



The British Alpaca Society

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## **Alpaca Fact Sheet - CHAPTER 1- Alpaca Reproduction**

### **Key Reproductive Features**

#### **Male Anatomy**

The male has two testicles in a non-pendulous scrotum situated below the anus. The function of the scrotum is to maintain the testicles, which are the source of sperm, at a slightly lower temperature than the rest of the body. The prepuce is the sac holding the penis. This normally points backwards during urination, but when the male is sexually aroused the prepuce points forward and the penis is extruded for mating. The tip of the penis has a slightly clockwise curvature. In young males the penis is adherent to the prepuce and they are usually unable to extrude the penis sufficiently for mating until they are about 2.5-3 years old. Immature males may not be able to extend their penis to reach the vulva of the female. Mating should be delayed until they are three years of age. Eruption of fighting teeth appears to correlate with approximate time of sexual maturity.

#### **Female Anatomy**

The female has a small opening called the vulva situated below the anus. The vulva leads to the vagina which is the actual birth canal and passage for the penis during copulation. (Fig.2). The vagina leads to the cervix which is the opening into the uterus. The uterus consists of a body and two uterine horns. During mating the male deposits sperm directly into the uterus of the female.

The oviduct carries the egg from the ovary to the uterus and is also the site of fertilization of the egg by sperm. In alpacas most pregnancies occur in the left horn. Young females usually reach sexual maturity at about 12-15 months of age and when they are 45-50 kg. This gives the female adequate time to mature and reduces the risk of problems during parturition. Potentially adult female alpacas can remain productive up to 13-15 years of age.

Figure 1 : Reproductive anatomy of a male alpaca

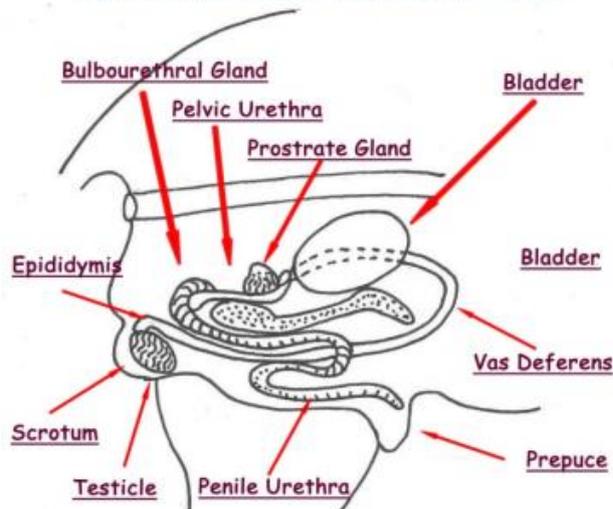
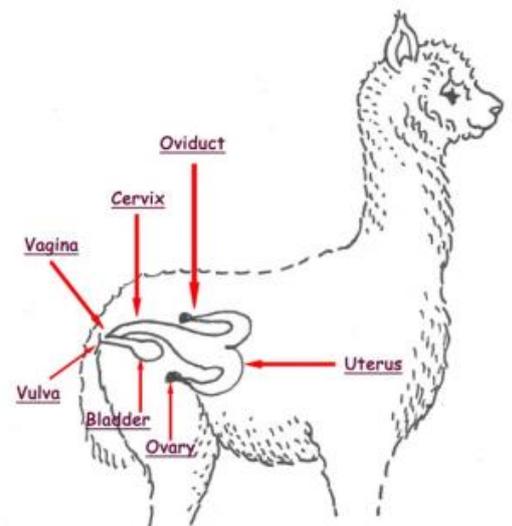


Figure 2 : Reproductive anatomy of a female alpaca



## Reproductive Physiology

Most domestic species show regular distinct periods of 'heat' or sexual receptivity. At each 'heat' one or more mature follicles (fluid sacs) on the ovaries ruptures spontaneously releasing an egg (ovulation). The number of follicles depends on the species. Alpaca females do not 'come on heat' but show prolonged periods of sexual receptivity during which time they will allow the male to mate (Fig. 3). Ovulation generally does not occur spontaneously and it is the act of copulation itself which induces ovulation. During copulation, the penis of the male stimulates the vagina and cervix of the female. This stimulation causes the release of hormones from the brain of the female which circulate in the blood to the ovaries and cause final development and ovulation of the ovarian follicle (Fig. 2).

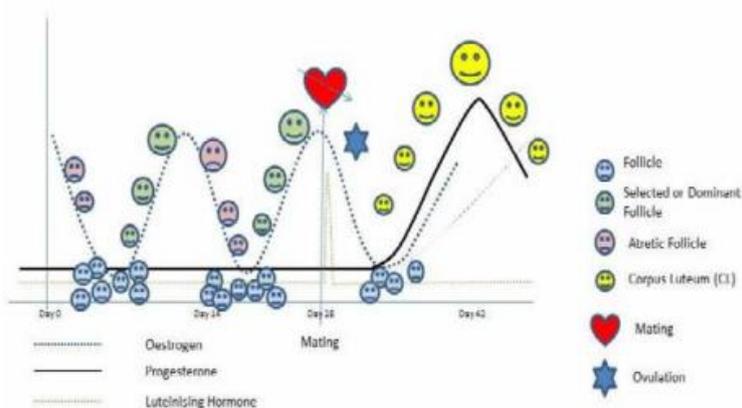
In mature alpacas, providing there is an absence of a corpus luteum and progesterone, the female is usually sexually receptive. Generally, only one follicle, on one of the ovaries, reaches maturity. It can remain at this stage for up to 10-12 days. If mating occurs during this time, ovulation may be induced (Fig. 3). If mating does not occur the follicle regresses. However, at the same time, another follicle is generally maturing (on either the same or the opposite ovary). This provides overlapping waves of follicular development and regression. Hence, prolonged periods of sexual receptivity may be shown (Fig. 3). There may be intermittent periods of non-receptivity of 1-2 days' duration, as new follicular waves commence. Ovulation occurs approximately 30-40 hours after mating. After ovulation, as in other domestic species, the cells around the collapsed follicle proliferate and form a corpus luteum, which secretes the hormone progesterone.

Progesterone suppresses receptivity for as long as the corpus luteum remains functional. Hence spit-offs (see Alpaca Note 2 Mating Behaviour) are a useful tool for seeing if there is a corpus luteum present – an indirect method of pregnancy testing. If the alpaca does not

conceive, the corpus luteum remains functional for 10-13 days then regresses, and another follicle begins to develop to maturity (again). As the follicle matures the female once again becomes sexually receptive (Fig. 3). If the female conceives and becomes pregnant, the corpus luteum does not regress but continues to produce the hormone progesterone throughout the entire pregnancy.

Ovulations are generally single, i.e. only one follicle ruptures. Multiple ovulations occur in 10% of natural matings but twin births are extremely rare (approx. 1 in 10,000 births). Spontaneous ovulation occasionally occurs in alpacas. Figure 3: Normal pattern of ovarian activity in alpacas South American Camelids.

## Ovulation Cycle



## **Alpaca Fact Sheet - CHAPTER 2- Alpaca mating behaviour**

### **Alpaca Mating Behaviour**

Introduction The male pursues the receptive female, attempting to mount her until she sits in 'cush' position. A male with good libido may chase a female for up to ten minutes. Once the female sits down, the male positions himself immediately behind her, manoeuvres his penis through her vulva into the vagina and cervix. With rhythmic thrusting movements semen is then deposited into the uterus of the female. If the male is properly positioned his back is characteristically arched with his pelvis close to the pelvis of the female. During copulation the male makes a characteristic guttural sound called 'orgling". Copulation may continue for 5-55 minutes with an average time of 15-20 minutes. During mating other receptive females present may sit down beside the mating pair. Once ovulation has occurred, females are non-receptive and will actively reject the male, i.e. they spit, refuse to sit down and try to run away. Alpacas are nonseasonal breeders and will demonstrate year round sexual activity.

### **Pregnancy**

Although left and right ovaries are equally active, most pregnancies implant in the left uterine horn. The placenta, which attaches to the developing foetus and the uterus during pregnancy, is similar to that of the mare and does not have raised attachment areas (cotyledons) like the domestic ruminant placenta.

Conception rates of 75-80% with a single mating are not uncommon.

The gestation is generally about 342 days but can range from 320-380 days. A birth within this range is perfectly normal.

### **Pregnancy Diagnosis Methods**

No pregnancy diagnosis method is 100% reliable. Because early embryonic deaths occur more frequently in alpacas than in other domestic species, all pregnancies should be reconfirmed 45 days post-mating and, if possible, by two methods.

### **Ultrasonography**

Flank ultrasonography where a transabdominal probe is applied to the body surface near the udder provides a visual sighting of the foetus. Depending on the type of machine used, diagnosis can be made 60 days. Pregnancy diagnosis can be performed per rectum but this is NOT recommended as a routine procedure because of the danger of rectal tears.

### **Appearance**

The initial 'spitting off ' (rejection of the advances of a male by the female – they spit off, refuse to sit down, attempt to run away) is a response triggered by an increase in

progesterone levels associated with ovulation and is not a confirmation of pregnancy. However, rejection of the male is a good preliminary indication of pregnancy or continued pregnancy, once diagnosis is made by ultrasound. As embryonic loss can occur, exposure to a male at regular intervals (e.g. six weekly) throughout the pregnancy is recommended.

Some alpacas do show changes in body shape but mostly external signs are not apparent even in advanced pregnancy

## Alpaca Fact Sheet - CHAPTER 3- Alpaca Birthing (Parturition)

### Introduction

Most births occur during daylight hours and reputedly between 0800 and 1400 hours. Physical signs of approaching parturition are often imperceptible but changes in general behaviour are usually the most obvious outward sign that birth is imminent. Physical signs may include relaxation of the vulva, loss of the cervical mucus plug, slight increase in the size of the mammary gland and waxing of the tips of the teats (only if previously given birth). Behavioural changes may include some, all or indeed none (!) of the following: signs of obvious discomfort (including rolling and frequently lying down and getting up), frequently looking at their tail, they may place themselves in isolation to the rest of the herd and frequent visits to the dung pile with little or no defecation. Other body language includes sitting on one hip, ears laid back, and back arched.

### Labour

Normal labour is a continuous process initiated by hormonal changes but it can be broadly divided into three stages.

#### Stage 1

The cervix relaxes and uterine contractions commence to propel the foetus into the birth canal. This stage may last 2-6 hours (or longer in first pregnancies). Signs include restlessness, discomfort, increased humming, increased defecation and urination, segregation from the herd and decreased appetite. Many alpacas show no obvious signs of being in first stage labour.

#### Stage 2

Uterine contractions increase in frequency to aid expulsion of the foetus. The female may lie down and rise up several times; there is abdominal straining; the amniotic sac (or water bag) may appear at the vulva and rupture. (Note: much less fluid is released than in other species). Both forelimbs appear together at the vulva and the head emerges either above or below the legs. Once the head appears, delivery is usually completed quickly but the female may rest before pushing out the shoulders. Most females deliver in the standing position. Stage 2 is usually completed in 30-45 minutes.

#### Stage 3

The placenta or afterbirth is usually expelled within 2 hours of birth. Alpacas do not eat the afterbirth nor lick their offspring. Veterinary attention is required if –

- Stage 1 exceeds 5 hours without signs of abdominal contractions.
- Stage 2 extends beyond 30 minutes without any signs of progression.

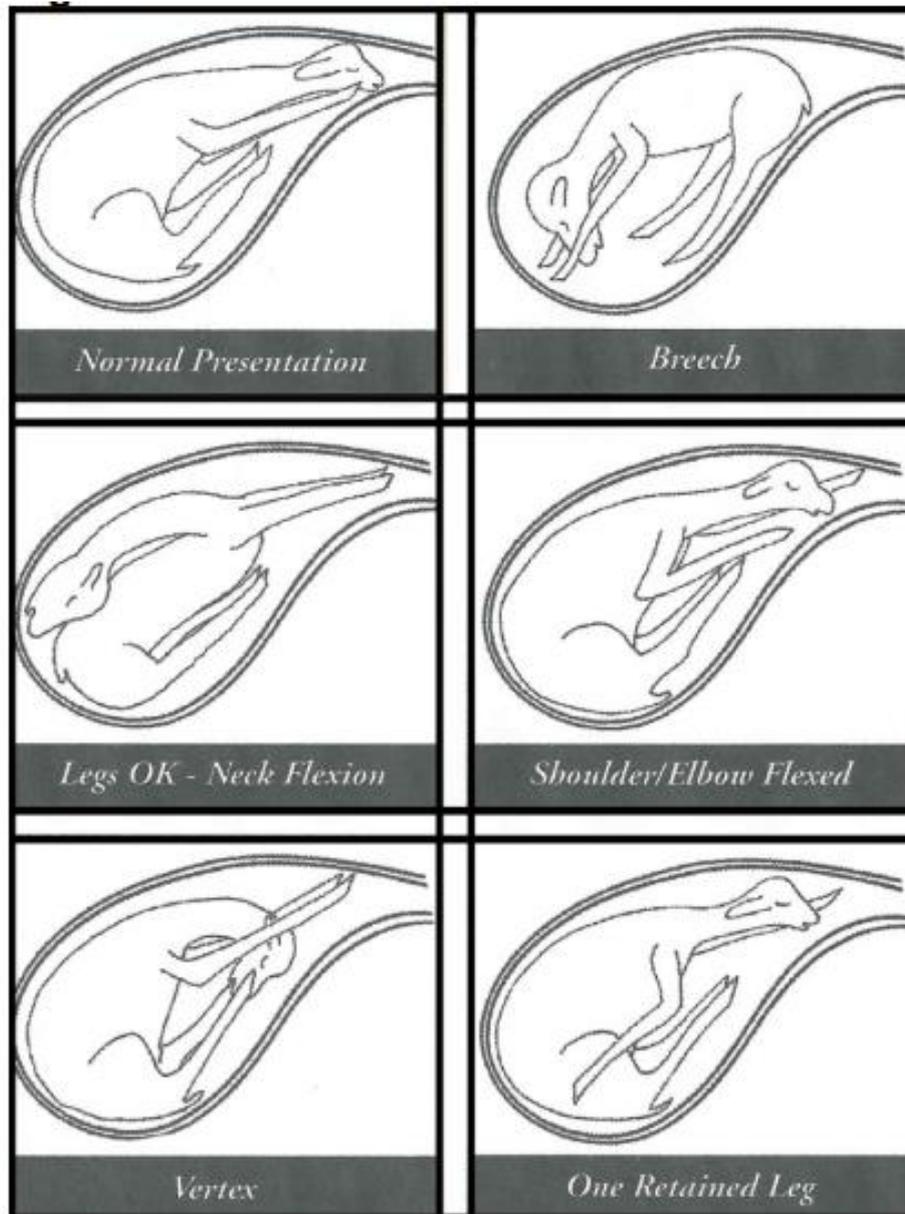
- Stage 3, if the afterbirth has not been expelled within 6-8 hours (or by the next morning for late in the day deliveries.)

Dystocias (Difficult births) – See fig 1 In alpacas the dystocia rate is low (2%-5%) but in such cases immediate assistance is generally required.

Most dystocias are due to abnormal presentation or position of the foetus in the uterus. Dystocia may also be caused by maternal reproductive problems such as infection, poor nutrition or obesity where excess fat in the birth canal reduces the area for the foetus to pass through. The dam (or mother) may become exhausted after prolonged unsuccessful efforts to deliver the foetus.

Shoulder/elbow flexion is the most common dystocia. Deviations of the head and neck are difficult to correct due to the long neck of the foetus. Backwards (hind legs presented first) or Breech presentations (buttocks and backbone jammed against the birth canal) are serious dystocias and require veterinary assistance.

Fig 1



Cria Care The newborn cria is often covered by a very thin membrane which dries and rubs off easily. This may need to be gently removed if it is around the nose and mouth.

After a successful birth cria and dam should be left alone to bond. Observations should be made from a distance.

The cria should:

- be active almost immediately
- have easy respiration
- sit up in the 'cush' position within 5-10 minutes
- be attempting to stand within 30 minutes and standing within 2-3 hours

- be attempting to suckle within 60 minutes and suckling within 4 hours
- have a birth weight of between 6.5 kg – 8 kg
- have a normal temperature of between 36.8 °C & 39.2 °C (local weather conditions should be taken into account i.e. contingencies should be considered if there is a low cria temperature in wet and windy weather)

If any problems are evident then immediately consult a veterinarian.

### **Post-partum Problems**

Problems after parturition (i.e. Post-partum) are uncommon, but may include prolapse of the uterus (Vaginal prolapse is very rare after parturition. It normally occurs before parturition), hemorrhage, uterine tears and uterine infections. Good hygiene is important when dealing with a dystocia to reduce the risk of introducing infection into the uterus.

### **Post-partum Breeding: When to rebreed?**

Involution (i.e. return to normal size) of the uterus progresses rapidly in alpacas and is complete by three weeks after parturition. A small amount of discharge, often blood tinged, is sometimes seen during the first 5-7 days post-partum.

In general, rebreeding should be delayed until 15- 20 days post-partum, and occasionally a female may not be receptive for up to 40 days postpartum.

### **Infertility**

Compared with many other livestock, infertility in alpacas is relatively uncommon and most problems can be resolved using different management strategies. Fertility problems should always be discussed with your veterinarian, who will be able to carry out the necessary reproductive examination and fertility assessment. Alpaca owners should keep good breeding records, as an accurate history is a vital part of any fertility assessment.

## **Alpaca Fact Sheet - CHAPTER 4- Alpaca Body Condition Scoring (BCS)**

### **Introduction**

Keeping alpacas on a good plane of nutrition is essential for healthy reproduction as well as minimizing variations in the diameter along the length of the fibre staple. Sudden changes in diet can result in sickness, foetal stress and tender fleece. Seasonal changes in dietary quality and quantity make it essential to monitor your animal's body condition.

Overweight alpacas may be at risk with heat stress, infertility, difficult births, poor lactation and neonatal mortality. Emaciated alpacas can be susceptible to embryonic loss, stillbirths, poor lactation and underweight neonates.

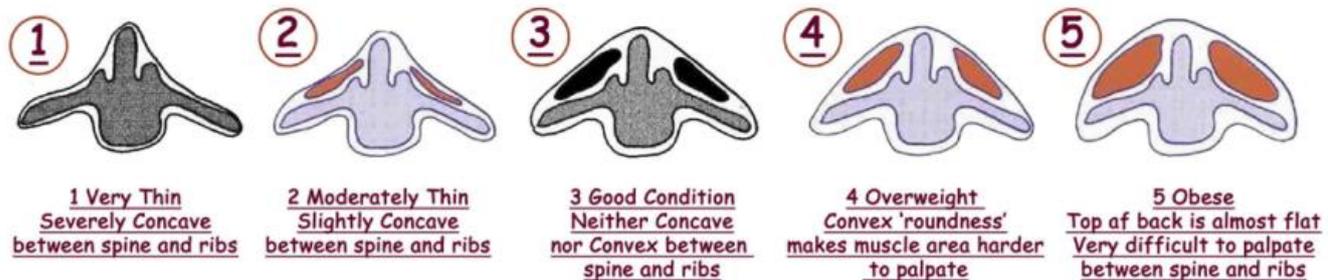
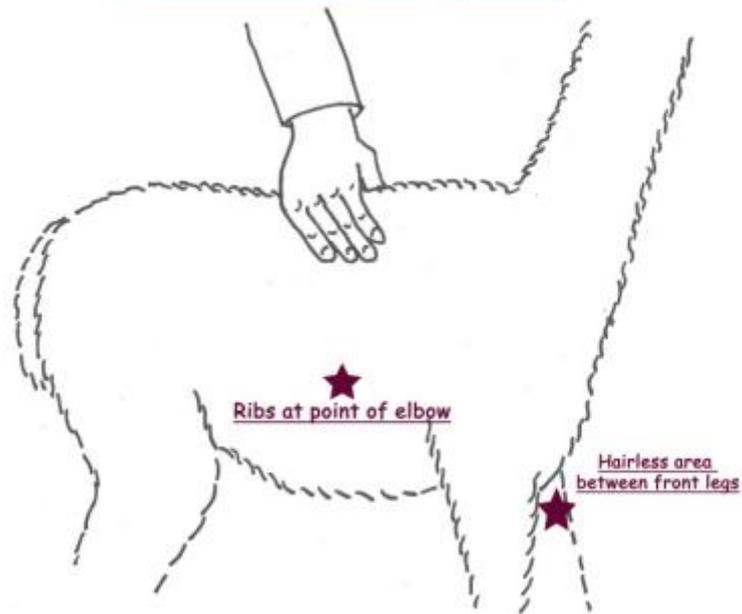
Variations in frame sizes from one alpaca to another means it is not always accurate to compare the weights between individuals. Mature females should weigh between 60-75 kg and males can weigh up to 100 kg. (Averages are 70 kg for adult females and 85 kg for adult males).

The nutritional status and condition of alpacas can be assessed without the need to purchase expensive weighing equipment. Live weight scales will accurately tell you weight changes within individual alpacas. However inaccuracies can occur due to females being in late pregnancy or when there are variations in gut fill between weighings. Body condition scoring can therefore give a more accurate picture of the animal's condition allowing you to optimise nutritional management of your alpaca.

Visual assessment of the condition of alpacas is often misleading as fleece and later stages of pregnancy can hide their true status. There is no substitute for hands-on appraisal.

Body Condition Score is based on a scale of 1 to 5, with alpacas in very poor condition scoring 1 and obese alpacas scoring 5

**figure 1 : Recommended position for Body Condition Score assessment**



**Figure 2 : Cross sections for body condition scores (BCS) 1 to 5**

### How to make a BCS assessment

The most commonly used area is over the central backbone near the last ribs. Do NOT make assessment over the pelvis as this area often feels boney, even with obese alpacas. Body scoring involves placing your fingers on the centre of the back, either side of the vertebrae and feeling for muscle coverage. By palpating the area with your fingers and thumb you can make an appraisal of the muscle mass. It should reveal a firm, slightly convex body shape. Bulging would indicate an overweight animal whereas concave tone indicates underweight condition. To confirm your estimate you can also palpate the area over the ribs at the point of the elbow (in an animal with BCS 2.5 you will just feel the ribs; an animal with impalpable ribs is very fat) and finally, observe and or palpate the hairless area between the front legs (see Fig. 1).

figure 3 : Palpating muscle between spine and ribs



Alpaca	Body Condition Score
Wether	2.5 - 3.5
Non-pregnant mature female	2.5 - 3.5
Mature male	2.5 - 3.5
Pregnant female	3 - 3.5
Working male	2.5 - 3.5
Growing (<15 months)	3 - 3.5

Practicing the technique whenever you handle alpacas will help make your assessments more consistent.

Each assessment should not take any longer than about 5 seconds.

If a low BCS is only due to a shortage of feed (and is not due to other factors such as ill health) alpacas with unlimited access to good quality pasture can take 3-6 weeks to gain one score.

**Disclaimer: The management practices detailed in this overview do not constitute veterinary advice. Any alpaca appearing to have an adverse condition should be assessed by a veterinarian**

## **Alpaca Fact Sheet – CHAPTER 5- Alpaca Nutrition**

### **Natural Grazing Conditions**

The alpaca belongs to a group of animals known as the South American camelids (SAC). The SAC are separated from true ruminants such as sheep and cattle partly because they differ in the structure of their stomachs.

In South America, alpacas are found at an elevation of 4400-4800 m where they are strict grazers, preferring the bottomland vegetation of meadows and marshes. The largest populations of alpacas live in the Bolivian and Peruvian Altiplano of the Andes Mountains at over 3800 m above sea level. The region has a short growing season between December and March with 75% of the rainfall, and a long dry season from May to October when there is almost no rainfall.

Peruvian studies have shown that alpacas consume tall grasses in the wet season and short grasses in the dry season. Alpacas are highly adaptable grazers that will eat grass when it is available but they will adapt to sedges during dry periods of low grass availability.

The sedge family (Cyperaceae) comprises annual and perennial grass-like or rush-like plants which usually show a preference for marshy or wet places but a few also occur on dry sandy soils with unimproved pasture. On improved pasture, sheep will eat at least 2.5 times more legumes such as clovers than alpacas, so alpacas still prefer grasses even in this situation.

### **Anatomy of the digestive tract**

The digestive tract is considered to be from the lips to the anus. The lips of alpacas are unique because the upper lip is split by a labial cleft so that each side of the lip can move independently, allowing alpacas to be very selective about what they choose to eat.

The tongue does not participate in grabbing food (in contrast to cattle) and rarely comes out of the mouth, so alpacas do not readily lick themselves, their young, or most importantly for nutrition, some will not lick mineral blocks/buckets. If you wish to use blocks/licks or buckets please ensure you can confirm their use (or not).

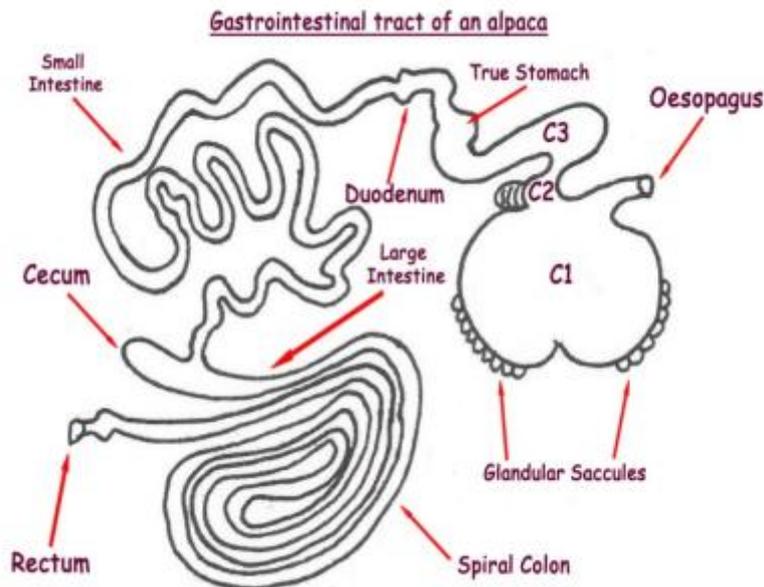
The incisor teeth of alpacas are firmly fixed in the lower front of their jaw, like sheep and goats, and take about 4.5 years for complete replacement and development. The jaw movements allow for efficient cutting and grinding of their food but often chewing is cursory, used mainly for mixing with saliva.

Saliva has three important functions:

- Lubrication of dry feed.
- Adding bicarbonate and phosphate to buffer against acids during fermentation.

- Recycling nutrients such as urea and phosphorus.

The alpaca stomach has three compartments (C1, C-2 and C-3) and is not analogous to any of the true ruminant stomachs.



Neonates have a large true stomach but a poorly developed C-1. By 8 weeks of age, the C-1 reaches adult proportions. It takes about 12 weeks to reach full adult activity allowing the breakdown of plant fibre.

C-1 lies on the left hand side of the abdomen and makes up about 80% of forestomach volume.

C-2 makes up 6%. (Together they contain 10-15 litres of digesta.) There are also glandular saccules across the ventral surfaces of C-1 and C-2.

This glandular area has many functions including:

- Absorption of nutrients.
- Addition of mucus secretions, glycoproteins and urea to provide an optimum environment for the microbes.
- Possibly secrete bicarbonate ions (findings not repeated experimentally) to buffer C-1 and C-2 contents.

The opening between C-1 and C-2 is large (mineral pellets do not remain in C-1 for any significant period of time) and the pH ranges from 6-7.

C-3 (11% of forestomach volume) is tubular and runs next to C-1 on the right side of the abdomen. The last one-fifth has true gastric glands and it has a pH of 2-3. Solutes and water are rapidly absorbed.

Motility (spontaneous movements) of the forestomachs is critical for continual fermentation. Alpacas have greater forestomach motility than ruminal contraction of true ruminants. The motility of C-1 and C-2 mixes ingesta so that there is little layering of feed. The motility allows constant exposure of feed to microbial activity and subsequent degradation.

Gas is produced by the microbes in C-1. Eructation (belching) occurs 3-4 times during each motility cycle. Increased stomach motility pattern may explain why alpacas are relatively resistant to foregut gas accumulation and clinical bloat compared with true ruminants. Regurgitation (backward flowing of food) occurs during mixing and stomach contents are sucked into the oesophagus and carried by an antiperistaltic wave to the mouth. Large fibres are regurgitated to allow more chewing to increase surface area for bacterial colonisation and stimulate saliva production.

The small intestine is 8 m long in an adult alpaca and digests and absorbs nutrients. It runs into the caecum and large intestine (6 m long).

The large intestine:

- absorbs water
- absorbs minerals and vitamins
- secretes mucus
- allows further microbial action on digesta

Due to the efficiency of digestion of C1 - C3, there is little left for the large intestine to ferment which reduces the risk of starch fermentation and hindgut acidosis.

Alpaca faeces are pelleted and begin to form at the start of the spiral colon. Alpacas usually use a communal dung pile for defecation and urination and generally avoid grazing near these areas.

### **Digestive Physiology**

The first compartment of the stomach (C-1) is a large fermentation vat. As with ruminants, alpacas have a vital symbiotic relationship with the microscopic organisms that live within the gastrointestinal tract. These organisms break down the cellulose in the feed that the alpacas eat. The alpaca provides the feed and stable environment (relatively neutral pH, anaerobic, moist medium) whilst the single celled organisms break down the food that is eaten.

Fungi colonise the plant material and weaken the structure of the plants so that bacteria and protozoa can attach. All these organisms use various breakdown products of the ingested plants to reproduce themselves.

The microbes contain the enzymes to break down cellulose, urea and protein using the carbon and nitrogen for their own growth. By-products from microbial growth and multiplication are then used by the alpaca. These include volatile fatty acids which provide the alpaca with energy and Bcomplex vitamins. The microbes themselves are washed from C-1 down to C-3 and the intestine where they are digested to provide the alpaca with protein and other nutrients.

**NOTE: When you feed an alpaca, you are also feeding the microbial population in C-1 and C2. The population dynamics of different species of bacteria in C-1 and C-2 depend on the prevailing source of ingested material. This is why it is very important to introduce any feed changes gradually. It is necessary to give the microbial population a chance to adjust to any change in conditions. Access to good quality hay for two or three weeks during change- over provides a healthy buffer.**

**Why alpacas perform better than sheep when on poor quality forage:**

- Slower particulate passage time (microbes have longer to attack structural carbohydrates in C-1 – 63 hours in alpacas, compared with 41 hours in sheep).
- Faster liquid passage time (constant removal of microbial protein, vitamins and soluble minerals from C-1 and C-2 maintains a rapidly dividing population of microbes which is more efficient. Liquid flow is 10.4% per hour in alpacas, compared with 7.7% per hour in sheep).
- Greater volume of saliva production (in relation to foregut volume).
- Efficient output of energy and protein on limited quality feed.
- Efficient nitrogen balance (by reduction of urea excretion through kidneys, thereby enabling recycling of urea through their saliva and directly through the wall of C-1).

### **Eating Behaviour of Camelids**

The basic requirements for alpacas are water, energy, protein, fibre, vitamins and minerals. It is essential that requirements of the first four essentials (water, energy, protein and fibre) are satisfied before assessing vitamin and mineral status.

- Alpacas in groups are contented, more productive and healthier
- They tend to be active at dawn and dusk
- They eat for 5-6 hours per day – hot weather can reduce grazing time
- They ruminate for 8-9 hours per day – longer on high fibre diets
- They rest for 7-8 hours per day
- They urinate / defecate / interact for 3 hours per day

Avoid competitive feeding situations when supplementing your alpacas by allowing adequate trough space. Dominant alpacas will eat more than the shy feeders if inadequate space is provided.

### **Paddock Feed**

Alpacas are primarily grazers and eat small amounts of a wide variety of plants. They will eat approximately 2% of their body weight in feed per day and prefer shorter pastures. Ideally they should have a diet consisting of 20% fibre.

They are very effective at extracting nutrients (protein and energy) from the available feed. Alpacas are efficient recyclers of urea and protein levels of 10-12% only are required.

Although they can survive harsh conditions they do best on good quality pasture. The growth of a variety of grasses and forbs (non-grass plants e.g. comfrey, small burnet, and chicory) in quality soils will provide your alpacas with good nutrition.

Care should be taken to avoid poisonous plants in your pasture or hanging over fences into alpaca paddocks, such as highly toxic oleander, lantana rhododendron etc.

### **Supplementary Feeding**

In seasons where pasture becomes limited, alpacas may be supplemented with good quality pasture hay and/or various grains according to their physiological state (e.g. pregnancy, lactation, growth, maintenance) and body condition score. Roughage in the form of hay / haylage etc. should be available at all times.

Pregnant and lactating females need a higher daily intake than other alpacas. They may need additional supplement above that given to the rest of the herd in order to maintain or recover condition.

Soils in the UK are often deficient in certain minerals and trace elements. Pastures and soils can be analysed to assess any areas of deficiency and it is important that this be done to avoid using unnecessary additives.

Alpacas can be supplemented using a variety of commercial mixes designed for alpacas, and some non-alpaca specific feeds and supplements can be used, however it is important to understand what the composition of the feeds are that you may be giving in order to ensure the correct balance of minerals and nutrition.

## Alpaca Fact Sheet – CHAPTER 6- Alpacas as Herd or Flock Protectors

### Introduction

Alpacas are one of four members of the South American camelid species. Like all camelids they are hardy, intelligent and gregarious animals that have evolved with strong herd social instincts. Both females and males are very protective of each other and especially of their young. The alpaca is generally very alert to any animal or person approaching its paddock, and has excellent eyesight over a kilometre. While normally almost soundless, the alpaca can emit a piercing alarm scream when aroused to potential danger, alerting their herd and property owners.

Alpacas are normally gentle toward humans and other animals that are not seen as threatening but they have an innate dislike for canines and foxes. Their defense against such predators is to chase them away or pursue them and if necessary stamp at or on the predator with their front feet, rising off the ground onto their back legs if necessary before bringing their front legs down with considerable speed and force. Alpacas, when provoked in such a fashion, are very fast and will catch the predator in a short distance. **However it should be noted that not all alpacas will react in this way and deaths and injury from dog attacks in the UK are unfortunately not uncommon. Owners should therefore take special care that alpacas are not attacked by dogs.**

The instinct for alpacas to bond with other grazing animal herds, and especially their proven ability to protect sheep and goats, has resulted in the growing use of wethered adult male alpacas as sheep flock guardians – especially during and after lambing and kidding. Cases have been recorded of wethers bravely standing in front of females and progeny in the corner of a paddock fending off multiple animal attacks. In some cases a guardian alpaca has been killed by dogs while at least some of his flock survived. Alpacas are herd animals and must be kept with a number of others of their own species even when co-grazing with sheep etc.

### Alpacas and the Environment

Like all camelids alpacas do not have hooves but soft-padded feet, each with two fairly soft toenails. Their ground foot pressure of 39 kPA is much less than sheep (82 kPA), cattle (185 kPA) and humans (95 kPA).

Alpacas differ slightly from true ruminants such as cattle and sheep because of the structure of their three-compartment stomachs. The alpaca's digestion is adapted to high fibre diets and their dietary efficiency is superior to goats and sheep on a similar high fibre diet.

Alpacas place their dung and urine in specific spots and do not usually graze close to these, thus avoiding ingesting internal parasites to which they generally also have high resistance.

(If grazed with sheep, cattle or goats alpacas will pick up the same parasites, and a similar dosing regime will be needed).

Alpacas grow fibre that is valued for its luxurious handle and brightness/luster, and in a wide range of natural colours that is unique among commercial fibre producing animals.

However, unlike many other animals, alpacas do not shed their fibre. Also, even when 'bonded' with an accompanying sheep flock and sleeping close by, alpacas will not come into physical contact with them unless forced to do by, for example, being held closely in a yard.

The alpaca does not grow fibre underneath its short tail or in the breech area, and tends to avoid any contact with its urine or dung pellets due to the crouching nature of the alpaca during urination and defecation. They have very little lanolin in their fibre. Fly strike is seen but is mercifully rare. However it can occur especially in heavily fleeced animals and owners should still be vigilant. If seen flystrike must be attended to quickly as it will kill without rapid & effective treatment.

### **Guardian Alpaca Husbandry**

The British Alpaca Society recommends that alpacas used as guardians for lambing ewe and breeding goat flocks should be fully grown adult males at least 18 months to two years old, and that castrated males [wethers/geldings] are used. Actual age will depend on the individual alpacas and indeed it is not a given that they will all be suitable guard animals.

It is recommended that castrations are only carried out when the males have reached adulthood and are fully grown (this is usually the case by the time they are 18 months to 2 years old) but will vary. Castrations must be carried out by a veterinarian.

Although entire males are equally capable as guardians, it is not recommended to use them as it has been known for entire males to mount sheep and inadvertently kill them.

The alpaca ideally should be introduced to the pregnant ewe flock about 4-6 weeks before lambing to allow time for bonding. However it is never too late to introduce guardians to a flock - even after lambing or kidding has begun. After initially patrolling the boundary, the guardians will soon remain fairly close to the flock for companionship, and will normally protect them from foxes. A single guardian has sometimes been seen 'minding' a group of young lambs while the mothers spread out to feed.

Guardian alpacas can be readily moved around the property with their accompanying flocks. If using sheepdogs be aware that since dogs are often seen as a threat they may be attacked. It may be preferable to remove the alpacas prior to moving the sheep then reintroduce the alpacas. Extra care is needed to control dogs in their vicinity.

To avoid undue stress, an alpaca should never be kept alone in a paddock. When not needed as guardians it is preferable to keep several alpacas in a paddock near the

farmhouse where they can become accustomed to farm dogs, and with occasional hand feeding they will be easy to handle.

They will eat sheep feed (and indeed other feedstuffs like grains etc.) given the opportunity so it is important to ensure you know the composition and take measures should there be any potential issues (eg Copper levels) With normal husbandry, guardian alpacas should remain active and useful for at least 15 years, aided by lower teeth that erupt to replace wear. Alpacas need to be shorn annually.

### **Shearing**

Because of their long legs and neck it is best to restrain the alpaca on its side. The animal should be reasonably firmly restrained by front and rear ropes and the head should be held by an assistant.

The alpaca should be quite comfortable in this form of restraint. When shearing with a view to using the fibre it is best practice for the blanket area should be sheared first to avoid coarse fibres contaminating it. It is best to book an alpaca shearer well in advance as they can be very busy during shearing season. Make sure you know what they require and be prepared.

If you wish to learn to shear alpacas there are a number of shearers who run courses and who will normally be happy to advise about shearing, methods of restraint and what to do with the shorn fleece. Also other alpaca breeders are usually very happy to give you the benefit of their wisdom!

### **Other considerations**

As with all other livestock annual procedures include teeth being checked (both males and females can develop very sharp 'fighting' canine teeth although these only usually present a risk with entire adult males) and their toenails being trimmed (usually every three to four months), unless they are kept on stony ground that will wear them down naturally (fairly unlikely in the UK).

### **Vaccinations:**

Alpacas also need bi-annual clostridial disease vaccinations - annual vaccinations are no longer considered sufficient by many veterinarians. The sheep dose is recommended. This should be discussed with your veterinarian.

### **Parasite control:**

All Parasite control should also be discussed with your veterinary surgeon.

### **Feed:**

Alpaca Guards will maintain condition on sheep feed, however as they do not have the ability to lick, a mineral/feed supplementation via a lick is not effective, so a loose mix supplementation is therefore preferable. The BAS would also like to thank Dr. Graham R Duncanson for his help in checking these documents Disclaimer: The management practices detailed in this overview do not constitute veterinary advice. Any alpaca appearing to have an adverse condition should be assessed by a veterinarian.

## Alpaca Fact Sheet – CHAPTER 7- Administrations of Injections

### Important Note

This information is provided as a guide for the administration of injections but breeders may have similar techniques which are equally effective. As with most livestock alpacas require injections from time to time but there are no medications in the UK which are licensed for use in alpacas.

### Please consult your veterinarian.

These procedures must be done correctly to prevent:

- Poor absorption.
- Failure to be effective.
- Risk of infection.
- Accidental human injection.

### Preparing for the injection

Preparation for giving injections should be carefully planned to minimise stress to both the animal and the handlers. First ensure that the drug is the correct one, read the label and follow the instructions which will include:

- Dosage and administration technique.
- Expiry date.
- Warnings and contraindications.
- Handling and storage instructions.

### Technique for preparing the medication

- Wash hands before starting and use sterile equipment.
- Make note of the batch number on the bottle used (if multiple bottles – make a note of the specific batch number for each animal) in case of any issues.
- Use a separate needle for each injection wherever possible.
- Select the smallest gauge needle that can still handle the volume and viscosity of the product. Needles are colour coded for gauge. The higher the size number, the finer the bore/gauge of the needle.
- Shake product regularly to ensure proper suspension in the container.
- Do not mix products.
- Only insert sterile needles into the bottle. If multiple injections are required, leave a needle in the bottle and use a separate one for the injections.
- Remove dispensing needle before storage.
- Inject air into the bottle before withdrawing the drug. This equalises the pressure.

- After withdrawing drug, hold the syringe and needle up and tap to move air bubbles up.
- Push plunger carefully to remove any air.

## **Routes of administration**

There are four main routes of administration of drugs by injection in the alpaca. These are:

### **1. Intravenous (IV)**

Should only be administered by veterinarians. Reasons for IV may include the taking of blood for laboratory examination, administration of anaesthetic agents, and blood or plasma transfusions.

### **2. Intraperitoneal (IP)**

Should only be administered by veterinarians. This method is sometimes used for the administration of plasma to the newborn cria.

### **3. Intramuscular (IM)**

A common method used by breeders for the administration of several drugs e.g. antibiotics, vitamins etc.

### **4. Subcutaneous (SC)**

Probably the most common method used by breeders for the administration of drugs e.g. parasite control etc.

## **Injection techniques**

The method of administering the injection will be stated on the bottle or in the accompanying literature and must be followed. In both cases it is preferable to inject when the animals are dry to reduce the chance of introducing foreign matter/bacteria.

**Intramuscular (IM)** – See next page Figure 1 Use a needle long enough to penetrate the skin and fat into the muscle. Make sure needle is perpendicular to the body.

Pull back slightly on the plunger before injecting to make sure you are not in a blood vessel. Inject slowly and gently massage the area when the needle is withdrawn.

**Subcutaneous (SC)** – See next page Figure 2 Use a narrow gauge needle but appropriate for the agent being administered.

Lift the skin and inject into the 'tent' at an angle of 30 degrees to the body. (This technique can be difficult if the animal is in full fleece), or hold the syringe at a 40 degree angle to the skin whilst injecting, alternatively some breeders find that cutting the end off the needle guard and allowing the needle to protrude only a few millimetres acts as a depth gauge.

NB cut the needle guard only – do not attempt to cut the needle!

When injecting SC pull back on the plunger once you have inserted the needle – there should be resistance – if you get no resistance you have probably gone through the 'tent' and out the other side, if you get blood in the syringe you are in a blood vessel and you should remove & replace the syringe and try again in a different location at least 1 inch away from the initial injection point (failure to move far enough away can cause leakage of the drug etc. out through the first 'hole' in the skin. After administering check fleece is dry – wet fleece may indicate the needle has been pushed through both sides of the 'tent' and the agent dispensed into the fleece on the other side. If the animal moves mid injection such that the needle is withdrawn from the skin complete the injection at least 1 inch away from the original site to ensure there is no leakage.

### **On completion**

Following the administration of any drugs:

Maintain permanent records for each animal which should include:

- Date of administration.
- Product name.
- Dosage.

Dispose of needles responsibly eg.in sharps bin. Wash hands and equipment. Monitor animal's response for any adverse reaction.

figure 1 : Recommended sites for administration of Intramuscular Injections

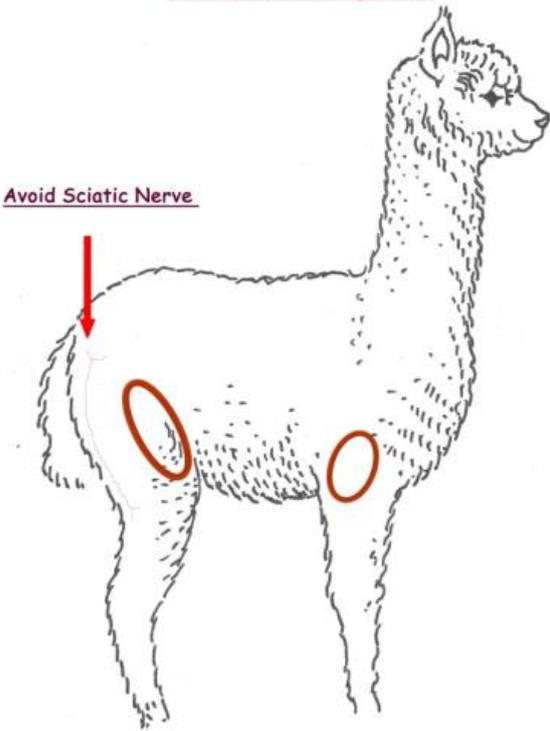
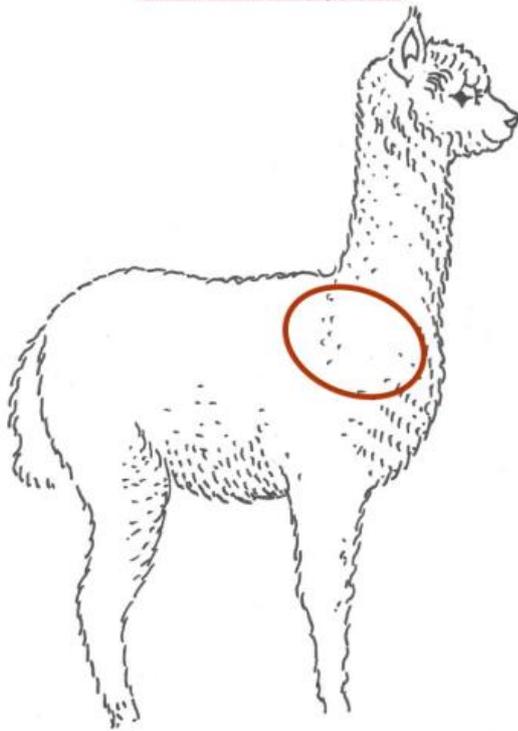


figure 2 : Recommended site for administration of Subcutaneous Injections



## Alpaca Fact Sheet – CHAPTER 8- Control of sheep ticks

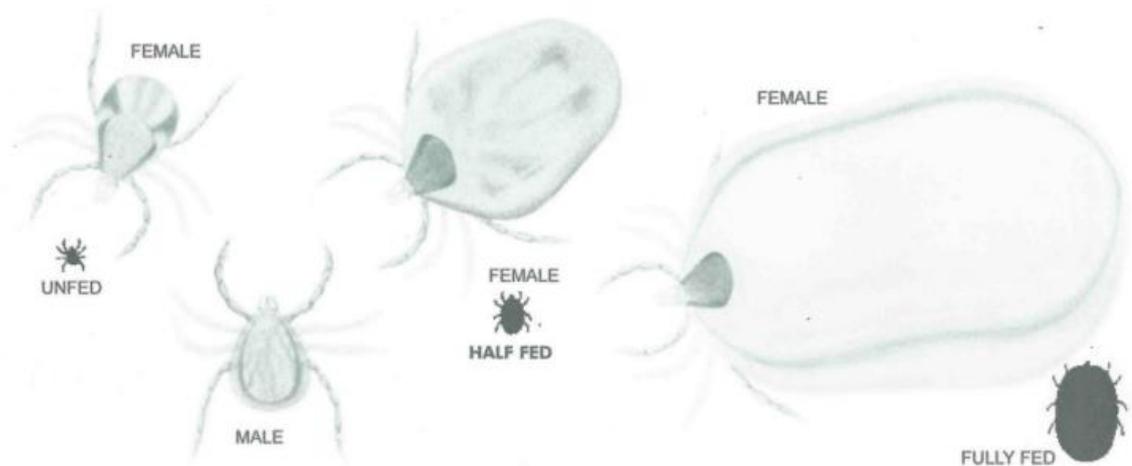
The sheep tick (*Ixodes ricinus*) is found throughout the UK but is more common on moors and heath land. It has two nymph stages which normally are spent on smaller animals before the adult bites the alpaca. The presence of ticks on alpacas can be difficult to ascertain due to the fleece coverage – they may be seen (or possibly felt) if present on the nose, eyes, ears or other areas with less fibre; or possibly seen on the body at shearing time.

The tick can cause four conditions;

- It can cause anaemia and debility from blood ingestion
- It can spread diseases e.g. Babesiosis and louping ill
- It can cause a severe infection called Tick Pyaemia
- It can cause local abscessation

Moxidectin injections can be used for tick control.

There are special tick removal ‘tools’ for dogs and cats which may be useful on alpacas. When removing a tick it is important to not leave the head in the animal as this can lead to infection/abscess.



## **Alpaca Fact Sheet – CHAPTER 9- Mineral and Vitamin Supplements**

The main vitamin to consider in alpaca supplementation is Vitamin D and the main mineral is Selenium. Both are responsible for significant pathology when deficient and both are able to induce severe toxic signs if given at too high dosage. Vitamin D is available both as injectable and in the form of a paste. Obtaining injectable vitamin D may be difficult owners should contact their veterinary surgeon

### **Vitamin D**

Vitamin D is essential for bone metabolism, amongst other things. Therefore growing animals have high vitamin D requirements. One of its main effects is to enhance calcium absorption from the diet. It seems that alpacas have higher vitamin D requirements compared to Ruminants, and this may be due to them being adapted to very high UV exposure in their native environment, as UV exposure is necessary for activation of vitamin D in the skin (transformation of a cholesterol derivative into vitamin D3).

As a result, vitamin D requirements are especially high for:

- Young growing animals (note that milk is essentially devoid of vitamin D).
- Animals with darker skin or heavy coat (blocking UV light).
- Animals not sufficiently exposed to UV light (i.e in northern latitudes or kept indoors for long periods).

The classically recommended dose rate for cria is 1,000-2,000 international units (IU) per kg bodyweight by subcutaneous injection twice at 6 week interval, during the winter months.

The form of vitamin D generally used in supplementation is vitamin D3 or 25-hydroxycholecalciferol. 1,000 IU of vitamin D corresponds to 25 µg. Normal values in alpaca plasma are reported as being above 25 to 30 nmol/L vitamin D3.<sup>2</sup>

Vitamin D deficiency in growing animals leads to a bone condition called rickets. However massive doses of vitamin D can be toxic and result in the following signs:

- Calcium deposits within blood vessels such as the aorta and carotids.
- Calcium deposits on adrenals, stomach wall and parathyroids.
- Reduced growth, hyperphosphataemia, weight loss, anorexia, debilitation.

### **Selenium**

Selenium deficiency is responsible for 'white muscle disease' in young animals (well documented in lambs) and for infertility in adults, especially females.

Selenium supplementation should be implemented carefully as too much selenium can lead to severe problems including sudden death in its acute form or abnormal nail and wool growth in its chronic form.

As the difference between the therapeutic/preventative dose and the toxic dose is narrow, it is recommended to check the selenium status of your animals before implementing a supplementation regimen in consultation with your veterinarian.

Normal values in alpaca blood are reported as being above 0.5 to 0.7µmol/L selenium.<sup>2</sup>

### **Copper:**

This mineral is rarely deficient per se but certain areas in the UK, particularly reclaimed marshland may have high levels of Molybdenum or Sulphur which interfere with the uptake of copper. However excess copper is very toxic and so any supplementation should be carried out under veterinary supervision. This may include blood testing for copper levels.

In the UK vitamins and minerals are most often given in the form of a drench (minerals), a 'lick' (minerals), a paste or gel (Vitamins) or by injection (Vitamins). A level of vitamins and minerals may also be present in the feeds esp those formulated for camelids so it is wise to check and calculate the additional mineral and vitamins accordingly. If in doubt consult your feed supplier who will have the information and often access to a nutritionist who should be able to assist.

When administering drenches and gels one must take care not to damage the soft tissue in the mouth or inadvertently introduce the drench or gel into the airway/windpipe.

Administration of injectable vitamins should be done in conjunction with a suitably experienced camelid vet in order to ensure correct placement.

## **Alpaca Fact Sheet – CHAPTER 10- Trimming Toenails**

Alpacas have soft padded feet with two toenails on each foot and a soft leathery pad. Most alpacas kept in the UK are grazed on ground which can differ significantly from that of their natural habitat.

Depending on the environment the toenails require regular attention at least three to four times a year and at shearing. However, nails will grow at different rates on different animals and in particular the toenails of lighter coloured animals seem to grow at a faster rate and are often thicker than the darker coloured animals. Nails left unattended can twist and deform the foot causing lameness, restriction of mobility and ability to move to graze, and ultimately weight loss.

Trimming technique Animals accustomed to being handled and having their toes trimmed are relatively easy to manage. Firm but gentle restraint is far more effective than force and mechanical restraint (e.g. a crush) and is less stressful for the animal. One person gently restrains the animal with the second person carefully trimming the nails. Using a pair of straight edged cutters (foot rot shears, hoof snips or straight edge secateurs) the second person lifts the foot and trims the nails level with the soft pad. Care must be exercised to prevent cutting too deeply and causing bleeding. If this occurs, spraying with an antiseptic solution will minimize the risk of infection



## Alpaca Fact Sheet – CHAPTER 11- Alpacas and Parasites

Alpacas are susceptible to cattle, goat and sheep Bowel worms and Flukes, Coccidia and other parasites.

Some of the most common to cause problems in the UK are:

- Barber's Pole Worm (*Haemonchus contortus*)
- Nematodirus Battus • Small Brown Stomach Worm (*Ostertagia ostertagi*)
- Black Scour Worm (*Trichostrongylus* spp)
- Liver Fluke (*Fasciola hepatica*)
- *Eimeria macusaniensis* (Large Coccidia)
- Mites (Chorioptic, Sarcoptic & Psoroptic)

Bowel Worm eggs are passed out in the faeces and can remain in the paddock for long periods, until warm moist conditions are present and they begin to hatch into infective larvae. Alpacas with a bowel worm burden can be passing eggs in their faeces over winter with the eggs not hatching due to the cold, only to have millions of eggs begin hatching when the warm spring days arrive. This sudden arrival in the paddock of millions of larvae can result in sudden and severe bowel worm infestations with severe consequences.

### Effects of Bowel Worms

Bowel Worms are damaging alpacas whenever they are active. They affect alpacas in different ways and can cause tissue damage, the removal of protein, depression of appetite and scouring. Barber's Pole Bowel Worms can also cause severe anaemia which can sometimes be seen in the colour of membranes (eyes and gums). A relatively simple and quick test for anemia is to check against a Famacha scoring card.

Tissue damage may be temporary or permanent. To repair the tissues requires protein, carbohydrates and structural elements that need to be diverted away from production or growth.

Removal of protein occurs when round worms penetrate the lining of the gut, for example to seek a blood vessel to feed from. They remove protein from the bloodstream or the gut lining or ingested feedstuff for their own metabolism. Barber's Pole (*Haemonchus contortus*) is a blood-sucker and is able to remove blood and red blood cells resulting in anaemia. A lack of protein will affect fleece production, muscle growth, milk production, ovum and sperm production, metabolism, development and maintenance of immunity.

The depression of the appetite can vary from small reductions that are unnoticed but affect the production of the animal, to large reductions up to half the normal daily intake. Severe untreated reductions in appetite will result in the wasting and eventual death of the animal.

Worms in the small intestine will cause the intestine to be irritated and produce excessive mucus while being excessively stimulated, with the passage of food too quickly resulting in scouring. The scouring will result in reduced nutrient uptake from the food consumed thus affecting all areas of growth and breeding.

### **Effects of Liver Flukes**

Liver fluke can affect alpacas in two ways: Acute which is rare and Chronic which is common in so called fluke areas. The acute form causes sudden death and fluke eggs will not be seen in the faeces. Eggs will only be seen in the chronic form which will cause weight-loss, ill-thrift and eventual death. Treatment should be discussed with your veterinary surgeon. The acute form must be treated with a product which is affective against the migrating larvae as well as against adults.

Anthelmintic resistance Anthelmintic resistance is common in sheep and an increasing problem in alpacas. This occurs when some of the worms are able to survive the chemical used in the anthelmintic. This can result in persistent worms within the herd causing sub clinical production losses or in the extreme severe production losses and deaths. Overuses of the same anthelmintic or under dosing are two common causes of anthelmintic resistance occurring.

Bringing new animals into a herd is another very common way of introducing anthelmintic resistant worms. It is highly recommended to test, dose, then test again whilst all new arrivals to property are held in a quarantine area.

To prevent anthelmintic resistance occurring, grazing management strategies, faecal egg count monitoring, alternating the broad spectrum anthelmintics and advice from your veterinarian on local issues should all be employed.

Permissible levels of egg counts will vary depending on the age/condition of the animal and the type of worm. As a general rule it is common to treat alpacas with far lower egg counts than would normally be considered an issue with other livestock. Consultation with a veterinarian experienced with camelids to produce a treatment regime tailored for your own situation is highly recommended.

### **At risk animals**

Healthy adult alpacas with strong immune systems are generally able to cope with some larvae in the paddock and hence worms in the gut, assisted by alpacas using communal dung piles. When the health of the alpaca is below optimum the immune system will not be able to cope with the larvae and hence worms ingested from the paddock. Late pregnant and post-partum females are under stress and hence their immune systems are compromised and are at risk of a worm infestation. Cria have immature immune systems and are at risk of picking up worms and other parasites. Rather than treating cria, grazing

them on clean paddocks is preferred unless severe worm burdens are present. Most weanlings suffer some separation stress and are susceptible hence they should be treated. Consult with your veterinarian regarding appropriate anthelmintics and management practices for your farm.

## Products

There are currently no treatment products available that are licensed for use in Camelids, however their use under the direction of a veterinarian is permissible. Many sheep anthelmintics are in use to treat worms in camelids with good success. Treatments fall into different categories: broad spectrum, narrow spectrum, long acting and short acting. Broad spectrum, short acting is the most common in regular use. Consult with your veterinarian prior to using anthelmintics to determine the most appropriate for your farm.

Some common anthelmintics used with alpacas include:

<b>Trade Name</b>	<b>Component</b>	<b>Family</b>	<b>Spectrum</b>	<b>Duration</b>	<b>Target</b>
Ivomec	Ivermectin	Macrocyclic Lactones (ML)	Broad	Short acting	Round Worms, Lung Worms, nasal bots.
Dectomax	Doramectin derivative of Ivermectin		"	"	"
Fasinex	triclabendazole		Narrow	Short Acting	Liver Fluke (3 stages)
Vecoxan	Diclazuril		Broad	Short Acting	Coccidia
Baycox	Toltrazuril				Coccidia (esp. E.Mac)
Cydectin	Moxidectin	Macrocyclic Lactones (ML)	Broad	Long acting on	parasites as listed above; but particularly for Barber's Pole and Brown Stomach Worms. Not good on bots.
Panacur	Fenbendazole	Benzimidazole (BZ)	Broad	Short acting.	Round Worms, Lung Worms, Tape Worms.
Virbamec	Abamectin	Macrocyclic Lactones (ML)	Broad	Short acting.	Round Worms, Lung Worms. More potent than Ivermectin.

## **Alpaca Fact Sheet – CHAPTER 12- Shearing**

### **Getting organised ahead of to make the most of your fibre**

This factsheet will outline aspects to consider in the weeks before shearing for the best results

- Shearing should take place once a year primarily for welfare reasons, fibre harvest is a secondary concern.
- Book your shearer early in the year, especially if it is your first year. Dates may be confirmed nearer the time.
- Check with your shearer about particular requirements such as power, anchor points and shelter etc
- Let your shearer know if you have undercover facilities to shear during wet weather.
- Ideally you should have somewhere dry to house your alpacas the day/night before and be able to provide a dry undercover area for shearing to take place. If not you may have to rebook your shearer for when the weather has improved.

### **Paddock Management and housing from a fibre perspective**

Vegetable matter (VM) in fleeces is always undesirable and anything you can do to minimise this will produce a more saleable fleece and save you time in the long term.

In the weeks before shearing

- Minimise seed bearing weeds as seeds invariably have hooks and are difficult to remove from fleece.
- Avoid topping or mowing to minimise grass getting stuck in fleece.
- Remove hedge cuttings and cut out brambles from field edges.
- Place hay racks low to (but not on) the ground to prevent cria getting covered in seeds.
- Don't place hay on the ground and pick up loose, uneaten hay.
- Avoid bedding material such as wood shavings, saw dust and crushed stone.

### **Equipment list for shearing day**

It is recommended you check with your providers regarding any particular requirements beforehand.

- Mains power and extension leads. Some shearers do have battery powered systems
- Anchor points for shearing ropes
- Cleaning and disinfectant solutions made up to the correct dilution

- Floor sweeping brush to sweep up fleece between animals
- Towels and absorbent paper such as kitchen roll for spit and urine
- Small sealable bags or A5 envelopes for mid side fleece samples (only two staples of fibre required)
- Large plastic or paper sheets for laying out blanket fleece as it is shorn
- Large plastic bags or paper sacks for storing skirted blanket fleece
- Additional bags for neck fibre which is typically shorter in length
- Bags for collecting thirds which should be clean and dry
- Permanent marker pens for labelling bags
- Scales to weigh the fleeces for animal record purposes
- Labels for identifying fleeces which are laid flat ready for skirting
- Husbandry record sheets for making notes throughout the shearing day
- Toe nail trimmers - your shearer may provide these
- Rubbish bag for toe nails, paper towels etc
- Antibiotic spray / super glue, first aid kit

For owners with many animals, helpers are always appreciated and often necessary to assist with the follow tasks.

- To move animals to the penning area and turn them out afterwards
- To bring alpacas from the holding pen to the shearing mat
- Sweeping between each animal
- Collect and labelling fleeces of each grades
- Labelling fibre samples
- Carrying blankets away for skirting if shorn flat
- Providing refreshments
- It is customary for routine vaccinations and husbandry tasks to be completed during shearing but we are concentrating on fibre for the purpose of these notes

Additional items

- Rubber matting and knee pads for added comfort
- Skirting fleeces should be done at the time of shearing with organisation and skilled help

### **The day of shearing**

Top tip: If your alpacas can be kept inside the night before, off the grass, they are less likely to urinate during shearing. Your alpacas must be dry for being sheared.

Your alpacas should have access to fresh water and hay all day if the shearing queue is a long one. Ideally keep them in their usual groups to minimise stress (and potential sweating)

If shearing early or late in the season, they will need shelter from very hot weather or protection from the cold. Alpacas are acclimatised to the UK however extremes of temperature post shearing can kill. Alpaca coats should be at hand for vulnerable animals who may well feel the cold having had their fibre sheared off.

Discuss and agree with your shearer what your expectations are before you get started; colour order, appearance, mid side samples, top knots, toes, teeth, who's doing what etc.

Ensure all equipment coming onto your farm is disinfected – either by your shearer or by yourselves ahead of shearing. (Clean and disinfect all equipment coming onto your farm.)

Have a list of your animals prepared and know which fleeces are likely to be for show, production, thirds etc. Taking fibre samples ahead of shearing helps with knowing what you are likely to do with each fleece.

Helen Macdonald  
BAS Fibre committee

## Alpaca Fact Sheet - CHAPTER 13- Fitting a Head Collar Correctly

### The Importance of Correct Head Collar Fit in Alpacas

Head collar fit in alpacas can have major implications for the feeling of health and well-being of your alpacas for two reasons:

- 1) Alpacas are semi-obligate nasal breathers. This means they can only survive by breathing through their mouths for a short period of time (and even this has been shown to being like trying to drink a thick milkshake through a small straw).
- 2) When looking at their skull, the bone which forms the nose only extends a short way in front of the eye, beyond which it is cartilage.



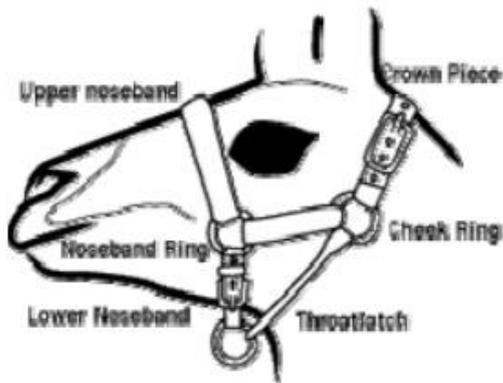
For this reason, alpacas with an incorrectly fitting head collar can feel that they are either being or about to be suffocated. This can cause behaviour that appears almost “brainless” in an otherwise very calm alpaca. Haltering issues such as these can easily be solved by checking and correcting (if necessary) the fit of your halter.

One reason for problems with halter fit is the variety of head shapes and sizes in alpacas. Of particular importance is the variation in length of the part of the nose that is bone. Some alpacas have very short heads and the heads of crias that have a lot of growing to do are sometimes not big enough to safely fit a halter on. Even with adults, there is some variation in the length of the bone of the nose in front of the eye. In a weanling, for example, the nose bone may be only about an inch or so in length, and even less for young crias. **It is very important to check, by gently feeling the top of your alpaca’s nose – forward of the eye – if there is any doubt.**

Another cause of problems is the adjustability of your halter, and whether it can be safely and comfortably fitted to your alpaca – and whether it will stay adjusted in this way, no matter what.

A correctly fitting halter sits in such a way that the nose band remains permanently on the bony part of the nose. It should be fitted so that it crosses the nose just in front of the eye – see correct halter fit below. The halter may appear that it is fitting too close to the eye, but this really is the best

position. Tightening up the nose band so that there is room to fit two fingers vertically under the jawbone (in an adult) will ensure a snug fit. The nose band must not be able to slip off the bone and onto the soft tissue (or even be pulled forward if the alpaca scratches its face) under any circumstances. This would cause your alpaca to panic. The alpaca must be comfortable if the halter needs to be on for a long time (without rubbing off fleece or skin) and it should allow the alpaca to eat, drink, ruminant or even yawn – everything it would normally expect to do.



### Types of halter

**It is worth noting that the size difference between adult alpacas and crias means that it is not the case that one size fits all.**

**A) Fixed Nose Band Head Collar:** With this halter type, the nose band cannot be adjusted. If the nose band is not large enough to slide up so that it fits snugly in front of the eye, then the nose band may sit too far down the nose. This will be of concern to the alpaca which may be able to think of little else than the pressure of the nose band over the soft tissue of its nose, or worse still its nostrils, affecting its breathing. While the crown piece can be adjusted, it still may not allow a nose band which is too small to sit in the correct position. Therefore it may simply clamp the alpaca's mouth shut, which could also stop it from eating, drinking, ruminating – and breathing!

**B) X-Style Halter:** With this halter type, the crown piece and nose band form a continuous loop & neither can be adjusted independently of the other. In this way, by loosening the crown piece, the nose band is also slackened, which can allow the nose band to slip forward and become unsafe. Without a variety of sizes available, it is difficult to obtain the correct fit, particularly for an alpaca which is being halter trained to walk on a halter for the first time. This can be inconvenient. However, this type of halter can fit a wide variety of head sizes and shapes.

**C) Adjustable Halter:** In this case, both the nose band and crown piece can be adjusted independently. A short cheek piece will prevent the nose band from slipping forwards, especially when in conjunction with the throat latch and nose band travelling through the same ring under the chin. If fitted with buckles, it is also more likely to remain in the original position. The adjustable type of halter seems to offer the greatest versatility in fitting alpacas of all head types – with both ease of fitting and safety paramount.

### Fitting and adjusting a halter

- Adjust the nose band to its widest setting before putting it on your alpaca. In this way, it can slide up the nose to just in front of the eye, where it will be safest.
- Tighten the crown piece high up behind the ears – this will give maximum control and contact while you are leading your alpaca. Bear in mind that the halter has to stay high on the nose – no matter what.
- Take any slack out of the nose band, allowing enough room for normal activity such as feeding. NB A larger alpaca will need more slack around the jaw. Generally, if you can get your index and middle finger between the jaw and the nose band, an adult should be comfortable. Less room is needed for a cria to ruminate, etc.
- If the alpaca is in full fleece, the fleece will compress, and the crown piece will almost certainly need tightening in a few minutes.
- In hot weather, the material of certain halters can expand slightly (nylon can expand by 30% of its length), further necessitating adjustment after a few minutes.

**In an unsupervised situation – such as in the field – it is not advisable to leave the halter on your alpaca.**

Alpacas are intelligent creatures and can remember the experience of a badly fitting halter. This can make them reluctant to be haltered again and can cause behavioural problems such as: cushing, bolting, rearing and/or panicking when the halter is put on. For all alpacas (and especially crias) beginning their handling training, it is imperative to:

- 1) have a correctly fitting halter, and
- 2) to take the time to fit the halter correctly.

This will allow your alpaca to become quicker to train and easier to handle.

Please remember that even the correct size halter becomes dangerous and useless if not adjusted correctly.

*(Authored by Vicki Agar with help from Marty McGee Bennett 2008)*