

Chapter 1

INTRODUCTION

This handbook is an updated version originally developed by breeders John Pool and Wendy Horton, and the Highland Cattle Society are grateful for all the hard work put into making it. It is now 2021 and time for an update. The handbook does not set out to be a treatise on all aspects of Highland Cattle management or try to teach “grandmothers to suck eggs”. It is a primer aimed in the main to the growing numbers of people who enjoy the breed and are beginning to establish a fold or who have never had cattle before.

All new breeders go through the stage of having the most basic questions in mind, which they are sometimes afraid to ask, especially in the august presence of “experts”. It is hoped that this primer will answer some of those questions and indeed suggest answers to questions which were not even considered by the reader of this manual.

It should be remembered that whether keeping cattle on a commercial scale or with only a handful, the majority of Highland Cattle breeders are enthusiasts who love to talk on the subject and share their knowledge. There is probably no question which has not been asked previously.

John Pool and Wendy Horton and updated in 2021 by Jacky Harrison.

Chapter 2

WHY CHOOSE HIGHLAND CATTLE?

Historically, like many native breeds, the Highland would have been a dual purpose breed used by crofters for milk as well as beef. As beef cattle they were driven to the outskirts of major cities to supply the ever-expanding population and exported across the pond in 1900s to range the prairies. They continue to be a beef breed, bred as pure Highlands or as a maternal breed crossed with a non Highland bull, to provide faster growing off spring and cross cows with inherited hybrid vigour.

Highlands are the most attractive and majestic of any breed. They have always attracted attention from artists, this being due to the lovely head with its impressive horns and the powerful body with its flowing coat. Truly eye catching. Traditionally considered to have originally been black, now the colours recognised by the Highland Cattle Society are black, brindle, dun, red, yellow and white.

However, the Highland is not just a pretty face; its greatest assets are hardiness and vigour. It thrives on the roughest land in the coldest and wettest of climates and it will eat fodder other breeds will not touch. In short, Highland Cattle can live and breed where other cattle would simply die.

The breed is environmentally friendly, their foraging ability dramatically improving sheep grazing, which is most valuable on hill and marginal land (severely disadvantaged less favoured areas). Highland cattle are now to be found in all five continents of the world. Their unique double coat, designed to protect the animals from the wet as well as the cold, allows them to live out all the year round and saves on expensive housing. They require less veterinary care, mainly routine dosing. Also renowned for their longevity cows can produce up to 15 calves in an 18-20 year period. The cows are exceptional mothers and with sensible stockmanship they calve easily, rarely needing help. However, they are very protective, so keep your distance; even if you cannot see where the calf is, the cow can! A pair of binoculars is invaluable for monitoring the situation during this period.

Finally, these cattle produce the finest beef from lower quality forage than any other breed. They do this and improve the land and the view – what more could you ask!

Chapter 3

FENCES AND FENCING

This chapter is a series of extracts from an article written by A D Kitson, Esq., for the *Yorkshire Farmer*. Cattle can be contained within strong fences that would not necessarily contain sheep and lambs. It is said a cattleman will examine the top of a fence or hedge and a sheep man the bottom. As many breeders run their Highland Cattle with other animals a full description of fences and fencing is presented so a range of options may be considered. It should be noted that a bull must have specifically strong fencing and advice should be taken in the event of the reader wishing to construct a bull pen.

EXTRACTS

A fencing contractor is asked regularly “what is the best type of fencing”? This is a “how long is a piece of string” type question. So many factors can influence this decision and without looking at every individual need it is impossible to give a specific answer.

However, one thing can be said is that with the development of modern fencing materials, it is possible to tailor a fence to meet the needs of almost everyone. The requirements stretch from vale to moor and for animals as far removed as sheep to ostriches. Different materials and fencing techniques can be mixed and matched to fulfil almost every requirement.

It is very important that the correct type of fencing is selected for the job it is intended and that it is correctly erected, otherwise the fence simply will not fulfil the job in hand and will not last long. Having said all this, what different types of fencing are now available and how is the suitable fence chosen?

Post and rail

This type of fencing is a traditional strong visible stock barrier, basically comprised of sawn posts usually at 6ft intervals with 12ft rails nailed horizontally on to the posts. The number of rails is dictated by what stock the fence is holding back. The rails should generally be either a sawn rail (I prefer a heavier rail 3 1/2" x 1 1/4" for strength) or 1/2 round rail which could be either a pole cut from an early thinning split into two (this will have a taper) or a machine rounded pole (no taper). Usually machined rails give a more level and smooth line to a fence. This construction of fence is very attractive and therefore is popular along drive sides and for paddocks adjacent to a property; however, the cost is prohibitive for large scale use since it is 3-4 times more expensive than wire. All posts and rails should be purchased as “tanalised” pressure treated as this ensures long life and minimal maintenance

Mild Steel Stock Fencing

This is the traditional net type of stock fencing often referred to as pig or sheep netting. The correct technical specification is denoted as C8-80-15 e.g. where

- C indicates the thickness of the mild steel wire
- 8 shows the number of horizontal line wires
- 80 the height of the net in centimetres
- 15 the distance between the verticals in centimetres

This fencing will generally be constructed to have either one or two strands of double strand barbed wire above and one strand of plain wire below. The bottom strand helps to lift the net further out of the vegetation reducing corrosion and also increases the height of the fence.

When correctly erected the wire will be tensioned between straining posts which should be placed at not more than 100m intervals or at every change of direction. These straining posts are generally 7-8 ft long with a 5-6 inch diameter. The netting should then be whipped round the strainers. Staples should not be knocked in tight as this damages the galvanising and therefore reduces the life of the fence. Intermediate posts are usually either round or half round and should be placed at 2 – 2 ½ metre intervals. This fencing makes a strong stock barrier for most forms of stock at a reasonable cost. Because the netting is made from mild steel the action of snow and frost has the effect of slackening the wire and this is the main reason that mild steel has now been largely replaced by high tensile wire.

High Tensile Fencing

Initially the concept of high tensile fencing came from Australia and New Zealand from where, incidentally, most of the modern fencing techniques originated. The properties of high tensile wire give it approximately twice the strength of mild steel and is not slackened by cold and snow. Because of the nature of high tensile wire it can be tightened to a greater degree than mild steel. This makes it possible to put intermediate and straining posts further apart, i.e. up to 400 metres for strainers and 8 metres for intermediate posts. The obvious advantage is one of cost because of savings made in posts and erection time. Although the usually accepted spacings are 8 metres, experience shows that this is suitable for use with sheep, but post spacing of 4-6 metres are better for cattle. However, if the barbed wire is replaced with one strand of electrified fencing then once again 8 metre spacings are quite adequate.

High tensile wire is also better for use on rough ground when compared with mild steel as it tends not to distort when pulled into hollows or over bumps. One problem, however, with high tensile wire is the difficulty experienced by non-professional fencers to erect it as the stiffer nature of the wire requires special techniques to enable the correct tension to be applied to the wire otherwise any advantages in its use are immediately lost.

Electric Fencing

When electric fencing is mentioned most people immediately think of a single strand of temporary wire run from a battery energiser for strip grazing. This system is now mainly used for the temporary closing off of an area, e.g. strip grazing. Electric systems are, however, very effective for permanent use and a very versatile form of fencing. Various systems are available on the market, although the basic principles apply to most of them. The fence generally comprises strands of galvanised high tensile plain wire attached to posts by plastic insulators. Post spacing can be anything up to 10 metres. The number of wires and the post spacing will depend on the application of the fence. Basically, however, the least number of wires and the simpler the system is, the more reliable it will be, four or five strands should be used for sheep but the bottom wire is not electrified and five strands are only needed if the fence is going to take pressure from stock. One of the main advantages of this type of fencing is its versatility, e.g. temporary systems can easily be run off the permanent system without needing an additional battery energised. A single strand on top of a new net fence replacing one row of barbed wire will result in the increased life of the fence as the animals will stay clear of the fence and not rub up against it.

Where possible, permanent electric fences are generally better run from a mains energiser. The greater power helps to keep down vegetation from the fence and also does away with the need for changing batteries. Wind and solar generators are available for use in remote areas.

Using Technology

There is now new technology available for those grazing open areas such as the fenceless grazing system which was devised by a Norwegian company, Nofence. Landowners simply draw a map on their phone app of the area they want fenced. The solar-powered GPS collars play a melody to alert the animals when they approach the invisible fenceline. If they cross it, the collar administers a small electric pulse, like an electric fence. After a short training session with the collars, the cows swiftly learn to turn away when the melody plays on. It is probably best to talk to those people with experience using these type of devices.

Remember, when planning a fence the cheapest is not always the most economic in the long term. It can be much more efficient to employ a contractor or an experienced neighbour. The right type of correctly erected fence should give many years of trouble free service and help maintain good relations with your neighbours, not to mention preventing potentially horrendous costs which could be incurred if cattle stray into crops, or to a non-breed bull or on to a public highway. See Chapter 13 on Insurance.

What fencing should I use for Highlands?

Any of the above should suffice but with a few words of caution. A normal stock fence of 80 cm mesh with additional height added with two strands of wire is fine but they will rub on the top wire and squash it, so a top strand of barbed wire is preferable. They will lean and rub on fence posts so it is advisable to provide them with scratching posts.

For biosecurity, especially if you are in a TB area, make sure your animals cannot come into contact with you neighbours. These boundaries are usually double fenced with a recommended gap of 3m.

If you have a bull then even a double fence may not be sufficient if your neighbours have bulling heifers, Keep him as far away from them as possible.

Do I need any Equipment?

Even if you employ a contractor for wire fencing you may need to do some emergency repairs. You may consider having a wire strainer, staples and wire handy.

Chapter 4

GRASSLAND MANAGEMENT

Basic Principles

The cattle should never be overstocked as over-stocking causes poaching (damage caused by cows' feet) which destroys soil structure and grass roots, particularly in wet weather, resulting in reduced yields.

Whilst stock levels vary according to the quality of the land, suggested stocking rates (when using reasonable grassland) are 1 cow per acre – grazing only. To provide winter hay / silage, allow an extra 1-1 1/2 acres per cow. This level will decrease if, for example, the cattle are mixed with sheep or horses.

If wintering outside, the cattle should be fed on a well-drained area if possible. In very wet conditions it is best to sacrifice a small area, and not the whole field.

If you are able to move stock to deferred grazing over winter then very little supplementary feeding may be necessary, depending on the amount of browsing area available. Even so, there may not be enough grazing available and that and severe weather may require additional feeding. If you haven't any fresh grazing available, and non to move them on to, then feeding will be absolutely necessary.

Highlands will not live on nothing. If you are using rough grazing on heaths, mountains, moors or woodland you still need to make sure there is enough forage available to them. This DOES NOT mean bracken which, if forced to, they will eat with disastrous consequences from accumulative poisoning.

Production of Grass

In spring, the grassland should be chain-harrowed in order to spread droppings and mole hills. This removes old grass and moss from pasture thus ensuring maximum new growth. In badly poached and damaged areas, apply quick growing grass seeds e.g. perennial rye grass or a special "patching" mixture.

Fertiliser application is very dependent on land fertility and weather conditions, but as a guide application is as follows:

For grazing land – 100kg of 20.10.10 fertiliser per acre, containing i.e. 20 units of Nitrogen, 10 units of Phosphate, 10 units of Potash and to be applied during spring and late summer.

For hay – 150kg of 20.10.10 fertilizer per acre.

For silage – 200-250kg of 20.10.10 fertiliser per acre.

If your objective is to produce ORGANIC BEEF use natural fertiliser such as calcified seaweed, farmyard manure, etc.

Note: Heavy use of nitrogen locks up minerals in soil and can cause grass staggers etc in your animals, and therefore great care should be taken. Soil analysis can be obtained commercially and is well worth the modest investment.

The pH value of the soil is one of greatest key influencers on grass growth. Grasses like a pH **between 5.5 and 7**. The low end (slightly acidic) is preferred by your fine grasses (bents and fescues) whilst your broader leaved grasses (rye and meadow grasses) like a more neutral pH at 6.5. Plant and grass nutrients are most readily available around the neutral pH level. Lime can be applied to raise the pH levels, but soil testing is advised to determine your pH value and agri environment schemes can dictate what and how much you can apply.

Conservation of grass is important for winter feeding. For a small fold, small bales of hay are easier to handle. If a tractor or loader are available in winter, big bale silage, haylage and hay can be used but are difficult to ration effectively.

Obviously if you are grazing open hills, common land, moorlands, mountains or woodland careful consideration needs to be made of the amount of forage available throughout the year and accessibility for any required supplementary feeding.

Again, if you partake in any environmental schemes then consideration should be made of any restrictions such schemes may place on your ability to graze land all year and your ability to supplementary feed your animals, as well as what you can apply to your land.

Weed control

A good stocking rate keeps weeds down and prevents weeds from seeding however, small isolated patches should be cut by a scythe or strimmer before seed heads appear, For, heavy infestation, cut with a mower or pasture topper or possible spray with an appropriate herbicide.

If it is necessary to spray weeds, get professional advice in order not to contravene Health & Safety Regulations which are very strict. Also read instructions carefully prior to using a proprietary weed killer. The field must be left before the cattle can start grazing. The exact period will be specified on the instructions.

Remember: any chemical sprays and artificial fertilisers defeat the objective of rearing organic beef.

If grass grows more quickly than is can be eaten by cattle, and starts to seed, it is best to cut the pasture with a mower to encourage new growth. It is argued that topping pasture at the right time can increase productivity of grass by up to 30%. As a guide the optimum sword height should be between 8-124 cms, ideally they should be coming off the pasture when it reaches 6-8cm. At 3-4cm he grass should be rested. Useful information can be found at <https://ahdb.org.uk/knowledge-library/understanding-grass-growth-for-beef-rotational-grazing>

Grassland management is a compromise – what is good for animals is not always good for grassland and vice versa.

Also native breeds are now being used for conservation grazing, improving soil fertility and improving biodiversity. More and more schemes are being introduced which encourages and pays for use of native cattle in such environmental schemes. Therefore do not assume that you only want grass in your fields. Multiple species are good for biodiversity, many put nitrogen back into the soil, some are high in protein and others are good for animal health. So seeking advice and getting a species surveys may be beneficial to your land, your animals and your pocket.

Do I need any equipment?

If you are handling any large bales then a low loader or tractor and loader is necessary together with a silage bale handler, spike or grab. A scythe, strimmer and napsack sprayer may be useful. If you have a tractor with a PTO then a topper could also be useful. You may want to harrow and roll the land in spring, so a chain or tine harrow and roller would be needed. The next level up would be haymaking equipment and you could go on, obviously you would consider the economics of using a contractor for farm work such as haymaking, growing feedstuffs and grassland management versus buying in the necessary foodstuffs.

Chapter 5

FEEDING

Hay

The grass is ready for cutting when seed heads have flowered usually late June or July, when weather is favourable.

Wilt grass (allow to dry out) and move regularly if weather allows to obtain even drying. It should be baled only when bone dry otherwise the hay will go mouldy (and be unusable) and moved to a barn as soon as possible. If hay is put into a barn or stack when it has more than about 22 percent moisture, not only does the hay lose forage quality, but it has an increased risk of spontaneous combustion. Heating occurs in all hay above 15 percent moisture, but generally it peaks at 125 to 130 degrees F, (55 degrees C) within three to seven days, with minimal risk of combustion or forage quality losses. Temperature within a stack then declines to safe levels in the next 15 to 60 days. To avoid hay fires, small, rectangular bales should not exceed 18 to 22 percent moisture, and large round or rectangular bales should not exceed 16 to 18 percent moisture for safe storage. You should check your hay regularly. If you detect a slight caramel odour or a distinct musty smell, chances are your hay is heating. (South Wales Fire and Rescue Service)

If unsure or unable to carry out your own hay making it is often better to purchase good hay than risk making poor hay. It is argued that buying in from another site can make up for mineral deficiencies found in one's own grass but check if you have any deficiencies first. The equipment is expensive and therefore it is often better to come to an arrangement with a neighbour or employ a contractor,

Hay must be allowed to sweat in the stack for a few weeks, especially if baled green before feeding. Feeding may begin later in summer if grass is scarce, but in general feeding may begin when available grass has been eaten which will vary on the year's weather. A suitable quantity might vary between 3 – 10kgs) of hay per day per animal, but depends upon animals size and needs as well as the quality of the hay. (The amount of feed is often spoke about in terms of dry matter, see later on in this section, 10kg of good quality hay would be 7.7kg of dry matter) A dry cow (not suckling) needs about 10kg, a freshly calved cow or a suckling cow needs 45% more dry matter. A bullock (steer) requires about the same as a dry cow.

If animals are being turned into lush grass, it is advisable to offer hay or good barley straw as well as grass whilst cattle acclimatise to new grass to help avoid bloat.

It is advisable to offer minerals (particularly magnesium) well before and during turnout, especially if indoor cattle have not been fed supplementary concentrate, which usually contains minerals. High magnesium minerals, which may be administered by the provision of a lick or by orally dosed product available from your vet, will help prevent staggers. The symptoms of stagger (hypomagnesaemia) will be found in a veterinary dictionary.

Haylage

Much of the following is taken from Dengie feeds.

The fundamental difference between hay and haylage is the way that the grass is conserved. Hay is cut when grass is mature and left to dry in the field before being baled and stored. To conserve hay and prevent it from spoiling or going mouldy, the grass needs to be sufficiently dry before baling. Typically hay will be 85%

or above dry matter which relies on good weather conditions to achieve – not always easy in the UK! Hay of insufficient dry matter will not store well and will be very likely to go mouldy.

Haylage tends to be cut earlier in the season and is left to wilt for a shorter period of time in the field before being baled and wrapped in several layers of plastic. The difference between haylage and hay is that, whilst the conservation of hay relies on the removal of moisture, the conservation of haylage relies on the exclusion of oxygen which prevents mould growth. Haylage is typically between 50 and 70% dry matter.

There seems to be an increasing trend to produce drier haylage which is more accurately termed ‘wrapped hay’ as the dry matter is closer to that of hay. Caution has to be taken with very dry haylage when wrapping as dry, coarse material may result in more air pockets in the bale and a bale that is more difficult to wrap without puncturing the plastic. Both of these factors can mean that very dry haylage is more susceptible to higher mould counts or becoming spoiled during storage as the higher levels of oxygen increases the opportunity for mould growth.

Another difference between hay and haylage which confuses many people is how much to feed. Due to a greater amount of moisture in haylage you actually need to feed more haylage by weight than hay to provide the same amount of dry matter. For example 10kg of forage on a dry matter basis daily would require 11.8kg of hay as fed assuming it was 85% dry matter and 16.7kg of haylage as fed assuming it was 60% dry matter in order to provide this. Knowing how much moisture your forage contains by analysis is key for working this out!

Is haylage better than hay?

Any nutritional differences between hay and haylage are predominantly determined by the grass type and age of maturity when harvested rather than the actual conservation methods. The table below shows the differences between hay and haylage when made from grasses cut within the same field at the same time to show the differences due to the conservation method.

Post Fermentation DM basis	Hay	Haylage DRY	Haylage WET
Dry matter %	88.4	68.4	57.7
Ash %	6.4	6.8	6.6
Crude protein %	10.8	11.6	11
NDF %	60.5	60.7	60.8
WSC %	10.1	7.1	6.9

C.E. Muller *, P. Uden (2007) **Department of Animal Nutrition and Management, Swedish University of Agricultural Sciences*

As can be seen from the table, some nutrients don't vary much as their levels are determined more by the grass species than the conservation technique. This would include ash which is an analysis of the inorganic materials such as minerals, as well as the NDF which is a measure of fibre. What may be surprising is the difference in WSC. This stands for water soluble carbohydrate and is a measure of the simple sugars plus fructan. The haylage in the table above has been very carefully conserved and has sufficient moisture to ensure that some fermentation has occurred. This uses up the sugar and converts it to another form of energy called volatile fatty acids which reduces the sugar level. In practice many of the haylages that are tested via Dengie's forage analysis service have very similar WSC levels to hay, especially if they are more like a wrapped hay with a higher dry matter.

Another thing to consider when weighing up whether haylage is better than hay is respiratory health. Hay is a larger source of respirable particles compared to haylage.

The nutritional value of the hay will be greatest just after harvest, nutrients such as vitamins will decline over time. When it comes to haylage it is a bit longer – usually around 6 weeks or longer. This is because it takes time for the fermentation process to take place which then ensures it is properly conserved.

Does haylage and hay lose nutritional value with age?

Generally, UK pasture and therefore forage lacks the trace minerals copper, selenium and zinc. Conserved forage like hay or haylage also loses vitamins, for example vitamin E which is usually abundant in grass, very quickly post-harvest. Whilst hay and haylage alone may provide enough calories it should be supplemented with a broad-spectrum vitamin and mineral supplement.

The only way to know what a forage provides and therefore how suitable is to get the forage tested. Purchased fodder from a good contractor should come with an analysis sheet.

Silage

In small herd situations it may be more practical to make silage in big round bales or bags. These can be stacked outside all winter. Silage (and haylage) in bales is easy to feed but difficult to ration therefore an ad-lib system particularly with out wintered cattle, is the only option. If feeding good quality silage, the feeding of additional concentrate is often unnecessary, however, consult a nutritionist/vet for expert advice.

Silage making is less dependent on good weather and a lot less labour is needed to gather the crop. It is possible to make silage out of a failed hay crop, i.e. bale damp, semi-made hay and wrap it.

The major disadvantage of big bale silage (and haylage) is it cannot be rationed like hay and a tractor and loader are needed to handle it. An advantage is it can be stacked in a remote area of the farm to facilitate feeding in winter. Opened bales need to be used up within 4-5 days to retain their quality.

Both haylage and silage should be left for 4-6 weeks to ensure fermentation has taken place before feeding to cattle. Things of course can get more complicated with things like additives and silage pits which we won't go into here!

Feedstuffs

Feeding cake (proprietary bagged feedstuffs) to in-calf cows must be done carefully so that cows do not get too fat for calving. Neither must cows be allowed to become too thin so as to deprive the growing calf. Over-fat cows are liable to have calving difficulties. Overweight cows will be covered in other chapters as it is a condition to be avoided at all costs. It can be the cause of many other important problems of healthcare, including loss of fertility.

In the case of Highlands, cows are liable to be dry at the latter end of the year if calving in early spring. If being fed silage, haylage or good hay, supplementary feeding with cake must be done with caution to avoid problems. If you are giving straw, supplementary feeding may be necessary, provision of minerals may also be advisable. Advice should be taken from the feed supplier where cake is bought and, of course, your vet should always be asked to give advice if you have any doubts.

If you are finishing animals for beef, then you may wish to use concentrates (cake). However, many breeders finish on forage alone, but remember these cattle are slow growing and take longer to mature than other breeds.

There are many ways of finishing cattle for beef and all will depend on forage you have available, land type and specific feeding and management. Steers and heifers are usually grown on to 30 months if not longer. In fact a mature animal even in their teens, which in many breeds would never be considered as prime beef, makes very good tasty beef with good yellow fat full of antioxidant.

Straw

This can be purchased in small bales, large round bales, or in larger, heavy rectangular bales. Clean, unweathered barley straw is most palatable for feeding. If fed outside, supplementary cake is probably necessary, especially if feeding in-calf cows (with straw). Straw does become unpalatable if it is allowed to get wet.

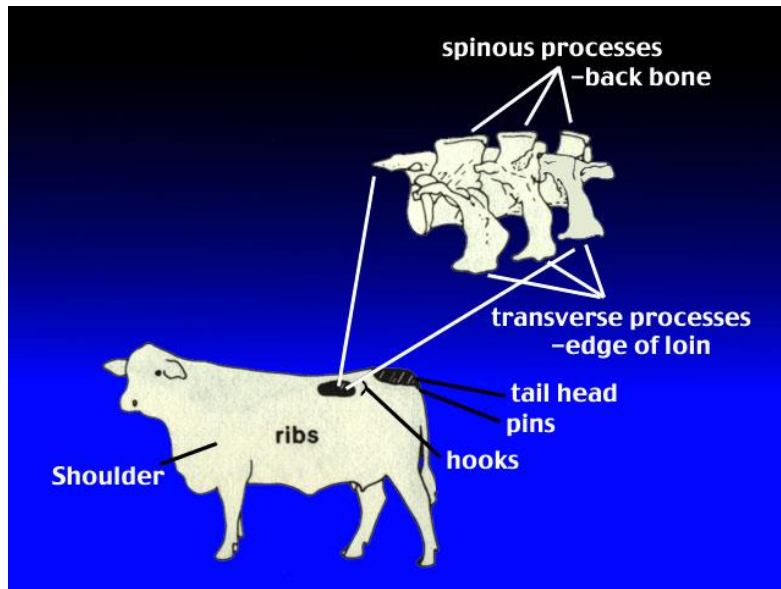
Clean, unweathered oat straw can be fed to stock and it is usually cheaper than barley straw. Clean, dry pea straw is also good feed once stock get used to it. It contains peas which are protein. Musty, mouldy straw or hay should most definitely not be fed as moulds can cause health problems including loss of fertility. It is probably cheaper to buy straw off the field at harvest. Barley straw is better material to feed cattle with; it is softer than wheat but more expensive.

Straws are typically high in fibre and low in crude protein and energy making them an excellent forage in situations where dietary energy or protein dilution is desired.

The amount that a herbivore can eat when there is unlimited food available is **directly related to the digestibility of the diet and the animal's size**. When the digestibility is low, the gut takes longer to digest the food so less can be processed. Large animals have larger guts so can process more food. As mentioned before Highlands seem to be capable of digesting the roughest of pasture they also have larger guts compared to their size, and sometimes look like barrels, so what applies to most cattle may not apply in the same way to Highlands.

Be careful that your animals do not get too fat it is detrimental to their health and fertility. One way to tell is feeling around the tail head it may look puffy and feel spongy. If you are at all unsure about the condition of your animals then seek advice. The following link

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69370/pb6491-cattle-scoring-020130.pdf gives more information on condition scoring beef cattle and explaining what score they should be at for calving. The article talks about the bone structure of the cow. Below is a diagram explaining the terms used.



Chapter 6

HEALTHCARE

Observation of behaviour is an essential component of healthcare. An animal will demonstrate by its demeanour, appearance or reluctance to eat that something is wrong. Expert advice should be sought urgently from your vet as an animal can decline very rapidly if not treated. In the main, Highland Cattle are very resistant to health problems and require minimal healthcare.

The most important regular job is the application of a worming produce (anthelmintic) such as ivermectin. This keeps control of the majority of internal and external parasites such as tapeworm, lungworm or skin mites/lice. The latter are common in Highland Cattle and may be recognised by the fact that the animal is constantly scratching, has wet patches on its hair and small oval white eggs are seen in the hair when combing. Your vet will advise you on frequency of giving an anthelmintic and when you should change brand to prevent tolerance to one product. The compound can be administered by oral bolus, injection or as a pour on. All are equally effective. The bolus and injection can give a quicker peak of response if being used for treatment rather than prevention, the pour-on has a longer period of efficiency, but products are constantly being improved and veterinary advice should always be sought.

If your land is wet then liver fluke may also be a problem and needs specific treatments depending on the time of year.

Ticks can also present a problem in some areas, and calves should be exposed to ticks at an early age to get them tick acclimatised.

However, heavy use of anthelmintics means the parasites can become resistant to the product and the product you use may need to be changed. Anthelmintics are also bad for the bug life in the soil and therefore the health of your soils and all the consequences that brings with it. There are natural wormers such as chicory, and the more biodiverse your forage is, the greater chance of your cattle getting the correct minerals **and** medicines. Using mixed grazing practices has also advantages against worms.

Not all your fold may need to be wormed, as they can develop their own resistance to worms.

Worming practices are changing so it is best to seek up to date advice.

Shelter and Shade

On exposed sites some shelter from the wind and wet in winter is preferable. Highlanders can also withstand extreme heat but they DO need some shade and ample supply of water. In hot locations they will graze in the evenings and early mornings and lie in shade or stand in water (if available and regulations allowed it) to cool down. Food intake does drop in really hot weather.

High Health Status and Controlled Diseases

Certain diseases are covered by legislation, this is covered in a later section.

Some further examples of healthcare matters are set out below. A good book on bovine healthcare or a veterinary dictionary will give further details. **IF IN DOUBT CALL THE VET.**

Hypomagnesaemia (staggers) is due to inadequate magnesium in the bloodstream and can be a killer. Lactating cows or cows whose calves have just been weaned are at greatest risk. This occurs most frequently when cows are turned out into lush Spring grass. Prevention is a better approach by feeding a magnesium rich supplement during, or before, high risks situations arises. Emergency treatment with intravenous administration of magnesium salts is the only cure for affected cows. Some do not survive.

Hypocalcaemia (Milk Fever)

This occurs in cows during, or more commonly after, calving and is caused by a fall in calcium and possibly phosphorous in the blood. Prevention is not possible. Cure is intravenous or sub-cutaneous (under skin) injection of calcium and phosphorous.

Incidence of milk fever can increase in outdoor calvers in wet weather. Consult your vet on all these points.

Infertility

Poor feeding and body conditions: cows must be in good condition at mating. They also need an adequate supply of minerals, high in phosphorous especially before and during mating. Copper has an effect on fertility and deficiency can be detected by a blood diagnostic test. Infection of the ovaries can cause irregular or absent heat periods. **At the risk of repeating oneself it should be noted that the major cause of infertility is overweight.**

Minerals

Cattle must receive minerals in some form or another – from grass, cake or specific licks, boluses or powders. Minerals are available to buy in different formulations for different problems. They can be mixed with rolled cereals or bought in solid licks or in free access powder form.

Before and during mating cows must have an adequate supply of minerals, particularly high in phosphorous. Copper also has an effect on fertility. Deficiencies should be rectified on the basis of advice from your vet. Administration should always be in accordance with the instructions. There are various proprietary products available which claim to supply minerals, by their distribution on pasture, to grazing cattle.

Grassland can also be improved by surface spreading minerals however land should be analysed before taking what could be an expensive approach to supplying minerals and trace elements. Again never hesitate to seek professional advice.

Water

Ideally water supplied from borehole or mains and distributed into troughs should be available as opposed to stream or river water. It is a condition of membership of the Cattle Health Scheme that clean water is available, i.e. not shared via a water course. It is worth mentioning that it is against the law to pollute water courses with farm animal waste and silage effluent, a substance highly toxic to river life, that comes from the fermenting grass. Water troughs should be supplied one per field or paddock, also in yards and calving boxes where self filling water bowls may be a better option. In hot, dry weather adult cattle will consume at least 12 gallons of water daily. Troughs must be large enough to supply the number of cattle per field during warm weather and should be frequently checked.

Each country has its own water regulations and whilst farming your land it is advisable that you make sure you are aware of what is required. Heavy fines exist for infringing these regulations.

There is also more and more emphasis on clean water as a public good and stewardship schemes and grants are available so you can improve how water is captured and stored, fencing to prevent animals from entering

rivers, storage of muck, yard improvements, and water storage to name but a few, so providing clean water for your stock AND for the environment.

It is a good idea to consult with your vet and establish a fold healthcare programme.

Chapter 7

STOCKMANSHIP

The following are points with reference to stockmanship specific to Highland Cattle the Society also has a panel of regional field officers who are experts and always ready and willing to help and give advice. You can find a list of field officers here <https://www.highlandcattlesociety.com/field-officers>.

Observation

A good stockman should look at his stock every day. Know your animals; look for abnormal behaviour, especially in the weeks before calving. An experienced stockman will know something is wrong and what to do. If you are not experienced, get professional advice.

Handling

For easy handling it is a good idea to halter train your animals, then you have good control for vetting etc. The vet does not want to chase an animal round a field!

Halter training

Calves should be haltered as early as possible. After the first few weeks when the mother is less aggressively protective, give her some food in a confined space and halter her up either in a yard or building or even a pen in a field. Gently coax the calf to accept the halter and tie it up near enough the mother for her to be happy; do not get near enough to the cow for her to injure you. Do this over a period of a few days; the calf will jump and fall down, but walk it and eventually it will quieten down. After much perseverance the calf will accept the halter.

It is highly advisable (some would say essential) to have a crush or handling race incorporating a neck yolk, used for blood tests, injections, TB tests and treatment allowing cattle to be safely handled. Many vets and technicians will not attend your premises without adequate handling facilities. You now can get crushes specifically for Highlands, although they can be trained to walk through a normal crush. If you can construct a race in an enclosed yard or building, it will prove invaluable. It is advisable to get advice from other breeders before planning the layout of handling facilities. Although each breeder will plan a system of management which suits their own particular circumstances. The fieldsmen will always assist on request.

Chapter 8

BREEDING AND CALVING

Pedigree Bloodlines

Pedigree Highland heifers will normally be served as 3 year olds, so that they will calve when rising four year olds. Leaving them until they are three enables them to grow as much as possible before their energy is diverted into the growth of a calf. However, some breeders will, if the heifer is already well grown, allow her to be served at the age of two.

Once you have decided to breed from your cow or heifer, you need to make some important decisions about the choice of bull, and whether you are going to use him 'in person' or by Artificial Insemination (AI) (see later chapter on Bulls)

If you have bought your cow or heifer at a recognised Highland Cattle Society sale, you will be in possession of at least a 'short pedigree' (as detailed in the sale catalogue). This will list her parents, and both sets of grandparents. You can get more information on their pedigree from the Highland Cattle Society database (<https://www.highlandcattlesociety.com/database-search>) by entering its ear tag number.

As a rule, it is best not to choose a bull who is closely related to your animal - i.e. who appears on her short pedigree. You should also try to choose a bull from a 'good', i.e. well-established, fold. That way you can see their progeny or their parents. However, you will need to guard against buying a bull that is too well established – if he or his father has been widely used in the past, you may later have difficulty in buying females who are not closely related to him!

This is where advice and guidance from your field officer, or another Club member, can prove invaluable.

Recognition of cow in season (on heat)

Q: How can I tell when my cow is ready for mating?

A: One of the most obvious signs of a cow being in season (or "bulling") will be that her vulva is moist and sticky, and there may be a slight 'show' of blood. Unfortunately, as her season may only last about 12-18 hours, this state is easily missed. Another sign to look for is that females may 'ride' each other – however, it is not always clear which of the animals (the one riding, or the one being ridden) is the one in season! The definition given at the International Conference was "the cow being mounted from behind is in season, if mounting from the front the one mounting is in season". If you have a bull (or even a steer) in the same field, then he will give you the most helpful indication, by being very interested in her, and attempting to mount. She will only stand still for him if she is ready to mate. There are now many electronic devices available that help detect animals on heat. They detect and analyse the animals movements and signal the user when these movements indicate bulling. A cow will not come into season until about 42 days after having her calf and then will cycle every 18 - 21 days or so. You can use this to calculate when she is likely to be in season and when her calf is likely to be born. Careful observation is the best way of determining how frequently they cycle.

Q: Should I just let nature take its course?

A: Generally, yes, but there are some issues around the timing of the birth that need to be considered:

The average gestation period for a Highland cow is 280 days (or around 9 months, the same as humans). However, each cow is an individual and may vary by five days either side of this. In particular, a heifer having her first calf may 'go over' by as much as a week or possibly a few days more. If too long or the animal is showing signs of distress or ill health call the vet immediately.

From 1996, the official 'birthday' of each animal is 1st January (prior to 1996, it was 1st December). This is the period over which the society herd book runs. This means that all animals born in the same year will be regarded as being the same age (i.e. a yearling, 2 year old, etc.). It follows that those born later in the year will be disadvantaged at shows and sales by the fact they are younger, and therefore smaller.

It is therefore beneficial to arrange your calving date as close to 1st January as your stock management system will allow.

Another consideration is the number of females you have, and your own personal circumstances. You need to decide whether it is more convenient for you to arrange for your calving dates to be close together, or spread throughout the year. It is advisable to have a tight calving pattern.

Caring for the pregnant cow

The main points in managing your cow's pregnancy are:

- Record the calving date
Note the service date when the cow became pregnant as, from that you can calculate and record the likely calving date, allowing a possible variation of five days earlier/later.
- Control the cow's feeding
See chapter 5
- Maintain the cow's health
Monitor cow health closely. If in any doubt whatsoever, consult your vet.
- If a cow aborts. There are some diseases which cause abortion, including Brucellosis, which is a notifiable disease in some UK countries. Therefore, contact your vet if abortion occurs. NI has been declared brucellosis free and in GB the last outbreak was 2004.

Woman of child bearing age in general and very specifically a pregnant woman should not deal with aborted material or cows that are aborting.

Preparing for calving

Q: inside or out?

A: Most Highlanders will happily calve out in the open, with no ill effect to either the mother or calf. However, if there are problems, you will have great difficulty in dealing with these in the middle of a wind-swept field, especially at 3am! The sensible answer is to bring the cow near to the house, preferably in a covered pen, and close to a supply of electricity and water. If cows have to be calved a long way from the house, then it is well worth constructing a catching pen in the field.

NB Highlands are very protective mothers, and even those who are normally placid can become dangerous during and after giving birth.

Q: What other preparations do I need to make?

A: Ideally, you should have experience in assisting a calving before you attempt to 'go solo'. You will then be able to see at first hand what is involved.

Failing that, it is well worth attending a course.

Q: What equipment will I need?

A: The basic equipment you will need to have to hand includes:

- Supply of clean, warm water and soap
- Antiseptic (preferably containing iodine)
- Disposable plastic gloves
- Lubricant for gloves (preferably obstetric jelly)
- Calving ropes
- Supply of colostrum substitute, such as volostrum, with suitable measuring and mixing equipment
- Feeding bottle and teat (both clean)
- Stomach tube

Calving

During the week immediately before the calving date, watch for behavioural and physical signs that the cow is entering the early stages of labour:

- **Behavioural signs**

- Loss of appetite
- Cow separates herself from the rest of the fold
- Cow is restless, frequently lying down and getting up again. Sometimes she lies stretched out on one side for short periods
- Tail swishing from side to side. Later she holds her tail high and arches her back.

- **Physical signs**

- The uterus drops lower into the abdomen as the calf is lined up for entry into the cervix
- Enlargement and filling of the udder (known as "bagging up"). The udder may also become hard and congested.
- The tail head rises due to slacking of the pelvic ligaments. This is noticeable only when cow is standing. When the ligaments relax completely ("dropping"), calving will normally take place within 24 hours.
- The lips of the vulva redden and swell to double their size. There is discharge mucus possibly tinged with blood.
- The embryonic sac appears at the vulva as the 'first water bag', if not already broken.

If the cow has shown some or all the above signs, you will need to keep a careful watch on her. If she is in a field away from the house this will be difficult (but not impossible if you make frequent visit and use binoculars), but this is where bringing her close to the house will have paid off, as it makes life far simpler. If nothing has happened after about 2 hours, the chances are that something is wrong, and she will need to be examined. If you have no experience of carrying out an internal examination, then enlist the help of someone who has, or call the vet.

A normally-presented calf is born with both front feet appearing first, closely followed by the head – sometimes referred to as the 'diving position'.

Any variation from this is an abnormal presentation, and will require adjustment before the calf can be safely delivered. Do not try to manipulate an abnormal presentation unless you have been trained.

If the front feet have appeared and the cow has been pushed hard for about an hour, but is making no progress and you are in doubt as to the correct action to take, call the vet.

Don't worry if the cow is standing and the calf has a drop to land when born, this is perfectly normal. Expertise in calving can only be acquired through experience built up over a period of time, and complicated calvings are best dealt with by a vet until sufficient experience has been gained.

Once the calf has been born, the cow should start to lick it. This action will stimulate and dry the calf. You will probably be surprised at how quickly the calf will struggle to its feet, and stagger about in search of its mother's teat (anything between 20 minutes to an hour). It may however need some assistance in identifying the precise location, and you may need to gently guide it towards the udder, and even place the teat in its mouth. This could take some time! Even the tamest of animal can be very dangerous at calving and a few days thereafter. Extreme care should be taking when approaching. The milk the cow will initially provides is colostrum, which contains antibodies that will provide the calf with resistance against infection. You must ensure that the calf has had its first supply of colostrum. If the calf is unable or unwilling to suckle, or if the cow will not stand still, then a suitable colostrum substitute, such as *Volostrum*, should be mixed and administered in accordance with the instruction on the pack. A rough guide is that after this initial feed, the calf should suckle every two to three hours.

The calf which doesn't suck

It is unfortunate fact that Highland breeders lose calves every year because, for one reason or another, they fail to suck. If human intervention is necessary a race, crush or other physical means of separation should be available to protect the handlers or the vet.

A calf which hasn't sucked and is otherwise well will usually be unsettled and will make more noise than a contented calf. These calves often follow their mothers around and do not settle in the same way as a contented calf.

The mother is also unhappy about the situation as she doesn't experience the release of hormones associated with a calf having sucked. The uterus may also fail to contract sufficiently to dispel the after-birth and it can often be a sign of a calf's failure to suck when a cow hasn't correctly cleansed. As she instinctively knows things are not right the mother may often be agitated and if a cow which is usually quiet after calving becomes more aggressive than usual then the failure of the calf to suck must be considered.

What, then are some possible causes?

Excessive hair around the udder, resulting in the calf sucking on hair rather than on the teat. The calf will be in the correct position and will appear to be sucking but will not be contented. Older cows can have conically shaped teats which are difficult for the calf to get into its mouth. Another reason is poor positioning. The calf doesn't know where to go and searches anxiously around its mother but doesn't quite find a teat. The calf may then smell the mother's cleansing and suck on this trail, hanging from the cow's rear, rather than continue to search for a teat. In this case the calf tends to lick rather than suck and this can result in it losing its initial sucking instinct, making it more difficult to feed it colostrum milked from its mother. Colostrum is the milk secreted immediately after calving. It contains all the antibodies required by the calf to protect it against viruses and bacteria. It also acts as a purgative, clearing accumulated faecal matter from the intestine. This black putty like substance is an early sign of having sucked. Colostrum if taken from the dam should be given immediately. If left to go cold or stored frozen it should be gently warmed by placing the bottle in warm water. N.B it should not be boiled or microwaved. It must be administered within 6 hours of birth as after the calf's ability to absorb decreases. If this is the case a teat with a very large hole attached to

a bottle, and a lot of patience, is necessary, or tubing into the calf's stomach as colostrum must be put into the calf as soon as possible.

A calf which has not sucked will look gutted and slightly hunched; the breeder will very soon know there is a problem and get veterinary assistance as a matter of urgency.

What to do

It is necessary to have some safe and secure place to milk the cow to produce the colostrum for the calf. Excess hair should be trimmed away from the teats and with patience and determination it may be possible to milk the cow into the calf's mouth placing the teat in its mouth thereby showing it what it gets and from where. It is often necessary to do this two or three times a day for several days until eventually the calf gets the hang of things.

It is better to milk the cow first, thus reducing the size of her teats, as this may not be as easy later when you have been upsetting her by handling her calf.

If, as will probably be the case, the calf doesn't suck straight away then you have colostrum which you can feed to the calf in small and frequent feeds, but within the six hour time period.

It is not always easy, and great care must be taken that the cow is completely secure before handling the calf. In cases of great difficulty where it is too difficult to milk the cow then fresh or frozen colostrum from another cow (from a TB free herd) or proprietary colostrum substitute can be used and administered in accordance with the instructions.

This needs to be administered to the calf for about two days. The calf can then be put on milk powder substitute feed if it is to be bottle or bucket fed.

All this seems worrying and difficult, but remember Highlanders are easy calvers and the majority of the time it will happen without you even noticing. Often a Mum will come and join the Fold for grazing and feeding having first hidden her calf. So you may see signs of her having calved but no calf. Don't worry, she will just have hidden it and it will be fast asleep. You may notice that her teats have been sucked or there is some discharge still on her tail which can tell you that she has calved and the baby has sucked.

Post calving

The cow will normally expel the afterbirth within an hour or two of calving, and some cows will then eat it. If you have seen no evidence of the afterbirth in the calving area after a day or so, and particularly if the cow seems unwell, call the vet.

It is worth reiterating here that care must be taken with a freshly-calved cow, her protectiveness towards her calf may result in her being unusually aggressive, and an aggressive Highland is dangerous.

Registration of calves

Assuming your calf is eligible for registration in the Herd Book, you will need to inform the Highland Cattle Society (HCS). If you are already registered as an HCS member and breeder, you are encouraged to register your animals on-line directly into the registration system. A DNA tissue sample must also be sent to the society. It is best to look at the society website for instructions. It is not compulsory to register your animals, but if you don't, you will not be able to offer for sale as registered pedigree stock, although it is possible to pay a late registration fee. You may decide, for example, not to register males that you intend to castrate and keep or sell as steers. However, it is beneficial to be able to show the fertility of your pedigree line of animals by referring to the record of all births in the herd book. Heifers can be fully registered immediately,

bull calves must be birth notified and then fully registered at 14 months. At that point the bull will need a vet inspection and you may wish to consult a field officer.

There are different rules if your animal is from unregistered stock and getting into the herdbook is complicated. It is best to consult you field officer and the rules on the website. If you intend to breed from an animal or sell it as breeding stock then it is advisable to keep on top of your registrations and birth notifications. An added bonus is that in some UK countries, if you are unlucky to go down with TB then your registered stock has a much higher compensation value.

Similarly, some of the environmental schemes specify stock must be registered.

Q: What information will I need to provide?

A: you will need to record:

- UK specified tag number – obtained from your tag supplier
- Date of birth
- Colour (See Below)
- Calf's Name (See below)
- Sire's name and UK tag number
- Dam's name and UK tag number

The details will be recorded on the online database and a printed copy of the year's Herd Book.

Naming your calf

Some excellent advice is contained in on the HCS website <https://www.highlandcattlesociety.com/naming-your-cattle> he key points made can be summarised as follows:

- Although every breeder is entitled to name in any way he wishes, the Society is keen to encourage the continuing use of Gaelic names for Highland cattle.
- It is important to be able to follow the female line, so it is useful to follow a naming system which will assist this. Briefly, a heifer calf will take on its own mother's name, together with the Fold name. if the mother was bred in the same Fold, the daughter's name is supplemented by a number. For example, ou attend a HCS sale and purchase Anabladh of Alpha, to add to your Delta fold. She produces a heifer calf, which you would name Anabladh of Delta. If Anabladh of Alpha produces a heifer calf the following year, you would name her Anabladh 2nd of Delta and so on.
- Highland cattle are classified under the following colours: Red, Yellow, White, Black, Brindle and Dun.

It may be difficult to decide on the colour of you calf, as they are known to change colour as their coat matures, especially black calves who are frequently born with a red coat, but will normally have a black muzzle (but then again so can some red calves!) Don't worry, you can always change the colour later.

Weaning your calf

A calf can be weaned from its mother at anything between 6 and 10 months of age. Ideally, the cow should be able to 'rest' for 3 months or so after calving before she is again served by the bull, so you will probably want to separate the calf from its mother at around 7-8 months to give her 4-5 months rest before calving.

The simplest method is to bring in both the cow and calf, and then move the cow out again. You will then need to move the calf to a location out of sight (and preferably out of earshot) of mother. It is obviously

better to wean two or more calves at the same time, so they have each others' company whilst getting used to life on their own. NB, They do not all have to be exactly the same age – maybe an average of 7-8 months.

Calves which have been creep fed do not check or stress as much as those that suckle only. Both the cow and calf may shout for some time after separation, but this should die down after a few days. On the day before weaning, the calf will be receiving between 40% milk and 60% concentrate. The concentrate should be increased for the last week before weaning and by 50% on the day of weaning. This should be reduced slowly after a few weeks.

Alternatively, you can leave nature to take its course, calves tend to be free of their mothers milk around 8-9 months and can be separated from their mothers if necessary with little to no anxiety and no change of feeding regime.

Dehorning and Castrating

It is not normal practice to dehorn your cows or bulls. However, those bull calves that are going to end up as steers are often dehorned. It is easiest to do this as soon after birth as possible, but if left until later it is best practice to do it towards winter when there are less flies. Abattoirs and finishing units prefer dehorned cattle, (some will not take horned cattle), they will fetch more money in the sale ring whether sold as stores or finished cattle, and in general it makes your life easier. You may be able to ask a neighbouring farmer to do this or ask your vet.

Castrating calves is also easier done at an early age by banding or squeezing. Again ask an expert or a vet.

Selling calves

Calves can be sold as soon as they are weaned – i.e. approximately a week after separation. You can sell them (and heifers, cows and bulls) in one of several ways:

- At a Highland Cattle Society-recognised breed Sale. NB The animals will need to be halter-trained, health checked and used to grooming. (see Chapter 10). These can be sales at auction marts or on-line.
- By putting an advertisement on the Highland Cattle Society webpage.
- Privately - by putting an advertisement online on club sites or by on line websites such as Sell My Lifestock
- Taking them to other auction sales

Or even advertising in a newspaper such as the *Farmers Guardian*, *Farmers Weekly* or *Scottish Farmer*, When the calf has been sold, you will need to have the ownership details amended on the Highland Cattle Society records and pay the current transfer fees.

Chapter 9

BULL OR ARTIFICIAL INSEMINATION

Hire of a bull, purchase of a bull or artificial insemination

Breeders can decide which is most suitable for their situation after maybe considering the following advantages and disadvantages.

First to consider is natural service. One of the main advantages is that a bull is a far better heat detector than you or I. He has a nose for the job.

Another option is hire or loan of a bull. This is less costly than purchasing and the bull can be returned when you are satisfied the job has been done. Limited keep and management are needed. One disadvantage to this method is limited availability of quality bulls to meet your requirements; another is the danger of a busy hire bull spreading disease from one fold to another if not carefully monitored and all health status criteria adhered to in the correct manner. Added to this is the consequences if TB is detected, including having to keep the bull on your holding for ever. This all depends on which TB area you happen to be in.

Next to consider is the purchase of a bull. This requires careful selection as a bull is going to contribute 50% to all your calves. As with a hire bull you need to check his pedigree to see that he is not closely related to any of your females, and you feel his type will improve your breeding. After making this decision you are then responsible for the management of this animal.

Care of a Bull

For several reasons it may not always be practical to run your bull full time with your females, e.g. timing of calving, young stock not of calving age etc., so separation is necessary. A high pen with vertical bars to prevent climbing is preferred, which is roomy, well ventilated and provides some shelter. This should be situated where your bull can see some farmyard activity. Grooming and attention will help prevent your bull from becoming bored. Your bull is likely to become aggressive if confined to a small dark hole with little or no attention. Fences should be of sound construction should your bull get the urge to wander. A strong and permanent specifically designed fence is the best deterrent. Some company near him may help, such as a steer in a pen close by.

He could be kept in a separate field but this should be well away from females or else he will walk through the fence to get to the girls on heat.

If you select a young bull, say 15-18 months old, he should be broken into work gradually, say 6-7 females in his first season, maybe 20 females at two years old, and a mature bull should cope with approximately 30-35 cows.

A young bull will spend much of his time hunting females for heat and deprive himself of time to feed, with obvious results. If possible, a young bull should be penned away from the cows for a few hours each day to allow him some extra feeding time or if possible given extra feed.

For the purpose of handling, ringing your bull is a must, although some breeders fear the ring may snag when the bull is left out on a rough territory. Always remember a bull can be a dangerous animal. Never trust him.

AI (Artificial Insemination)

AI is very practical if a breeder has good handling facilities and is able to detect heat periods. The advantage of AI is that there is no need to keep a bull. All AI bulls chosen by the Cattle Society are of the highest health status.

AI requires accurate observation and experience to judge the optimum time for service. There are, however, hormonal products available based on prostaglandins (sometimes called prids). These are used to stimulate the cow to come into season and therefore for calculating the precise date and time of serving using AI. Your veterinary surgeon will give you a full explanation as to their use.

This method does take a little time to organise. Your local AI centre should be contacted to arrange storage of the semen. Your local vet or other AI users will be able to tell you who this is. A monthly charge is made for the semen storage. Straws of semen are then purchased from the supplier who arrange delivery (for a fee) to your local centre. The straws are then stored in a flask, and will be used only for your animals. You then call the centre to arrange the date for the technician to come and perform the AI. A service charge is made each time an animal is inseminated. AI bulls can be found on the HCS website, and other suppliers such as UK sires or Genus.

Chapter 10

SHOWING CATTLE

Showing is a pleasant occupation, although very hard work. It allows you to see how your breeding programme is producing results compared to the breed standards. Judges do differ in how they score certain characteristics, but experience and discussion will teach you the points which are being examined. Your cattle are not only an advert for your fold but for the breed in general. Both the farming population and the general public are drawn to Highland cattle and much enjoyment can be got by explaining the virtues of these cattle, their beef, and their contribution to the environment. Apart from the satisfaction of breeding good cattle, prizes all add to the value of a cow and its progeny and are thus very important.

Some people show for personal satisfaction. The majority, especially the commercial breeders, do and have to take it very seriously because of the added value it gives their business. They will therefore spend several hours in preparation and have "tricks of the trade" to ensure the best chance. Shows should be visited before you start showing your own beasts, to observe these procedures and talk to experienced breeder and showmen.

The main tasks are briefly described as follows:

Showing Cattle

The most important factor in preparing cattle for the show ring is that the job must always be done to a high standard. It is a poor advertisement if a beast is only half washed or badly groomed.

Selection of Stock

The animals one intends to enter for a show may have to be selected many months in advance, to enable feeding and management to produce the animal in the right condition at the right time. Halter training should be started as young as possible, preferably as calves.

Feeding

This is important - to produce a well fleshed animal with a good bloom on its coat, is the main objective. As well as concentrates or cobs, sugar beet pulp or bran will help to keep the digestion in good order. Oil rich foods and molasses will give the coat bloom. Good quality hay is good forage and easily handled at shows. It is important not to over feed as the animal will put on too much fat, which will be seen by the judge and is also bad for their fertility and health. However, a well bred animal, with good forage can produce a good show cow. Feeding will not hide faults such as poor walking, badly shaped horns.

Housing

Most animals are brought indoors or penned for the period up to a show, and they will be penned or tethered at the show itself. They need a cool location with plenty of ventilation and clean bedding. Adequate exercise will be necessary to keep the animals moving smoothly and to stimulate circulation.

Washing

This not only removes dirt and dead hair but improves coat condition. An approved shampoo should be used, taking care not to allow detergent into eyes or ears. Rinse thoroughly. If using a power wash, great care should be taken not to use too high pressure.

Feet

The feet should be well trimmed as this will allow the animal to walk and stand correctly. Just before entry into the show ring ensure the hooves are clean and lightly oiled.

Nose rings

For showing, bulls are required to have a permanent nose ring. Also, cows and heifers at HCS shows must have a removable nose ring. Animals the led with a halter and the rope attached to the ring is used for control of the animal when necessary. Local and county shows can have different rules but it is advised that a ring is used for animal control especially when leading in the vicinity of the general public and in the ring.

Grooming

A perth pin comb should be lightly applied to the coat to remove any knots and dead hair, after which, a light brushing and a spray with an animal coat dressing will give the required result.

Horns

These should be lightly sanded, then oiled. Care should be taken with young stock.

Parading

Aim to have your animal quiet but showing itself. Try to catch the judge's eye, but not too much. Practice getting the animal to stand correctly. If an animal is unused to a halter and is being lead with reluctance or showing sign of bad temper, it will not only put off the judge but also prospective purchasers. Lastly be of smart appearance yourself.

Legislation

You must complete a cattle movement when going to a show and for some shows you must have a TB test. Passports and TB test results if needed must accompany the cattle to the show and handed in at the show ground. On returning home you log the animal back into the movement system.

The Highland Cattle Society supports exhibitors at shows by presenting prizes, rosettes and financial incentives at some of the larger shows. They also run the show Fold of the Year competition.

The Regional Highland Cattle Breeders Clubs also provide their own prizes and rosettes at the more local shows as well as running their own Fold of the Year competitions. They also hold meetings throughout the year, which are very educational and informative as well as being pleasant social occasions.

Chapter 11

Breed Standards and Using DNA Testing

Breed Standards

The breed standard is on the HCS website <https://www.highlandcattlesociety.com/breed-standards> which have hardly changed since 1885. It is hard when beginning to judge your own against these standards, especially calves, and a visit from a field officer is always a good move, in fact getting a field officer involved before you buy your first animal is even better. It is important for example, to check things like feet, locomotion and udders.

Also remember the bull is 50% of your herd and traits can be inherited.

Using DNA Testing

A tissue sample has to be sent into the society at birth notification or registration for all calves born in 2021 and onwards.

Primarily this is to use genetics going forward to improve the integrity of the herd book. But already, semen for export comes from bulls whose sire and dam have had DNA recorded. Demand is also coming from the cattle export market where complete parentage is often required by DNA validation (both sire and dam). There are also signs that this will in the future be required across the beef supply chain. (Not only NO HORSE MEAT! but complete parent traceability).

A further reason is to eventually use genetics to calculate Genetic Estimated Breeding Values for Highlands. This is a much longer term view, which will need many samples and also recording of physical characteristics of the animals (called phenotypes).

One way of starting to use the tissue samples beyond simple parentage verification, is to measure certain genetic traits. The Society is initially looking at the genetic traits produced by Neogen's, Igenity Beef scheme. Neogen has produced sixteen traits from taking DNA and physical measurements from 1,000s of animals produced by all sorts of methods (ie feed lots, open range) all of which are commercial cattle. There were no Highlands in the samples they used.

If you do Igenity Beef (and Seek Sire) then you do not need to send your sample to the Society but you do need to fill a form that tells the Society you have a direct relationship with Neogen. Ownership of the sample and any DNA test results remains with the breeder although the Society reserves the right to use the database that results from all the DNA profiling.

All this is very new to the society and will take time, so do refer to the Society website for any changes in DNA sampling and registration going forward. Most Breed Societies are now using genetic characteristics in some way to help breeders with their selections.

So why would you do Igenity Beef?

Well, the first thing may just be curiosity. Or you can use it to select the heifers you want to breed from, or to promote your animals, or even to help the society to build up a bank of data for further analysis.

Below are the traits that are measured by Igenity Beef and what they mean. (This is taken from a Society Bulletin).

- The traits that are measured are as follows: -
Birth Weight (BW). Higher score is higher birth weight potential. Heavy calves can cause calving difficulties but also have more growth potential. (Calving Ease Direct (CED) or Calving Ease Maternal (CEM) in selection indexes are preferred over BW alone.)
- Calving Ease Direct (CED). Greater probability calf will be born unassisted out of a first calf heifer, including birth weight and shape of calf. A higher value means greater calving ease.
- Calving Ease Maternal (CEM). Includes all genetic factors that impact a first-calf heifer's ability to calve unassisted, such as pelvic area and her genetics for birth weight. A higher value is more calving ease.
- Heifer Pregnancy Rate (HPR). A heifer's potential to conceive during breeding season, relative to other heifers. A higher value is desired.
- Milk. Kg of calf weaning weight due to dam's milk production. Optimize "milk" to the forage environment.
- Stay-ability (STAY). The chance the heifer will remain in the herd as a productive cow until at least six years of age. A higher value is desired.
- Docility (Doc) Genetic potential to be calm or to have calm offspring. Higher value indicates a higher probability of an acceptable disposition.
- Weaning Weight (WW) Difference in average 205-day weight. The higher the number, the greater the weaning weight of calves.
- Average Daily Gain (ADG). Based on Kg gain per day. The Igenity Daily Gain (ADG) identifies potential for post-weaning growth.
- Yearling Weight (YW). Difference in average 365-day weight. The higher the number, the greater the yearling weights.
- Residual Feed Intake (RFI). This is an indicator of feed efficiency. It is the difference in an animals' daily consumption of feed to achieve the same level of daily gain. Lower RFI indicates greater feed efficiency.
- Marbling (Marb). The higher the marbling the higher the quality grade.
- Rib-eye Area (REA). Rib-eye area as measured on the carcass. REA measures the area of muscling at the 12th rib. Larger REA progeny have more muscle and higher percentage of retail product.
- Fat. Back-fat as measured on a carcass. Fat thickness is scored as depth of fat over the rib-eye muscle at the 12th rib. Higher fat thickness score equates to lower lean yield.
- Tenderness (Tend). Genetic potential for beef tenderness. A higher 1-10 score is more tender.

- Hot Carcass Weight (HCW). Un-chilled weight of a beef carcass. The higher the HCW, the greater the dressing out percentage.

So how could you use your results?

Well, within your herd you may want to decide which heifers or bulls to keep for the future; and you may use these results to help with the selections. You may want to breed from animals who have the greatest stay-ability score or have the best easy calving index or docility.

Remember though this is only part of the story, **nature versus nurture**. If you keep your animals on nothing then they won't grow, if you finish them on different feed stuffs you could increase the marbling,

It also doesn't cover conformation or breed standards, they could have the best genetic scores ever but can't walk well, or may have bad feet, look ugly or have wonky horns.

You can also start to take your own physical measures for future use, for example you can record birth weights, growth and mature weights by using a simple measuring tape. These too could help you in your future selections.

For more information or discussion talk to your local field officer or contact the society who will put you in touch with an expert.

Chapter 12

REGULATIONS

No matter whether cattle are maintained for business or pleasure there are regulations which apply to all and must be applied. Legislation changes rapidly nowadays. It is essential to keep up to date by reading farming press and relevant government websites

There are different rules in each of the different UK countries, for different TB areas and different farming schemes.

Some of the major UK requirements are as below.

Holding Number

This is a number given to a holding, i.e. a qualifying agricultural premises, that enables official bodies to identify the premises and the area in which it is situated.

Herd Number

This is a number given to your cattle herd.

Tagging

The present UK rules on tagging are – any animal born after 1 April 1995 must have a UK approved tag inserted in the both ears. Letters to consist of country of origin, herd number and individual animal number as consecutive numbers e.g. UK nnnnnn nnnnnn. If you intend to export an animal then currently (2021) the tag must start with GB. When you order your tags from a tag supplier they will issue the next tags in your number sequence. Some UK countries are working towards EID tagging.

Cattle Passport/Identification Documents

Every birth, death or cattle movement has to be registered on your countries cattle movement system. It contains details of every individual animal e.g. tag number, breed, date of birth, holding number and address. The animal's passport is then issued when it is registered for the first time on the system. It cannot be sold or moved without it. There are rules when you must log your births on to the system. Again, it is best to check with your government websites for the latest regulations.

Cattle Health Schemes

The aim of Cattle Health Schemes is to provide a pool of cattle herds of defined health status. It is best to get advice on voluntary health schemes from your vet. These schemes tend to cover BVD (bovine viral diarrhoea), IBR (Infectious bovine rhinotracheitis) and Leptospirosis.

Some health schemes are being introduced and are intended to become mandatory in each country. In particular, BVD free schemes.

To enter a HCS show and sale the breeder must declare they have High Health Status, i.e. partake in a cattle health scheme or have their animals privately tested for BVD. IBR and Lepto.

TB Testing

Depending on your location within the UK your animals have to be tested for TB on a regular basis. This could be as frequently as every 6 months, or if you have a TB breakdown every 60 days. If you are lucky you could be in a TB free area or a 4 yearly testing area. This does not mean your animal may escape from ever having a TB test. There are pre and post movement tests for animals which move between different TB areas. TB

areas and regulations are constantly changing. The appropriate Animal Health body notifies you of the frequency of testing and when you must complete your TB tests. Strict fines are in place if you fail to do so. Compensation is paid for animals slaughtered as a result of TB. The amount varies between countries, for example in Wales each animal is valued individually, in England there are fixed amounts which are doubled if the animal is pedigree registered.

Herd Book

The herd book of the Highland Cattle Society contains the pedigrees of cattle born in one year e.g. 1 January to 31 December 1996. Volume 1 was published in 1885. It is now kept electronically.

Medicine Book

Any person involved in the rearing or production of animals must keep a record of any veterinary medicinal products, who administered it, from whom it was purchased and any withdrawal period, the name of the drug and the amount administered.

Movement Book

Any person involved in the transporting of animals must keep a record comprising date of movement, details of animal e.g. breed, ear tag number, premises from which moved and premises to which moved.

Transport

It is important that you are aware of your responsibilities under the Animal Transport Legislation. As these acts are quite extensive, advice should be sought. Qualifications for animal transport are often necessary and the legislation changes. Advice can be found online.

Grants and Schemes

As a registered holding, grants can be available from several bodies for example, for hedging, forestry, drainage, conservation and building restoration. It is possible for farmers to join various different devolved schemes which offer annual payments for farming and management of land in different ways. It is advisable to look on line for such schemes or take advice from land agents. These schemes are continually changing and the rules and regulations often complicated but can be financially rewarding.

The above just gives you a few basic rules and regulations. They are many and varied and depend on your location and schemes that you are in. You need to keep up to date as much as possible.

Chapter 13

INSURANCE and SUPPORT

Is insurance necessary?

Yes, it is vital, even if you only have one animal and it must include public liability.

Owning livestock brings with it a lot of pleasure but also responsibilities – and the potential for some very large bills if things go wrong.

When arranging insurance, the most important cover is not for the animals themselves but liability insurance to cover the risk if the owner is held liable for injuries to people, or damage to property.

Straying livestock have been known to cause serious road accidents, which have led to compensation claims of hundreds of thousands of pounds; while a few head of cattle trampling a prized garden can easily bring in a bill of several thousand pounds.

Some show grounds now ask for a copy of your insurance policy.

Where can I learn more about my responsibilities, management and stockmanship of Highlands?

By using the government websites for legal responsibilities, land agents and government bodies for advice on farming schemes, vets for health schemes and also Society field officers can help point you in the right direction. men.

Many local authorities and agricultural colleges also offer short courses in many aspects of interest and benefit.