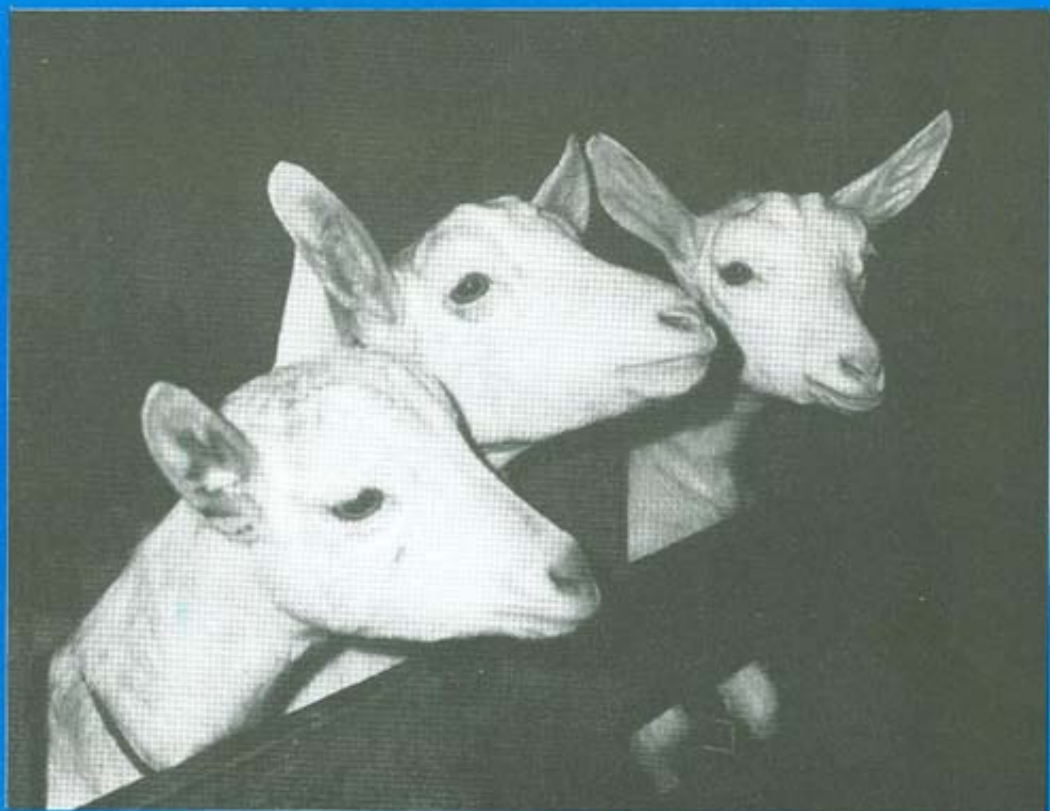




AGRICULTURE AND FOOD DEVELOPMENT AUTHORITY

Alternative
Enterprise
Series No. 7

DAIRY GOAT KEEPING



Dairy Goat Keeping

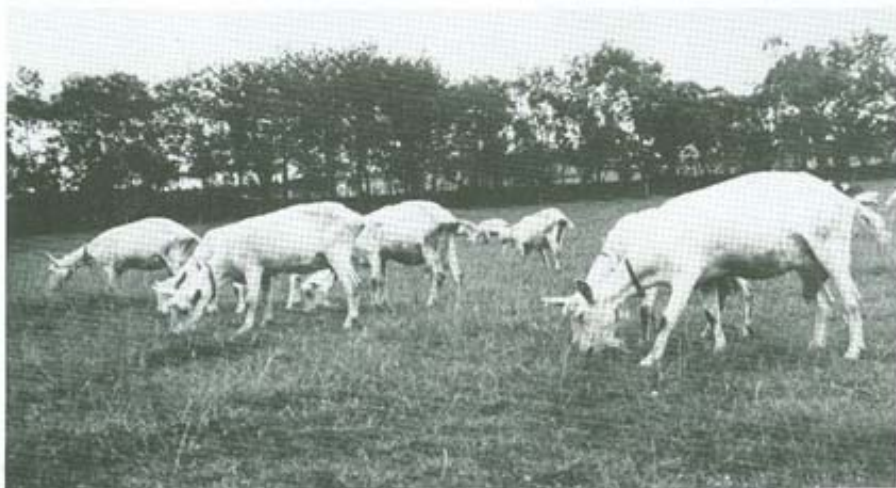
Goat keeping in Ireland is increasing both as a hobby and as a commercial enterprise. Most of the milk is either consumed on farms, sold frozen to special retail outlets or made into cheese and yogurt.

The demand for goats' milk is expanding as prejudice against the milk declines. This has come about partly because a more health conscious public, and people with allergies to cows' milk, are discovering the benefits of goats' milk. In addition, there is an increased demand for the products from goats' milk, such as cheese and yogurt which have unique flavours and textures. However, before embarking on goat milk production a prospective new producer should research the market thoroughly.

Selection of Stock

The breeds of goat most suited to Irish conditions are the Saanen type, the British Alpine, the Toggenburg and the Anglo Nubian breeds. The first three breeds give similar milk yields, the Anglo Nubians produce less milk but with a higher butterfat content and are generally not as hardy as the others.

When selecting stock for milking ability the strain of a particular breed is much more important than the actual breed of goat. Stock should always be purchased from a reputable source. Desirable appearance in a dairy goat does not include special colours or marks. The female should appear to be in good health and should have a good conformation. The udder is very important. It should be firmly attached to the body, round in shape, and carried well up under the body. The teats should be set well apart, and be of moderate size, pointing slightly forward.



Saanen type milking goats.

Fencing

Although goats are quite adaptable, they have a natural tendency to browse and range for their feed. The goats' inclination to wander must be checked. Therefore, a good fence is essential since if allowed to run loose goats can do a great deal of damage, even in a short time.

Properly constructed fences and gates will keep goats confined and prevent them from learning the bad habits of fence jumping, climbing on fences or crawling under them. Four foot high mesh wire with one row of barbed wire or electrified wire on top is usually adequate. Goats can rapidly weaken damaged fencing by standing on their hind legs and pushing against the fence. Hence, all fences must be solidly constructed from the beginning.

Electric fencing is suitable for goats, however at least two strands of electrified wire are necessary. A training pen is essential for goats not accustomed to electric fences. This should be a small pen with several strands of charged wire in which goats are confined until they acquire knowledge of and respect for the fence. This fence should be sufficiently tight that the goats cannot force their way through should the current be off.

Housing

Goats need more protection from inclement weather than cows or sheep. They must have access to adequate shelter at all times. Goats must be housed at night all the year around and also during bad weather. Housing for goats requires careful planning as they tend to be destructive. They chew soft materials such as timber, putty and rubber. Timber should be clad in metal sheeting to prevent damage. Goats raise themselves up on their hind legs; an average sized adult can reach to over two metres. Therefore, vulnerable fittings should be well out of reach and low windows must be protected with wire mesh.

Goats may be housed in individual pens, or communal housing may be used. Large goat farmers tend to favour communal housing. It is cheaper to have all the goats sleeping in one area. However, many small goatkeepers prefer individual penning. Here, each goat has her own pen, equipped with hayrack, water supply and mineral lick.

A concrete floor is recommended with drains sloping to an outside effluent tank. A dry bed of straw or sawdust must be provided and changed regularly. All accommodation must be draught-proof and waterproof. For individual pens, a floor area of at least 1.5 to 2.0 square metres should be provided with sides about 1.5 metres high. For loose pens, 1.2 square metres per goat is adequate.

If a male goat is kept, his house should be quite separate from the females, with his own run attached. Construction must be very strong. It is best to be

able to feed and water him from the outside. A food store out of reach of the goats is desirable.



Goats must be housed at night and also during bad weather.

Ventilation

The objective of ventilation is to ensure that the air within the goat house is changed regularly. This provides fresh air for the goats to breathe and removes the foul air containing the micro-organisms which cause pneumonia and other respiratory tract infections. It is always better to provide more rather than less ventilation. The risk of chilling the goats is minimal, provided that direct draughts are excluded. Air should circulate freely in the goat house but it is recommended to have cosy areas where the goats can be protected from draughts by solid partitions.

Feeding

Goats are ruminants like sheep and cattle and in general their dietary requirements are similar although goats are naturally browsing animals with a preference for herbs and scrub. Care must be taken to eliminate poisonous plants, such as rhododendron and some ferns from the grazing area.

Good quality hay is the ideal conserved forage but silage is quite suitable for goats provided it is of high quality and changed daily. Concentrates, containing 16 per cent protein, should be fed to adults goats and a mineral lick must be freely available to highly productive animals.

The Adult Goat

A balanced diet must be provided during pregnancy and lactation. During the first third of pregnancy in a non-lactating goat very little additional feeding is necessary above that required for maintenance. However, the feed

requirements are considerably increased during the last seven weeks of pregnancy, because the foetuses are growing rapidly in this period and concentrate feeding should be gradually increased to the level the goat will be fed when lactating.

A typical diet for a milking goat would be 1 kg of concentrates for every 2.5 litres of milk produced per day and as much good quality hay or silage as she can eat. It is not recommended to give the concentrates in one feed — it is better to give half in the morning and half in the evening at each milking.

Water is an essential part of the diet and it should always be available. Lactating females, especially, can consume considerable quantities of water.



In commercial milking herds, kids are normally reared on milk replacer.

The Kid

Kids can be reared on their dams with the balance of the female's milk available for human consumption. Alternatively, and more commonly in commercial situations the kids can be artificially reared using a bottle and teat, pan feeding or ad lib feeding with a multiteat apparatus such as a lamb bar.

From birth to six weeks kids should be fed milk four times daily, but thereafter the number of feeds can be gradually reduced. Lamb milk replacer is very suitable but calf milk replacer may also be used.

A little good quality hay or silage should be offered to kids when they are two to three weeks old. They should also be introduced to concentrates from an early age.

The Young Goat

Goatlings (i.e. animals between one and two years old) must be fed adequately to keep them growing but to prevent them from becoming overfat. Where they have access to good grazing or browsing these requirements are satisfied by a feed of hay in the mornings and about 0.25 kg of the milker's ration.

Handling

Goats generally enjoy companionship and being handled. They are sociable animals and it is generally not advisable to keep a single goat. However, goats should always be treated as individuals; they cannot be driven as a cohesive group like sheep. Groups or individuals are best led. Goats are intelligent animals and quickly adapt to routines.

For veterinary treatment, such as foot-trimming, goats are held or tethered in the standing position. Horned animals are best disbudded as kids for ease of management later in life. The electric dehorner used for calves is suitable.

Male goats not wanted for breeding purposes should be castrated as early as possible. This may be done surgically or by using either a Burdizzo or rubber rings.

Milk Production / Dairy Routines

Goat's milk can be used for all domestic purposes, as well as for making cream, butter, cheese and yogurt. Milk yields vary enormously but commercial producers should aim for between 500 and 900 litres per goat per annual lactation for their herd.

Milking machines for goats are available from most of the major suppliers of milking equipment for cows. However, if only a few goats are kept this investment is hardly worthwhile and the goats can be milked by hand.

Milking should be carried out twice a day. Milking buckets and all other equipment coming in contact with the milk must be thoroughly washed using a dairy detergent and disinfected with either steam or a proprietary dairy disinfectant. Once the milk is collected it should be strained through a milk filter and cooled immediately. Failure to do so results in unpleasantly tainted milk. Taints can also develop if goats are milked too close to the bedding area.

Breeding

Goats, like sheep, are seasonal breeders. Females usually come into heat from late September to February. Goats come on heat every three weeks and if successfully mated the gestation period lasts for approximately 150 days.

In the absence of a buck goat, does on heat may be identified by a constantly wagging tail, a pink swollen vulva, by persistent bleating or by any combination of these.

Female kids come on heat at about six months of age but unless they are exceptionally well grown it is not recommended to breed them until they are eighteen months old. This is to ensure that they produce better kids and are themselves better goats. Adult goats have the ability to milk through for two years between kiddings.

Pregnant goats, particularly in the latter stages, need special care. While they should have their usual amount of exercise, care must be taken to ensure that they are fed as well as possible. They should not receive any blow on the side of the body, get a fright, be chased or fall on slippery surfaces. Such accidents may cause abortion, or misplaced kids, causing difficulty at kidding.

It is essential that kids receive colostrum (biestings) within a few hours of birth. Kids can be separated from their mother from two days of age but they are frequently allowed to suckle for longer periods. The longer the kids are left with their mother, the greater the problems when they are eventually separated.

If male kids are being reared for breeding they must be separated from females. They are sexually precocious and may effectively service females from as young as ten weeks. If the males are reared for meat, they should be castrated as young as possible to prevent any setbacks.

Diseases of Goats

Goats are generally regarded as being healthy animals. However, they are susceptible to many of the diseases of sheep. Symptoms of ill-health include loss of appetite, dullness, alteration in the character of the droppings, failure to chew the cud, drop in milk yield or a cough.

The goat's temperature is taken by placing a thermometer in the rectum. The normal temperature is 102.5°F (39°C). The best place to feel the goat's pulse is in the artery on the inside of the thigh. The pulse should be between seventy and eighty per minute. Respiration can be counted by watching the flank; this should be between 22 and 26 per minute.

Mastitis

This is generally recognised by a hardening of the udder and a change in the nature of the milk. It may be acute or chronic. It is treated with an antibiotic, either into the teat or injected intramuscularly, depending on the degree of severity. To prevent mastitis, strict hygiene must be observed at milking and dry, clean bedding must be provided for the goat. Teats should be dipped in a dairy disinfectant immediately after milking and long hair in the vicinity of the udder should be kept trimmed.

Pregnancy Toxaemia/Acetonaemia/Ketosis

These three are basically the same condition, except that pregnancy toxaemia only occurs during pregnancy. They are caused by a lack of energy in the diet. In late pregnancy, the uterus squeezes the rumen, so there is less room for roughage. At this time it is essential to feed some concentrates to keep the goat in moderate condition and to supply the energy that is required. In pregnancy toxaemia, the only way the goat can cut down on the drain of energy is by aborting and it may be necessary to induce kidding to save her life. In lactation, the goat reacts by reducing milk yield. Treatment with propylene glycol or glycerine is helpful in an early case, and a useful preventive, but it is usually best to seek veterinary assistance as glucose and corticosteroids may need to be injected.

Maize is specially helpful in supplying energy in the right form when ketosis has been a problem. Exercise during pregnancy is also beneficial since it helps to mobilise energy from muscles.

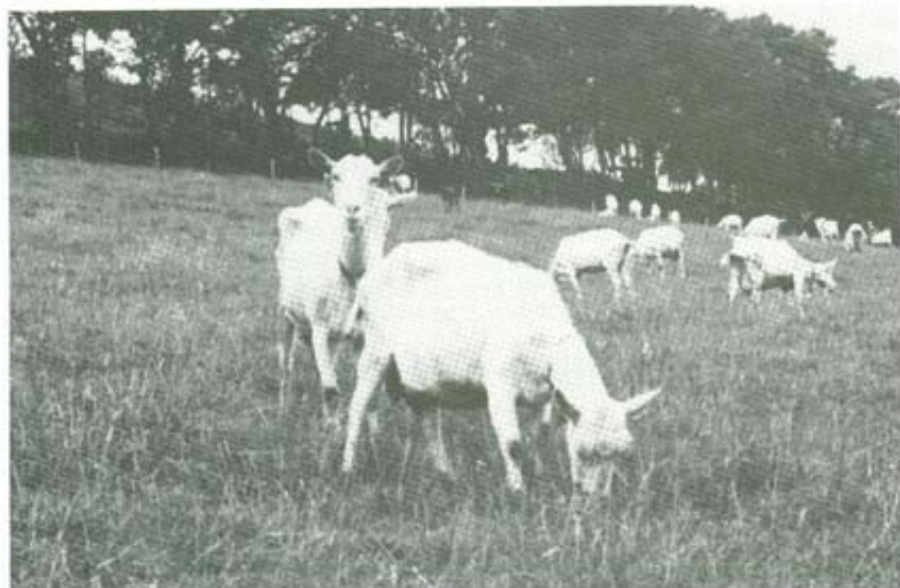
Clostridial Diseases

It is essential that goats are vaccinated against clostridial diseases such as tetanus and enterotoxaemia. Clostridial diseases manifest themselves as pulpy kidney in young goats from 3 to 12 weeks old, as 'struck' in goats over one year old and as enterotoxaemia in adult goats. Goats are particularly susceptible to enterotoxaemia - an acute fatal disease. The main danger period is the first few days after any change of pasture or diet. There is no satisfactory treatment but it may be completely prevented by vaccinating the goats. Vaccination against all the clostridial diseases should be carried out twice yearly. Immunity is transferred to the kid by vaccinating the doe in late pregnancy. The kids should subsequently be vaccinated at about three months of age.

Internal Parasites

Sheep and goats are infected with a similar range of internal parasites. Worm eggs passed by goats at grass during the spring and early summer develop into infective larvae. These appear on herbage in mid-summer and persist throughout the rest of the grazing season. Animals grazing contaminated pastures in the summer and autumn are therefore at risk unless control measures are taken. Grassland management practices to control internal parasites are difficult on many holdings because of limited pasture availability. One must therefore rely on anthelmintics to control worm infections. The anthelmintics marketed for

use in sheep are also effective in goats. It is beneficial to consult a veterinary surgeon to develop an effective worming programme for the herd. It is essential to withhold milk from human consumption for the specified time after administration of anthelmintics.



Control worm injection using an effective worming programme.

Where goats are grazing lowlying areas there is a risk of liver fluke infection. This may result in a reduced milk yield and even death in very severe cases.

Scour

Scour in kids can be very serious. It is caused by several bacteria and viruses and it is impossible to eradicate many of them. Adequate colostrum for kids and clean surroundings for the dam and kids reduce the risk of scour. At the first sign of scour, milk must be withdrawn from the kid and oral electrolytes given according to the manufacturer's recommendations. If the scour persists or the kid is ill, veterinary attention should be sought as antibiotic treatment may be required.

Coccidiosis is a protozoan disease of kids that can cause mild to severe diarrhoea. It can be prevalent where the bedding is very wet, where pens are not cleaned out between batches of kids or where food and water containers become contaminated. In most cases sensible changes in husbandry control the disease and eliminate the need for any medication.

External Parasites

Lice may be found in the goat's coat and they are just visible to the naked eye. Infestation with lice causes intense irritation and itching, usually during the winter months. Louse powder will normally control the problem.

Infestation of the skin by parasitic mites is referred to as mange. There are several types of mange and it is important to know the type involved when an infestation occurs. They are of varying significance, some causing only mild problems, others being virtually incurable. Veterinary assistance should be sought if mange is suspected.

Ringworm can affect all animals and it can be transmitted to humans. Normally a disease of the winter months, it is especially prevalent when animals are housed together. Ringworm does relatively little harm to the goat, but it looks unsightly and is a potential danger to humans. Antifungal drugs can be given to the goats mixed with their concentrate ration.

Since most goats milk is sold unpasteurised at present, goat keepers should be aware that a range of disease causing organisms affecting goats can also affect humans. Therefore, attention to hygiene is particularly important.

Marketing of Goat's Milk

The liquid milk market is an important outlet for goat's milk. Goat's milk is bought primarily on its health image, and also by people who have an allergy to cows' milk. The outlets for liquid milk are small retail dairy shops and health food shops. Some supermarket chains also take liquid and frozen goats' milk.

Goats' milk yogurt has traditionally been sold to that sector of the market that cannot tolerate cows' milk products. There is scope for increasing the share of the overall yogurt market with flavoured and natural goats' yogurt. Goats' yogurt is now being sold primarily in health food shops but new outlets are becoming interested.

The consumption of speciality cheese has been increasing in Ireland in recent years. The opportunity for cheese from goats' milk is mainly in the soft cheese markets. The trend towards natural and traditional foods favours goat cheese makers. The possible outlets for goats' cheese are supermarkets, delicatessens and restaurants.

A number of factors militate against an increase in goat milk consumption. These include marketing, distribution, absence of an all year round supply and to a lesser extent a built-in aversion to the real or imagined goaty odour of some milk supplies.

The problem of a year round supply can be overcome by artificial manipulation of the breeding season and can also be helped by the fact that goats' milk freezes satisfactorily. In modern goat dairying there is not a problem with odour or flavour.

The marketing and promotion of goats' milk must be seriously undertaken if sales are to be increased on the home market. Recent market research indicates

that there are major market opportunities for goat milk curd and soft cheese in France and Germany. However, it is almost impossible for Irish farmers to exploit these export opportunities on an individual basis.

Economic Aspects

Costs and returns from goat dairying vary enormously between farms. Milk yield per goat and the price per litre of milk are key variables in determining the profitability of the enterprise. The availability, quality and price of feed are also critical.

When drawing up a financial plan for a goat enterprise it is important not to overlook marketing costs such as packaging, freezing and transport which are usually much higher than for conventional dairying.

A budget for dairy goat keeping is included in the Teagasc publication "Management Data for Farm Planning", which is revised annually. Copies are available from any Teagasc office.

For further information on dairy goat keeping, contact your local Teagasc office.

Information is also available from the associations representing goat producers, i.e.

- * **The Secretary, Irish Goat Club, Ballintober, Hollywood, Co. Wicklow,**

OR

- * **The Secretary, Irish Goat Production Association, Rinnaknock, Ower P.O., Co. Galway.**