

## IOWA AGRICULTURAL EXPERIMENT STATION

### ANIMAL HUSBANDRY

Dairy Husbandry Section

# THE MILCH GOAT

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Interest in the milch goat has been stimulated by the world-wide food shortage and a keener appreciation of the food value of milk. Altho goats are kept mainly for the production of mohair, meat and hides, several milk-producing strains are recognized and in some countries a large percentage of the milk produced is goat's milk. Germany had at the beginning of the war about 4,000,000 milk producing goats which returned annually over three times their capitalized value in the form of milk and by-products. While goats are widely known as scavengers, they must be fed liberally and well managed to secure the highest production. Goats' milk, tho ill adapted for butter making, is excellent for cheese making and for infants and invalids. Its apparent freedom from tuberculosis also enhances its value for these purposes. Goats are not, however, as economical dairy animals as cows, requiring over three and a half times as much feed per quart of milk produced. Care should be exercised by purchasers of goats to secure animals adapted for milk production.

#### ADAPTATIONS

The number of goats in the United States is large, consisting mainly of Angoras kept for the production of mohair. Of recent years considerable interest has been shown in milch goats and at the present time owing to the high cost of milk to the consumer, this interest is greater than ever.

Milch goats are not adapted to all conditions. Altho hardy and generally free from disease, they will not thrive on wet or low-lying land, their natural environment being mountainous regions. They can be kept successfully, however, on small tracts of ground and so are frequently found in towns and populous rural districts. Goats and consequently their milk, are remarkably free from tuberculosis and so goat's milk is in demand for the feeding of infants and invalids. It is doubtful if in Iowa or the mid-west much demand could be found for goat's milk on a commercial scale but in individual cases the keeping of one or more milk goats might be recommended.

Goats produce milk fairly economically, consequently where a few are kept for family purposes a comparatively cheap supply of milk can be obtained. At the present time milch goats are in considerable demand, and as the number available is limited, prices are high and so the chances of producing cheap milk are not so good as they were formerly.

#### BREEDS

There are several breeds and many poorly defined varieties of goats but for milk producing purposes only three need be considered here.

*Toggenburg.* This breed, which originated in Switzerland, is perhaps the most common in the United States. The goat is brown with white markings and a white streak running down each side of the face. Horns are generally but not always absent, while a beard and wattles are usually present. Toggenburgs are as a rule a short-haired breed of medium size, weighing about 125 pounds at maturity in the case of the doe. They are hardy and the does make excellent mothers and milkers and perhaps average four quarts of milk per day. A Toggenburg doe owned in California and weighing 136 pounds produced 2,680 pounds of milk in one year.

*Saanen.* The Saanens are also of Swiss origin. They are a short-haired breed and generally hornless, though horns sometimes are present and some long-haired animals are found. Their color is white or creamy. They are larger than the Toggenburgs, the does averaging about 145 pounds in weight. While fairly good producers they do not yield as heavily as the Toggenburgs and probably 3 quarts per day is a good average production. A doe of this breed owned in New York produced 1,845 pounds of milk during one lactation.

*Nubian.* This breed is less common in America than the previous two. It probably arose from the crossing of some oriental variety on the common goat of England. The Nubians are generally short-haired and polled and their color is exceptionally variable. They are larger than Toggenburgs or Saanens and does will average about 160 pounds in weight when mature. Nubians are generally heavier producers than the other two breeds and they are extremely prolific, but owing to their extreme sensitiveness to low temperatures they are less adaptable.

#### FEEDING

Goats are primarily browsers and so the majority of them kept in this country are used to clean up brush or destroy weeds on waste land. Milch goats are as efficient at clearing brush as are Angoras, but it can not be expected that they will produce their maximum when kept under such conditions.

On the whole the feed required by goats is of the same nature as that for dairy cattle and whenever possible they should be provided with some pasturage. Limited pasture can be used, provided it is not overstocked or allowed to become foul. The herbage on vacant unfenced lots can be utilized by tethering goats thereon.

In winter, or when pasture is unavailable or limited, hay should be provided and grain will also be needed in the case of high producers. Goats are not limited in their tastes to any particular concentrates, but oats and bran and sometimes cracked corn are the best suited to their needs. A doe of average production should receive one-half to three-fourths of a pound of grain per day. In winter roots are also valuable for providing the succulence necessary.

The goat is frequently looked on as an animal that will consume any rubbish dignified by the name of feed and tho they do utilize much that would otherwise be wasted, they cannot act as scavengers and produce profitable yields of milk. However, such kitchen refuse as the parings from fruit or vegetables can very conveniently be fed to milch goats, provided it is clean and free from decomposition.

There is considerable difference of opinion as to the number of goats that can be kept on the feed required for one cow but probably not more than five can be supported on this.

From the feed standpoint goats are not as economical producers of milk as are dairy cattle. At the New York (Geneva) Agricultural Experiment Station it was found that during the years 1909-12 the average feed cost of production for a quart of goat's milk was 3.4 cents while that for a quart of Jersey milk was .92 cents.

## MANAGEMENT

Milch goats, like dairy cows, respond readily to good care and proper management, and if best results are to be secured, they must be attended regularly. In winter the short-haired breeds require comfortable housing in order to secure the largest production. Without a doubt, the most critical period in goat management is the kidding season. The does should be kept in individual pens a few days before and after kidding, when they may be returned to the milking herd. The kids are small and delicate when dropped, tho with care and attention at the proper time, they rapidly become stronger. They are separated from their mothers in a short time and fed from a nursing bottle. Weaning occurs after the kids have been taught to eat well enough so that their growth will not be impaired. Young bucks not intended for breeding purposes are castrated at an early age and butchered when only a few months old.

Milch goats are very prolific, usually dropping twins or triplets, and having a gestation period of five months. They breed almost immediately following kidding while yearling does are also fit for reproduction. Breeding should be so practiced that the doe will kid three times in two years, which permits the lactation period to be about six months in length, after allowing for a short resting period. To insure largest production the doe should be dry from five to eight weeks before kidding.

Goats must be milked in quarters separated from those in which they are stabled or the milk will otherwise become tainted. Milk from rutting does is not fit for domestic purposes and to insure a palatable product the buck must be kept sufficiently removed from the milking quarters. Goats are milked twice daily unless the production exceeds three quarts, when it is advisable to milk three times. Before milking the udder should be thoroly cleansed so that the flavor of the milk will not be impaired. To facilitate milking, which is done from behind, the does can be trained to jump upon a box.

Many enthusiastic advocates of goat husbandry have stated that tuberculosis is unknown among goats, a statement that in the light of present evidence appears to be erroneous and misleading. It is true, however, that tuberculosis is rarer among goats than among any other class of domestic animals, and that a relatively small percentage are afflicted with this dread disease. Figures from some of the leading slaughter houses of Germany indicate that only about one per cent of the goats have tuberculosis, a fact which explains in part the popularity of that animal in central Europe. It also affords one of the chief reasons for the growing interest evinced in milch goats in this country. Generally speaking, goats are less subject than sheep to disease except in the cases of lung worms and foot rot and on account of their liability to these diseases they should not be kept exclusively on low wet land. Takosis is an important disease peculiar to goats, the symptoms of which are great weakness, emaciation, diarrhoea and pneumonia and for which no effective treatment has been evolved.

## PRODUCT

Goat's milk varies widely in composition with the breed, period of lactation, individuality of the animal, and other factors. In composition it is quite comparable to cow's milk altho somewhat higher in total solids, fat and protein. It differs from human milk in having a higher fat content, more casein, less sugar and double the ash content. The composition and amount of the ash present may be partially responsible for the beneficial effects following the use of goat's milk.

Goat's milk is well suited for the manufacture of cheese, and is also highly recommended for invalids and infants. Infants suffering from malnutrition show marked relief when goat's milk forms the basis of the diet. Doctors Sherman and Lohnes of Buffalo, N. Y., have shown that the curds of goat's milk when returned from the stomach were smaller and more flocculent than those of cow's milk. It is probable, however, that cow's milk has a greater stimulative action on the stomach, so that babies tolerate equally well similar amounts of goat's and cow's milk when used in the same manner. The beneficial effects of goat's milk are most apparent with very young infants; for older children it is perhaps equal in value to cow's milk. Condensed goat's milk is also being used in infant feeding with considerable success.

The fat of goat's milk is ill adapted for butter making owing to its lack of color and the difficulty of separating out the fatty globules from the milk. Goat's butter also becomes rancid quickly and can only be used in cooking when fresh.

Goat's milk is highly desirable for cheese making owing to the small fat globules, the nature of the casein and the peculiar flavor secured. Much of the cheese manufactured in Europe comes wholly or in part from goat's milk. In large part Swiss cheese and some of the more popular varieties produced in France and Norway owe their popularity to the goat.

## LITERATURE

The interests of the milch goat in this country are guarded by the American Milch Goat Record Association, the Secretary of which is J. C. Darst, Dayton, Ohio.

Publications of special interest to goat owners are:

The Milch Goat in California; E. C. Voorhies: Bul. 235, California Agricultural Experiment Station, Berkeley, Cal.

Goat's Milk for Infant Feeding; W. H. Jordan and G. A. Smith, Bul. 429, New York Agricultural Experiment Station, Geneva, N. Y.

Journals partially devoted to goat farming are:

The American Sheep Breeder and Wool Grower, Union Stock Yards, Chicago, Ill.

The Angora Journal and Milk Goat Bulletin, Portland, Oregon.