

Goat Care Primer, part 2: Breeding, Kidding, and Milking

Okay, so you must be one of those buyers I hope for most—someone who is interested in taking our beautiful goats and helping them fulfill their potential as more than just lovely lawn ornaments. To me, so much of the beauty of these animals lies in how useful they can be that I am always happy to help new would-be goat breeders. In this handbook, I summarize some of the things that we do here to manage and care for our breeding does and bucks as they reach breeding age and become productive.

Breeding

Choosing a mentor: This is the first and most important way to start in any serious breeding program. Early on, this is the single most important choice you can make. You need to choose your advisors as carefully as your breeding stock—your sense of style and priorities in breeding should be consistent with that of your mentor, or their advice will not get you where you want to go. Obviously you will need to be a very astute observer of the product of breeders in your area and elsewhere in the country to be able to make this choice. At first it does not have to be a highly technical choice—whose goats do you love at first sight? That is clearly a good place to start.

Choosing a buck: I could write a whole book on this topic alone. (Maybe someday I will.) The ideal buck to breed to a particular doe will have two qualities that make him the perfect choice: complementary conformation (phenotype), and complementary ancestry (genotype). Essentially, phenotype is what you see, and genotype is what the genes contain. I'll discuss these two considerations very briefly. In this discussion, I am assuming that you will be going to a breeder for buck service, and will have a number of mature bucks to consider. Buck service is a very good investment for a breeder just starting out—with small numbers of does to breed, it is relatively inexpensive compared with the cost of buying and maintaining a quality buck, not to mention less fragrant on the home front. Choosing a buck to buy is a somewhat different issue.

When you are choosing a breeding partner for your doe based on conformation, the more you know about her relative strengths and weaknesses, the better. Showing your doe and paying close attention to what judges have said about where she is strong and where she is weak is very helpful in learning what to seek in a complementary buck. Having your doe classified (or linear appraised) by an official classifier or appraiser is even more informative. Showing and classification/appraisal have different advantages, from the learning point of view. When showing your goat, she will be compared with other goats that are present on that particular day. In classification or appraisal, an appraiser or classifier compares your goat to the ideal—this sounds similar to what happens at a show, but is actually a very different process. In addition, when you are appraised or classified, you get a written record of the session to contemplate at your leisure. Of course, appraisal and

classification are much more useful as tools in the case of a doe's second or later breedings, when her udder is visible and can be included in the scoring. For earlier breedings, you will have to rely somewhat on the evidence of your doe's female ancestors to assess mammary type.

In all cases, scoring information is organized into 4 categories (general appearance, dairy character, body capacity, and (for senior does) mammary system); therefore, it is useful to begin to organize your thinking in terms of these categories. For good explanations of what characteristics fall in each of the 4 areas, study the AGS and ADGA dairy goat scorecards, and the book **Dairy Goat Judging Techniques (now out of print, horrors!)**, by Harvey Considine and George W. Trimberger. Livestock judging is based on the idea that good qualities in the area of conformation are those closely connected to utility and longevity; therefore, all livestock breeders must be judges of their livestock. These references are valuable even if you never intend to show your goats. I will discuss details of conformation in a later section.

AGS scorecard:

<http://www.americangoatsociety.com/2006%20handbook%20files/AGSUnifiedScorecard.htm>

ADGA scorecard:

<http://adga.org/Scorecard.htm>

To help you evaluate a buck, ask whether there is any classification or appraisal information available for him. This will tell you something about his potential to complement the weaker areas of your doe in general appearance, dairy character, and body capacity. However, observation of offspring and female relatives is the only real way to evaluate the buck's potential to produce a good mammary system. If the buck has fresh offspring, you will want to look at these very carefully, along with his dam, his sire's dam, and the dams of the fresh daughters (to guess how much credit the buck should get, or perhaps to excuse some failures), with special attention to the mammary systems. Obviously, when evaluating the strengths of a buck in this all-important area, you have no choice other than to go by inference. A good breeder who has been able to make use of the buck will have an idea of what he can produce when bred to various types of does, and should be willing to share what they know.

The second area to consider when choosing a buck for your doe is pedigree. To understand why this is true, we need to discuss linebreeding and inbreeding. This is also a fairly large topic, but for the purposes of this discussion, let us just say that if you wish to produce a fairly reliable result in your breeding, the best way to do that is generally agreed to be linebreeding. This means breeding animals that share some relatives in common—sometimes pretty close relatives. The most important consideration when considering linebreeding on a particular relative of your doe is to make sure that that relative is truly outstanding in every possible way—a real paragon. This is because while linebreeding is a

tried and true way to "set" type, the process does not distinguish between good type and bad type. When you choose to concentrate traits by linebreeding, you concentrate all the traits—good and bad.

Another way to use pedigree to help you in your breeding choices is to repeat crosses between particular unrelated or distantly related lines (outcrosses) that have proven synergistic in the past—in other words, the results have been observed to be superior to both parents. This is similar to the technique used to create hybrid seeds—the seed and pollen parents combine every time to produce a very consistent result that is frequently superior to both of the parents. In both linebreeding and outcrossing, the advice of seasoned breeders is invaluable.

Logistics of breeding: Once you have chosen the buck, you will need to arrange buck service with the buck owner. Most of the time, you will be offered a "driveway breeding", where you bring the doe to the buck when she is in season and receptive to breeding; boarding the doe at the buck's location is usually not an option. This means that you will want to observe the doe's heat cycle carefully so that you can give the buck owner an approximate date when she will be ready for breeding. You may also be able to bring a buck to your farm in a lease arrangement, so that he can do the sometimes tricky job of heat detection for you.

Heat cycles vary from about 18 to 21 days in length, and signs of heat include tail wagging, vocalizations, bucky behavior towards other does, and most importantly, willingness to stand for another goat to mount. There is an excellent article on signs of heat in does here:

http://www.sweetlix.com/media/documents/articles/Goat_009.pdf

Write down your observations, and after a few cycles you should have a pretty good idea of your doe's patterns. Keep in mind that there can be some variations—one that is fairly common is a split cycle, or 5-day heat. This happens when the ovum matures, but is not released from the ovary; a second surge of hormones occurs when the ovum is finally released 5-7 days later. The doe will usually stand for a buck on both occasions, but usually conceives on the second heat. Another tendency a doe can exhibit is the silent heat. This is a fully fertile heat cycle, which is not accompanied by any of the usual outward signs. The buck can detect this heat and successfully breed the doe, but the owner who has no buck may have trouble observing the event. In this case you may observe heat cycle lengths of twice the usual duration, as the doe alternates strong and silent heats. Nigerian dwarf goats are not strongly seasonal breeders as the standard size breeds tend to be, but silent heats are more likely as the days lengthen in spring.

To make signs of heat easier to observe, you may want to utilize a wether, which will usually interact with your receptive does in a telling manner. Some owners also have good

luck using a buck rag, which is a rag rubbed on the smellier portions of a likely buck, and stored in an airtight container. When the rag is waved before a doe in season, she may respond by showing signs of heat.

In any case, once you have determined that your doe is in season, you have no time to waste—the doe remains receptive for only about 24-36 hours. This time tends to be longer in older does and shorter in younger ones.

If your doe has conceived, you will probably not see her cycle back into heat on her next scheduled date, though on rare occasions you will observe weak signs of heat the first and even second cycle after she is bred. To be safe, you should definitely bring her back to the buck if you see any indication that she is still cycling. Make note of every date that breeding occurs, because in this last case, it may well be the earlier breeding that resulted in conception.

The pregnant doe: Now that you have achieved conception, you can expect kids in about 145-155 days. For our dwarf goats, we generally observe births about 145 days from the breeding date, at the earliest, though I have had does deliver a few days sooner than that. This is a somewhat shorter gestation than what is observed in standard breeds, so be sure if you are using a kidding calculator or table that it is based on a 145-day gestation—standard goat tables are often based on 150 days.

We feed dry stock and pregnant does very similarly—they receive about 1/2 pound of a 20% dairy ration made for goats (NOT goats and sheep) daily. This is about 2 cups of feed per goat. If they are getting hay (i.e., they are not 100% on pasture), they each get about 2 pounds of good quality hay, usually alfalfa or a grass/alfalfa mix, per day as well. We do not tend to increase the amount of grain as the pregnancy proceeds—this level of feed seems to keep the does in good condition without excess flesh, and yields healthy, vigorous kids with birth weights in the 2-4 pound range, depending on the number in the birth. You should monitor body condition continuously throughout the pregnancy (and all the time, in fact) to make sure that your doe has a good amount of "tenderloin" on each side of her spine without her vertebrae and hip bones disappearing entirely. I like to feel nicely rounded muscling running down the back; if these muscles become concave, increase the amount you are feeding. All the usual supplements are available to our pregnant does, including loose minerals, kelp, etc.

It is generally recommended that you give a CD-T booster and Bo-Se shot to the pregnant doe about 3-6 weeks prior to kidding. We usually worm (ivermectin only, and not in the last month) and trim feet at this time as well, and give a copper bolus if it has been longer than 3 or 4 months since the last bolus.

Preparing for delivery: When the 145 day due date is 3 or 4 days away, we generally start watching the doe like a hawk for signs of impending labor. One very important technique for determining when labor is imminent is to feel the ligaments that form a triangle with its apex at the base of the tail and run down to attach at the end of the pin bones. Normally these ligaments feel taut and hard, like steel cables, but as kidding time approaches, they soften and loosen until you almost can't feel them at all. When you feel this loosening starting to occur, you can generally expect labor to begin soon, and when the ligaments can't be felt at all, kids will be arriving within 12 hours or less.

There are a lot of references that give excellent advice for what to expect when your doe delivers. My favorites are here:

http://www.fiascofarm.com/goats/how_to_deliver_a_kid.html

http://www.goatwisdom.com/ch1baby_care/deliveries.html

<http://kinne.net/ob1.htm>

<http://bedford.extension.psu.edu/agriculture/goat/Process%20of%20Kidding.htm>

It is a good idea to read them all, and then go back and read them again!

Here are a few rules of thumb, based on our typical kidding routines.

First, we confine the doe about two days before her 145th day, in a location where we are pretty sure that, should she kid early or unattended, the kids will arrive in a spot that is relatively clean, warm, and dry. This situation will vary depending on the weather—if it is freezing, she is inside in a stall, but if it is warmer, she may be allowed more freedom. We try not to stress the doe by isolating her from her friends too early. We tend to bed with shavings, though some prefer straw. It is a good idea to have some kind of monitor, either a baby monitor, if the range is not too great, or a walkie-talkie with a rubber band around the transmit button. We will have a clean place prepared for the delivery, and a pristine place for her to end up with her kids when the action is all over.

We have on hand the following:

Clean hands with fingernails cut very short!

5-6 kitchen size cotton towels or rags

Several paper feed bags, cut open so that they lay flat, or puppy house training pads

One or more large cotton sheets or mattress pads

(In a 5-gallon bucket, with a canvas bucket organizer from Home Depot):

Hand sterilizer and/or surgical scrub

Baby wipes, paper towels, AND antiseptic dairy wipes

Lubricant—I use powdered, made up in Nolvasan antiseptic solution, but KY or generic is fine

1-2 pieces of plastic baling twine (~2-3 feet long) soaking in a jar of Nolvasan

A flashlight

A teat dip cup or small disposable cups, strong iodine tincture (7%)

Scissors

Number 10 French tube and syringe

Gloves (I have them—but I never end up using them)

Baby Lamb Strength (available from Pipestone Vet Supply) in pump bottle; a 3 cc syringe

Bo-Se (you will need a vet's prescription) and 0.3 cc insulin syringes

Blow dryer

Clean 20 ounce plastic soda bottle, a vessel to milk into, and a Pritchard nipple (make sure the nipple fits the bottle—lots of soda bottles don't work with these nipples any more)

A scale—I use my digital hanging dairy scale with a bucket

Kidding record sheet, with doe name, due date, and tattoo number of the first kid entered

CD antitoxin, Poly Serum, and (optional) Porcine Ecolizer

Molasses

MFO solution, or CMPK solution (calcium/magnesium/phosphorus/potassium solution)

Wormer for the dam—I use Synanthic for 3 days at this time; any normal wormer is fine

Later you will need:

Tetanus antitoxin, tattooing, castrating, and disbudding supplies, and a plan for coccidia prevention (a coccidiostat in the feed or the mineral, and Di-methox solution)

As the doe is starting to get down to business, I lay out my kidding stuff—4 or 5 cut open feed sacks, towels, my large clean sheet, my kidding bucket, which I hope I won't need. I tend to lay open feed sacks under the doe so that each kid lands on one; it catches a lot of birth fluids so they don't waste bedding. Especially in fly season, it is hard to remove every drop and the flies LOVE that stuff. Clean the face first to make sure they don't inhale any goop. I slick off the kid onto the feed sack with my hands, and present it to the doe's nose on a clean one. I usually help her dry off the kids at this point with towels. Things usually are moving pretty quickly now. You can leave her to lick this one while you go catch the next one, etc. At some point in here, you have a number of mostly dry kids moved to something large and absorbent, like a sheet or big towel. Especially if it is cold, I like to blow dry each kid, sitting on the floor near mom. Besides the obvious benefit of making sure the kid does not get chilled, it is actually a bonding process—they will always associate you with comfort, and they actually usually love the warmth, even on relatively warm days.

This part of the procedure is peculiar to my farm, and is oriented towards those who wish to dam raise their kids while also having the benefit of being able to bottle-feed them when desired. Toward this end, I don't like to let the kids get their very first colostrum from mom, because this is the very best opportunity to start those kids learning to take a bottle. So, before any of the kids have nursed, I clean the dam's udder with antiseptic dairy wipes or udder wash, to minimize the pathogens to which the kids are exposed right off the bat. Then I milk a little colostrum into my handy milk pail, pour the colostrum into the soda bottle, and get ready to give the kids their first drink. They are usually quite easy to convince, because the newborn suck reflex is extremely strong. (If you have trouble getting them to nurse within 30 minutes of birth, it is usually because of some level of selenium and/or vitamin E deficiency. To prevent this, many people routinely give Bo-Se injections to newborns at the rate of 1 cc per 40 pounds, which is usually around 0.1 cc for a Nigerian. We have not usually had to do this, but this is a good way to make sure you don't have a low level of selenium deficiency—if they don't nurse, definitely give Bo-Se, and the Baby Lamb Strength helps as well, see below.) After they have figured out the bottle, they get put with mom and I make sure each one nurses competently, and has a full belly. I have never had a kid fail to nurse, even with having taken a bottle first.

To complete the training to the bottle, I do the following: during the afternoon on the next 3 days, I let mom out with the herd to re-integrate without worrying about all the head butting affecting the kids. After 4 or 5 hours, I bring mom back in, milk her out, and give the milk to the kids from a bottle. By the 4th day, I have kids that are as sweet and loving as bottle babies, even if I don't give another bottle for weeks. They don't forget how to take that bottle, and I have nearly 100% success getting kids to take that bottle. This is not just wonderful for socializing the kids, it is also vital to safely milk testing and taking the does to shows without their kids. If I can't be sure the kids will take a bottle, they are highly stressed in those situations.

After they have had their first bottle and nursed from mom, I give them 3cc of Baby Lamb Strength (which is basically Vitamin E and fat), weigh them, dip their navels in strong iodine, and record all their vital statistics on my kidding record (date and time of delivery, tattoo number, color, markings, gender, and weight). I keep all records of each litter on this sheet from birth to weaning, pretty much, and record treatments given to the dam in the aftermath of kidding, such as routine worming, etc., as well. If you would like to download a copy of my kidding record sheet, you can find it here:

<http://www.dragonfly.jmkarohl.com/files/DragonflyKiddingRecord.pdf>

In our large herd, I also give each kid several colostrum supplements: 2 cc Porcine Ecolizer orally, to prevent neonatal E. coli infection, 1 cc Clostridium antitoxin sub-Q to prevent enterotoxemia, and 1cc Poly Serum sub-Q to prevent pasteurella, salmonella, and several other pathogens. These supplements are usually not necessary in a small herd on fresh

ground, though none of them hurt. The Poly Serum and Clostridium antitoxin are actually things that are good to have on hand, and if you need them, you need them fast. But the Ecolizer is very expensive because it only comes in giant sizes, and is probably not needed.

The dam gets her reward as well: a 2 quart bucket of warm water with 30 cc MFO solution and enough molasses to make it look like strong coffee. Most does love this and drink it immediately, but if they don't, I usually don't give them any plain water until they have drunk their MFO. This is to prevent hypocalcemia as they are starting to come into milk. Calcium is mobilized from the bones to sustain the high demand for calcium, but there is sometimes some loss of appetite until this has time to happen, and this way my does never stop eating. I also worm each doe as she delivers, usually with 3 days of 2.5 the label dose of Synanthic, which deals with tapeworms, if present, as well as the usual suspects, and which has a short milk withdrawal. By the time the milk is drinkable at 2 + weeks, the wormer residue is gone. I do offer a small amount of grain right after delivery, which they usually gobble down, but I take about a week to ramp them up to the full free choice grain (circa 2 pounds per day) that they will receive during their lactation.

Typically, we confine the doe alone with her new kids for a minimum of 3 days after the birth, to allow them to get to know each other, and to allow the kids to become strong and mobile enough to deal with adult goats that are not as concerned for their welfare as their dam is. Here I usually use a new, or sterilized blue plastic tarp on the floor, a sterilized X-pen set on top, and tie the grommets of the tarp around the bottom to form a rim so the bedding stays reasonably in place. I also like to put a half-vari kennel or even a 5-gallon bucket on its side in there for the kids to cuddle up in. Like the ledge in a whelping box, it actually prevents accidents where the dam lies on her kids. Doesn't happen very often, but when it does, it really sucks. In cold weather, I will set a plastic electric pet bed warmer in the kids' bed, and that really teaches them to sleep there, safe from being flattened.

Getting those kids out: Deliveries in Nigerian Dwarf goats are usually straightforward and uncomplicated, but if you attend enough kiddings there are quite a few variations that can occur. Most of these can be handled easily if you are alert and have a good mental image of what you might encounter. Personally I am inclined to monitor progress with internal examinations sooner rather than later in the process, though other sources advise a more hands-off approach. I have never had cause to regret doing an exam to see how things are going, however, and I have had cause to regret waiting too long to do this.

The first important principle to keep in mind is what one very sagacious goat writer referred to as the "banana principle". I have searched for where I read this without success; so if you are or know the person who wrote this, please let me know so I can give proper credit! The banana principle is a description of what a kid will look like if he is lined up properly to deliver, and it does not matter very much which end of the banana comes first. There are

many very good sources for diagrams and/or descriptions of correct and abnormal kidding positions; here are a few of my favorites:

<http://fiascofarm.com/goats/kidding.htm>

<http://fiascofarm.com/goats/kidding.htm#kidpositions>

Please feel free to call me at ANY time if you have any questions about a kidding problem.

When membranes appear (usually in the form of a bubble filled with fluid), a kid should follow very soon—within 30 minutes. If it does not, don't wait longer, go in and find out what is going on. Do not let a vet tell you that the doe might not be in active labor—this may occur in cows, but not in goats. You will become adept at picturing what your hand is feeling, but here are some hints.

Normal (bananas)—no intervention needed, unless you want to stretch the opening a little or give a little pull in time with contractions to hurry things along:

A) 2 feet, soles downward, 1 slightly ahead of the other, and a nose not too far behind

B) Also fine: 2 feet, soles upward, with hocks not too far behind

Less good:

A) Nose, but 1 foot, or no feet—you will know it is a nose if you can feel teeth. You can try to push the head backwards and bring the leg or legs forward into a normal position, but if this proves too difficult, you can deliver this kid as is—but a snare over the head may be necessary. It can be surprisingly hard to pull out a kid with legs back, but it can usually be done. There may be some temporary neck trauma, but usually this works out fine.

B) Frank breech—tail first, no feet. Sometimes you will not need to help but often the hocks get hooked over the lip of the pelvic girdle and prevent progress. This is an easy one to fix—using one finger, hook each the leg carefully and bring the hoof through so the kid is a breech banana, and they will come easily. The first time you feel this you may be mystified—you will feel a nose but there are no teeth! Eventually you will recognize the little tail...

Much less good:

A) 2 heads at once, or sometimes you will feel 3 or more legs. This is not as scary as it might seem at first, although it is generally a situation where your intervention is required. For one thing, it means that your doe is very roomy inside! Usually you will need to push

one kid back so that the other can come out—which to push back is sometimes obvious and sometimes a toss-up. I did once witness two kids born simultaneously in "missionary position", one head slightly behind the other. That was a surprise.

B) "The wall". If you feel through the cervix, and find just a featureless flat surface, you probably have rib cage or possibly spine—the kid is sideways across the birth canal. You need to push him around and get one end or the other to deliver the kid. This usually happens if there are lots of kids in the litter. I did once find this, go in, work a kid around and deliver it, and find the ribs still there when I went back in—I had managed to deliver kid 2 before kid 1—there were 2 more in there as well. This was a case where the membranes came and nothing followed for 30 minutes. This delivery would not have proceeded without help.

C) Head back. I have never had a kid appear in this position where it came out alive. I have the feeling that there may be a certain tendency of kids that are already dead to assume this position, because they lack tone in the neck. However, I have heard of kids like this being delivered successfully, so I am not sure if my experience is influenced by other things I do, like going in sooner rather than later. In any case, you need to push the kid back, work the head around to the correct position on top of the forelegs, and then proceed to deliver the kid. This is the greatest challenge you will probably face in difficult deliveries. One other note: I am pretty sure that I did create this position once, in a case where the head was almost too large to pass through the birth canal, and the right thing to do would have been to put a snare on the head and pull. What I did was pull on the legs without also pulling on the head...that's why I keep that sanitized piece of baling twine on hand. If I have any sense that I will need to pull the kid, and the head is not clearly already through the pelvic girdle, I ALWAYS put a snare on the kid's head, and ALWAYS pull on the legs (if any) and the head (using the snare) at the same time. (To make a snare: tie a tiny loop in one end of the twine, make a slip knot, place the slip loop over your fingers, get your hand in there somehow and your fingers around the kid's head, and using your thumb, work that loop off your hand and over the head. I like to get that slipknot under the chin, but others may disagree.)

I feel that at least some of my does can tell that the kids are not properly lined up to be delivered normally, and hold off labor until they feel that the kids have moved into place. If a doe is approaching 150 days gestation, and especially if she seems restless and uncomfortable but is not moving into active labor, I will often go ahead and do an internal exam. Long gestations often seem to go along with the first kid in line arriving in a breech position (tail first) waiting to be re-arranged, or some other type of malpresentation.

One other thing that new goat raisers are often not told right away is, the sooner you have those kids disbudded, the better! Buck kids should ideally be done by 3-5 days of age, though doe kids can sometimes go a little longer. As soon as the horn buds can be felt, and I

like to have the kids be 5 pounds, get someone to help you with disbudding. We usually tattoo at the same time...I am happy to advise and show you how to disbud, though I usually stipulate that I will teach folks how, but I try to avoid committing to doing it for you forever! With our vet's approval, we use tiny amounts of Rompun (xylazine) anesthetic to knock out our kids for disbudding and tattooing. It is a good idea to talk to your vet to see if they will agree to prescribe Rompun for you to use during disbudding, because if they will not, you will need to learn on kids that are not knocked out.

This is still a work in progress, so if you have any questions or comments, I would love to hear them...still to come—**Milking and Judging Dairy Goat Conformation!**

Joanne Karohl
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