

Videos on fertility in dairy cattle

Poor cattle fertility is recognised as a problem in LMICs but little data is available for the large number of small scale producers that make up the majority of animals kept in LMIC.

For many small holder farmers, their cows currently have a very low peak yield 2 months after calving. The levels then reduce rapidly. In some cases cows only produce milk for 5-8 months after calving or will produce very little milk per day and then spend an unproductive year to eighteen months before calving again.

The normal target would be to produce a live calf every 365 days, (the calving interval) and for dairy animals to milk for at least 10 months.

The aim is to produce videos that can be easily used, shared, translated and understood by farmers and advisors to improve cattle fertility and production.

Target Audience

There are two groups that these videos aim to reach:

Animal Health Service providers/Advisor : These would include Artificial Insemination (AI) technicians, NGO and Government advisors, Dairy inputs field staff, veterinary para professionals and veterinary surgeons in the field.

The first 3 videos can be used by advisors as a tool with small scale producers (SSP)

All the images are available as separate pdf handouts from the web site.

Video Topics

1. (SSP) Importance of Fertility, the Oestrus Cycle and heifer breeding
2. (SSP) Signs of Oestrus, detection, recording and AI
3. (SSP) Aids to Oestrus detection inc P4 Gold
4. (Advisors) - Pharmaceutical interventions for fertility management
5. (Advisors) - Investigating poor fertility. Inc data management, transition cow management, infectious causes and mineral balance,
6. (Advisors) Male Fertility and examining bulls
7. (Advisors) Pregnancy Confirmation, Rectal PD-You Tube Video on learning Rectal Pregnancy Confirmation.

Video Scripts (the disclaimer and copyright details are available as a separate pdf.)

A: Introduction for each Video

Welcome to this series of videos on Fertility in Cattle brought to you by livestockdevelopment.co.uk

These videos are for Animal Health Service providers or Extension workers such as Artificial Insemination (AI) technicians, NGO and Government Extension workers, Dairy inputs field staff, veterinary para professionals and veterinary surgeons in the field. Their aim is to improve production through improved fertility.

Video 1 Importance of Fertility, the Oestrus Cycle and heifer breeding

Reasons for keeping cows

This is Video 1. An Introduction to the importance of fertility, the Oestrus cycle and heifer breeding

1.1 Livestock is a livelihood strategy for over a billion people worldwide.

The most important reason animals are kept is for food and as a source of income from the sale of milk and meat.

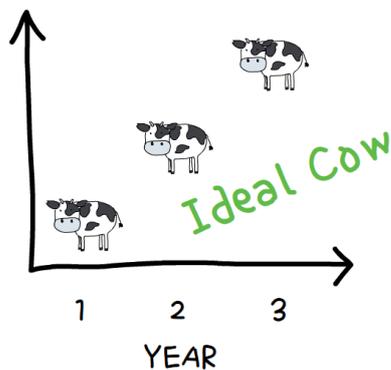
These videos are aimed at improving productivity but acknowledge that animals are also kept for other reasons which must be kept in mind. For their hides and wool, for draught power, for their manure, as a source of savings and economic resilience, and as social assets for marriages, prestige and social standing. These videos are aimed at cattle but the underlying principles can be applied to other ruminants whether sheep or goats, camels or water buffalo.

Importance fertility-Milk Production curve

Fertility is an important driver of production. The average time between one calf and the next for a group of cows is the known as the calving interval. The accepted goal is for a farm to maintain a calving interval of 365 days, this means a cow would therefore have to have a calf every year or 365 days to work with the seasonal supply of grazing.

The reason for this is that if a cow has a calf every 18 months rather than 12 months then over 3 years only 2 calves will be produced. Or in a herd then for every 3 cows only 2 calves are produced per year rather than 3 calves per year

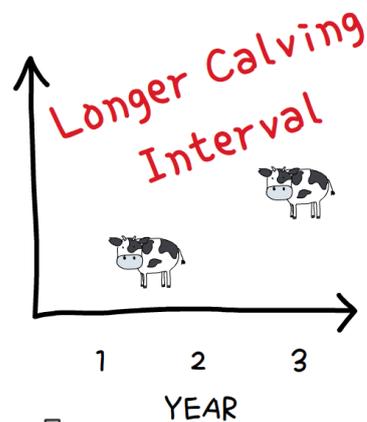
12 Months VS 18 Months



Calving at optimum time of year



Served 45 - 65 days post calving



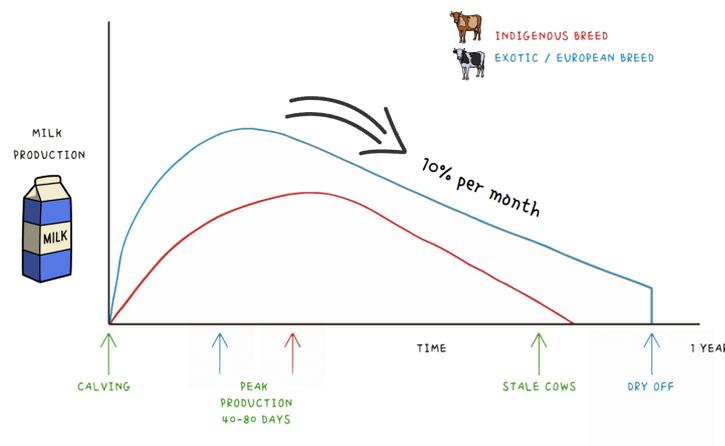
Longer time as stale cows



Lower milk yields

1.2 In European breeds, cows kept for milk production, then peak milk production occurs 40-60 days after calving. The milk yield then drops by 10% per month and are dried off 1-2 months before the next calving..

Indigenous breeds tend to produce less milk and peak later, 60-80 days after calving and will dry off or produce low volumes of milk after 5-6 months.



So cows that have a longer calving interval will spend longer time as stale cows either dry or producing lower milk yields than cows that calve again after a year. So the ideal cow or target produces a live calf, without problems at the optimum time of year. She then returns to oestrus and is served 45-65 days post calving and conceives.

Cows should not reduce their milk production on becoming pregnant, if they do it is suggestive of a nutritional problem.

1.3 Heifers

Heifers that calve down at 24 months, calve more easily, produce more milk, and become pregnant more quickly than older heifers. But they can only be served when they reach their target weight.

The International Livestock Research Institution (ILRI) has produced a growth chart for target weights for Friesian and Jersey Heifers.
 Goopy, J.P. and Gakige J.K. (eds.) 2016. Smallholder dairy farmer training manual. ILRI Manual 24. Nairobi, Kenya: International Livestock Research Institute (ILRI).



AGE (MONTHS)	FRIESIAN LIVE WEIGHT (KG)	JERSEY LIVE WEIGHT (KG)
2-3 (weaning)	90-110	65-85
12	250-270	200-230
15 (mating)	300-350	250-275
24 (pre-calving)	500-520	380-410

AHDB recommended targets (UK)

AGE (MONTHS)	% OF MATURE WEIGHT	% OF MATURE HEIGHT (KG)
0 (birth)		
3 (post-weaning)	17	63
6	27	74
14 (pre-breeding)	55	87
24 (calving)	90	96

The easiest way to measure weight if cattle scales are not available is to use a weigh band which measures the girth of the animal and converts it to the weight of that animal.

For indigenous breeds a growth chart of target weights should be produced between the Friesian and the Jersey cow targets or produce one for each breed or even for an individual farm using the ADHB recommendations of percentage of mature weight or height.

Calving well grown heifers at 24 months and good fertility means more calves and more milk for producers.

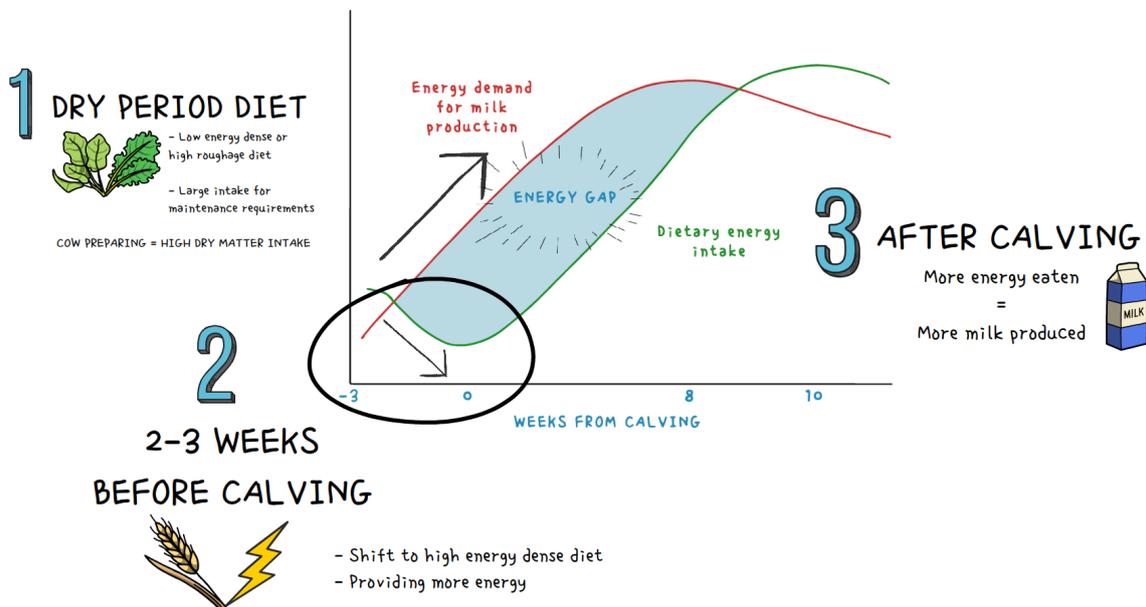
Our next video follows the important stages from before calving to being confirmed pregnant. Looking at: Transition cow management, Signs of oestrus and the advantages of Artificial Insemination

Video 2 Signs of Oestrus, detection, recording and AI

Welcome to video 2, this follows the important stages from before calving to being confirmed pregnant. Looking at: Transition cow management, Signs of oestrus and the advantages of Artificial Insemination

2.1 Transition cow management. As cows come up to calve their energy requirements increase, but their Dry Matter intake decreases. Cows during the dry period should therefore be fed a low energy dense or high roughage diet. This means a LARGE intake is required for maintenance requirements. Then as the cow prepares for calving the cow will still have a high dry matter intake.

At this time, in the last 2-3 weeks before calving, the diet should shift to a high energy



dense diet that provides more energy.

Most cows will go into a negative energy balance after calving as more energy is required for milk production than is provided by the cows feed intake. This means they lose weight and condition. The more energy a cow can eat at this point, the more milk it will produce and a higher peak yield will be achieved.

2.2 When the cow calves it should be in a dry and comfortable shed. If assistance is given, then hands should be washed and good hygiene observed as it is easy to introduce infection.

The cow should pass the placenta within 12 hours. If it is still present 24 hours later gentle traction should be used to encourage it come away. If it cannot be removed easily then gentle traction should be tried again at 48 hours and be examined by veterinary advisor.

2.3 Any vaginal discharge should stop by 10 days. If a cow has an infection or discharge beyond this, veterinary advice should be sought. This can be managed by either a dilute povidine wash out or by intra uterine antibiotics.

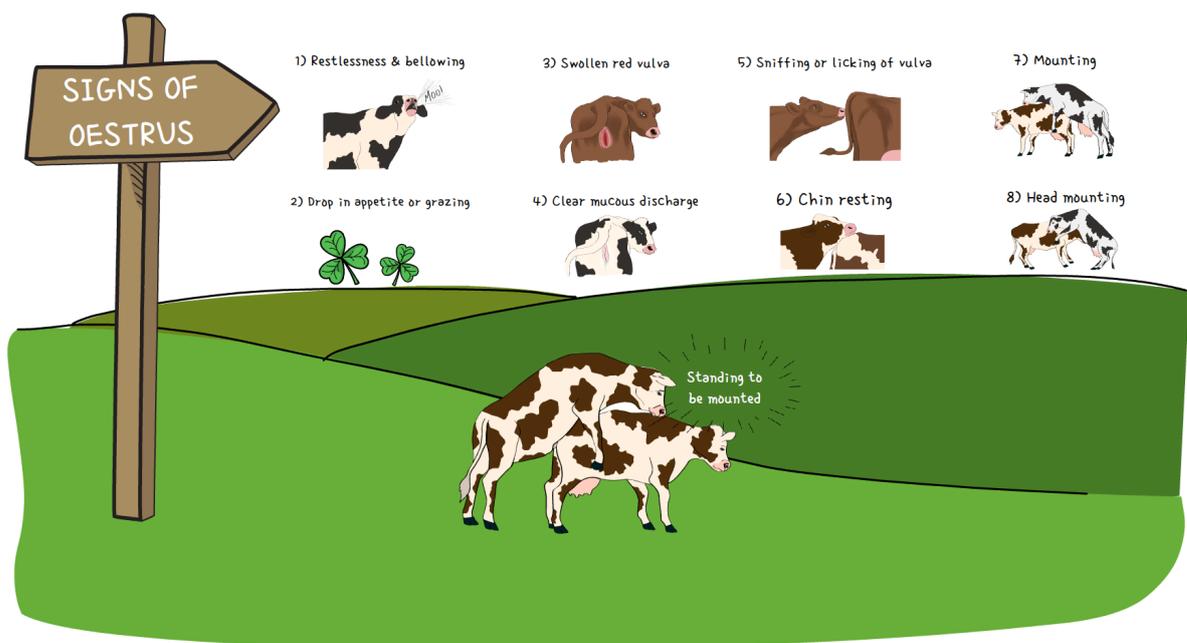
2.4 Cows return to oestrus 35-60 days after calving. Cows not seen in season by 2 months post calving should be checked by the vet.

The voluntary waiting period is the time after calving that a farmer waits before allowing a cow to be served.

The normal cycle is 21/22 days long but can vary from 18-23 days. Heifers tend to have shorter cycles 20/21 days.

2.5 Average duration of a heat is half a day but can vary from a few hours to a full day.

The definitive sign of oestrus is a cow standing to be mounted by a bull or another cow



The signs of oestrus can include:

Restlessness, bellowing

Drop in appetite/grazing

Swollen red vulva

Clear mucous discharge

Sniffing or licking of vulva

Chin resting on other cows

Mounting or attempting to mount other cows

Head mounting another cow

But remember, the definitive sign of oestrus is a cow standing to be mounted by a bull or another cow

2.6 Fewer behavioural signs are seen during heat stress, <pause>
poor nutrition
in animals tied in stalls
or in small groups of animals.

Signs are more likely to be observed in the cool of early morning and evening and when animals are mixing.

Cows should be observed two or three times a day for oestrus. With particular attention at 18-23 days after the last heat.

2.7 Prompt record keeping helps the farmer identify which cows may be coming in to oestrus, which animals have been served by which bull and prevent future inbreeding. There are different ways farm records can be kept from simple paper cards to spread sheets and advanced software programs. Good records can guide decisions on how to manage your cows, measure the productivity of the cows, decisions on culling and selection.

2.8 For small scale producers with only a few cows the normal variation in the calving interval makes seeing any underlying fertility issue difficult to assess. So vets and advisors should where possible collect and analyse data over villages or groups of cows 30-50 cows to identify problems. The information that is recorded needs to be discussed and driven by the farmer. It must be easy to record, easy to use and make a difference to decisions. The key drivers for fertility and therefore milk production and number of calves born are the age at first calving of heifers and the calving interval. Examples of record keeping are discussed in video 5.

2.9 Artificial Insemination

The advantages of Artificial Insemination are:

To choose from a wide variety of better and known quality bulls

Increases genetic gain in a herd

To choose beef or dairy sires and if sexed semen is available heifer or bull calves

The semen is quality checked and fertile

Minimises the risks of sexually transmitted diseases

Reduces keeping costs and risks of keeping bulls

The disadvantages

Requires better oestrus detection and training of farmers to replace the bull at identifying cows in season

Requires availability of trained AI service providers

Requires a supply of liquid nitrogen and quality control on the tanks

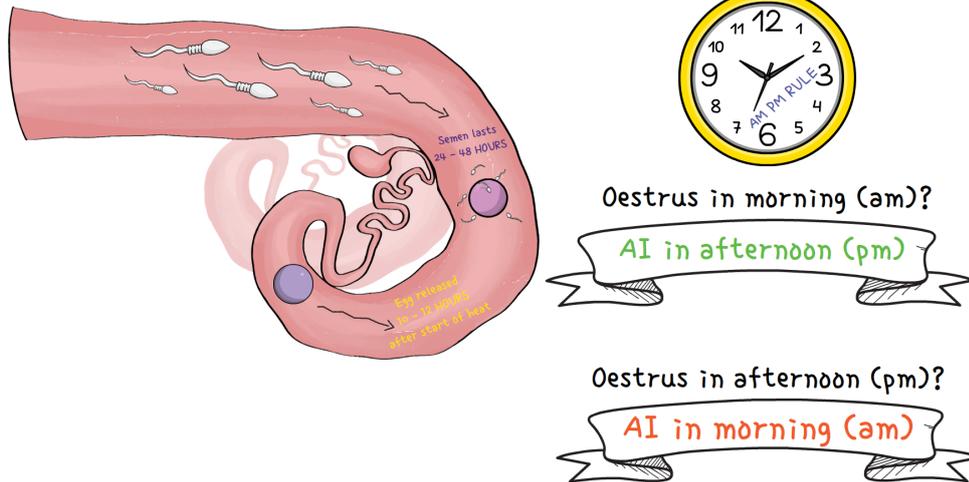
2.9.1 Artificial Insemination Timing-The am/pm rule

The correct timing of AI is so that the ova meets spermatozoa at the correct location

The egg is released 10-12 hours after the onset of oestrus and semen lasts in the uterus for up to 24-48 hours. As it is difficult to know when the oestrus started and timing is critical, the best advice is to follow the am/pm rule:

If the cow is seen in oestrus in the morning (am) AI in the afternoon (pm)
If the cow is seen in the afternoon (pm) then AI the following morning (am)

This will help to achieve best conception rates. The key to good fertility with AI is good observation of oestrus



As oestrus detection is such an important part of fertility management the next video looks at the aids that can be used to help farmers identify when their cows are in oestrus including the use of P4 Gold to measure milk progesterone.
(SSP) Aids to Oestrus detection inc P4 Gold

Video 3 Aids to Oestrus detection inc P4 Gold

Welcome to video 3, this looks at aids to oestrus detection including the use of P4 Gold to measure milk progesterone.

As oestrus detection is such an important part of fertility management there are a number of aids that can be used to help farmers identify when their cows are in oestrus.

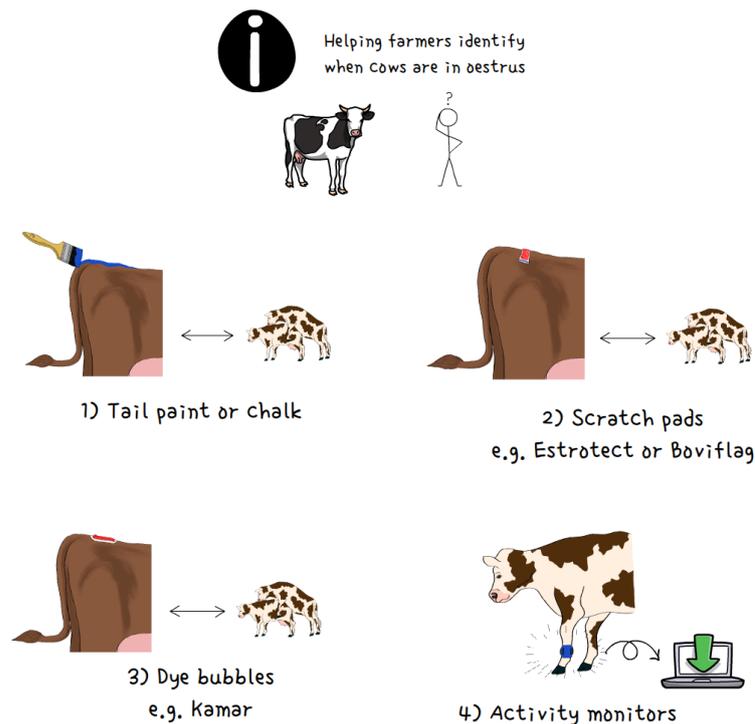
3.1 Mounting detectors

The simplest of these is tail paint or chalk that is painted on to the tail head. When another cow mounts the cow it is rubbed off showing that the cow is in oestrus.

There are a number of manufactured devices. This includes scratch pads eg Estrotect/ Boviflag When another cow mounts the outer covering is scratched off or dye bubbles that burst to give a visual symbol for example Kamar/

3.2 Activity Monitors or Fitbits for cows

These are electronic devices that measure the cows movement which increases during oestrus. These are either Pedometers attached to the feet or Rumination monitors attached to the neck. They require for the information to be downloaded to a computer and analysed. They are expensive but reusable and are aimed at large herds. Several groups are trying to make them available to small holder farmers in the future.



3.4 P4 Gold

This is a rapid milk test for progesterone and measures the progesterone level in milk.

3. To understand the test we need to understand the cows reproductive cycle and how progesterone levels change over the 21 days.

When the progesterone levels drop, the oestrogen levels rise and the cow comes into oestrus. Whether she is served or not the progesterone levels rise again after 24-48 hours in response to the corpus luteum forming in the ovary.

If she is not pregnant the levels will then fall 18-24 days later as she comes back in to season.

If she is pregnant then the levels do not fall at 18-24 days later.

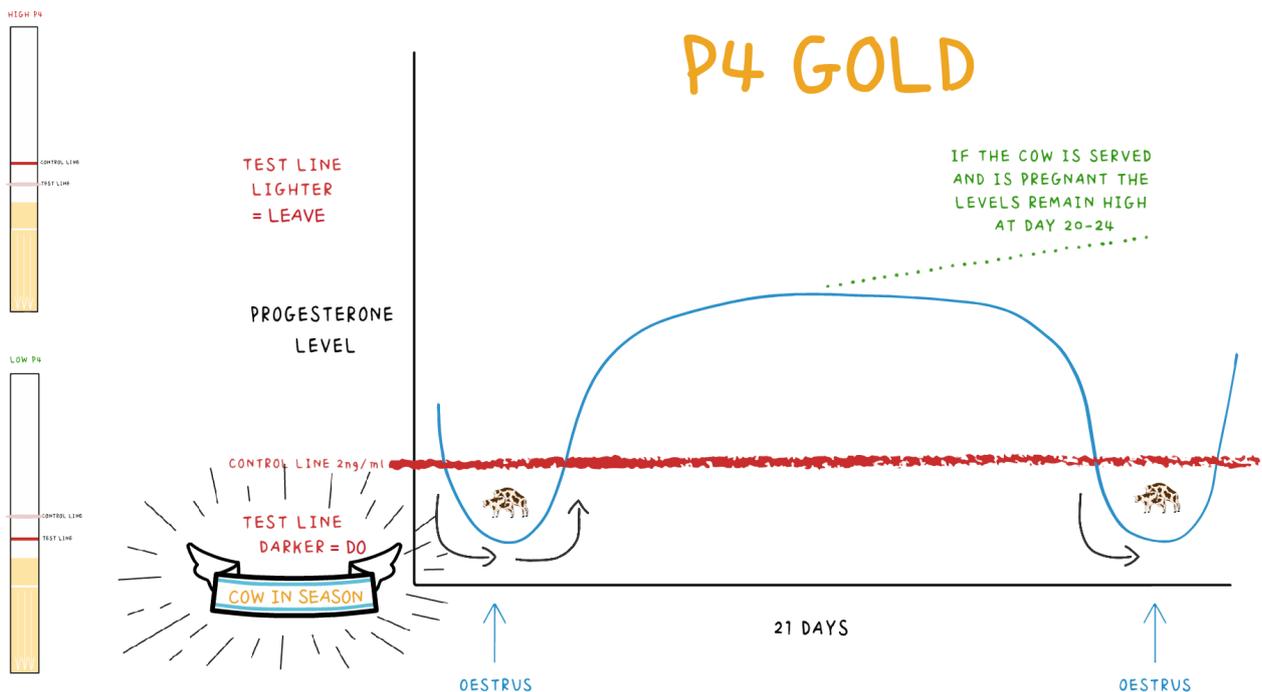
3.5 In the P4 Gold test there are two lines that are produced in a competitive assay.

The test line and a control line which has a known amount of progesterone.

If the test line is darker than the control line then progesterone is low, which means the cow is in season. Test Darker = Do

If the test line is lighter than the control line then progesterone is high, which means the cow is mid cycle or pregnant. Test Lighter = Leave

If the lines are the same it means the progesterone levels are roughly equal so the cow is either coming in to oestrus or is coming out of oestrus and re testing is recommended



3.6 So by testing the milk in cows, AI technicians or farmers can check to see if a cow has low progesterone and is in season and ready to be served.

The definitive sign of oestrus is a cow standing to be mounted by a bull or another cow.

There are a number of pharmaceutical interventions for fertility management that may be available from your veterinary surgeon. The next video describes these interventions.

Video 4. (Advisors) - Pharmaceutical interventions for fertility management

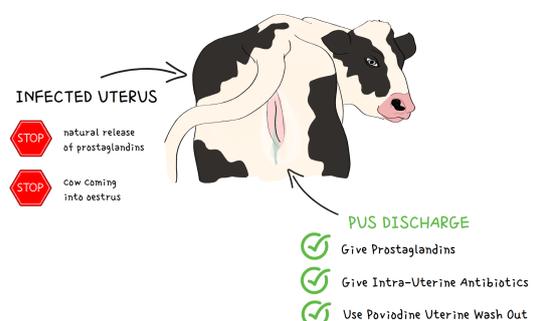
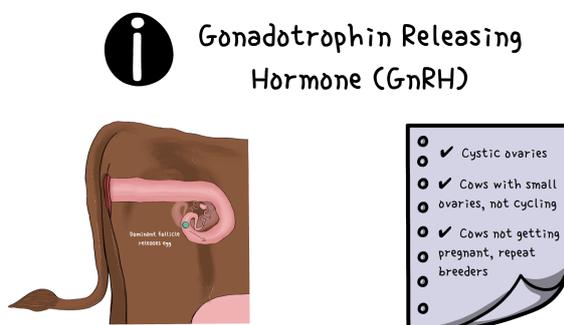
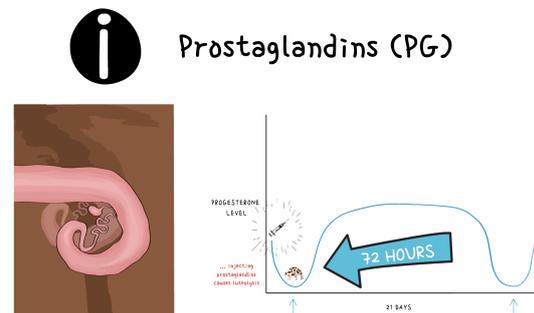
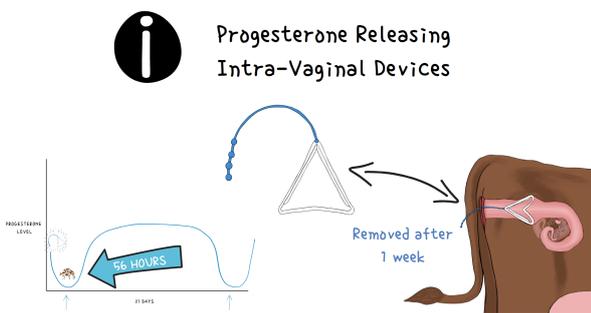
4.1 Welcome to video 4, this looks at the Pharmaceutical interventions for fertility management.

There are a number of interventions that may be available from your veterinary surgeon depending on the local situation. This video describes the generic interventions and tools but local licensing and regulations may vary. Please consult your veterinary surgeon about the health and fertility of your animals.

4.2 When the progesterone levels drop, the oestrogen levels rise and the cow comes into oestrus. Whether she is served or not the progesterone levels rise again after 24-48 hours in response to the corpus luteum forming in the ovary.

If she is not pregnant the levels will then fall 18-24 days later as she comes back in to season.

4.3 Progesterone releasing intra-vaginal devices. These come in various shapes and forms; Coils, wings, paddles and delta shapes. They are inserted into the vagina where they release progesterone. When they are removed after a week the drop in the progesterone levels mimics the drop in progesterone before a cow comes in to oestrus. This drop in progesterone kickstarts the cow in to cycling. Cows are served 56 hours after removal of the device.



4.4 Prostaglandin

Prostaglandins (PG) cause what is called luteolysis. If a cow has a corpus luteum on its ovary, prostaglandins cause it to lyse and disappear. The corpus luteum produces

progesterone. So giving prostaglandins causes the luteolysis, progesterone levels fall and the cow comes in to season and can be served 72 hours after injection. The corpus luteum also maintains pregnancy so injecting in early pregnancy with prostaglandin causes abortion.

4.5 GnRH

Gonadotrophin Releasing Hormone causes the release of another hormone Luteinising hormone. Along with other hormones, this causes the dominant follicle in the ovary to release the egg, for a corpus luteum to form and a new wave of follicles to form.

GnRH can be used for cystic ovaries or where cows are coming in to oestrus every few days.

GnRH is used to stimulate cows with small ovaries that are not cycling in to season.

GnRH can be used in cows that are not getting pregnant, repeat breeders.

4.6 Wash out/Pyometra

If cows have infections in their uterus after calving then they will continue to discharge pus from the uterus. The inflammation of the uterus stops the natural release of prostaglandins and it can stop the cow from coming in to oestrus. If the cow does come into oestrus then pus maybe seen in the mucous discharge from the vulva.

This can be treated by giving prostaglandins, by giving intra uterine antibiotics or by using a special povidine uterine wash out.

4.7 Beyond these simple induction or synchronisations, there are a number of different programs that are used in different situations to synchronise cows for artificial insemination.

Combining prostaglandin, GnRH and Intra vaginal progesterone releasing devices.

For example a Prostaglandin injection 12-24 hours prior to removal of a progesterone releasing device may increase conception rates.

4.7.3 Ov Synch

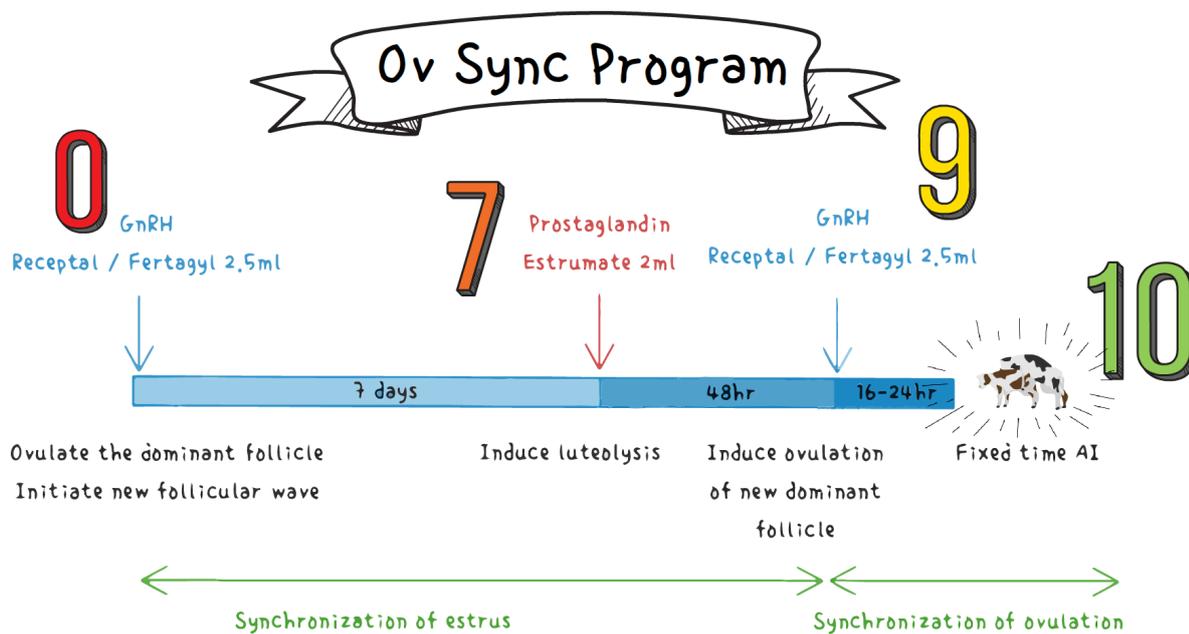
The standard Ov Synch program to synchronise cows or to get cows to come in to season is as follows:

Day 0 GnRH is given to form a new wave of follicles.

Day 7 Prostaglandin injection is given to lyse any Corpus luteum that may be present.

Day 9 (48 hours after Prostaglandin) GnRH is injected to cause the dominant follicle to release the egg and form a new corpus luteum.

Day 10 (16-24 hours) Fixed time AI



This video describes generic interventions and tools but local licensing and regulations may vary. Please consult your veterinary surgeon about the health and fertility of your animals.

Why is my cow not pregnant? That is a question that always needs answered but in an individual cow is very difficult to answer. Fertility is always about probability, the chance of a cow getting pregnant. The next video looks at that question.

5. (Advisors) - Investigating poor fertility. Inc data management, transition cow management, infectious causes and mineral balance.

5.1 Why is my cow not pregnant? That is a question that always needs answered but in an individual cow is very difficult to answer. Welcome to Video 5 and this video aims to help answer that question.

Fertility is always about probability, the chance of a cow becoming pregnant. On good farms then three quarters of cows will become pregnant at the correct time. For small holder farms, there are too few animals to be able to make inferences as the numbers are too small. However in groups of animals it is possible to investigate possible reasons. So data from small holder farms need to be grouped. This can be done in to villages or vet practices, by bull or AI technician, or geographies or selling groups with similar situations and practices.

Only if there is good record keeping can any investigation be under taken.

Records can be kept in books, on spreadsheets or on apps or software.

The information that is recorded needs to be discussed and driven by the farmer. It must be easy to record, easy to use and make a difference to decisions.

Good records can guide decisions on how to manage your cows, measure the productivity of the cows, aid decisions on culling and selection.

The key drivers for fertility and therefore milk production and number of calves born are the age at first calving of heifers and the calving interval.

5.2 What is poor fertility?

Poor fertility is having fewer cows calving than is desirable.

When setting targets they should be done in participation with the groups of farmers, taking heed of constraints of resources, feed, and why animals are kept.

5.3 There are two main aims for good fertility to improve production and profitability.

Age of first calving for heifers. Target is an average of 24 months, (but not less than 22 months and not below the recommended target weight). An average of beyond 28 months should be investigated.

A calving index target of 365 days (An average of more than 395 days should be investigated)

However both of these are historical, representing what has happened in the past and when measured and reported cannot be changed.

So for example measuring growth rates of heifers and what age they are served means that interventions can be made if necessary.

5.4.1 As the calving index is always at least a year out of date, so better metrics that allows farmers and advisors to respond are:

The Conception rate which is the No of cows pregnant/No of cows served

and the calving to conception interval(Interval between calving and when a cow becomes pregnant)

A similar measure expressed differently is the no of services per pregnancy.

Prompt record keeping helps the farmer identify which cows may be coming in to oestrus which animals have been served by which bull and prevent future inbreeding.

A simple paper record should include:

Cow ID, Cows Date of birth, Date of 1st Calving, (To calculate the age of first calving in months)

Farmers should then record when the cow first comes in to oestrus, and write down a date 21 days later to monitor her to see her return to oestrus. If she is over 42 days post calving then she should either be taken to a bull or AI'd.

5.4.2 SNV has produced a table of indicators but local discussion on what data can be easily collected, how it is to be grouped, whether cows can be confirmed in calf,

Cow ID	Date of birth (Year)	Calving date	Days from 1st Calving to 2nd Calving	Services	Days to 1st Calving	Days to 2nd Calving	Days to 3rd Calving	Days to 4th Calving	Days to 5th Calving	Days to 6th Calving	Days to 7th Calving	Days to 8th Calving	Days to 9th Calving	Days to 10th Calving

Indicator	Unit	Year	Unit
First Heat - Months - Days			
Age at 1st Calving (Months)	Months	2015	2016
Calving Interval (Days)	Days	2015	2016
Days to 1st Calving after 1st Oestrus	Days	2015	2016
Days to 2nd Calving after 2nd Oestrus	Days	2015	2016
Days to 3rd Calving after 3rd Oestrus	Days	2015	2016
Days to 4th Calving after 4th Oestrus	Days	2015	2016
Days to 5th Calving after 5th Oestrus	Days	2015	2016
Days to 6th Calving after 6th Oestrus	Days	2015	2016
Days to 7th Calving after 7th Oestrus	Days	2015	2016
Days to 8th Calving after 8th Oestrus	Days	2015	2016
Days to 9th Calving after 9th Oestrus	Days	2015	2016
Days to 10th Calving after 10th Oestrus	Days	2015	2016
Days to 11th Calving after 11th Oestrus	Days	2015	2016
Days to 12th Calving after 12th Oestrus	Days	2015	2016
Days to 13th Calving after 13th Oestrus	Days	2015	2016
Days to 14th Calving after 14th Oestrus	Days	2015	2016
Days to 15th Calving after 15th Oestrus	Days	2015	2016
Days to 16th Calving after 16th Oestrus	Days	2015	2016
Days to 17th Calving after 17th Oestrus	Days	2015	2016
Days to 18th Calving after 18th Oestrus	Days	2015	2016
Days to 19th Calving after 19th Oestrus	Days	2015	2016
Days to 20th Calving after 20th Oestrus	Days	2015	2016

For an individual cow this would include

The age at first calving, the calving interval and days to first oestrus.

As fertility depends on probability, cows need to be grouped into a minimum of 30-50 cows to get average figures that are meaningful. For example by village or by AI service provider

For this grouping looking at the Average figures for Calving Interval, for first heat after calving, average no of days to first AI or service and average no of services per pregnancy or conception allows advisors to identify and investigate problems

5.5 Poor Conception rates

The causes of poor conception rates can be from a range of causes.

If very few cows are getting pregnant, and all returning with normal cycles the most likely problem is with the bull or the quality of the semen.

If some cows are returning but at irregular intervals, not at 21 or 42 days then the most likely cause is some form of infection or early embryo loss.

If too many cows are returning at regular intervals (21 and 42 days) then the most likely problem is nutritional or transitional management.

5.5.1 Poor feeding. Dairy cows should have food and water in front of them all the time. Cows are fermenters of the fodder and require plenty of water to get good fermentation in the rumen.

Lack of energy or protein in the diet will reduce fertility. Rain fed pasture, range feeding and pastoralist systems will have times of shortage, and low fertility. Fodder conservation to cover seasonal shortages improves fertility.

Cows require to eat:

350-450g of crude protein for maintenance per day plus 80g per litre of milk

55-75MJ of Metabolisable Energy (ME) for maintenance per day plus 5MJ per litre of milk

For further nutrition advice see the SNV handbook or ILRI reference. The links are below this video.

5.5.2 Poor transitioning from dry cows to milking. If cows are over fat, or have a high negative energy balance then their conception rates will fall. Holstein cows should be kept on a low energy dense, high roughage diet during the dry period. This means that they have to eat a lot of food to maintain their low energy requirements. This maintains rumen function and high dry matter intake. When they calve and have high energy requirements to produce milk, they can transition to eating larger quantities of a high energy diet, reducing the negative energy balance. Cows in negative energy balance have a higher incidence of uterine infections and fertility problems.

The transition to high energy diets should take place slowly over the two to three weeks before calving.

5.5.3 Even if cows are well fed, if they are low in trace elements such as Selenium, Cobalt, copper or Iodine then they will be less fertile. Establishing these levels may or may not be possible, but supplementation of deficiencies can improve fertility in a district. This is especially important when importing exotic genetics. Care should be used in supplementing with copper or general minerals.

5.5.4 Do not forget to include the bull when supplementing cows with minerals. As bulls are important in getting cows in calf, our next video looks at the importance of bulls.

Hopefully this video will help advisors answer the question Why is my cow not pregnant? But in an individual cow it is very difficult to answer. The key to identifying and investigating a problem is good record keeping. Fertility is always about probability, the chance of a cow getting pregnant.

For good conception rates then good fertile semen needs to be available. Our next video looks at issues with AI and the importance of bulls.

Video 6 (Advisors) Fertile semen

6.1 For good conception rates then good fertile semen needs to be available. This is video 6 and looks at issues with AI and the importance of bulls.

Semen from AI will be tested to ensure fertility. However poor storage may cause reductions or no fertile semen in the straws. Temperature variation caused by lifting semen straws out of flasks or by low levels of liquid nitrogen will reduce semen fertility.

6.2 Poor AI technique will reduce conception rates, so most Artificial Insemination Service Providers (AISP) will monitor the conception/return rates, where available, from their different technicians.

6.3 The majority of cows in LIMC are still served by a bull. Checking on a bull's fertility is a veterinary task but there are some simple checks that can be carried out that can give an indication.

6.3 Bulls should be well grown, in good general health, well fed and not be deficient in selenium, copper, cobalt or iodine.

Any illness will reduce sperm production for up to two months, so any bull that has been ill should be rested for 2 months.

Bulls need a sound footing and space to serve cows. Lameness or slippery or muddy flooring will reduce fertility. Housing with low roofs will dissuade bulls from mounting.

6.4 Measuring scrotal circumference is a good indicator of puberty and indicator of sperm production which is related to the size of the testes. The size of the testes is also genetically related to an earlier return to oestrus post calving in female relatives.

The bull should be safely restrained and either a non stretchable string or direct cotton tape measure used to measure the widest circumference around both testes. The operator should palpate the testes which should move freely in the scrotum, be of uniform size and consistency, and have no lumps or bumps or signs of infection.

The measurement should be repeated several times and a median measurement used.

<https://www.beefcentral.com/genetics/understanding-why-and-how-to-measure-scrotal-size/>

For breed societies a Barth or Reliabull tape should be used as it gives more accurate and reliable measurements.

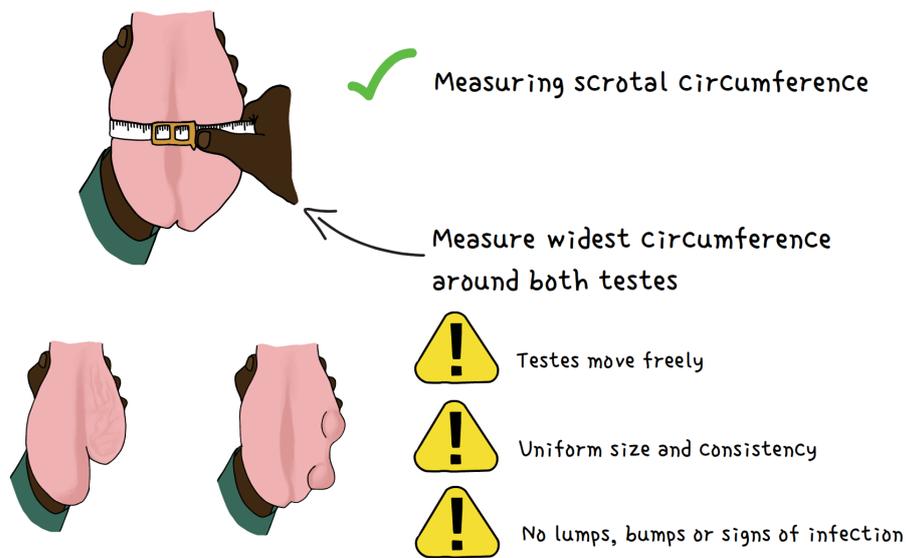
The size of the testes will vary according to weight, puberty, the season and to the body condition of the bull. An indication of minimum standards are given below but bigger is better. Swollen, painful or odd sized testes are signs of infection that are likely to reduce infection. Local breed societies will have minimum circumferences for breeding bulls.

6.5 Sharing bulls, also means sharing any diseases that the bull may be carrying from farm to farm. So bulls should only be shared in local groups.

Monitoring of cows returning to oestrus will give an early indication of problems with bull fertility.

We have also produced a video that looks at the manual confirmation of pregnancy.

This is a simple cost effective technique that although it requires practice to learn, it can be a very useful tool for extension workers to intervene and improve cattle fertility.



Age of bull	European / Temperate Breeds	Tropical breeds
18 - 24 months	32cm	28cm
24 - 35 months	33cm	30cm
Above 36 months	34cm	32cm

BIGGER is BETTER

It can be viewed either as an Omnibus or in three sections demonstrating how to learn the technique of manual confirmation of pregnancy.

Fertility is an important driver of production. Calving well grown heifers at 24 months and good fertility means more calves and more milk for producers.

Video 7 (Advisors) - Pregnancy Confirmation, Rectal PD-You Tube Video on learning Rectal Pregnancy Confirmation.

These videos are available as an omnibus edition or in 3 shorter videos.

Confirmation of pregnancy is usually done by either a vet or qualified AI service provider 2-3 months after service, so that if the cow is not pregnant then it can be brought back in to oestrus and served or any problem treated.

While ultrasound using a rectal probe provides early confirmation of pregnancy the costs and availability may limit its use.

This video explains the basics of manual rectal pregnancy confirmation and should only be used in conjunction with an approved training course. Local regulations concerning confirmation of pregnancy should be followed. There are always three outcomes from a pregnancy confirmation. Pregnant, not pregnant and not sure. Always be prepared to reexamine animals three weeks later.

Manual rectal pregnancy confirmation is a task that can be mastered quite easily but requires a lot of practice so that the operator can confidently identify the cervix, the non pregnant uterus and then the pregnant uterus.

The procedure of rectal confirmation of pregnancy is to insert a gloved left arm in to the rectum, sweep the edge of the pelvic brim, identify the cervix, pull the uterus into the pelvis and palpate the uterine horns.

In learning the technique it is important to be confident to identifying non pregnant structures before moving on to pregnant structures.

The videos are broken down into 4 Sections

Stage 1 Non-pregnant Slaughterhouse samples

Stage 2 Model Cow

Stage 3 Non Pregnant cows

Stage 4 Pregnancy Confirmation

7.1 Stage 1 Non-pregnant Slaughterhouse samples

Non pregnant slaughterhouse samples should be examined using gloved hands to simulate the pregnancy confirmation.

1.1 Identify by visualisation and feel the main structures.

The cervix is made of cartilage, and feels firm to the touch. It is always the first structure to identify.

The uterus horns are softer, usually similar finger shaped and sized with the ovaries tucked in behind them.

1.2 When the students are confident about handling and identifying the different structures. They should each approach from vagina end, identify the cervix, feel along the horns of the uterus and then cup the uterine horns in their hand and move their hand around the uterus and ovaries.

1.3 This should then be repeated several times.

1.4 When confident, the slaughterhouse sample should be placed in a black plastic sack and the students asked to repeat the exercise without being able to see. They should be able to manipulate the sample to line up the cervix, uterine horns and examine as above.

This should be repeated several times.

7.2 Stage 2 Model Cow

2.1 A simple model cow can be set up using a bucket with the bottom removed turned on its side and taped to a board. This acts as the pelvis. The slaughterhouse sample can be placed in the bucket and the vagina tied to the board at the edge of the bucket. A black plastic sheet or bag to cover the back end of the cow which can have a hole added.

2.2 The procedure of rectal confirmation of pregnancy is to insert a gloved left arm in to the rectum, sweep the edge of the pelvic brim, identify the cervix, pull the uterus into the pelvis and palpate the uterine horns. Each student should repeat several times.

2.3 Once confident the students should repeat the exercise. This time tie the hand end of a rectal glove and hold the plastic tube rectal glove in place through the bucket acting as a rectum. The students should feel the structures through the model rectum.

2.4 As slaughter house early pregnancy samples are difficult to obtain, a model 8 week pregnant uterus can be fabricated and put in place. If two condoms or long balloons are filled with half water and half lubricant and tied off they can represent the uterine horns. The 5cm tip of a third condom or long balloon can be filled with DIY silicon (used to seal bathrooms and windows) and tied off. The three can be tied together and represent the 8 week pregnant uterus. The students should examine the model pregnant uterus.

2.5 The students should take turns using the model swapping around the slaughter house samples and the model pregnant uterus.

7.3 Stage 3 Non Pregnant cows

3.1 Cows must be safely restrained to prevent injury to themselves or the operators. Examination of cows in oestrus, when there is a lot of uterine tone is easiest for those new to the technique.

3.2 The procedure of rectal confirmation of pregnancy is to insert a gloved left arm in to the rectum, sweep the edge of the pelvic brim, identify the cervix, pull the uterus into the pelvis and palpate the uterine horns.

3.3 If there are a lot of faeces present in the rectum or the cow is on a high fibre diet with dry bulky faeces it may be necessary to empty the rectum prior.

It is important to be confident in identifying non pregnant structures before trying to identify pregnant ones. The pulse of the femoral artery should be identified in either side of the pelvis.

7.4 Stage 4 Pregnancy Confirmation

4.1 There are always three outcomes from a pregnancy confirmation. Pregnant, not pregnant and not sure. Always be prepared to reexamine animals three weeks later.

Manual rectal pregnancy confirmation is a task that can be mastered quite easily but requires a lot of practice so that the operator can confidently identify the cervix, the non pregnant uterus and then the pregnant uterus.

The procedure of rectal confirmation of pregnancy is to insert a gloved left arm in to the rectum, sweep the edge of the pelvic brim, identify the cervix, pull the uterus into the pelvis and palpate the uterine horns. When students are confident in identifying the non pregnant structures then pregnancy confirmation examination can be practiced.

4.2 If the uterine horns are fluid filled they are 2 months pregnant.

4.3 If the cervix cannot be pulled back in to the pelvis then the cow may be more than 10 weeks pregnant.

Follow the cervix down and move your hand up and down.

If you feel a calf then the cow is pregnant!

Feel for cotyledons, which can be felt from 12 weeks.

Feel for the uterine arteries either side of the cervix. If you can feel a pulse in the uterine artery, which is moveable then the cow is 6 months plus pregnant. Do not confuse with the femoral artery which is not moveable.

4.4 If you cannot feel any of these and cannot retract the uterus, or you are not sure what you are feeling then seek professional veterinary advice as there maybe other reasons for the uterus not retracting. There are always three outcomes from a pregnancy confirmation. Pregnant, not pregnant and not sure. As students master the technique, then the number of not sure will decrease.