CHAPTER-14

Breeding Calendar, Gestation Length in Different Dairy Animals, Pregnancy Diagnosis, Record Keeping

Objective

1. To learn the use of breeding calendar.
2. To understand gestation and pregnancy diagnosis in dairy animals.

Why to use a breeding calendar?

Success of any dairy farm depends upon how often the cows calve. This requires efficient observation of heat, insemination at the right time, drying off prior to calving and attention at calving time. This information can be written down in note books, on loose sheets of paper but it may be irregular and forgotten. A simple breeding calendar, kept in the barn, makes it easy to write down every important event for each cow in the herd.

A breeding calendar helps to improve breeding in a herd. The important things about the cows can be written on the calendar. Checking breeding calendar every day helps to plan breeding. From the breeding calendar one can know when the cow is going to calve, when the cow show heat, when was she bred and when she should be dried off. Even in the small herd, efficient breeding is the main problem. A breeding calendar can often improve breeding efficiency on the farm considerably, because it helps the farmer to do the right thing at the right time.

Gestation length in different dairy animals

Breed	Gestation length (days)
Aberdeen Angus	273-282
Ayrshire	277-278
Jersey	277-280
Holstein	278-282
Shorthorn	281-282
Guernsey	282-285
Hereford	283-286
Brown Swiss	288-291

Brahman	271-310
Afrikaner	293-296
Sahiwal	278-289
Red Sindhi	276-285
Kankrej	279-288
Buffaloes	310

Pregnancy diagnosis

Early identification of nonpregnant dairy cows and heifers post breeding can improve reproductive efficiency and pregnancy rate by decreasing the interval between AI services and increasing AI service rate. Thus, new technologies to identify nonpregnant dairy cows and heifers early after artificial insemination may play a key role in management strategies to improve reproductive efficiency and profitability on commercial dairy farms. There are several methods for diagnosing pregnancy in dairy animals.

Attributes of the ideal pregnancy test

For successful integration into a reproductive management system, an ideal early pregnancy test for dairy cattle would be 1) sensitive (i.e., correctly identify pregnant animals) 2) specific (i.e., correctly identify nonpregnant animals), 3) inexpensive, 4) simple to conduct under field conditions, and 5) able to determine pregnancy status at the time the test is performed. Most currently available methods for pregnancy diagnosis exhibit one or more of these attributes, but none currently available or under development exhibit all of them.

Non-return to heat*:* Non-return to estrus from 18 to 24 days after AI is often considered by dairy farmers the easiest and least costly method for determining nonpregnancy in dairy cattle early post breeding. However non-pregnant animals also may not return to heat due to other reasons, which is the disadvantage of this method of pregnancy diagnosis.

Transrectal palpation*:* Rectal palpation has been routinely used for pregnancy diagnosis in cows for many years and has remained one is the most simple and valuable methods. The documented reports suggest an average efficiency of >95^{0}C for this method to detect pregnancy accurately after 50 days of pregnancy. The landmarks for pregnancy diagnosis by rectal examination are given below.

Landmark	Remarks
Corpus luteum of pregnancy	The accuracy of this method is around 80% for pregnant and higher for non-pregnant animals.
Disparity in horn size	Gentle handling is required, accuracy is high
Amniotic vesicle	Careful and gentle palpation is required to avoid direct pressure on the vesicle, which may lead to death of the embryo
Slipping of fetal membrane (double slipping)	This can be best performed 40-90 days of gestation with high accuracy
Palpations of placentome	Accuracy 100%
Palpation of "thrill" in the middle uterine artery	Pulse in internal iliac artery should be differentiated from middle uterine artery; the later is movable while the former is tightly secured.

Progesterone assay: Progesterone, a hormone associated with pregnancy can be used to detect the pregnancy of animal. It can be estimated in blood as well as milk at 21 - 24 days after mating. Elevated levels of progesterone indicate pregnancy. The efficacy of this test in detection of pregnant animal is around 80% while it is 100% in detection of non-pregnant cattle.

Detection of pregnancy specific proteins: This method involves specific detection of protein associated with pregnancy. These are secreted by placental membrane are detectable in maternal circulation. Several specific markers have been identified for detection of pregnancy. These include pregnancy specific protein B (PSPB), bovine pregnancy - associated glycoprotein (bPAG), pregnancy serum protein (PSR 60) etc. PSPB can be estimated after 30 days of breeding. A limitation with this protein is that, it is present in the blood of the cows even up to 80 days after calving. The bPAG assay can be carried out from 30 days of gestation onwards while the PSP60 assay can be used from day 28 of gestation onwards. Early pregnancy factor (EPF) is one of the protein seeneted during pregnancy shortly after fertilization. Its molecular weight is nearly 21KDa. Rosette inhibition test is used to detect EPF in sheep as early as 6 - 24h after fertilization.

Ultrasonography: Diagnostic ultrasound scanners with transducers suitable for transrectal and transabdominal use have become available recently for imaging the reproductive tract of large and small animals. With this instrument, a trained operator, can visualize organs previously accessible only with tactile sense and is used to monitor the pregnancy and embryo loss. The method of scanning in large animals is transrectal. In this method the animal is prepared in a similar way as for rectal examination. If there are some faeces or air between the surface of transducer and rectal mucosa, the image will be disturbed. After

removal of faeces, the ultrasound transducer is covered with coupling gel and introduced into the rectum. First structure to be located is cervix because of its hyperechoic nature. The transducer is then moved over the body and horn of the uterus.

Indications of pregnancy

i) Presence of non-echogenic area in transverse as well as in longitudinal image.

ii) Embryonic heart beat.

iii) Placental membranes containing embryo and fluid.

iv) Placentomes in later stages

Record keeping

Keeping track of what is happening on the dairy farm requires some records. Good farm management requires a good useful set of farm records. Farm records are like the report cards students receive at school. With a farm report card, farmers can tell how well they are managing their operation compared to other producers. They can also see the strengths and weaknesses in their operation.

The information on calving dates, daily milk yields, daily herd milk yield, regular milk composition data, mastitis treatment, routine monitoring of feed offered, live weight and body condition of young stock, dates when each cow is on heat, dates and results of pregnancy diagnoses, animal sickness, veterinary visits and drug treatment, routine vaccination and drenching, stock purchases and sales of culls, stock deaths and probable causes, milk and concentrate intakes of young calves, yields of forage crops and other dairy enterprise sales etc. should be recorded and available at any given time in the farm.

Following are some of the important records to be kept in dairy farms.

Cow byre sheets/Milk recording book: This record may contain body weight, body condition scores, daily milk yields, fat and SNF percentages, total lactation length and yield, concentrate use, drying-off dates, oestrus, breeding details and incidence of diseases like mastitis.

Individual animal cards: All the details of individual animals

The heifer record card

The breeding record card

Production records

Veterinary records

Cow and heifer calendars

Insemination / pregnancy diagnosis (PD) notebook

The daily diary

Review Questions

1. What is the importance of record keeping?
2. Name the methods for pregnancy diagnosis. Describe progesterone assay.