

GENETIC CONCEPTS

UNIT CODE: 0511 551 08 A

TVET CDACC UNIT CODE: AGR/CU/AP/CC/03/6/MA

Relationship to Occupational Standards

This unit addresses the unit of competency: Apply genetic concepts

DURATION OF UNIT: 80 Hours

UNIT DESCRIPTION

This unit describes knowledge, skills and attitudes required to apply genetic concepts. It involves applying Mendelian and chromosomal theories in theory in agricultural production. It also involves illustrating genetic mutations in agricultural production.

Summary of Learning Outcomes

By the end of this unit, the learner should be able to:

S/No	Learning Outcomes	Duration (Hours)
1.	Apply Chromosomal theory	20
2.	Apply Mendelian theory	30
3.	Apply Genetic mutation	30
Total		80

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
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1. Apply Chromosomal theory	1.1. Identification and illustration of chromosome structure 1.1.1. DNA 1.1.2. Proteins 1.1.3. Centromere 1.2. Identification and illustration of DNA structure	<ul style="list-style-type: none"> • Written assessment • Practical • Projects • Third party report • Portfolio of evidence • Oral questions
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	1.3. Role of DNA 1.4. Cell division stages 1.4.1. Interphase 1.4.2. Prophase 1.4.3. Metaphase 1.4.4. Anaphase 1.4.5. Telophase	
2. Mendelian theory	2.1. Variation in animal breeding 2.2. Monohybrid inheritance 2.3. Dihybrid inheritance 2.4. Complete dominance 2.5. Co-dominance 2.6. Incomplete dominance 2.7. phenotypes and genotypes illustrations 2.8. Identification and illustration of phenotypic frequencies	<ul style="list-style-type: none"> • Written assessment • Practical • Projects • Third party report • Portfolio of evidence • Oral questions

<p>3. Apply Genetic mutation</p>	<p>3.1. Causes of mutations</p> <p>3.1.1. Radioactive rays</p> <p>3.1.2. Chemicals</p> <p>3.1.3. Infectious agents</p> <p>3.2. Types of mutation</p> <p>3.2.1. Chromosomal mutation</p> <p>3.2.2. Gene mutation</p> <p>3.3. Mutational disorders</p> <p>3.3.1. Hypotrichosis</p> <p>3.3.2. Beta-man</p> <p>3.3.3. Osteoporosis</p> <p>3.3.4. Pulmonary hypoplasia</p>	<ul style="list-style-type: none"> • Written assessment • Practical • Projects • Third party report • Portfolio of evidence • Oral questions
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Suggested methods of delivery

- Demonstration
- Practical
- Discussion
- Direct instruction

Recommended Resources for 25 Trainees

S/No.	Category/Item	Description/ Specifications	Quantity	Recommended Ratio (Item: Trainee)
A	Learning Materials			
1.	Charts	Flip Charts Rules and Regulations	5	1:5
2.	Markers	whiteboard markers and permanent markers	50	1:1
3.	Video clips Audio tapes	MP4, MP3	5	1:5
4.	Newspapers and Handouts	Daily	25	1:1
5.	Business Journals	Annual, Monthly, Daily	25	1:1
B	Learning Facilities & Infrastructure			
6.	Lecture/Theory Room	(9* 8 sq. metres)	1	1:25
7.	Internet Connection	WI-FI, Dial-Up, Cable, Fixed-wireless,	1	1:25
C	Consumable Materials			
8.	Flashcards	Alphabet, Numbers, Math	25	1:1

9.	Stationery	Printing Papers, and Exercise Books Sizes A4, A3, A2 etc	5 reams	1:5
D	Tools And Equipment			
10.	Computers/Laptops	Any model	1	1:25
11.	Projector	LED.LCD, Laser	1	1:25
12.	Whiteboard	Glass, melamine, porcelain	1	1:25