

- Emphasis on minimizing uterine diseases especially after calving. Long-acting broad spectrum antibiotic regimen could be effective in controlling majority of genital infections.
- Routine inspection for subclinical endometritis in high yielding and repeat breeding animals using tests like White Side test (2 ml of cervical mucus heated with 2 ml of 5-10% NAOH up to boiling point. Development of yellow colour indicative of endometritis)



White side test

#### Ameliorating climatic stresses

- Focus should be on feasible strategies to counteract heat and other climatic stresses
- Measures include modification of animal environment, shelter management with optimal ventilation so as to improve heat exchange between breeding animal and its environment
- Increasing evaporative cooling rate by wetting animals through sprinklers or nebulizers and increasing convective heat transfer rate (higher air velocity over animals) through ventilators
- Ensuring clean drinking water at all times and strategic feeding methods to counteract stress

#### Correcting managemental errors

- Proper identification of animals, close and regular heat detection especially for detecting silent heat in buffaloes
- Regular exercise of breeding animal will improve the tonicity, physical and fertility fitness
- Bio-stimulatory effect (male exposure) of teaser bull allows for general increase in reproductive efficiency and also heat detection accuracy
- Awareness creation on importance of sanitation and hygienic measures, record keeping etc.

#### Treating hormonal imbalance

- Judicious use of hCG and GnRH drugs in cystic ovaries, delayed ovulation, anovulation cases
- Exogenous Gonadotropin treatment use in case of smooth ovaries (true anestrus)
- Supportive progesterone therapy in case of spontaneous abortion or luteal deficiency cases
- Avoiding nitrate-accumulating grass, moldy, musty feed (high estrogen content) can minimize the incidence of abortion, cystic ovaries and other hormonal disorders

#### Miscellaneous measures

- Ensure use of quality and disease-free semen, proper timing and technique of artificial insemination (AI)
- Double AI in cases of prolonged estrus and delayed ovulation cases
- Hygienic and properly attended calving expedite involution, ovarian rebound and elimination of microbial contamination
- Prompt collection and testing of samples like aborted material, abnormal cervical discharge will aid in early detection and containment of infectious causes of infertility
- Proper testing, quarantine and vaccination measures in new breeding herd

#### Sum up

Infertility disorders in cattle and buffalo are the main causes of concern for the dairy farmers. Timely diagnosis and treatment are of paramount importance for improving fertility and productivity. Infertility management is a multi-faceted arrangement and small efforts in regular vaccination, deworming, heat detection, sanitation, minimizing stress, mineral supplementation with balanced feeding can greatly reduce infertility cases. Sustainable improvement of the general conditions (housing, feeding, animal health, management) is a prerequisite to infertility management.

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## Common infertility disorders & their management in dairy animals



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### Infertility in dairy animals:

Infertility is a temporary disturbance in reproductive function wherein the animal cannot become pregnant or fail to reproduce. Infertility disorders generally accounts for major economic losses in dairy animal production in the country. There are multiple causes of infertility in the coastal region and can be mostly due to nutritional causes, infections, climatic stress, managerial errors, ovulatory or hormonal imbalances and congenital defects.

### Common infertility disorders:

Some of the most common disorders include anestrus, repeat breeding, uterine infections like endometritis, silent estrus, embryonic and fetal loss, ovarian and ovulation disorders. Indicators of reduced fertility in dairy animals include delayed resumption of ovarian cyclicity, repeat breeding, reduced estrus expression, anestrus, longer service period and calving interval, lower conception and pregnancy rates.

### Important causes of infertility:

#### • Nutritional Causes

Impaired nutritional status due to under feeding, overfeeding, deficiencies of protein, vitamins like Vit. A and E and trace minerals like Selenium, Phosphorus, and Zinc due to poor quality feed and soil deficiency, Negative Energy Balance (NEB) especially in pregnancy and lactation adversely affects reproduction. Excessive mobilization of body reserves during physiological stress and NEB increases disease susceptibility in high-yielding animals.

#### • Infections

Diseases like Brucellosis, Trichomoniasis, Vibriosis, non-specific infections of genital tract and some chronic diseases can lead to infertility.



Purulent vulval discharge

Postpartum uterine infections occur as sequel to immune suppression, trauma, retention of foetal membranes, prolapse etc. Low grade uterine infection (endometritis) changing to moderate (metritis) and severe infection with pus (pyometra) reduces fertility. Mild ascending specific and non-specific genital infections are found to be associated with repeat breeding.

#### • Climatic stress

Environmental factors such as temperature, relative humidity and season affect fertility. Climate change is causing global temperatures to increase and heat stress from extreme heat and humidity has a wide range of effects on the reproductive axis. High temperature shortens the duration, lowers estrus expression and interferes with fertilization.

#### • Managerial errors

Management is a crucial in optimizing reproductive efficiency. Majority of reproductive disorders arise due to improper management practices like poor estrus detection, improper housing, feeding, poor sanitation, unhygienic practices, sloppy record-keeping

#### • Hormonal imbalance

Hormonal imbalance in dairy animals interferes with reproductive processes like estrus, ovulation and fertilization with manifestations like

delayed ovulation, cystic ovaries, nymphomania or anestrus etc.

#### • Congenital factors

Congenital defects can cause infertility and sterility and these include developmental abnormalities of genital tract. Some are lethal, a few have morphological and others have functional significance. Common conditions include ovarian hypoplasia and aplasia, free martinism, White heifer disease and double cervix.

### Major signs and manifestations of infertility

#### • Repeat breeding

Repeat breeding is a syndrome in which female animal fails to conceive after 3 or more attempts by fertile bull or A.I. at normal estrous cycle. Fertilization failure or early embryonic death are the primary causes while feeding and managerial errors like poor estrus detection and faulty AI, bull infertility also contributes to repeat breeding.

#### • Anestrus

It is a condition in which the animal is not observed in heat or estrus either because she has inactive ovaries (true anestrus) or due to undetected estrus. True anestrus can be due to nutritional deficiency, infections or hormonal disorders. In some cases, animal will have normal cyclic activity, but is not observed in estrus due to weak or absent estrous signs (silent heat), or insufficient observation.

#### • Delayed resumptions of estrus activity after calving

Production stress, infections, inadequate nutrition and NEB after calving and during lactation adversely affects ovaries resulting in sub-optimal ovarian activity, delayed ovulation and lower conception rates.

### Key points to manage infertility

#### • Addressing nutritional imbalance & deficiency

- Special attention should be paid with regard to optimal energy, protein and vitamins prior to two months breeding to calving
- Use of area-specific mineral mixture incorporating important minerals which are deficient in soil in the region in order to address naturally occurring mineral deficiencies
- Zinc Oxide (10g/kg of mineral mixture) and 2-3% addition of Dicalcium Phosphate recommended for high yielding and vulnerable animals
- Special attention to Vitamin E and selenium supplementation especially in heifers, repeat breeding & pregnant animal can help in reducing incidence of retention of placenta, metritis
- Treatment with injectable vitamin E (1000 IU) weekly for three weeks and chelated micro-minerals, macro-minerals, bypass proteins and bypass fat in feed regimen of breeding herd

#### • Controlling infections

- Regular veterinary evaluation of herd health status, suitable biosecurity, vaccination measures



Placental retention