.

Forages

The unit has four larger bunker silos for the preservation of silages. Forages fed to the dairy cattle herd include cereal (barley, oats, and triticale) and alfalfa silage, which are grown at the 500-acre Edmonton Research Station located just 10 minutes from the university campus. In this fiscal year, 687 tonnes of alfalfa silage and 1200 tonnes of barley silage were harvested and ensiled. Most of the lactation rations are based on 20-25 per cent barley silage, 20-25 per cent alfalfa silage, 7-10 per cent alfalfa hay, and 45-55 per cent concentrate. Alfalfa and grass hay are chopped with a hay shredder.

Cows are dried off at 11kg milk/day based on the dry cow standard operation procedure of the DRTC and join the dry group in the outside dry cow sheds. Dry cows are divided into either far-off dry or close-up dry based on their stage of pregnancy. Far-off dry cows receive barley silage, grass hay, and two kilogram of far-off dry concentrate. The concentrate is used to ensure adequate mineral-vitamin intake by the dry cows. Intake is limited to this level. The amount may change if there is a significant change in the silage dry matter or animal bodyweight. Close-up dry cows receive a TMR.

Concentrates

Concentrates are formulated based on the stage of lactation and predicted milk production. The formulated concentrate and experimental concentrates are prepared at the university feedmill or purchased from a commercial feedmill. Since June 2003, a customized protein, fat, mineral, and vitamin premix for the early lactation (high group) cows has been purchased from Co-op Wetaskiwin. This premix is the standard for the milking herd. A barley grain (77.8 per cent) and corn grain (22.2 per cent) mix is also prepared in the form of dry rolled grain at the university feedmill. This mix is used with the standard supplement to complement the concentrate portion of the ration.

Calf Management

There is another barn (intensive unit) which is designated for intensive work with cannulated or younger animals. This barn also accommodates a few maternity pens and is adjacent to a calf barn. The bull calves are sold a week after birth to free the calf barn for the heifer. Newborn heifer calves are raised on milk and calf pellets to weaning at 45 days of age. They are then sent to an outside farm near Millet. They are bred by artificial insemination (AI) on the farm and return to the DRTC eight weeks before calving. Heifers calve within 24 months and 20 days.

Heifer Raising

We are raising our heifers at an outside farm about 60 km south of Edmonton, near Millet. The calves are picked up at the dairy unit at forty-five days of age, at which time they are weaned from milk. Calves are tagged and dehorned prior to their departure. They are then housed in a heated calf barn in groups of five per pen at that farm. They are fed 18 per cent total diet calf

pellets (Co-op). They are also fed second cut grass alfalfa hay, free choice. The calves are offered a free choice of pellets up to a maximum of five pounds per day. Within a few weeks of arrival, the calves are vaccinated with 8-way closteridial vaccine, bovine virus diarrhea (BVD), hemophilus somnus, and dectomax pour on antiparasitic treatment. They are boostered with the same vaccine six weeks later. The calves are moved to larger pens and placed into larger groups with a similar diet of five pounds of 18 per cent ground barley blended with beef grower supplement containing rumensin along with free choice second cut grass alfalfa hay. They receive this until eight months of age.

At approximately fourteen to fifteen months, the heifers are moved into pens for breeding. At this time, they are offered a limited amount of barley silage along with free choice of second cut alfalfa grass hay plus the five pounds of 18 per cent protein barley ration. The heifers are artificially inseminated at around fourteen months of age. After the heifers are confirmed pregnant, they are grouped in larger numbers and fed barley silage up to a maximum amount of fifty pounds of silage (40 per cent dry matter). They are also offered free choice alfalfa grass hay plus the 18 per cent grain ration at 5 pounds per head. During the summer, the barley silage is substituted with grass alfalfa hay plus some limited grazing.

The pregnant heifers are returned to the DRTC eight weeks prior to calving and heifers are calved at 2 years and 20 days of age. From the time the heifers leave the calf barn, they are offered free choice of minerals and salt. All animals are bedded with barley straw. Heifers are generally put into groups of twelve, of which four groups are placed in the heated barn (younger age) and the others are housed in cold barns or an open shed (older age). There are no other heifers being raised in this farm; thus, this is a good opportunity to keep a closed herd environment.

Culling Guidelines

Cows are culled for the following reasons:

- Major milking procedure problem including serious teat injuries, serious or chronic mastitis (staph aureus), and injuries or severe lameness. This category also includes animals with feet and leg problems such as chronic lameness caused by laminitis, abscesses, stifle injuries or arthritis, and serious hock or knee injuries.
- Production: includes cows and heifers which produce less than 80 per cent of the Rolling Herd Average at 140 days of lactation. These animals will be culled at the end of their lactation.
- Cows open: these include cows with more than one abortion, cows open at more than 240 days of lactation, heifers with more than four services.