Harper Adams University

University Farm Dairy Unit

Operating commercially, alongside farm-based research and teaching facilities, the dairy unit provides accommodation for 400 cows. Cows are milked in the leading edge technology 40 point internal rotary milking parlour with computerised cow identification and milk yields. The target annual yield for the unit is 9000l/cow. One rotation of the parlour for forty cows takes eight to twelve minutes. The operators work from the inside of the circular pit enabling them to see all the cows easily. Segregation gates, controlled from the parlour using live video images, are used to direct cows before and after milking to specific areas of the building.

The unit also features a parlour viewing gallery and modern cow housing.

Cow Housing

Two spacious, light and airy cow housing buildings aim to offer the optimum conditions for dairy cow health, especially to maximise ventilation. One building contains an area entirely of cubicle housing and the other provides both cubicles and straw yards. Automatic ventilation screens on some exterior walls react to wind speed helping protect sensitive computerised feeders.

Other features of the cow housing:

- roving feed drones push up feed throughout the day increasing appetites
- spacious cubicles accommodate the modern large dairy cow
- cubicles are lined with latex mattresses with a rubber top cover on a lime material to minimise bacterial build-up
- slurry is scraped automatically into channels leading to an underground slurry pit
- passageways can be washed using water from tipping water troughs which then refill to provide fresh water for the cows.

Trial Area

A trial area is available for up to sixty cows from the main herd to feed individually. The cows wear a neck transponder so that they can access an individual feed unit. The amount of feed eaten can be automatically weighed and recorded thereby allowing a comparison of different diets in the same area with minimum disturbance to the cows.

Environmental Considerations

The dairy unit has been designed with emphasis on environmental sustainability.

- Water from the washings in the parlour is channelled back into a holding tank. This is recycled for flushing through the collecting yard after milking.
- The slurry is not diluted by rain water which is diverted away. This more concentrated slurry has a higher nutrient level and less energy is needed to transport it.
- The dairy unit has its own borehole for water. Treated water is only needed to clean the milk plant. This provides a cheaper and more sustainable system.
- Slurry is separated into a liquor fraction and a solid fraction. The liquor is stored for use on the Harper Adams' farm but the solid fraction is sold as a fertiliser for use elsewhere.
- Special 'ramping' pumps reduce electricity consumption at milking time as they adapt to the variation in power demand when the number of cows being milked alters.

- A heat exchanger transfers heat from the milk to pre-heat the hot water system.

Research Projects

The facility includes research capacity for 60 individually fed cows or groups of 40.

- Level and form of dietary Zn on cow health and performance
- Grazing behaviour of dairy cows
- Whole crop wheat for dairy cows
- Effect of high and low tannin peas on dairy cow intake and performance
- Foam foot baths to reduce lameness in cows
- Dietary means to reduce methane output from cows