ANP 504 : ARTIFICIAL INSEMINATION

COURSE LECTURERS

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COURSE OUTLINE

PART I

The Role of AI and Reproduction in Livestock Improvement

1. Advantages and Disadvantages of AI
2. Status and Development of AI
3. Basic Genetics of Cattle Breeding
4. Reproductive organs of the cow and their functions
5. Reproductive organs of the Bull and their functions

PART II

Semen collection in Farm animals

6. Collection of semen from the bull
7. Collection of semen from the buck
8. Collection of semen from the Ram
9. Collection of semen from the Boar
10. Collection of semen from the Cock
11. Collection of semen from other farm animals

PART III

Semen evaluation; Extenders; Frozen semen

12. Evaluation of semen for General consideration
13. Evaluation of semen for Appearance and viability
14. Evaluation of semen for Concentration/enumeration of spermatozoa
15. Evaluation of semen for Live-Dead (Vital) Staining
16. Evaluation of semen for Morphology
17. Evaluation of semen for other measurements
18. Extenders and extension of semen

19. Frozen semen; Cryogenic storage; Transportation; Handling

20. Custom freezing of semen

PART IV

Insemination: Training, Pregnancy Determination and Reproductive Problems

21. How to inseminate Cattle, Sheep, Goat and Hens

22. Artificial Insemination of Beef cattle; Controlled estrus

23. Direct Herd service and herdsman-Instructor training

24. Pregnancy determination

25. Reproductive efficiency; Breeding problems; Conception rates

PART V

Sire selection; Bull health and management; AI organizations; Employment opportunities

26. Selection of Sires for AI use

27. Bull management and care

28. Health requirements for Sires in AI use

29. The AI Business – Organization

30. Records, Accounting, Regulations Pertaining to Registered Cattle

31. Carrier opportunities in the AI industry

PART VI

AI of Dairy Goats and Other Farm Animals

32. AI of dairy Goats and Sheep

33. AI of other farm animals and additional species

1.0 Introduction

- 1.1 How it all began
- 1.2 AI Worldwide
- 1.3 Status of AI in Developing Courses
- 1.4 Status of AI in Developed economies
- 1.5 Advantages and Consideration of AI
- 1.6 Basic Genetics of Cattle Breeding
- 1.7 Reproductive organs of the Bull and their functions

OBJECTIVES OF THIS INTRODUCTORY MODULE

I. To become knowledgeable regarding the advantages and the disadvantages of AI
II. To become familiar with the growth , development and present day activity of AI in the World
III. To become familiar with the more important genetic principles influencing inheritance
IV. To become familiar with the anatomy and physiological functions of the reproductive organs of the cow.
V. To become familiar with the anatomy and physiological functions of the Bull

PRACTICAL I

This practical session aims at identifying the various organs in the reproductive trait of Cow and Bull

PART II: SEMEN COLLECTION

2.1 Collection of semen from the Bull
2.2 Collection of semen from the Goat Buck
2.3 Collection of semen from the Ram
2.4 Collection of semen from the Cock
2.5 Collection of semen from the Boar
2.6 Collection of semen from other farm animals (Rabbit Buck and Tom (Turkey))

PRACTICAL II

This practical session is mainly practice of semen collection in Bull, Goat Buck, Ram, Cock, Boar and other farm animals (Tom and Rabbit Buck)

OBJECTIVE OF PRACTICAL I & II

- To become familiar with the methods and equipments used in the collection of semen from the various species of farm animals
- To practice the proper method of semen collection from Bull, Buck, Boar, Cock e.t.c

PART III: SEMEN EVALUATION

3.1 Evaluation of semen: General Considerations

Objective

To understand the importance of evaluating semen quality in AI and to indicate certain evaluation

3.2 Evaluation of semen: Appearance and viability

Objective

To become familiar with appearance and viability characteristics of semen

3.3 Evaluation of semen: Enumeration of spermatozoa (Concentration)

Objective

To become familiar with the technique of enumerating spermatozoa in semen by use Of the haemocytometer and to understand the principles of other rapid methods of estimating sperm numbers

3.4 Evaluation of semen: Live-Dead (vital) Staining

Objective

To become familiar with the differential staining technique used to determine the percentage live sperm in semen

3.5 Evaluation of semen: Morphology

Objective

To gain understanding of the morphological assessment of sperm cells and obtain practice in preparing smears for examination

3.6 Evaluation of semen: Other measurements

Objective

To recognise other measures used to evaluate semen

PRACTICAL III

This involves Practice on colour (appearance, enumeration, vital staining, morphology and other measurements

3.7 Extenders and Extension of semen

Objective
To study the preparation of extenders and extension of semen

PRACTICAL IV

This session involves preparation of extenders and extension of semen

3.8 Frozen semen; Cryogenic storage; Transportation; Handling

Objective
To become familiar with the processing and use of frozen semen, cryogenic storage methods, transportation and semen handling

3.9 Custom freezing of semen

Objective
To become familiar with the custom freezing of semen

PART IV: INSEMINATION: INSEMINATION TRAINING; PREGNANCY DETERMINATION AND REPRODUCTION PROBLEMS

4.1 How to Inseminate Cattle: Techniques

Objective
To learn the proper techniques and develop knowledge and skill in the artificial Insemination of Cattle

4.2 Artificial Insemination of Beef Cattle; Controlled Oestrus: Beef and Dairy

Objective
To become familiar with the role of artificial insemination in Beef improvement and how to make it work

4.2.2 Artificial Insemination of Sheep, Goat and Poultry: Techniques

Objective
To become familiar with the role of AI in species improvement

4.3 Direct Herd Service and Herdsman – Insemination Training

Objective
To become familiar with the importance of direct herd service, or "do it yourself" AI, and the necessity for adequate herdsmen – Inseminator training Courses

4.4 Pregnancy Determination in the Cow, Ewe, Doe, Sow and Bitch

Objective
To become familiar with the principles of pregnancy diagnosis in these species

4.5 Reproductive Efficiency: Breeding problems: Conception rates

Objective
To become familiar with factors that affect reproductive efficiency in Cattle, Sow e.t.c and consideration for improvement breeding efficiency

4.6 Embryo Transfer and Related Practices

Objective
To become familiar with the technology, advantages and disadvantages of embryo transfer (ET); to review the progress been made and the biotechnology involved in splitting embryos, cloning and *In vitro* fertilization

PART IV: SIRE SELECTION

5.1 Selection of Sire for AI use

Objective
To review considerations in the selection of dairy and beef bulls for Artificial insemination

5.2 Bull Management and Care

Objective

To become familiar with some of the basic practices involved in the proper management of bulls used for artificial Insemination

5.3 Health Requirement for Sires in AI Use

Objective

To become familiar with the importance of using only health and disease free Sires for production of semen used for AI, the importance of proper hygiene in the collection and processing of semen, and the role of AI in controlling transmission of veneral disease in livestock

5.4 The AI Business-Organizations

Objective

To study the organization and conduct of AI and to become familiar with the operation of AI business

5.5 Records, Accounting, Regulations pertaining to Registered Cattle – Important concerns in operating an AI Business

Objective

To become familiar with the financial records, semen and laboratory records, regulations for registered cattle, and other records used in the conduct of an AI business

5.6 Career Opportunities in the AI Industry

Objective

To become familiar with the opportunities for a career in livestock improvement, the various positions in the expanding field of AI, and the qualifications for each

PART VI: AI OR DAIRY GOATS AND OTHER FARM ANIMALS

6.1 AI of Dairy Goats and Sheep

Objective

To become acquainted with the techniques and advantages of improving dairy goats and sheep

6.2 AI of Other Farm Animals and Additional Species

Objective

To become familiar in a general way with the use of AI for other farm animals and species