KOONAC Goat Farm

Kidding Statistics

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1. Introduction

Picture 1: How many kids are cuddled beside each other in this shelter?

Between 2006 and 2018 a total of 1249 kids were born on our farm. All relevant information (as far as it was available) about every of the 635 births from 241does, for example the joining and/or mating date, the kidding date, the birth position of the kids, birthweight, etc., was recorded and entered into our goat management database. This text is based on an analysis of these collected data. The following terms are used:

- Sex ratio means the percentage of male kids compared to the percentage of female kids. It is normally expressed as percentage of male kids;
- Gestation period is the time (in days) between mating and kidding;
- Litter size means the number of kids from the same mother that are born together at one time;
- Maiden does are goats that kid for the first time (first parity); in contrast, the term "older" goats is used for goats that had kidded before (second or higher parity).
- Dairy goats are milking goats with 50% or more dairy genetics (Saanen, Anglo-Nubian, or British Alpine).

2. Sex ratio

606 (48.5%) of the kids born on our farm were males, 643 (51.5%) were females (see Figure 1, first column to the left). However, the sex ratio varied somewhat from year to year. The most "unbalanced" years were 2012 and 2018, where 48.0% and 57.1%, respectively, of the kids were males.

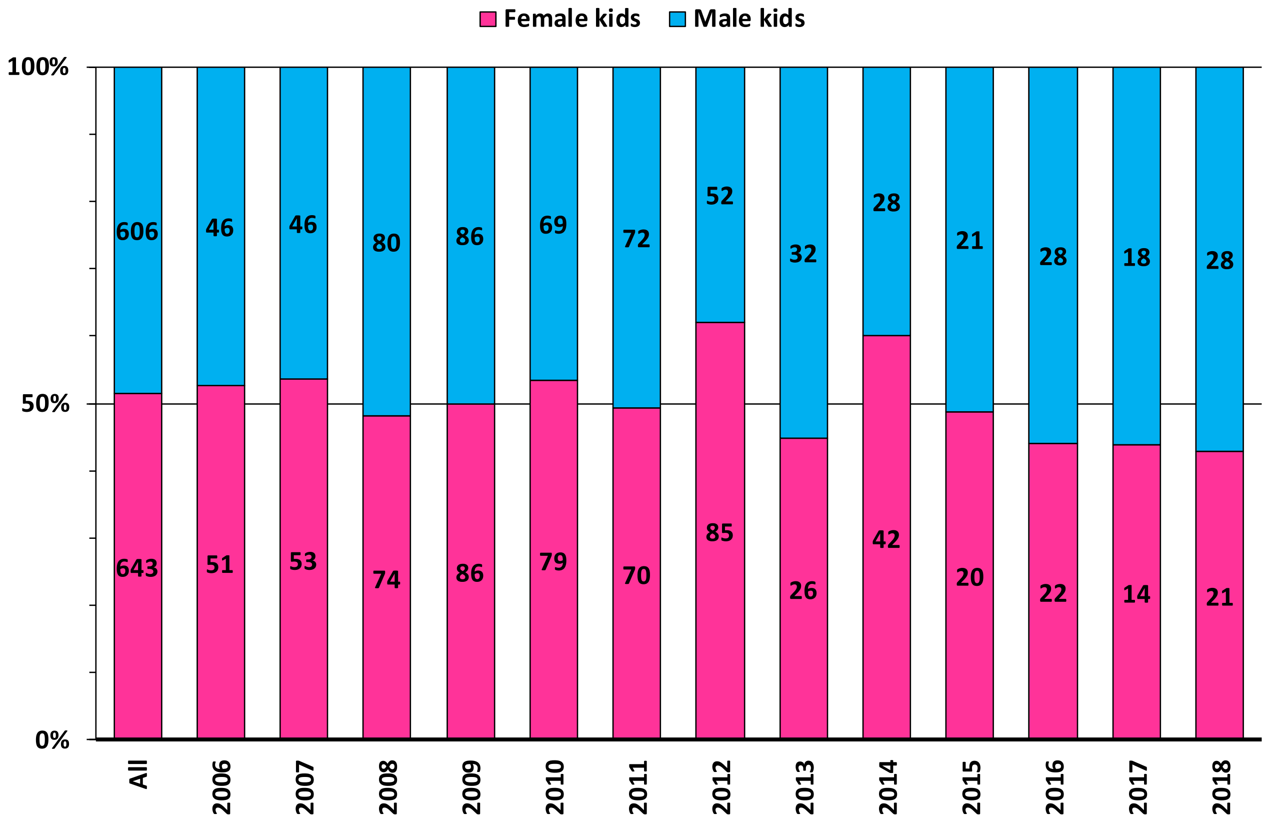


Figure 1: Number of male and female kids born on our farm in total (most-left column), and in the individual years from 2006 to 2018.

It is interesting to note that the sex ratio in goat herds can deviate significantly from the 50% to 50% ratio, which is normally expected. For example, 56.8% of 59'355 kids that were born on farms all over the Czech Republic between 1992 and 2004 were male kids[1]. In contrast, only 44.2% of 527 kids born in the years 1997 to 2002 on the Experimental Farm in Zlotniki (Poland) were male kids[2]. Scientific attempts to explain these variations in the sex ratio of goats as an adaptive manipulation in relation to the relative fitness of the mother (Trivers-Willard's hypothesis) were not successful. It seems that the reasons for these deviations are not fully understood.

[1] Polak J., V. Mares, R. Konrad, D. Frynta (2015): Offspring sex ratio in domestic goats: Trivers-Willard out of natural selection. Czech J. Anim. Sci., 60, 2015 (5): 208-215
[2] Gorecki M.T,. K. Koscinski (2003): Offspring sex ratio in domestic goats (*Capra hircus*). Arch. Tierz. Dummersdorf 46 (2003), 277-284.

2.1. Sex ratio and litter size

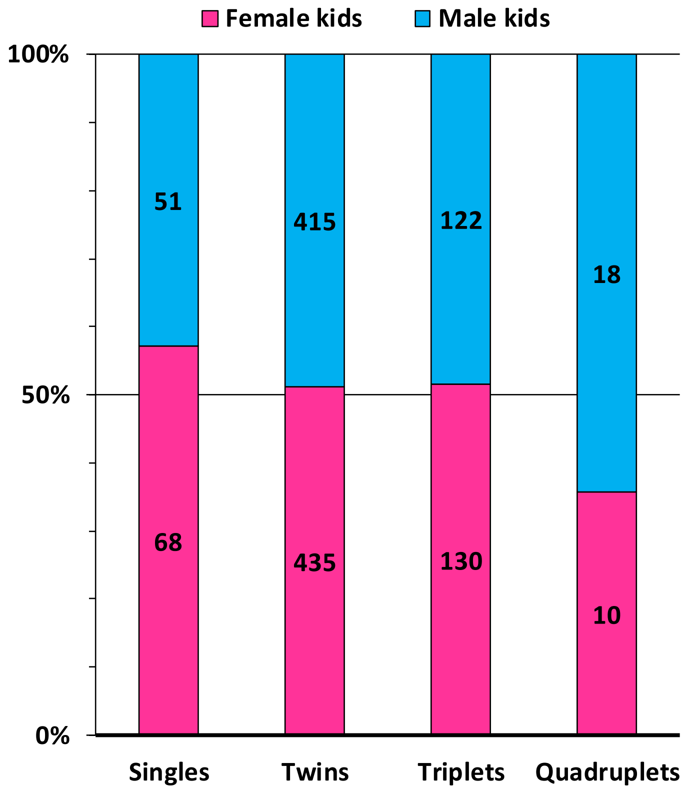


Figure 2: Number of male and female kids that were born as singles, twins, triplets, and quadruplets on our farm from 2006 to 2018

Figure 2 shows that the percentage of male kids that were born on our farm increased with increasing litter size. It was 42.9% in singles, 48.8% and 48.4% in twins and triplets, respectively, and 64.3% in quadruplets. "Maiden does" with singles had the lowest sex ratio of all groups (38.8%, n = 49), compared to the percentage of single bucklings in older goats, which was 45.7% (n = 70). For larger litter sizes, however, no statistically significant difference is found between the sex ratio of the first kidding and later kiddings. The high percentage of male kids in quadruplets is likely not significant because of the small number of quadruplet births.

2.2. Determination of the sex ratio by the buck

Figure 3 shows the number of male and female kids from 15 different bucks that have sired at least 21 kids, sorted for increasing sex ratio from left to right. It can be seen that the sex ratio of most bucks is close to 50:50, but that some bucks have sired an uneven number of males and females, with "Angus" (26.5% male kids) and "Ken" (76.2% male kids) being the two most "unbalance" sires (Picture 2).

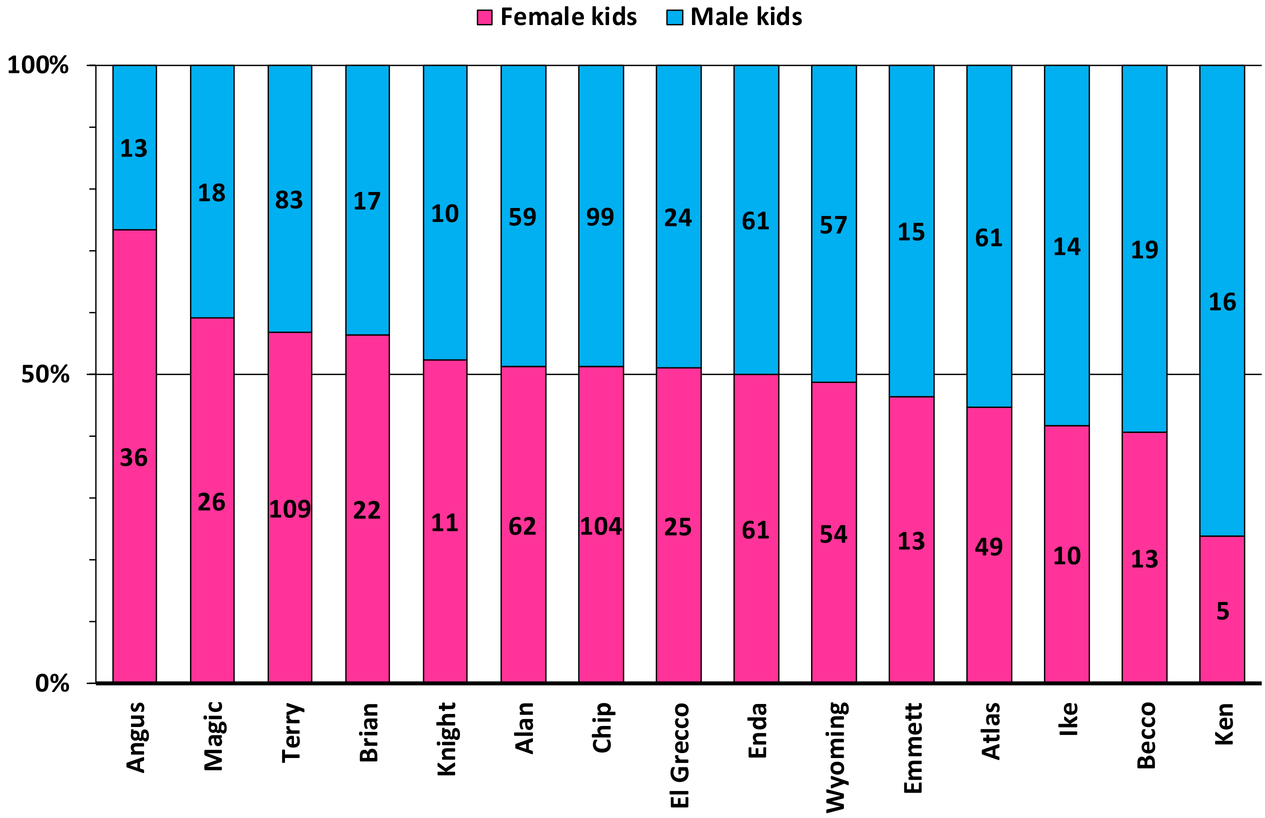


Figure 3: Number of male and female kids from 15 different bucks that had sired at least 21 kids.

Picture 2: "Angus" (left) sired the highest percentage of female kids, whereas "Ken" (right) sired mostly male kids.

Bucks produce two different types of sperms, either sperms containing the X-chromosome ("female" sperms), or sperms containing the Y-chromosome ("male" sperms). Identical numbers of both types of sperms are produced. Does, on the other hand, produce only one type of eggs, containing the X-chromosome. Fusion of an egg with a sperm containing the X-chromosome will result in a female kid, whereas eggs that fuse with sperms containing the Y-chromosome will develop to a male kids. If the buck sires significantly more male kids than female kids, it is likely that his "male-sperms" are more competitive than his "female sperms". They might be able to swim faster, or they might live longer. If more female kids are born than male kids, the "female sperms" are more competitive.

2.3. Determination of the sex ratio by the doe

Because of the small number of kids from individual does, compared to bucks, it is more difficult to find a statistically significant determination of the sex ratio by the does. Only 34 of the 241 does from our farm produced 10 kids or more, at which number systematic patterns start to emerge from the normal statistical scatter. The sex ratios of the 10 does which deviated most from the 50% to 50% ratio are shown in Figure 4.

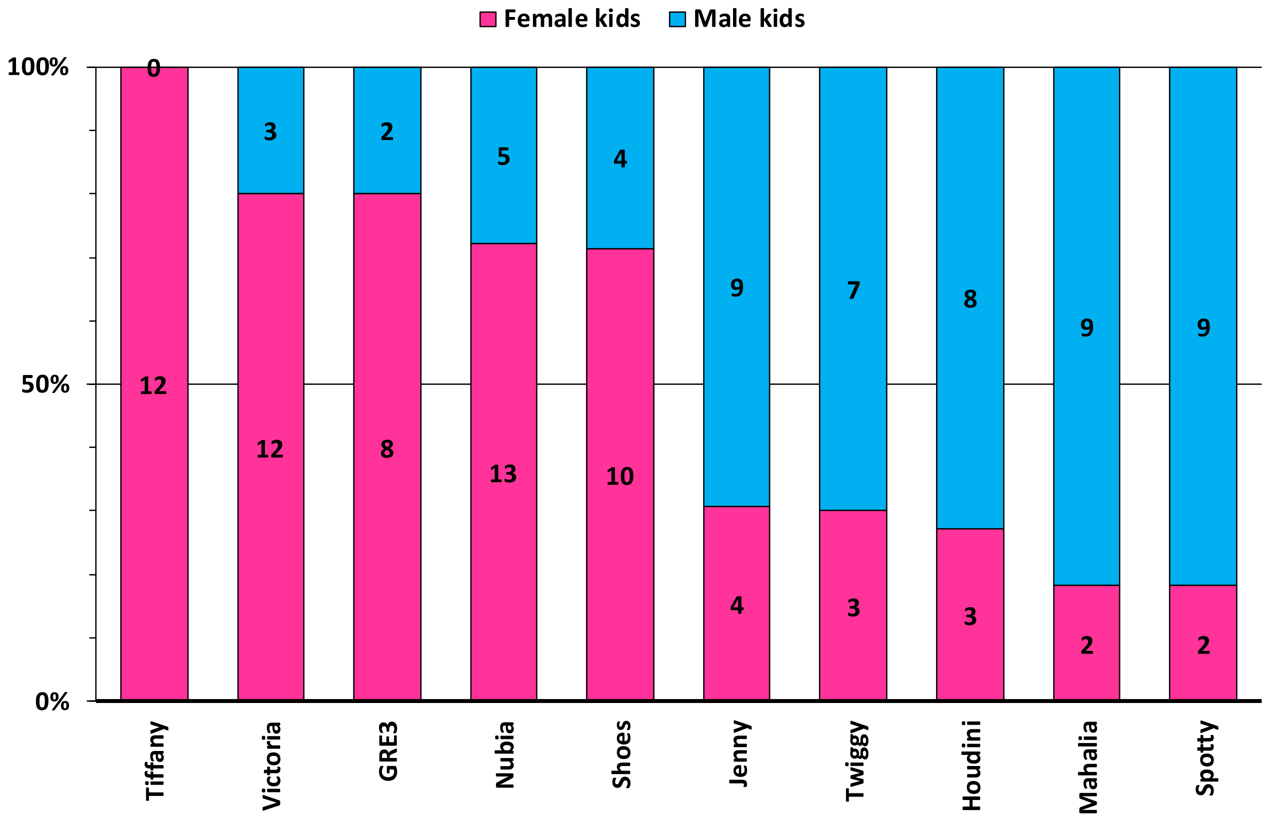


Figure 4: Number of female and male kids from 10 does which had 10 or more kids with a sex-ration that different substantially from 50:50.

"Tiffany" had produced 12 female kids and no male kids. It has to be noted, though, that "Tiffany" had been mated 2x with "Terry", 2x with "Angus", and 2x with "Magic", hence with those three bucks which had sired the highest percentage of female kids. For this reason, it seems likely that the sex ratio of "Tiffany" (100% females) was partly also influenced by the bucks that were used.

With "Mahalia" and "Spotty", which are the two does with the highest percentage of male kids, it is also likely that their sex ratio was partly influenced by the bucks, because both of them were mated several times with bucks which sired more male than female kids. "Spotty" was mated with "Alan" (1x), "Wyoming" (1x), "Chip" (1x), "Becco" (1x), and "Atlas" (2x), and "Mahalia" was mated with "Alan" (2x), "Wyoming" (1x), and "Chip" (2x) (see Figure 3 for the sex ratio of these bucks).

3. Gestation period

Gestation period of 272 pregnancies, where mating was observed, ranged from 143 to 159 days, with an average of 150.8 days. 90% of all pregnancies lasted between 147 and 155 days.

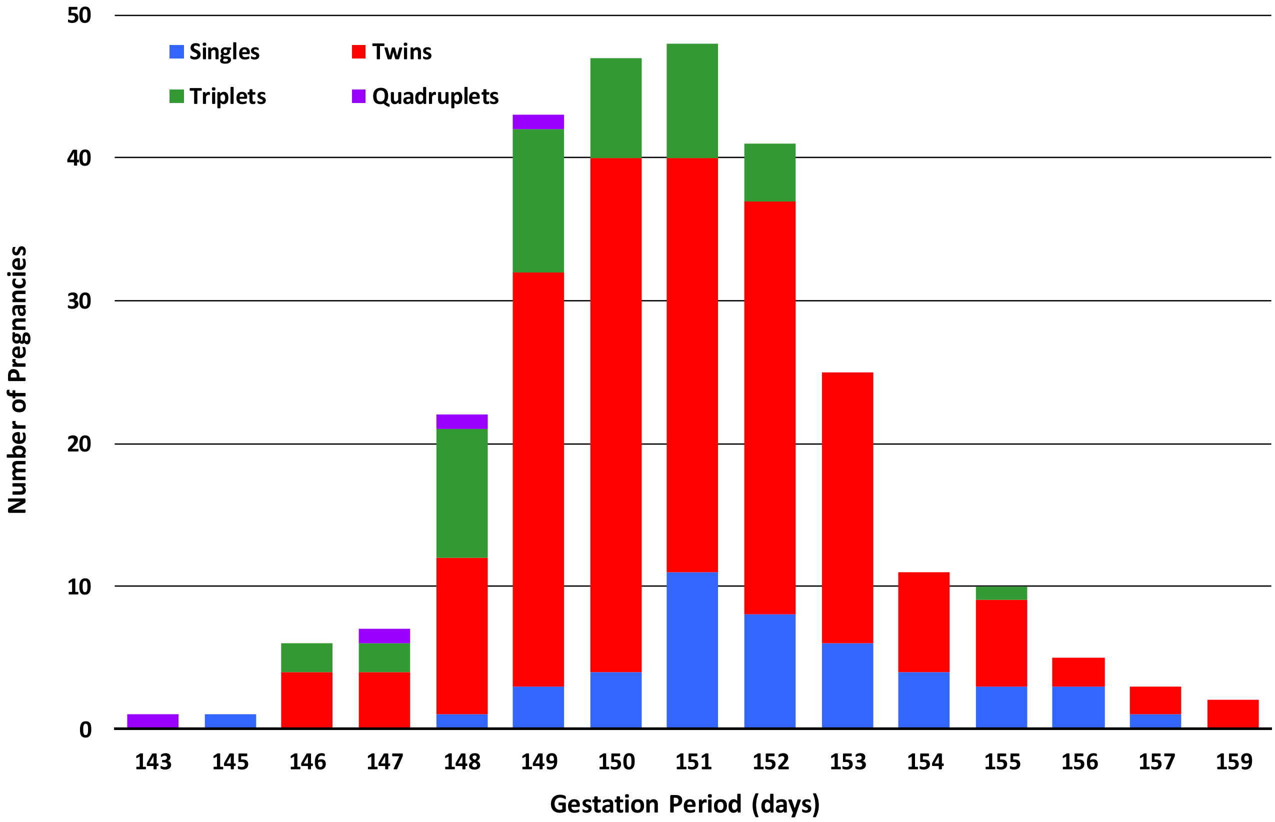


Figure 5: Distribution of gestation period and litter size.

Gestation period decreased with increasing litter size. Average gestation for singles was 152.0 days, for twins 150.9 days, for triplets 149.5 days, and for quadruplets 146.8 days (Table 1). All these differences in gestation period between the different groups (i.e. pregnancies with singles, twins, etc.) are statistically significant (Table 2).

Table 1: Gestation period (in days) of 272 pregnancies where mating was observed, and gestation period of pregnancies with one, two, three, and four kids born.

Table 1	All	Singles	Twins	Triplets	Quadruplets
Number	272	45	180	43	4
Average	**150.8**	**152.0**	**150.9**	**149.5**	**146.8**
Minimum	143.0	145.0	146.0	146.0	143.0
5% Percentile	147.0	149.0	148.0	147.0	143.6
25% Percentile	149.0	151.0	149.0	148.0	146.0
50% Percentile (Median)	151.0	152.0	151.0	149.0	147.5
5% Percentile	152.0	153.0	152.0	151.0	148.3
5% Percentile	155.0	156.0	155.0	152.0	148.9
Maximum	159.0	157.0	159.0	155.0	149.0

Table 2: Statistical likelihood for the gestation periods of the different groups (e.g. births were one, two, three, or four kids were born) to be different, calculated using Student's T-test[3].

p (equal)	Singles	Twins	Triplets	Quadruplets
Singles		0.45267%	0.00002%	0.00906%
Twins			0.01839%	0.03824%
Triplets				0.67143%
Quadruplets				

In contrast, average gestation period of "maiden does" was not different from the length of pregnancy of older does (Table 3).

Table 3: Average gestation period of does that kidded for the first time are statistically not different from those that had kidded before.

	1st kidding		2nd and later kiddings		
	Number	Gestation (d)	Number	Gestation (d)	p (equal)
Singles	15	151.6	30	152.2	39.8%
Twins	27	151.1	153	150.9	65.1%
Triplets	4	149.3	39	149.5	76.3%

[3] Student's T-test calculates the statistical probability that two data-sets which are compared, here for example the gestation period of all twin kiddings against the gestation period of all triplet kiddings, originate from data-pools with identical mean and distribution. The likelihood is given as the probability p that this is the case. Differences are usually considered to be statistically significant if p < 1%.

4. Litter size

Average litter size for the period from 2006 to 2018 was 1.97. 18.7% of all kiddings were single kiddings, 66.9% were twins kiddings, 13.2% were triplet kiddings, and 1.1% were quadruplet kiddings (Table 4).

Table 4: Litter size, number of kids, and number of single, twin, triplet, and quadruplet kiddings.

	Average Litter size	Total kids	Single kiddings	Twin kiddings	Triplet kiddings	Quadruplet kiddings
2006-2018	**1.967**	1249	119	425	84	7
all maiden does	**1.736**	276	49	103	7	0
all 2nd or later kiddings	**2.044**	973	70	322	77	7
2006	**1.865**	97	11	38	2	1
2007	**1.904**	99	12	34	5	1
2008	**1.974**	154	12	56	10	0
2009	**1.955**	172	21	51	15	1
2010	**1.827**	148	20	55	6	0
2011	**1.919**	142	14	52	8	0
2012	**1.986**	137	10	50	9	0
2013	**1.933**	58	4	24	2	0
2014	**2.000**	70	7	21	7	0
2015	**2.050**	41	2	15	3	0
2016	**2.273**	50	2	14	4	2
2017	**2.462**	32	3	2	7	1
2018	**2.333**	49	1	13	6	1

4.1. Influence of parity on litter size

Maiden does had more than twice the percentage of single kiddings (30.8%) than older does, but only few triplet kiddings (4.4%), and not quadruplet kiddings. As a result, the average litter size of maiden does was substantially lower (1.74) than the average litter size of older goats (2.04).

4.2. Influence of the dam's condition on litter size

It is generally accepted that the condition of the goat at the time of mating has a major influence on the fertility and, hence, on the litter size. This is also confirmed with our data. Average litter size varied substantially from year to year (Figure 6, Table 4). It was low (1.87) in 2006, which was our first year of goat farming. Most of our first goats were high-percentage Boer crosses. Many of them were "rescue" animals from other farms, and often in poor condition, which resulted in a low average litter size. The poor average condition of these goats is also reflected in a comparatively low average kids' birth weight of 84.4% of the 2006 - 2018 average.

From 2007 to 2009 the condition of our goats improved, as our skills and experience in goat farming increased. The average litter size and kid's birth weight increased to approximately 1.95 and 3.9 kg, respectively.

Average litter size in 2010 was down again to 1.83, which is the lowest value we ever had. It is explained by the very late start of the rain season in 2009 (approximately one months later than normal). As a result, the paddocks were in very poor condition throughout the entire winter, and the condition of the goats was accordingly. Also, the average birth weight of the 2009 kid was only 3.21 kg (83.7% of the overall average), which is the lowest average birth weight we ever had. In February 2010, when we joined the goats again, they had not yet recovered from the bad winter, which explains the exceptionally low average litter size of the 2010 kiddings.

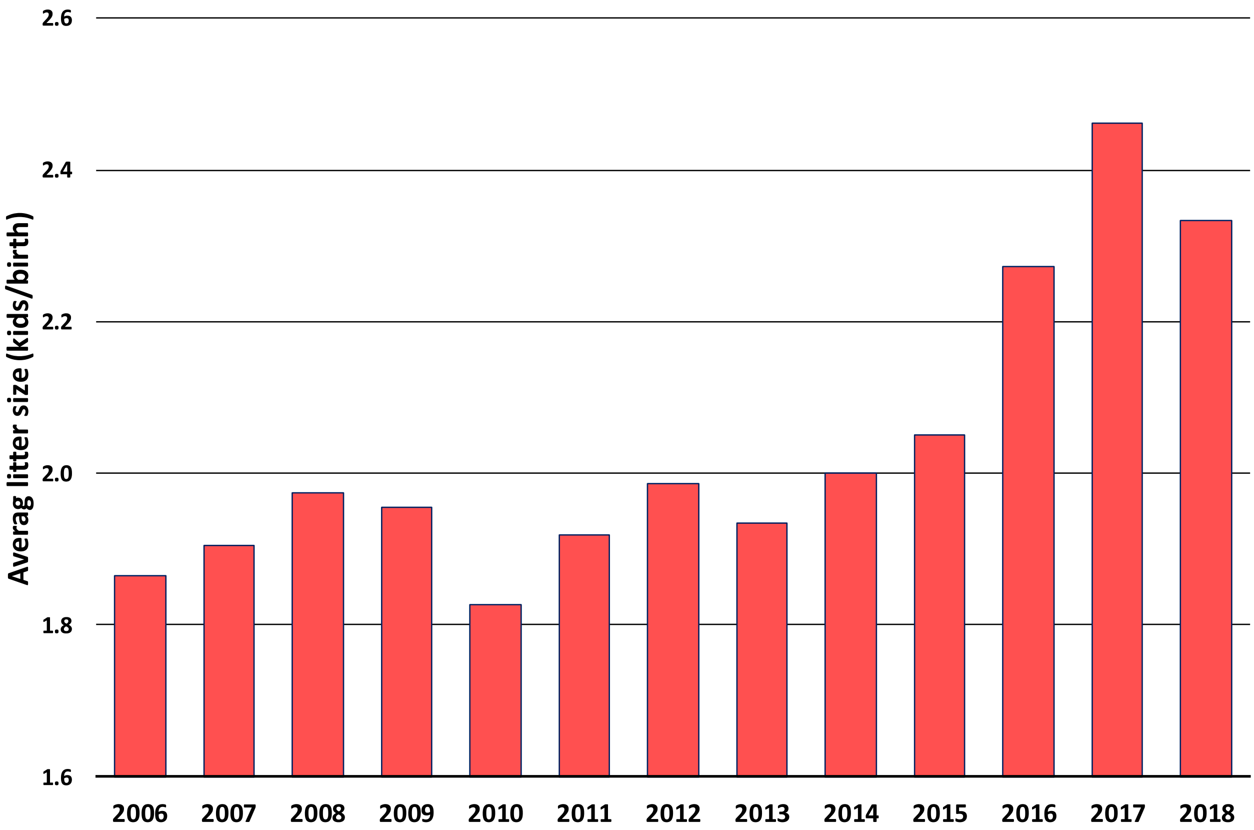


Figure 6: Annual average litter size from 2006 to 2018.

In January 2010, after we had decided to change our business from goat meat to goat cheese, we purchased some dairy goats and also a dairy buck. Since then the genetic composition of our goat herd, and also the feeding regime, has gradually changed from a meat operation to a dairy operation. Different to meat goats, the dairy goats' feed is supplemented with concentrate (goat pellets). As a result, the condition of the goats is less influenced by the seasonal conditions, and they are normally in good condition at the time of joining, resulting in comparatively high litter sizes.

5. Presentation of the kids at birth and kidding difficulties

Our database contains information about the presentation of 492 kids at birth. 757 kids were born unobserved, and no information about their presentation is available. Table 5 shows the numbers of the different birth presentations, sorted by decreasing occurrence.

Table 5: Presentation of 492 kids at birth

Presentation of kids at birth	No. of kids	kidding
(not observed)	757	easy
forwards, legs extended	387	easy
forwards, 1 leg back	38	easy
backwards, legs extended	34	easy
forwards, both legs back	15	very difficult
backwards, both legs back (breech)	7	very difficult
backwards, 1 leg back	5	difficult
forwards, legs extended, head back or down	4	impossible
transversely	2	impossible

Only approximately 2.6% of all kids were positioned such that kidding was difficult or not possible without assistance. However, kidding difficulties can also have other reasons than the kid's presentation at birth, and assistance can be required despite a normal (uncritical) presentation of the kid. In multiple kiddings, for example, the kids can be entangled and block the entry of the birth channel. Or the kid can be too large to fit through the birth channel.

At our farm, 578 (91.0%) of all kiddings did not require any assistance. In 51 instances (8.0%) we assisted the doe with kidding. However, in many cases our assistance would not have been required, but we helped the doe to progress somewhat faster with kidding. For example, if the kid was positioned forwards with both legs forwards, but the legs were not straight ("elbow lock"), we would pull the legs straight to make the passage of the kid through the birth channel easier. Or, if the kid was born backwards with both legs extended, but parturition progressed slowly, we would pull the kid out to avoid suffocation in case the oxygen supply of the kid through the umbilical cord was interrupted before the kid could breath. In 6 instances (0.9%) the situation was too difficult for us so that we needed the help of our veterinarian.

Table 6 shows the number of kiddings that were easy (no assistance required), difficult (some assistance required), and very difficult (help from a veterinarian required) in total, and for maiden does, older does (2nd or later kidding), and for single, twin, triplet, and quadruplet kiddings. The percentage of kiddings where assistance was required was somewhat higher in maiden does than in does that kidded for the 2nd or later time. However, these differences are probably not significant, since we normally observe maiden does that are due to kidding more closely than older does. Furthermore, because kidding in maiden does is often slower than in older does, we tend to assist maiden does more likely than older does.

Table 6: Number of easy, difficult, and very difficult kiddings

	Total	Easy (no assistance required)		Difficult (some assistance required)		Very difficult (Veterinarian required)	
All kiddings	**635**	578	91.0%	51	8.0%	6	0.9%
Maiden does	**159**	142	89.3%	15	9.4%	2	1.3%
2nd or later kidding	**476**	436	91.6%	36	7.6%	4	0.8%
Single kidding	**119**	105	88.2%	13	10.9%	1	0.8%
Twin kidding	**425**	396	93.2%	27	6.4%	2	0.5%
Triplet kidding	**84**	71	84.5%	10	11.9%	3	3.6%
Quadruplet kidding	**7**	6	85.7%	1	14.3%	0	0.0%

Table 7 list some examples of comments we recorded in our field book about kidding difficulties and assistance.

Table 7: Examples of recorded kidding difficulties

Parity	**Litter size**	**Comment on birth**
Maiden	Single	Difficult: Kid was almost too big for the doe, some pulling was required (doe might or might not have been able to successfully kid without our help)
Older	Single	Difficult: Position of kid was normal, maybe got stuck with one knee. Since the kid was not born after 45 minutes we helped with some pulling (would probably not have been required).
Older	Twins	Difficult: First kid got stuck with its legs (head was out but no progress). Was relatively easy to get out after the legs were out. The second kid had crippled hind legs and had to be destroyed (birth weight was 2.83 kg)
Second	Single	Difficult: Only one front leg and head was out, second leg folded back. Maybe help would not have been required, with some more patience...
Maiden	Twins	Difficult: Both kids came at the same time, the first backward. The head of the second kid was ahead of the head of the first one, as a result the birth canal was blocked. We pushed the second kid back and then pulled the first one out.
Maiden	Twins	Difficult: First kid came head first, but both legs were back. Could only be delivered after we pulled one leg out.
Maiden	Twins	Difficult: First kid came head first and got stuck, needed some help, second one was born without problems within few minutes
Maiden	Twins	Difficult: Found doe early morning with head of first kid hanging out. Got stuck because second kid (backwards) blocked birth channel.
Maiden	Twins	Difficult: First kid had both legs back, so we helped, but would probably not have been required.
Maiden	Twins	Difficult: Both kids tried to get out at same time, got stuck. After a while of unsuccessful pushing and pulling from our side, we gave up and left the doe alone, and suddenly the kidding progressed successfully without further help.
Maiden	Twin	Difficult: Both kids wanted to come out at the same time and blocked each other. By pulling one out, the problem was solved.
Maiden	Single	Very difficult: Kid was simply too big to fit through the birth channel. Vet managed to pull the kid out, but by then it was dead (doe was culled at the next suitable occasion)

Maiden	Twins	Very difficult: Second kid had head bent back. Needed veterinarian to get it out. Because its spine was twisted, maybe from its position in the uterus, we destroyed it afterwards.
Third	Triplets	Very difficult: Somehow, the three kids blocked each other. Birth was not progressing for one day, before we called the veterinarian. All 3 kids survived.
Older	Twins	Very difficult: 1st kid was forwards with legs extended, but head back (according veterinarian a typical problem if birth channel is too narrow). Kid could only be extracted with great difficulties. 2nd one was easy.
Older	Triplets	Very difficult: First kid was transversely and blocked birth channel. Birth did not process. We tried to sort the problem but failed, and finally called veterinarian.
Third	Triplets	Very difficult: First kid was breech. We could pull it out. Second had head turned back, veterinarian was required to get it out. Position of 3rd not known, was also pulled out by veterinarian. All three kids survived.

6. Mortality

58 (4.6%) of the 1249 kids that were born on our farm were born dead, or died within the first week of their life. Table 8 shows the number of kids in total, and the number of male and female kids, that died from different causes, and Figure 7 shows the mortality rate for the different causes of death.

Table 8: Number of kids that were born dead or died within a week.

	Total	Males	Females
Born alive, died within a week	14	9	5
Born dead	9	3	6
Died during birth	10	6	4
Suffocated	9	5	4
Born alive with fatal defect	9	3	6
Born alive, too small to survive	3	2	1
Born too early (abortion)	4	2	2

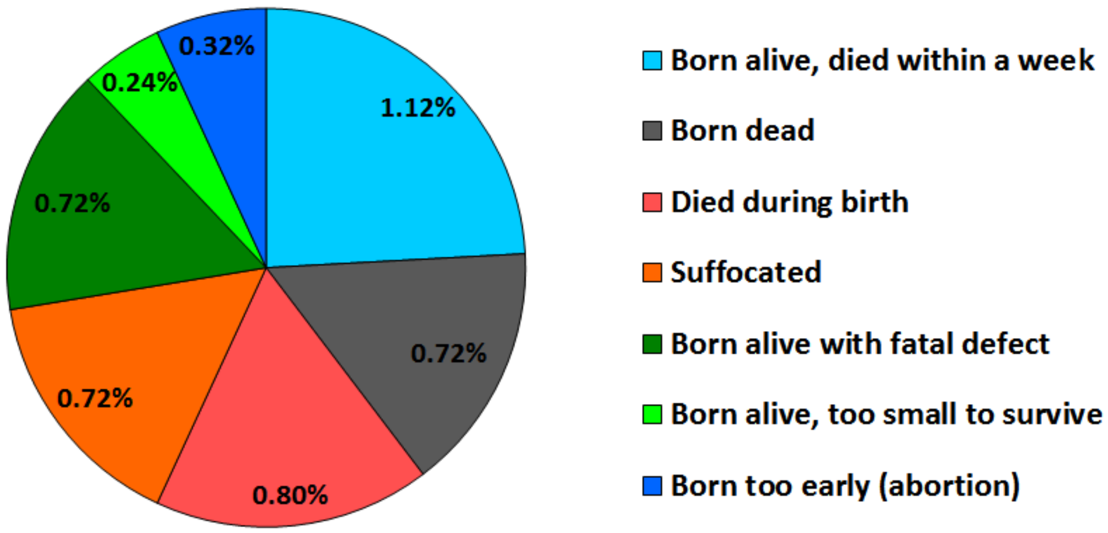


Figure 7: Mortality rate for the different causes of death.

Our data allow to identify several factors that might influence the death risk for newborn kids. Table 9 shows the mortality in regards to the sex of the kids, to the litter size, and for kids that were born by a maiden doe or an older doe. However, it has to be pointed out that the numbers of kids that died for different reasons at our farm are relatively small. The observed patterns might be within the normal statistical variance and, hence, statistically not significant.

Table 9: Dead kids and mortality rate for sex, litter size, and parity of the dam.

	Total	Sex		Litter size				Parity	
		Male	Female	Single	Twin	Triplet	Quadruplet	1st	higher
Kids born	1249	606	643	119	850	252	28	276	973
Kids dead	58	30	23	4	35	16	3	19	30
Mortality rate	4.6%	5.0%	3.6%	3.4%	4.1%	6.3%	10.7%	6.9%	3.1%

6.1. Sex as risk factor

Mortality rate of male kids was 40% higher than mortality rate of female kids at our farm. At first, this seems somewhat surprising, and might actually be within the normal, statistical variance for such a small set of data. However, from Table 8 it can be seen that mortality rate differed most between males and females in the group of those kids that were born alive, but died within the first days of their life, whereas all other fatal causes affected both sexes approximately equally.

Most of the kids that died some days after they were born were initially vital and seemed perfectly healthy, but then got increasingly weak and apathetic. Many of them developed a high fever and finally died from pneumonia. These symptoms are typical for kids that did not get enough colostrum within the first 12 hours of their life.

It is our observation that newborn bucklings tend to be more laid-back than doelings, but also clumsier. They sometimes have more difficulties, and it takes them longer, to find the teats than female kids, which are more active and energetic. Consequently, the risk to miss out on enough colostrum might be higher in bucklings than in doelings, which could explain the higher mortality rate of male kids.

6.2. Litter size as risk factor

As can be seen from Table 9, mortality rate increased with litter size. It was lowest in singles, and highest in quadruplets. This is not surprising, since the chance that something goes wrong during kidding increases with increasing number of kids involved. For example, the chance that kids get entangled is higher with multiple births. Also, if a dam has to produce multiple kids, the chance that some of them suffer from malnutrition and remain small and weak is higher than if the dam has only one kid.

6.3. Birth weight as risk factor

Mortality rate decreased with increasing birth weight (Figure 8). However, this decrease was not linear. Small kids (birth weight below 3.0 kg) were much more affected than bigger kids. For example, only 55% of the kids survived that were less than 2.0 kg at birth.

Particularly big kid (> 5.0 kg birth weight), on the other hand, had the lowest mortality rate. This seems to be in contradiction to the common expectation that big kids can be too big for the dam to deliver, but can be explained by our observation that, in general, those dams which had very big kids were also big animals themselves.

We only had one case where the kid died during birth because it was obviously too big for the dam to deliver. This kid's birth weight was 4.76 kg, and the dam weighed 54 kg (two weeks before kidding). According to the veterinarian, who pulled the kid out, the problem was not primarily that the kid was too big, but more that the mother's birth channel was too narrow.

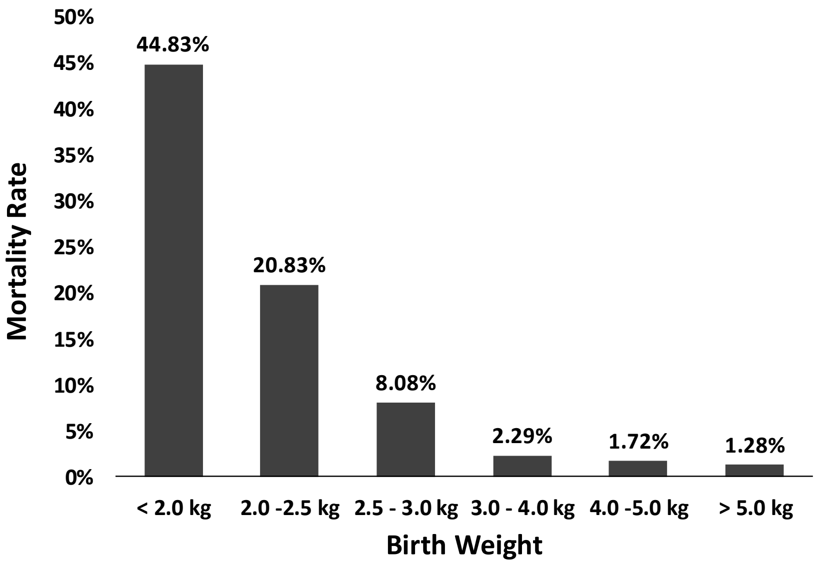


Figure 8: Mortality rate for kids of different birth weight.

6.4. Condition of the dam as risk factor

It is our experience that the condition of the dam during the last months of pregnancy, and particular during the time shortly before kidding, has a major influence on the survival chance of the kid, mainly for two reasons:

Poor condition of the dam during the second half of the pregnancy results in small kids, which have a higher mortality rate than bigger kids (see Chapter 6.3, above).

If the dam is in poor condition shortly before kidding, the kids will be born with a low sugar level in their blood, which is their only energy source before their first drink. Such kids are weak, have difficulties to find the teats and suckle, and will quickly become hypothermic.

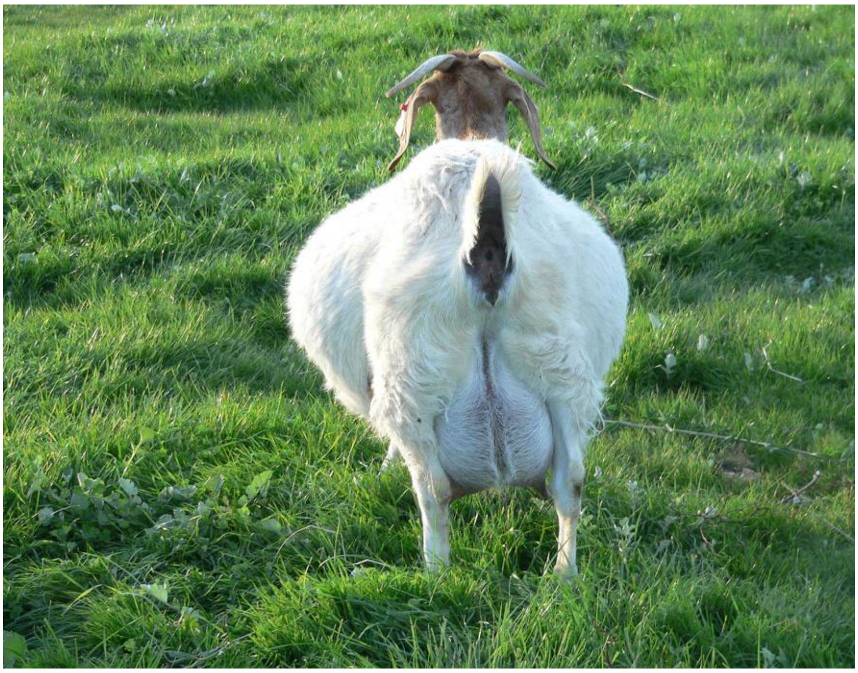
Since we don't monitor and record the condition of our goats regularly, we don't have data to statistically analyse the adverse effects of poor condition of the dam on kidding and kids' mortality. However, the data from 2009 can be used as example to illustrate how a poor condition of the dam translates into litter size, birth weight, and mortality (see Chapter 4, page 9 for more explanations). Because of a very late start of the winter rain, the feed conditions on our paddock were exceptionally poor in 2009, and the condition of the goats was accordingly. The mortality rate was 9.9% (213% of the overall average), which was higher than in any other year.

6.5. How to keep mortality rate low

Following is a list of management advices that can help to keep kidding mortality low. The recommendations are a based on our own experiences from 12 years of goat farming.

It has to be pointed out that every birth is an individual event, and that there are no rules that apply in every situation. To assess a specific situation, it is usually required to consider a combination of several different symptoms.

a) Make sure the goat is in good condition (but not fat!) during the second half of the pregnancy, and in particular shortly before kidding. "Good condition" means a condition score of 3.0 or 3.5. The body weight of a pregnant goat should increase 30-40% during the last 2 months before kidding. This will give the goat the strength and energy reserves for successful kidding, and will help her to get through the tough first days after kidding. It will also make sure the kid is born with a high blood sugar level, which is its only energy source until it had its first drink of colostrum.



Picture 3: Pregnant Boer goat a few days before kidding.

b) If goats are subject to a vaccination schedule, they should be vaccinated approximately 4 weeks before their due date. This ensures a maximal protection of the newborns through the antibodies they receive with the colostrum.

c) Because the gestation period in goats does not vary much (see Chapter 7), the date of parturition can be predicted from the date of mating fairly reliably and precisely. Hence, it is a good idea to closely observe the goat during joining, and record the date of mating, if it is observed.

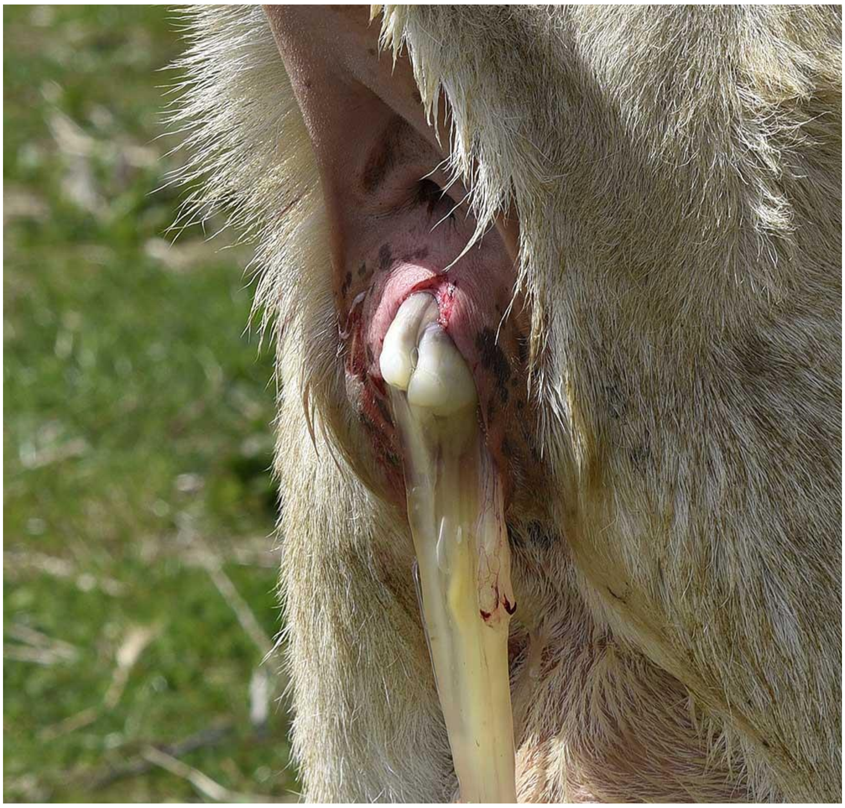
d) There are a number of symptoms goats might (or might not) show, which herald the imminent kidding:

- The goat might have a discharge of mucus, but this can already appear several days before kidding
- Sometimes the udder fills up and becomes big and hard during the last 24 hours before kidding. However, this is not a very reliable sign. Some goats don't bag up until after kidding, whereas others have a huge udder already several days before kidding.
- The belly of the goat might "drop" in the last 24 hours. Looking from behind, the shape of the goat changes from "apple" to "pear".

- The goat becomes restless, separates from the herd, and is searching for a suitable place for kidding.
- The goat might show signs of discomfort and might whinge softly from time to time.

e) Once the water sac has broken and/or the doe starts labouring ("pushing"), the first kid should be born within less than an hour, and the others should be following soon after. In maiden does, however, kidding can be slow and can last many hours. A general rule is that everything is OK as long as there is some progress, even if the progress is minimal. However, if, despite heavy labouring of the doe, no progress can be observed within 5 to 10 minutes, help might be required.

f) Another rule of thumb is that kidding problems are unlikely to occur as long as at least one foot of the kid becomes visible soon after labouring has started. However, if the head or the tail of the kid becomes visible, but no hoofs, it is likely that the goat will need help to deliver the kid.



Picture 4: This is how a normal parturition without problems looks like at the beginning: Two hoofs are visible. The direction of the hoofs (downwards) indicates that the kid will be born forwards, hence soon the nose will also become visible.

g) Occasionally the amniotic sac ("water bag") does not rupture when the head of the kid is outside the vulva, preventing the kid from breathing. Suffocation by the amniotic sac accounted for 16% of the mortality at our farm. To prevent such annoying and easily avoidable losses of newborns, we always attempt to be present during kidding and observe it, so that we can tear the bag open, if required.

h) Once all kids are born, the placentas (or afterbirth), are expelled. There is normally one placenta for every kid. Typically, this last phase of kidding starts within 1-2 hours after the last kid was born. If no placenta is expelled within this time, there might be one or more kids in the uterus that cannot be delivered because of their presentation (dystocia), or the placenta is retained. In both cases intervention is advisable.
Some goats will attempt to eat their placentas. This is an ancient behavioural pattern, probably with the purpose of avoiding predators. However, it does not make sense in farmed animals. Furthermore, goats are vegetarians, and their digestive system is not capable of digesting animal material. Eating their placentas will not allow them to recuperate nutrients and protein, as sometimes stated, but can result in severe diarrhoea. For this reasons, we recommend that goats are NOT allowed to eat their placentas.

Picture 5: The first born kids is already on its legs when the second one is born.

i) Newborn kids should be on their legs within a few minutes, and should be suckling from the teats of their mother within one hour. It is important that they get a good feed of colostrum within the first 6 - 12 hours of their life. If the kid is unable to drink within this period, for whatever reasons, we recommend to give the kid its first feed of colostrum with the bottle. Colostrum can be milked from the mother right after kidding, or colostrum that had been stored in the freezer can be used. Colostrum from cows should not be used, because it can destroy the kid's red blood cells and kill it.

Picture 6: The kid is having its first feed of colostrum shortly after it was born.

j) To prevent an infection of the umbilical cord (naval cord), which may cause severe polyarthritis of the leg joints ("joint ill") within the first months of the kid's life, we cut the umbilical cord to approximately 50mm and dip it in an iodine solution about an hour after kidding. However, we think that a good feed of colostrum during the first hours after birth, and a clean, hygienic environment during kidding is more important to prevent "joint ill" than the iodine treatment of the naval cord.

k) Newborns don't have the ability to regulate their body temperature. In cold conditions they quickly become hypothermic, if they are exposed to rain and wind, and in summer they will soon suffer from heat stress, if they are exposed to the sun. It is therefore important that they are sheltered against the wind, rain, and sun.
Despite our kidding paddocks offer a lot of different suitable shelters for kidding, the goats usually decide to kid at far less protected locations. We normally don't interfere, and allow the doe to kid where she wants, but move the kids to a sheltered place a while after kidding. This is best done by carrying the kids a few meters in the direction of the shelter at time to allow the mother to follow.

Picture 7: Newborn kids need to be sheltered against rain, wind, and sun.