

PREGNANCY DIAGNOSIS

Level 3

Topic	Training & information Content
5.1	Dairy Cattle Breeds and Breeding
5.2	Breeding program for a dairy farm (medium & large)
5.3	Conformation, Type classification and judging
5.4	Cow handling
5.5	Milk production recording
5.6	Heat Detection
5.7	Artificial Insemination
5.8	Pregnancy Diagnosis
5.9	Fertility Management
5.10	Cows with abnormal discharge
5.11	Fertility disease recording
5.12	Calving recording
5.13	Use of Key Performance Indicators



Pregnancy Diagnosis (Level 3)

You will learn about (learning objectives):

- Basic introduction to Pregnancy diagnosis
- Methods of Pregnancy diagnosis
- Heat and insemination recording (The Three-weeks Cow Calendar)
- Pregnancy at various ages/days – embryo recognition

Pregnancy Diagnosis (Level 3)

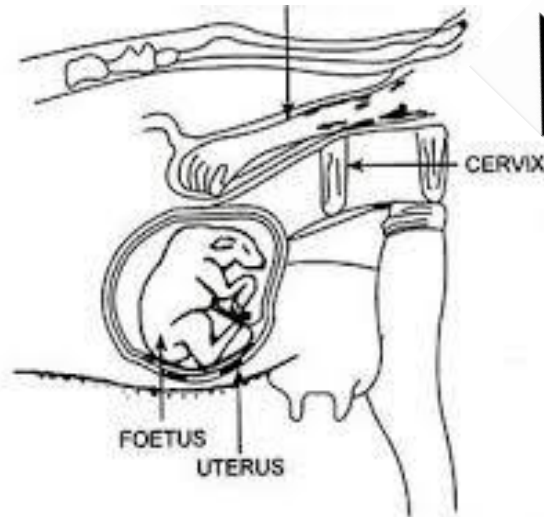
Pregnancy Diagnosis

Background

- Pregnancy diagnosis (PD) is an essential part of fertility management.
- It is a procedure done to establish the presence of an embryo in the uterus of a cow or heifer.
- PD can be done using several methods, commonly;
 - Rectal palpation (manual)
 - Use of Ultrasound device
 - Punching



Ultrasound Device (USD)



Manual (rectal palpation)



Pregnancy Diagnosis (Level 3)



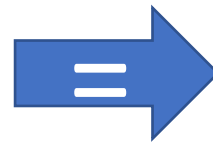
Let's go find
out if you
conceived



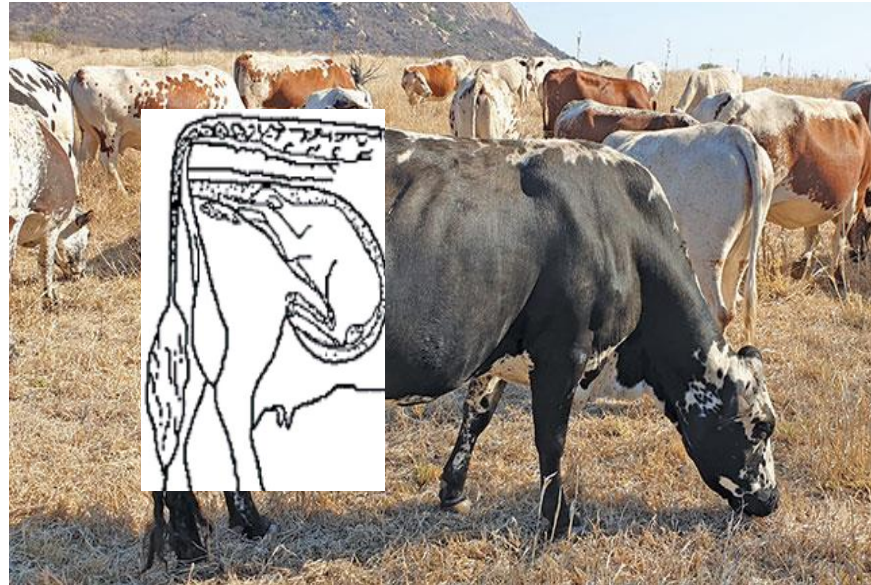
- Pregnancy diagnosis done accurately and early enough can help a farmer identify cows/heifers that did not conceive (empty cows) for purposes of treatment (if necessary), and/or early re-breeding.
- Simply put, the point of interest becomes cows found to be empty. It means that a farmer can put focus on these cows to make sure that the days open are kept as short as possible.

Pregnancy Diagnosis (Level 3)

- PD is normally done after Artificial Insemination and/or Natural Mating (by a bull) has taken place; thus, farmers must try to find out as soon as possible whether their cows conceived or not.



*Does
AI/Natural
mating
automatically
lead to
pregnancy in
cattle?*



- In the first 19-23 days or averagely 21 days after service, we will not receive any information but after 21 days we can know for sure if the cow has been in heat or no. If there has been no heat signs, we may assume that the cow is pregnant (at that moment)

Pregnancy Diagnosis (Level 3)

Good to Know for Pregnancy Diagnosis

- It is important to register/record all the heat signs from calving to the following pregnancy. These records, if kept accurately, can be analysed to know the average heat cycle and range
- Insemination becomes more successful when farmer knows that cow has been in heat 21 days ago, cow is cycling



Photo: Felix | Courtesy - Eric Kimalit, KE

Pregnancy Diagnosis (Level 3)

Good to Know for Pregnancy Diagnosis (Cont'd)

False heat

- Some cows show heat signs every 10 days (mid cycle); this is known as false heat and will never result into a pregnancy. Nevertheless, do not rely on this to inseminate the cow
- Insemination of a cow in false heat may result into abortion if the cow was already pregnant
- False heat occur throughout the cycles, even in (heavy) pregnant cows. Furthermore, a cow in false heat allow bulls to serve them. This can be a reason to separate pregnant and empty cows - from bulls.



Pregnancy Diagnosis (Level 3)



Aborted embryo

- Irregular heats between 21 and 35 days after insemination means that cow has been pregnant
- In a natural process, approximately 35-40% of the embryo will degenerate before the 50th day
- When a cow is confirmed pregnant at day 50 after insemination, there is only 5% chance she'll lose the embryo.
- Sometimes you may find an aborted embryo in the field/stable - very difficult to distinguish from which cow. Frequent PD therefore helps identify empty cows at an early stage.

Pregnancy Diagnosis (Level 3)

The Three-weeks Cow Calendar

- The three weeks cow calendar (21 days) is a very useful tool to have and implement in a dairy farm. It basically prompts the farmer a little bit to register/record heats and inseminations. This helps in thinking ahead/making future decisions or plans.

Legend:

A crossed number e.g. ~~17~~/color with "x" means repeated insemination

A number with + e.g. 17+/color with "✓" means successful insemination (cow conceived)

Calving	October			November		
Drying	August			September		
Insemination	January			February		
	1	22	12+ ✓	1	22	
	2	23		2	23	
	3	24		3	24	
	4	25	17 X	4	25	
	5	26		5	26	
	6	27		6	27	
	7	28		7	28	
	8	29	23 X	8	1	
	9	30		9	2	
	10	31		10	3	
	11	1		11	4	
	12	2		12	5	
	13	3		13	6	
	14	4		14	7	
	15	5		15	8	
	16	6		16	9	
	17	7		17	10	
	18	8		18	11	17+ ✓
	19	9		19	12	
	20	10		20	13	
	21	11		21	14	
	22	12		22	15	
	23	13		23	16	
	24	14		24	17	
	25	15		25	18	
	26	16	17 X	26	19	
	27	17		27	20	
	28	18		28	21	
	29	19	23+ ✓			
	30	20				
	31	21				

Pregnancy Diagnosis (Level 3)

From the calendar;

- **Cow no 12 (blue):** was inseminated only once on January 1 became pregnant (12+). She's to be dried August 1; and is due to calve October 1.
- **Cow no 23 (green):** was inseminated twice - January 8 (~~23~~) and January 29 became pregnant (23+); to be dried August 29; and is due to calve October 29.
- **Cow 17 (purple):** was inseminated three times - January 4 (~~17~~), January 26 (~~17~~) and February 18 became pregnant (17+); to be dried September 18 and due to calve November 18.

Calving	October			November		
Drying	August			September		
Insemination	January			February		
	1	22	12+ ✓	1	22	
	2	23		2	23	
	3	24		3	24	
	4	25	17 ✗	4	25	
	5	26		5	26	
	6	27		6	27	
	7	28		7	28	
	8	29	23 ✓	8	1	
	9	30		9	2	
	10	31		10	3	
	11	1		11	4	
	12	2		12	5	
	13	3		13	6	
	14	4		14	7	
	15	5		15	8	
	16	6		16	9	
	17	7		17	10	
	18	8		18	11	17+ ✓
	19	9		19	12	
	20	10		20	13	
	21	11		21	14	
	22	12		22	15	
	23	13		23	16	
	24	14		24	17	
	25	15		25	18	
	26	16	17 ✗	26	19	
	27	17		27	20	
	28	18		28	21	
	29	19	23+ ✓			
	30	20				
	31	21				

Pregnancy Diagnosis (Level 3)

Keep observing the cow after insemination

19-23 days later (after insemination)



The cow look relaxed and does not show any heat signs, she may be assumed pregnant/has conceived



The cow shows heat signs, she may not have conceived (not pregnant/open cow)

Pregnancy Diagnosis (Level 3)

19-23 days later (after insemination) Cont'd



- The cow shows No heat signs around the 21st day after insemination, we might think she is pregnant
- However, even at this time it is important to keep on observing the cow over the coming weeks as early Embryonic Death (EED) may occur if it is true that she conceived. EED is a natural event, it has 10-30% chance of occurrence in pregnant cows. At this stage (day 17-day 30), the aborted embryos are usually not found.

Pregnancy Diagnosis (Level 3)

It is possible to do Pregnancy diagnosis:

Day 30 (after insemination)



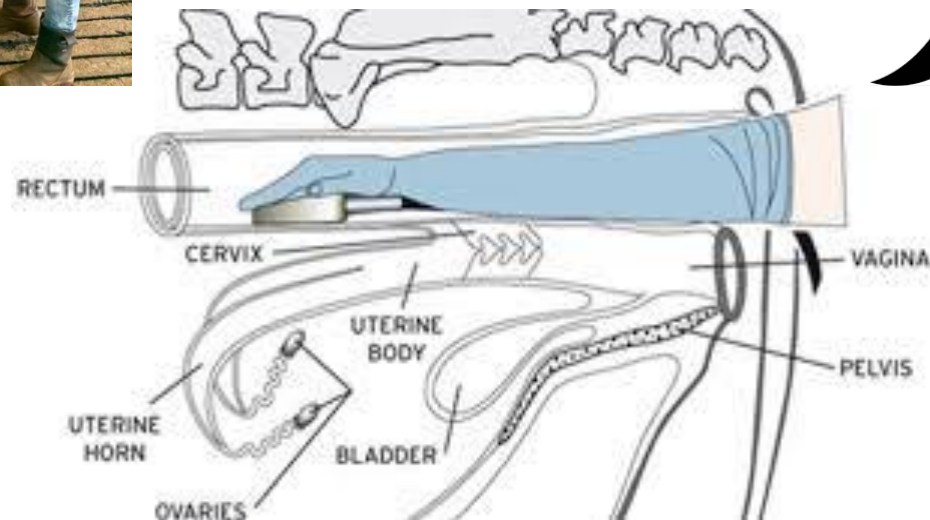
- If the cow doesn't show any heat signs 30 days after insemination, call a qualified and/or experienced veterinarian to confirm pregnancy
- Use of Ultrasound Device is effective at this time.



Pregnancy Diagnosis (Level 3)

Ultrasound Device method

- Starting day 30 the Ultrasound Device (USD) is a very useful and reliable tool to detect pregnancies.
- What is seen?: A ± 10 mm diameter embryo becomes visible on the screen, meaning that for the next coming days there is no need to worry. The cow is pregnant !!!



Pregnancy
(30 days)



Pregnancy Diagnosis (Level 3)

- As earlier mentioned, accurate PD done early enough is useful to identify empty cows for purposes of treatment (if necessary), and/or early re-breeding
- During PD, check all other cows that haven't shown any heat signs yet. Unless confirmed pregnant, they could be empty/open cows



Pregnancy Diagnosis (Level 3)

- If confirmed empty/open, think of reasons why the cow hasn't shown any heat signs – with possible treatment in mind.
- If necessary, treat this cow to stimulate heat. This means, more importantly, that together with the veterinarian the farmer must make a plan of action to get the cow inseminated as soon as possible; to reduce days open.



Empty cow



Pregnancy Diagnosis (Level 3)

40-45 days later (after insemination)



Showing heat signs could mean she is not pregnant/open cow



The cow should still look relaxed and does not show any heat signs

Photo: Felix, KE

Pregnancy Diagnosis (Level 3)

45-50 days later

- Call the veterinarian to repeat PD after 50 days i.e. fresh check all cows inseminated earlier, including re-confirming pregnancies detected at day 30.



Pregnancy Diagnosis (Level 3)

45-50 days later (after insemination) Cont'd

- For this second PD, the Ultrasound Device is still a reliable method. The USD check is best recommended to be executed between 45th and 50th day after insemination.



Pregnancy Diagnosis (Level 3)

- What is seen?: A 4 cm embryo becomes clearly visible on the USD screen, meaning that the embryo most probably remains seated.
- However, only few veterinarians have the Ultrasound Device. Where the USD is not available/possible, a manual procedure can still be used e.g. rectal palpation (best from day 100) and punching (from day 200)



50 Day Pregnancy



Pregnancy Diagnosis (Level 3)

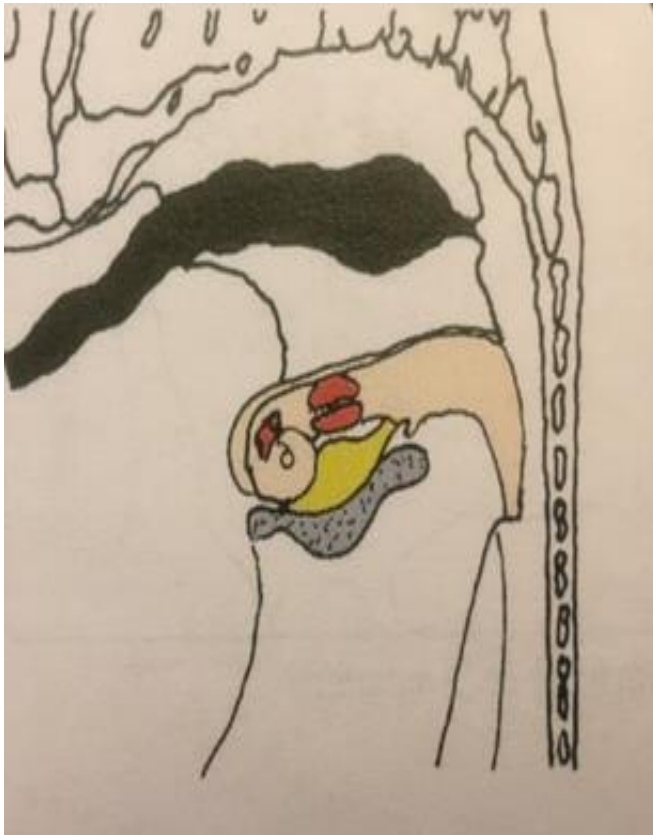
- Between day 30 and day 50 after insemination, cows still loose between 5-15 % of the embryos. Such cows will show irregular heats.
- When the losses become more, it is time to act. Here are some reasons associated with higher embryonic deaths:
 - Weather conditions
 - Heat stress
 - Shortage of nutrients
 - Contagious diseases: depends on the disease and at what stage EED/ abortion may occur. After implantation, embryonic losses due to contagious diseases are rare and the pregnancy becomes more secure.



*Aborted embryo
(more than 50 days)*

Pregnancy Diagnosis (Level 3)

What to look for when conducting PD using Ultrasound Device, Rectal palpation or Punching



40 - 50-day pregnancy

- The size of the embryo is too small (± 10 mm) to detect. In this stage the USD is an excellent tool to confirm.



50 - 70-day pregnancy

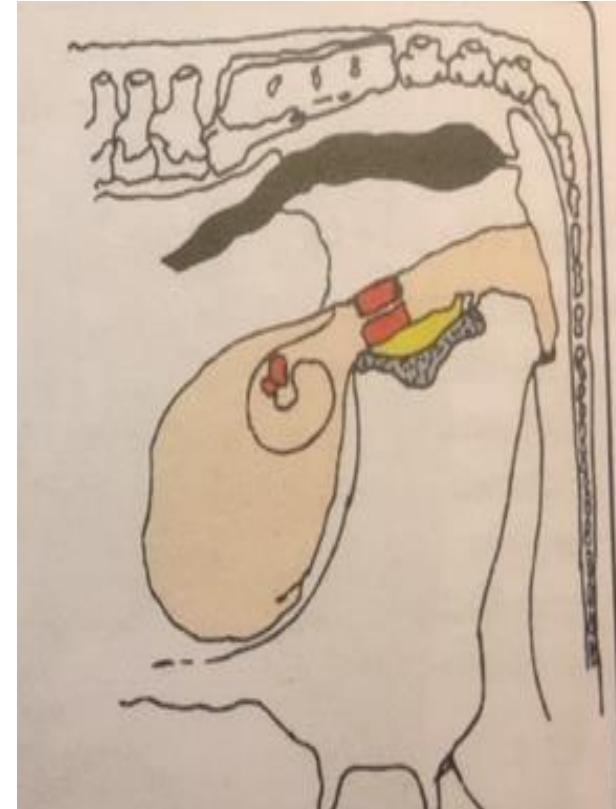
- At this stage, only a skilled person is able to confirm pregnancy by rectal palpation, in general USD is more adequate and reliable.

Pregnancy Diagnosis (Level 3)



A 3 months pregnancy

- Look at the difference between the pregnant horn and the empty horn (asymmetry)



A 4 months pregnancy

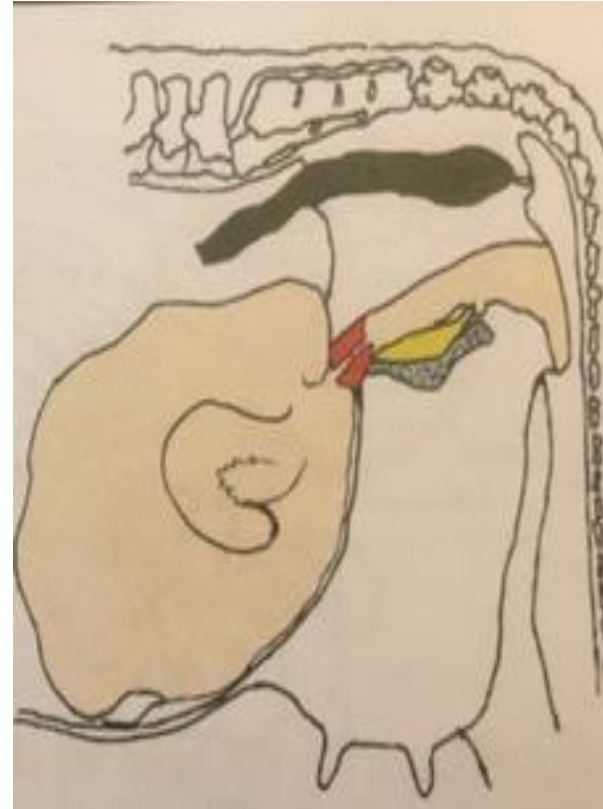
- The difference between the pregnant horn and the empty horn is huge, you will be able to detect the fetus in combination with fluctuation

Pregnancy Diagnosis (Level 3)



A 5-6 months pregnancy

- Difficult to detect by USD as well as rectal palpation. Punching is the first method to try, the fetus is weighing approximately 3kg (5 months) 7 kg (6 months)



A 7-8 months pregnancy

- Easy to confirm by punching, no need to try rectal palpation, the calf is big enough to feel

Pregnancy Diagnosis (Level 3)

Day 100

- Some pregnancies get lost between day 45 and day 100. Hence, it is important the farmer calls the Veterinarian to re-confirm pregnancy



Pregnancy Diagnosis (Level 3)

- Note that Rectal Palpation by a qualified and/or experienced veterinarian is the most accurate way to confirm a 100 days pregnancy.



Pregnancy Diagnosis (Level 3)

Day 200

- Detecting pregnancy is a continuous practice. At around 200 days, **the farmer** will be able to detect pregnancy by Punching
- Punch in between the orange lines where the calf is located, by using your fist. You will be able to feel the calf by pushing the blue dots up/down



Pregnancy Diagnosis (Level 3)

- In an empty cow/early pregnant cow, if you punch/push this point it feels like a water bag
- Workers who milk cows (milkers) usually sit on the right side of the cow. They too should be trained on pregnancy diagnosis, starting from 5.5 months till drying.

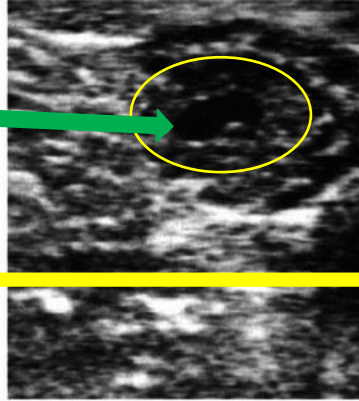


Photo: Felix | Magana's Farm, KE

Pregnancy Diagnosis (Level 3)

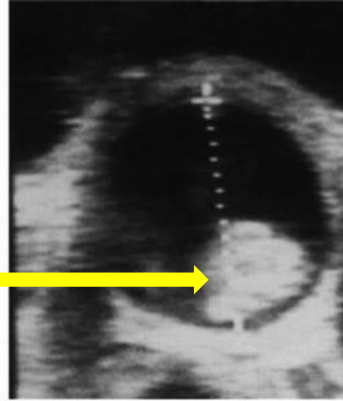
Ultrasound (USD) Pictorial impressions of Pregnancies at different days

Embryonic vesicle visible (An enlargement in the horn)



25 Day Pregnancy

Embryo diameter starts becoming visible. Uterus filled with fluid and feels slightly thinner

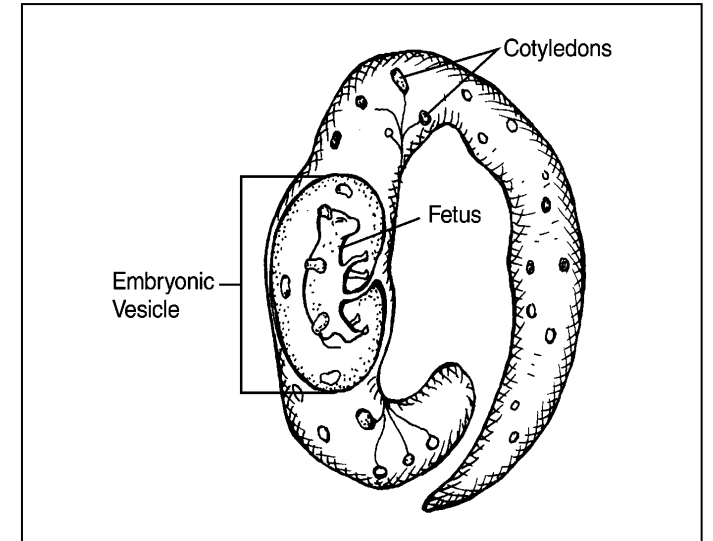


30 Day Pregnancy

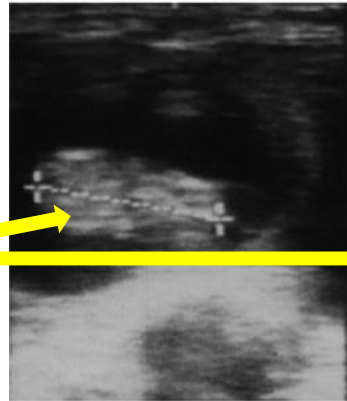


35 Day Pregnancy

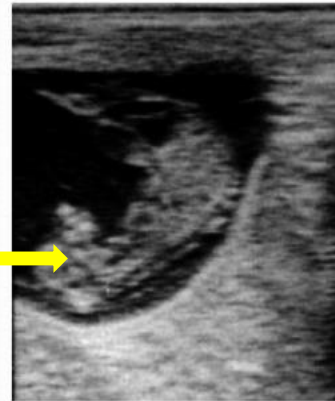
Embryo becomes becoming visible



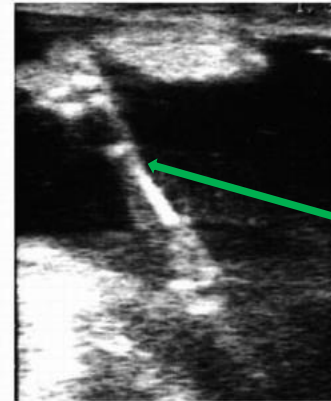
Note the growth of the embryo



43 Day Pregnancy



50 Day Pregnancy



100 Day Pregnancy

Note the skeleton of the foetus and cotyledons/allantois visible at the top

Pregnancy Diagnosis (Level 3)

Take Home Messages

1. Pregnancy diagnosis is an **essential part** of fertility management – it helps identify those cows are not pregnant
2. An **early and precise/accurate** pregnancy diagnosis is key to shorten days open in cows through timely treatment and/or insemination at the first opportunity
3. Rectal palpation and ultrasound palpation are **effective** methods for early pregnancy diagnosis. Both require a veterinarian with **experience, skills and thorough knowledge** of a cow's reproductive system.



I **know** She's Not Pregnant
(I **have** confirmed)

I **don't know** She's Not Pregnant
(I **have Not** confirmed)

- Allows for treatment (if applicable)
- Plan re-breeding

- Increase in number of days open
Loss of Income!!

