



New Dairy Research Center

*Facilities Practical
But Also Attractive*

Vearl R. Smith

Dairy Science Department

The University of Arizona's recently completed Dairy Science Research Center features corrals in a unique layout with a modern equipped milking barn, calf, bull, and maternity pens plus some modest facilities for research. The center is located on a 10 acre plot on Allen Road just east of Campbell Avenue in Tucson.

The corral layout at the center is in the shape of a half wheel or fan. The hub is formed by a circular lane and holding pen adjacent to the milking parlor. Six corrals extending out from this hub roughly form a half circle. In dry lot feeding with large herds common to the Southwest, this type of corral arrangement reduces time and labor in the milking operation.

Saves Man Hours

In a conventional rectangular or square corral layout, some of the corrals are a quarter of a mile or more from the milking barn. A recent U. S. Department of Agriculture survey showed as much as one-third of an operator's time was spent in driving cattle to and from the milking parlor.

In a half wheel layout, each corral is equidistant from the milking barn. The herd can be checked or observed much more readily from the half wheel layout. Standing in the holding pen, the herdsman can observe unusual behavior of a cow in any one of the corrals. In the conventional layout of corrals, to make a similar observation may require walking half a mile. Also, for lanes in a rectangular arrangement extra fencing and space are required that are eliminated in the half wheel design.

Even Shade Pattern is Planned

The corrals each accommodate 25 cows, allowing 400 square feet per cow. Shades in the corral are 10 feet high and 16 feet wide. Each cow has 40 square feet of shade space. The shades are oriented north and south so that the shade pattern changes from morning to night. Consequently, the area shaded each part of the day is dried by exposure to the sun sometime during the same day.

Gates and lanes from the milking barn are arranged so that cows moving from the milking barn return to the corral from which they came. Or, if the cow needs to be retained for some type of treatment, she can be shunted into a holding pen to one side or the other of the milking barn.

Feed bunks for the feeding of roughage are on the perimeter of the circle. With this type of an arrangement there is a minimum distance to travel in the process of feeding. The feed bunks are in a straight line for two adjacent corrals. Then between those banks and the ones for the next two pens there is a jag or indentation between the corrals. This jag allows room to maneuver a tractor when moving from one set of corrals to another in cleaning off the concrete platforms.

One Watering Control

Three watering troughs set in the fence lines between corrals provide drinking water for the cattle. A unique feature of the watering system is a master float valve in the holding pen that regulates the water level in all three troughs. If the float valve sticks, the water troughs

will not overflow. Overflow water from the master valve will flow into the sewer line from the holding pen. This type of arrangement prevents a mudhole around each trough which could occur if each trough had its individual float valve which could get stuck.

On the south side of the milking barn, steps lead up to an observation platform over the cow exit. Spectators may observe the milking operation from above without disturbing the cows during milking.

Dessert in the Parlor

The milking parlor has three elevated walk-through stalls on each side to accommodate six cows at a time. While in the milking barn the cows are fed concentrate automatically from a small hopper above each stall. The concentrate is moved from a large outside storage bin by means of a conveyor.

From any one of the six milking machines the milk flows into a glass weigh jar, then is released into a 1,500 gallon cold wall holding tank where the milk is cooled almost immediately to 40° F. After each milking the milking machines and pipeline conveying the milk to the cooling tank are washed automatically merely by pressing a button.

Includes Office, Laboratory

Separated from the milk barn and milk room by a breezeway is an office, laboratory, and student quarters building.

(continued on next page)

Constant Research Seeks New Grasses, Legumes for Southwest

L. P. Hamilton

Department of Agronomy and Range Management

One of the kinds of research being carried on at the University of Arizona deals with introduction of new plants from foreign countries or the improvement of species already in use.

The U. S. Department of Agriculture maintains a branch plant introduction center at Tucson as one of the functions of the University of Arizona plant materials center. Although plants of all sorts that may have economic value are tested, emphasis thus far has been on forage grasses and legumes.

In addition to their study of foreign introductions, plant scientists at the plant materials center keep a sharp lookout for promising strains of native species. These are brought to the center and propagated either by seed or vegetatively. The increases thus obtained are finally field-tested in cooperation with the Soil Conservation Service to see how they will respond under actual field conditions.

Selection of Blue Panic

A number of grasses have been selected for Arizona propagation in this way. Blue panic, a highly productive forage species, is one of these. This grass, native

to India, was only a promising row in the nursery at Tucson in 1937. Farmers have increased the seed from this original row until today it has been planted on thousands of acres in Texas, as well as on less extensive areas in Arizona and New Mexico.

Its value in well fertilized, irrigated pastures is likewise recognized. A perennial grass, it does not need to be replanted every year. Although rather coarse, it is well liked by cattle. Unlike Johnson grass, it has never been known to poison livestock through the development of prussic acid.

Another introduction that shows a great deal of promise is an early-growing Moroccan Harding grass. This grass promises to produce an abundance of spring forage in irrigated pastures. It responds particularly well to fertilization and is a heavy producer under the right combination of fertilization and irrigation. Studies are currently under way to compare this grass with promising new strains of Alta fescue that have recently been brought in from Israel, Uruguay and other countries.

New Range Grasses and Legumes

Range forage grasses are the primary concern of the center. Creeping drop-seed from South Africa is an example. This plant has been field-planted near Hereford, Arizona, where its Bermuda-like growth is spreading over a denuded dry-

land slope. Climatic conditions at Tucson do not seem to favor satisfactory seed production, but it has set seed satisfactorily near Snowflake in northern Arizona.

Cold-tolerant early-season grasses suited to the summer rainfall areas in central and northern Arizona are scarce. Karoo grass appears to be such a grass. The plant materials center is testing this leafy African grass and numerous native strains near Snowflake. Plants not suited to southern Arizona are tested at this Snowflake location with the help of Irving Gibson, a Snowflake rancher.

Needed — A Dryland Alfalfa

Another important phase of plant research at the center has to do with dryland alfalfas. The development of a dryland alfalfa that would grow in mixture with grass on our ranges would do much to increase the quality of range forage. A number of alfalfas have been introduced from the Middle East and are being grown in a 14-inch rainfall area on the Page Ranch near Oracle. Some of these have survived the drouth of two years ago and appear promising. They are being maintained at the center along with new ones still being tested.

Seedbed Preparation

Development of seeding methods which will result in more dependable stands on the range is often as important as the grasses that are used. Various methods of water conservation to accompany seeding, control of annual competition, seed placement and fertilizer application are studied as a part of the research program.

BELOW, Blue Panic grows in a depression where it receives a little runoff water.



(continued from previous page)

The office will be used for the keeping of breeding and production records and other records connected with research work. The small laboratory will be used in processing semen, blood and in making chemical analyses for experimental work. Quarters for two students are for boys employed by the department in caring for the herd or working on research projects.

The calf quarters are south of the milking barn. There is only space enough in these facilities to handle the calves until they are six months old. At a 90° angle and connected to the calf quarters is an experimental barn. This has a con-

crete floor and stanchions for 24 cows. The structure is used entirely for experimental work. East of the experimental barn are 10 maternity pens. These are enclosed with a chain link fence and the shade is of the same design as used in the corrals.

Design is Basically Practical

Two bull pens are located at the southeast end of the plot. Bulls kept in these pens will be used almost entirely for experimental purposes.

The basic design of this unit can be adapted by the commercial dairyman. In addition to a unit for practical management, the few extra features provide excellent research facilities.