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CURRENT TOPIC

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Llamas or alpacas can be a good addition to the farm or ranch—an alternative livestock enterprise that fits well into a diversified farming operation. Marginal pastureland, not prime farmland, is suitable for raising llamas and alpacas with some supplemental feeding. There are currently over 200,000 llamas and over 20,000 alpacas in North America (1, 2).

There are four types of llama (the genus name is spelled with one 'l'). They are the llama, the alpaca, the guanaco, and the vicuna. All are members of the *Camelidae* family. Modified ruminants with a three-compartment stomach, they have cloven hooves and chew a cud like sheep and cattle. The llama and alpaca have been domesticated in South America for many centuries. The llama, the largest of the types, is used as a beast of burden, as a fiber source, and as a meat source in South America. The alpaca is used primarily for fiber production, but is also used as a meat source in South America. The guanaco and vicuna are wild animals that are protected from hunting in South America.

Before starting a llama or alpaca enterprise, it is advisable to visit as many existing llama or alpaca operations as possible, to pick up as many ideas and options as possible. Remember that your llama or alpaca operation will not be exactly like anyone else's, so getting varied opinions from others will help in designing for your particular needs.

One major drawback is that when starting to raise llamas or especially alpacas, the initial capital investment in breeding stock is fairly substantial. Llama or alpaca farming is considered a high-risk enterprise by banks and other agencies. A large owner investment is usually needed to obtain a loan.

There may be some tax advantages for breeders holding animals for over five years. For more information on these tax advantages, see <www.ctalpacas.com/invest.html> or discuss it with a tax accountant.

Regulations for Llamas and Alpacas

Before considering a llama or alpaca operation, find out whether any permits or licenses are required for raising llamas or alpacas in your state. The USDA Animal Plant Health Inspection Service has a website <www.aphis.usda.gov/vs/sregs/> listing U.S. states' and territories' import regulations, along with state contacts and state veterinarians' names, addresses, and phone numbers. A listing of APHIS Veterinary Services Area Offices for each state is enclosed for the benefit of those without web access.

The property where the llamas or alpacas will reside must be zoned for livestock. Check with your zoning authority before you purchase any animals. Transporting llamas or alpacas across state lines requires considerable paperwork, testing, and vaccinations. You should

consult with your veterinarian or your state veterinary office for rules and requirements on interstate transport of llamas and alpacas.

Llamas

Many prominent people, including William Randolph Hearst, imported llamas to the U.S. in the late 1800s and early 1900s. Since the mid-1970s, the animal has gained popularity with hobbyists.

Adult llamas' average weight can range from about 250 to 450 pounds. Their height at the shoulder is from 40 to 47 inches and at the head from 5 1/2 to over 6 feet tall. Llamas' lifespans can range from 15 to over 25 years. Llamas come in a large number of colors – various shades of brown, black, white, gray, red, and beige. They range from one solid color, to various patterns and spots.

The llama price range can vary from \$200 to \$1000-plus for males and \$400 to \$3,500-plus for females (3). This price variance depends upon the age, sex of the animal (males usually cost less), quality of breeding or show stock, and location of birth or bloodlines (recent imports sell at a much higher price than domestic llamas because of improved genetic potential). Llama owners need to consider which of the creature's multiple uses will fit with their goals. Llama owners who plan to market breeding llamas will probably need to get pedigreed animals. For more information on pedigrees and registering llamas, contact the International Llama Association (4) or the International Llama Registry (5).

Alpacas

The alpaca was first imported to the United States in 1983. Ninety-nine percent of all alpacas reside in South America (6). There are two types of alpacas, the huacaya and the suri.

Huacaya is the most common variety of alpaca. The fibre of huacaya alpacas grows perpendicular to the body. It forms a lock structure that surrounds the body with fibre, giving the animal a fluffy spongy appearance. Approximately 90 per cent of the world's alpaca are of the huacaya breed.

Suri is a less common variety of alpaca. The fibre of suri alpacas grows parallel to the body and hangs down the sides of the body in curly ringlets. Suri fibre doesn't stand out from the body, but parts along the backbone and hangs along the sides giving the animal a slender, sleek look. Approximately 10 per cent of the world's alpaca are of the suri breed (2).

Adult alpacas' average weight is about half that of an adult llama, or about 100 to 175 pounds. Their height at the shoulders is about 30 to 36 inches. The alpaca's lifespan is similar to that of a llama, averaging about 15 to 25 years. There are twenty-two natural basic colors of alpacas ranging from black to white – including many different browns, grays, tans, and creams. Alpacas tend to be more a single, uniform color than llamas, but occasionally will have white markings on the face, neck, or legs.

The price range for alpacas, like llamas, depends on age, quality, and sex. Prices can range from \$10,000 to \$30,000-plus for good-quality females and from \$1,000 for a gelding (used for companions and fiber animals) to as much as \$60,000 for a prime herdsire (7). However,

because of the small number of alpacas in North America, the main market for alpacas will probably focus on breeding stock for some time. Alpaca producers getting into marketing of breeding stock should purchase registered and blood-typed stock. Contact the Alpaca Owners and Breeders Association (8) or the International Llama Registry (5) for more information on registered alpacas.

Marketing

Llamas and alpacas can provide only a couple sources of income: fiber and live sales.

Llamas are usually shorn annually and have a double-hair coat consisting of a fine wool fiber intermingled with stiff guard hairs. The guard hairs can be left in when making rugs and ropes. But before spinners and weavers can use the 4 to 7-inch-long llama fiber for knitting and weaving other products, the guard hairs have to be removed.

Alpacas are raised to be fiber-producing animals. They are usually shorn annually and produce about 5 to 8 pounds of fleece a year (2). Because alpacas have been bred as fiber animals, they should naturally not have any guard hairs mixed in their fiber. The price for the fiber varies according to condition and quality, but can bring from \$20 to \$40 per pound for raw fleece to \$160 per pound for finished yarn (2). *(Note that dollar amounts in this reference are stated in fluctuating Canadian dollars, about 66 cents to the U.S. dollar).* Some positive aspects of alpaca fiber are its softness, uniform fineness, and strength, while some negative aspects are its low elasticity, attractiveness to moths, and potential of being harmed by sunlight (9). However, because the fiber is hollow it provides warmth despite its light weight. Spinners, weavers, and knitters use the fiber for fine textiles. The sheared fiber from one alpaca is usually enough to make four to six sweaters (6). Since neither alpacas nor llamas produce lanolin in their fiber, the fiber does not need to be processed before it can be spun.

Live-sale uses for llamas can include breeding stock, fiber-producing stock, pack animals, cart pulling animals, golf caddies, companion pets, animals for pet therapy programs for nursing homes and schools, and guardians for sheep or goats. Live-sale uses for alpacas are mainly for breeding stock and fiber-producing stock.

Llamas and alpacas are easy to train. Accepting a halter and lead, loading into or out of a vehicle, pulling a cart, or carrying a pack, a lightweight rider, or golf bags, are easily taught with just a few repetitions. Be careful not to leave halters on all the time, and don't tie animals to any stationary object, such as a tree or post. Llamas and alpacas can break their necks trying to get away or by jerking their heads. If you have to tie the animal up and leave it unattended, always use a bungee or other elastic extension (1).

The use of llamas as pack animals is discussed in *Llama Facts for New Owners*. It states:

The llamas' centuries-old ability as a beast of burden has been rediscovered by hikers, hunters and forest work crews in North America. Their hardiness, surefootedness and common sense make them an excellent pack animal and trail companion. They are quiet, unobtrusive and so easy to manage that children love to lead them. Their great agility allows them to negotiate terrain that would be difficult or impossible for traditional pack animals, and because of their padded feet and ability to browse, they have minimal impact on the backcountry. When confronted with other pack stock, unexpected situations, and sudden movement

or noises, llamas remain calm and unruffled. Males are most commonly used for packing, and depending on maturity, weight and condition, will tote 50–120 pound packs 6–15 miles a day. An animal's performance is always relative to training, fitness and trail condition. A variety of custom packs and halters are available for llama use (10).

Guard llamas can be an alternative to guard dogs or donkeys for use as predator control with sheep and other livestock – such as geese, ducks, deer, and cattle (11). Most guard llamas are geldings. Female llamas are usually kept for breeding purposes, though the females also are good at guarding. Not all llamas have the correct characteristics to become good guard animals. More information on using guard llamas is available on several of the web-sites listed below in **Further Resources: Web-sites**, or contact ATTRA for additional information on using llamas for predator control.

A consideration for both the llama and alpaca "industries" is that the driving force for current high prices is primarily demand for breeding stock. There are few, if any, alternative markets for llamas or alpacas that would continue the high price of these animals if the breeding market decreases. While llamas and alpacas are used for meat in South America, a viable meat market in the United States is unlikely. However, the article "Llama Raising" discusses this possible marketing option.

After 15 years of breeding and selling llamas largely for pets, Gene and Jan Wells are considering the potential of utilizing their excess animals for food, as is done in South America. "Llamas are so intelligent and interactive with humans that people think you shouldn't eat them," says Jan. The Welles point out that the popularity of raising llamas in the United States has resulted in a surplus of males not suitable for breeding. They think there is a need to find uses for these excess males.

"They are only used for wool, pets, guard animals, or pulling carts, and you can only use so many for that. What will we do with the rest?" asks Gene. Llama meat is mild and tasty, but the Welles are meeting resistance as they try to persuade other breeders to consider the possibility of male llamas as food. "I think we need to develop a market for it by finding restaurants that might want to serve llama meat," Jan says. "But everyone's entitled to their own opinion." (3)

The enclosed *Commercial Alpaca Industry* is an excellent publication that focuses on many key production and marketing issues, as well as providing budgets for start-up costs and a cash flow projection. It is also available at <www.agric.gov.ab.ca/agdex/400/491_830-1.pdf>. It should be remembered that dollar amounts are stated in fluctuating Canadian dollars, about 66 cents to the U.S. dollar.

The enclosed publication *Llama* has a sample budget created in 1993 that is designed for a 15-head female llama herd for a pet market. This publication is also available at <<http://ndsuent.nodak.edu/extpubs/alt-ag/llama.htm>>.

These budgets were created to aid in evaluating various alternative business enterprises. The budgets are designed to present a workable combination of inputs that will produce a given output. This combination of inputs probably doesn't represent any given farm, and the actual costs for inputs for every farm is likely different. While there may be hundreds of combinations of inputs for feed, health, labor, etc., the budgets only give one combination. Different production practices, such as improved pasture yield and quality, as well as various marketing opportunities, can cause the producer's actual budget to vary greatly.

A consideration for many llama or alpaca farmers is that llama or alpaca marketing opportunities are not readily available in their locations. Developing markets for their llama or alpaca operation can take a large amount of the operator's time and energy, and requires good "people skills" and a business plan.

Marketing of llamas and alpacas on the Internet is an option, but it does have both advantages and challenges that need to be considered. Washington State University has a publication (enclosed) and website that offer resources for farmers wanting to market their products. Both provide information on the pros and cons of Internet marketing, tips for success, links to other farmers' sites, resource lists for more information, and a glossary of Internet terms. The site location is <<http://king.wsu.edu/Ag/internetmarketing.htm>>.

Producers considering marketing over the Internet should also check out the Access Minnesota Main Street website. The website has an Electronic Commerce Curriculum that provides information on: Electronic commerce basics; Finding business information and services online; Exploring E-commerce websites; Creating your website; Promoting your website; Minnesota case studies; Developing your Internet business plan, and much more. For anyone interested in marketing on the Internet, check out the website at <www.extension.umn.edu/mainstreet> or contact Rae Montgomery at (612) 624-2773 (e-mail: rmontgomery@extension.umn.edu).

Nutrition

Llama and alpaca production practices are similar to those for sheep. Llamas and alpacas are adaptive feeders, eating grasses, forbs, shrubs, and trees. They can be kept on a variety of pastures and hay. About 3 to 5 llamas or 5 to 10 alpacas can be grazed per acre, depending on quality of the pasture. A bale of hay will generally feed an adult llama for a week. Because of the animals' high feed conversion, hays with high protein, like alfalfa, are not recommended because the animals can easily become overweight (2). Rotational grazing of llamas and alpacas can help utilize the pasture to a greater extent. Water needs to be accessible at all times. Using pastures to meet most of the nutritional needs of the animals will enhance profitability. Pasture is usually less costly than purchasing supplemental grains and hay.

Related ATTRA Publications

Meeting the Nutritional Needs of Ruminants on Pasture

Sustainable Pasture Management

Rotational Grazing

Introduction to Paddock Design and Fencing-Water Systems for Controlled Grazing

Llama and alpaca owners need to be concerned about poisonous plants located in their pasture or hay area. Some plants can make the animals sick, while others can kill them. Many state Extension offices have publications discussing poisonous plants found in their states. A good list of poisonous plants for the Northwest region of North America can be found at <www.smartt.com/~brianp/planpage.html>, or contact the International Llama Association (4) for information about books on poisonous plants.

During periods of stress, animals should receive supplemental grain, such as small alfalfa pellets, cracked corn, or rolled oats. Be careful if feeding straight pelleted feed because llamas frequently choke on the pellets. If pellets are fed, they should be mixed with a coarse feed, or spread out in a large pan. The producer may also put smooth rocks in the pan to keep the llamas from gobbling the pellets too fast (1). If a rich diet is continuously fed, llamas and alpacas will become fat, causing various reproduction problems varying from poor conception to poor milking. Free access to salt, minerals (with selenium in a selenium-deficient area), and clean water is essential.

Fencing, Handling, and Transport

Most standard 4-foot-high fencing (barbed wire is not recommended because the barbs can injure their prominent eyes) is generally adequate for llamas; however, a 5-foot-high fence is recommended for alpacas. However, remember that the animals are very agile and can jump the standard 4-foot-high fences if they feel they need to do so. Fencing for llamas and especially for alpacas may need to be more substantial to control predators – especially dogs. The publication *Llama Housing & Fencing* comments:

A major threat to llamas are roaming domestic dogs, which have killed and injured many llamas. In some areas peripheral fences must be dog proof. Forty-eight-inch field fence set tight to the ground with one or two smooth wires running above it will usually discourage all but the most determined marauding dogs. Electric fence strung close to the ground or chicken wire partially buried around the outside fence is also an effective deterrent against digging dogs. Gates must also be made secure, as dogs will dig under them (12).

Producers need a small catch pen, a chute, or other safe restraint to catch llamas or alpacas for trimming toenails (see <www.llamapaedia.com/maintenance/toenails.html> for specific step-by-step instruction), administering vaccinations and shots, or handling an injured animal. The publication *Llama Housing & Fencing* states:

A chute built into the corner of a small corral aids the handling of routine health procedures and medical emergencies. Several portable restraint chutes designed especially for llamas have been developed, but a simple chute can be built using sturdy wooden posts and two fence poles for each side. The chute should be about 2 feet by 5.5 feet, with the top pole about 45 inches from the ground, and located so that the llama is accessible from all sides. It need not open at the front, since llamas easily learn to back out. If desired, removable plywood side panels can be wired to the side poles to form solid walls (12).

Transporting llamas and alpacas is less difficult than with most other livestock. The Llamapaedia publication *Transport* explains:

Llamas are unique among livestock in their ability to be **easily transported** in a wide variety of vehicles. They can climb into almost any vehicle, which will accommodate their size. Llamas are transported in trailers specifically designed for llamas, horse trailers, airport buses, school buses, full size buses with an area for llamas, pick-up trucks with cages, vans, mini-vans, and back seats of cars. Any llama, which is halter trained, can be taught to enter any of these transport vehicles (13).

Many of the Further Resources listed at the end of this publication provide excellent information on developing and planning fences and handling areas, and transporting the animals safely.

Shelter and General Management

A three-sided shed or other shelter should be provided for inclement weather. Llamas and alpacas do not adapt well to dark sheds, but prefer shelters with large doors or windows. For a group of five adult llamas accustomed to each other, an open shed should be at least 12 feet by 16 feet, while six mother llamas and crias can fit into a 16 by 16 foot shed. Alpacas are generally about half the size of llamas, so shelter sizes can probably be reduced.

Llamas and alpacas are herd animals and prefer to be with other llamas and alpacas, or with other animals. In *Llama Life*, Jo Ann McGrath states:

Even responsible purchasers, who have listened to responsible owners and bought a pair of llamas, can run into trouble. As long as the two are together...they are content. If you choose to take one of them for a walk, expect the one remaining to become extremely agitated. So agitated that he may jump the fence or do damage to himself in an attempt to join you. Even in herd situations, llamas show concern when one is separated from the group (1).

Llamas and alpacas communicate with each other by ear, body and tail positions, shrill alarm calls, or a humming or low-pitch sound. Spitting among themselves is used to divert annoying suitors, protect themselves from a threat, or to help establish dominance over other animals. Occasionally they may spit at humans by accident, or if they feel threatened by the person.

Alpacas and llamas have a habit of sharing communal dunging areas called dung or potty piles. This trait makes manure cleanup easier and helps reduce the spread of internal parasites. The Llamapedia publication *Communal Dung Piles* comments:

It also means that llamas **can be brought indoors** for parties, nursing homes or handicapped people without the risk of accidents. Dung piles are what make llamas well suited for outdoor activities like packing or golf caddies. They will not randomly go to the bathroom on the trail or the golf course. The golf courses, which allow llama caddies, provide dung piles in a few areas along the course. Clean up becomes much easier at the golf courses and along the pack trails (14).

Even though llama and alpaca dung may be used fresh without "burning" garden plants, the dung is usually composted, then applied to the garden as an excellent fertilizer, or used as mulch. However, because llamas and alpacas will not eat dung-contaminated grass, it is not advisable to spread the dung in areas that the llamas or alpacas are supposed to graze.

Health Concerns

Yearly vaccinations and a regular schedule for deworming are recommended to maintain animal health. It would be advisable to seek a veterinarian's advice or contact breed associations in your area for preventative health suggestions, specific nutritional requirements, or special problems prevalent in your area. Work with your veterinarian to determine what vaccination schedule is necessary to protect your animals from local disease risks. Llama Web <<http://camelid.webis.net/Vet/Location.html>> has a list of veterinarians in the United States who work with llamas and alpacas.

Because llamas and alpacas are from the dry, thin air in the high plains and mountains of South America, heat stress is a concern during a hot, humid day. They should be sheared in the spring and a small wading pool or sprinkler may be needed to help keep them cool. They need shelter from direct sunlight, and air movement is also necessary. During the heat of summer when the heat index is 120 or more and an animal is breathing with an open mouth, is drooling, walks with a stiffness due to muscle soreness, or is unwilling to get up, assume it is in heat stress and cool it down immediately. Hosing the llama all over, immersing the animal in a pond or trough, or placing ice packs under the belly, armpits, and thighs can cool them down sufficiently until the veterinarian arrives.

Llamas and alpacas raised where white-tailed deer are found have the possibility of becoming infected with the parasite *Parelaphostrongylus tenuis* or meningeal worm. The white-tailed deer is a natural host for the parasite, which has a fairly complex life cycle. Health problems occur when other species ingest the parasite and the meningeal worms migrate to the central nervous system and cause paralysis in the host animal. For more specific information on this parasite and possible ways to prevent infection, see the enclosure *Meningeal Worm* or the web version at <www.llamapaedia.com/problems/meningeal.html>.

Before anyone (new or established llama or alpaca producer) buys a llama or alpaca, the buyer should check out the seller's herd and make sure the animals all look healthy, well fed, and well treated. The buyer must ask questions of the seller and learn as much as possible about the animal's health, diseases, and parasites. The buyer needs to ask about health records, breeding programs, origin of the seller's stock, proof of health tests, and status of the herd, as well as other questions needed to determine that the seller is knowledgeable.

A prospective llama breeding stock buyer particularly needs to ask whether choanal atresia has occurred in the seller's herd. Choanal atresia is a congenital defect, relatively common in llamas, that is the lack of a connection between the nose and the mouth. It makes up about 10% of all congenital defects in llamas, and is thought to be heritable. For more specific information on this defect, see the enclosure *Choanal Atresia* or the web version at <www.llamapaedia.com/problems/choanal.html>.

Reproduction

Female llamas produce one offspring (called a cria—pronounced *creeah*) per year after a gestation of around 350 days. Alpacas also produce one cria after a gestation of about 335 days (6). Twins for both llamas and alpacas are rare. Birthing is usually quick and trouble-free, and occurs during daylight hours with the mother standing during delivery. If the female is in labor for hours, she keeps lying down and getting back up or she stays lying down on her side; contact a veterinarian for help. Crias are usually up nursing and running with the herd within an hour or so. Newborn cria llamas range in weight from about 20 to 35 pounds and newborn cria alpacas average about 15 to 20 pounds. Occasionally, new mothers do not have sufficient milk for their newborn crias. Having some frozen baggies of goat or cow colostrum (first milk) available, along with a nipple that works—flutter valve (item 126) recommended from Caprine Supply (800) 646-7736— and bottle to fit the nipple can save a cria's life (1).

The female, being an induced ovulator and able to be bred year-round, will be ready to be bred again in a week or two. Females are devoted and protective mothers and will suckle the cria until weaning at about four to six months. Age at first breeding for females should be at least 18 months old. Llamas, guanacos, alpacas and vicunas can interbreed and should be pastured separately.

Males over the age of eight months should be separated from females to prevent unwanted pregnancies. Males should not be used for breeding until after they are two years old. After the age of two, male llamas grow very sharp fighting teeth (fangs) on both the upper and lower back of their jaws. Consult a veterinarian about removing these fighting teeth to prevent injury to other males or females. The fighting teeth may grow back and need to be removed again at a later time. Males in the same pasture will fight to establish who is boss, even if one is gelded. Many veterinarians recommend that males not intended for breeding purposes be gelded. This can be done as early as six months, but usually at about two years of age. If gelded too early, many llamas may have abnormal skeletal development (6).

Sometimes cria males that are bottle fed or given too much attention at an early age, bond to people and not with other llamas. When they have bonded to humans and grow to maturity, they perceive the humans (usually male) to be in competition for females in their herd. Their behavior problems toward humans can range widely in severity. The extreme case is called Berserk Male Syndrome (BMS) or Aberrant Behavior Syndrome. Males exhibiting BMS will treat people as if they are male llamas. This can include chest butting, knocking people down, and biting them. See the enclosed article "Berserk Male Syndrome" for more specific information, or see <www.llamapaedia.com/problems/bms.html>.

Sources for additional information

A representative of the International Llama Association (ILA) (4) pointed out the importance of attendance at their annual conference for new producers. The information presented at the workshops may save new producers from making costly trial-and-error mistakes. Contact the ILA for information on their next conference, and about individual or farm membership fees. The enclosed listing from ILA contains many books, videotapes, magazines, and web-sites dealing with llama and alpaca production, training, and care, and is also available at <www.internationalllama.org/html/pdf/resources.pdf>. There are twelve brochures dealing with all aspects of llama ownership listed on the ILA website. The ILA has about 34 affiliate regional and state associations.

Alpaca Owners and Breeders Association (AOBA) (8) holds a convention in June each year. AOBA publishes an informative breeder's directory. Members receive the quarterly magazine *ALPACAS* free. Their website has additional information concerning alpaca production.

International Llama Registry (ILR) (5) is the only U.S. registration organization for all four types of llamas. Contact the ILR for any questions regarding registration of llamas and alpacas, or for references to llama breeders in a specific area. Information is also available on their website.

Several additional electronic resources and magazines not mentioned in the enclosed ILA listings are listed in Further Resources. A search engine such as Yahoo can also be used to locate other sites on the World Wide Web.

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PO Box 1891
Kalispell, MT 59903
(800) why-lama (949-5262), (406) 257-0282; Fax: (406) 257-8780
Website: www.internationalllama.org
E-mail: ILA@InternationalLlama.org
- 5) International Lama Registry (ILR)
PO Box 8
Kalispell, MT 59903
(406) 755-3438 Fax: (406) 755-3439
Website: www.lamaregistry.com
E-mail: ilr@digisys.net
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c/o Hobert Office Service, Ltd.
1140 Manford Avenue
PO Box 1992
Estes Park, CO 80517-1992
(800) 213-9522, (970) 586-5357, Fax: (970) 586-6685
Website: www.aoba.org
E-mail: kenaoba@aol.com
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Further Resources:

Websites

<<http://www.rmla.com>>

Rocky Mountain Llama and Alpaca Association website.

<<http://surinetwork.org>>

Website for Suri Alpaca owner's information.

<wysiwyg://82/http://personal.smartt.com/~brianp/>

The llama question and answer webpage has nine sets of illustrated pages answering questions about llamas.

Magazines

AgVentures

11950 W. Highland Ave.

Blackwell, OK 74631

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