BASIC PLANT AND ANIMAL BREEDING (PBS 302): 3 UNITS

COORDINATED BY PROF. D. K. OJO

PROF. M. O. OZOJE

FIRST AND SECOND WEEKS (LECTURES 1 AND 2)

- Character inheritance in plants and animals
- Changes in gene and gene structure
- Mutations, lethal traits and examples, pedigree analysis

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THIRD WEEK (LECTURES 3 AND 4)

- Cell and basic components of cell
- Cell cycle and Cell division (Mitosis and Meiosis)
- Major differences between mitosis and meiosis and the significance of the two methods
- Gametogenesis (Spermatogenesis in male and Oogenesis in female)

FOURTH WEEK (LECTURES 5 AND 6)

- Alleles or allelomorphs (including simple and multiple alleles)
- Symbols for alleles, Allelic relationships and common examples
- Multiple allelism with special emphasises on coat colours in rabbit and the ABO blood type in humans
- Blood types, types acceptable for transfusion, determination of individual blood groups
- Medico-legal aspects of the ABO series including disputed parentage

FIFTH WEEK (LECURES 7 AND 8)

- Genetics of sex (autosomes and sex chromosomes)
- Classification of sex chromosomes in diploid organisms
- Sex differentiation and determination
- Sex ratio and assessment of sex ratio
- Intersexes (Meaning, super-females and meta-males, etc)

- Two common sex chromosome anomalies in humans (Klinelfeter and Turner syndromes and their characteristics)
- Holandric genes, sex-linked or x-linked genes, sex-linked lethal, sex-limited genes, sex-influenced genes, examples of each.

Prof. D. K. OJO, Mr. A. O. Oduwaye & MR. E. O. IDEHEN

LECTURE 9

- Definitions of Plant and Animal Breeding
    - Introduction
    - Hybridization: Inbreeding and outcrossing
    - Hybrid and hybrid vigor
    - Pureline
    - Inbred line
    - Manifestation of heterosis
    - Consequences of inbreeding
    - Selection and selection methods: Mass & Pureline selection
- Genetic basis of breeding in plants and animals
- Concept of heritability and genetic gain

LECTURE 10

- Methods of reproduction in plants
- Features that dictate mode of pollination in plants

Cross-Pollinating Crops

* Main selection
* Recurrent selection
* Reciprocal recurrent selection
* Hybrid/Synthetic varieties
* Meaning of protogamy
* Self-incompatibility
* Male sterility
* Floral devices
* Monoecy
* Dioecy

LECTURE 11

Self-pollinating crops

* Meaning of Autogamy

* Pureline breeding
* Bulk-population breeding
* Pedigree breeding
* Backcross breeding
* Cleistogamy
* Apomixis
* Parthenocarpy

LECTURE 12

- Breeding Methods in Plants
  - (a) Conventional: Plant introduction, Hybridization and selection
  - (b) Non-conventional: Mutation, Tissue culture and Genetic engineering
- Polyploid, Aneuploids, Euploids in Plant Breeding

LECTURE 13

- Concept of Disease and Insect Resistance
  - Horizontal Resistance
  - Vertical Resistance
  - Tolerance
  - Hypersensitivity
  - Immunity

LECTURE 14

- Breeding Methods that can incorporate resistance in crop plants
  - Backcross breeding
  - Pedigree breeding
  - Genetic basis of backcross breeding
  - Advantages/Disadvantages of both

LECTURE 15

- Revision class
- CAT