

ANHFC302

FODDER CROPS AND PASTURES MANAGEMENT

Manage fodder crops and pasture

Competence

RQF Level: 3

Learning Hours



50

Credits: 5

Sector: Agriculture and Food processing

Trade: Animal health

Module Type: Specific

Curriculum: AFPANH3002 - TVET Certificate 3 in Animal Health

Copyright: © Rwanda TVET Board, 2022

Issue Date: May, 2022

Purpose statement	This module covers the knowledge; skills and attitudes required to provide a balanced feeding to domestic animals by managing fodder crops and pasture in an optimum manner. It is intended for learners who have successfully completed ordinary level, level II in animal health or its equivalent and pursuing TVET level III and related qualification. Upon completion of this module, the trainee will be able to: Cultivate fodder crops, perform pastures lay out and improvement and Manage pasture grazing						
Leaning assumed to be in place	N.A						
Delivery modality	Training delivery			100%	Assessment		Total 100%
	Theoretical content			30%	Formative assessment	30%	50%
	Practical work:			70%		70%	
	• Group project and presentation	20%					
	• Individual project /Work	50%					
				Summative Assessment		50%	

Elements of Competency and Performance Criteria

Elements of competency	Performance criteria
1. Cultivate fodder crops	1.1.Fodder crops are appropriately identified according to their characteristics
	1.2 Site of fodder crops cultivation is properly selected as per soil types and fodder species
	1.3 The land is properly prepared according to fodder species
	1.4 Seeds are properly selected according to fodder species
	1.5 Fodder crops are properly planted according to their species.
	1.6 Fodder maintenance techniques are properly applied according to the species and growth stage
	1.7 Harvesting techniques are appropriately applied according to fodder species
2. Perform pastures lay out and improvement	2.1 Common pasture fodder trees and shrubs are properly identified according to their botanical characteristics
	2.2 Common pasture grasses and legumes are properly identified according to their botanical characteristics
	2.3 Maintenance of pasture is appropriately applied according to

	their levels of exploitation
	2.4 Integration of legumes within pastures is properly done according to their types and requirements of animals
	2.5. Fencing and paddocking of the pasture are properly done according to the size and animal species
	2.6 Water is properly supplied according to the farm requirements
3. Manage pasture grazing	3.1 Herd and flock in the pasture are properly organized according to their species and requirements
	3.2 Pasture productivity is adequately estimated according to the standard
	3.3. Pasture carrying capacity is adequately calculated according to the size of pasture and animal species
	3.4 Pasture rotation and ranching method are properly applied according to the size of pasture and number of animals
4. Improve nutritive value of crops residues and straws	4.1 Common crop residues are properly identified according to their nutrient content
	4.2 Crop residues and straws qualities are properly improved according to their nutritional values
	4.3 Crops residues and straws are properly used according to their standards

Learning outcomes	At the end of the module the learner will be able to: 1. Cultivate fodder crops 2. Perform pastures lay out and improvement 3. Manage pasture grazing 4. Improve nutritive value of crops residues and straws
--------------------------	---

Learning outcome 1: Cultivate fodder crops	Learning hours: 20
Indicative content	
• Identification of fodder crops ✓ Legumes/Leguminous plants ✓ Grasses/graminaceae plants • site selection of fodder crops cultivation ✓ ecological requirements ✚ edaphical requirements ✚ climatic requirements	

- **The land preparation**
 - ✓ land clearing
 - ✓ primary tillage
 - ✓ secondary tillage
- Selection of seeds of fodder crops
 - ✓ Seeds selection criteria
- Planting of fodder crops
 - ✓ Planting techniques
- Application of fodder maintenance techniques
 - ✓ Fertilization:
 - ✓ Weeds control
 - ✓ Pest control
- Application of harvesting techniques
 - ✓ Hand harvesting
 - ✓ Mechanical harvesting

Resources required for the learning outcome

Equipment	Audiovisual material, wheelbarrow,
Materials	Fodder crop,pictures,herbarium,papers ,pen,black board,chalks,marker grass,legumes
Tools	Hoes,panga,sickle
Facilitation techniques	Demonstration and simulation,Visits, discussions, works (herbarium),presentation of specimen, presentation of fodder crops.
Formative assessment methods	Written assessment, Oral presentation, Performance assessment

Learning outcome 2: Perform pastures lay out and improvement

Learning hours: 10

Indicative content

- Identification of common pasture fodder trees and shrubs
 - ✓ Types of pasture fodder trees and shrubs
- Identification of common pasture grasses and legumes
 - ✓ Types of common pasture grasses and legumes
- Maintenance of pasture

✓ Types of pasture ✓ Pasture maintenance practices • Integration of legumes within pastures ✓ Importance of mixing grasses and legumes in the pastures ✓ Types of Legumes to associate with grasses in pasture • Fencing and paddocking of pasture ✓ Importance of the pasture fencing ✓ Pasture fencing methods ✓ Paddocking system • Supplying water ✓ Importance of supplying water in the pasture ✓ Sources of water	
Resources required for the indicative content	
Equipment	Audiovisual material, scales
Materials	Herbarium, papers, pen, black board, fodder trees, fodder shrubs, land, seeds, pictures, fodder plantation, fertilizers, seeds, land, Chalks, marker, flip chart, pastures, dam, wells, borehole, water points
Tools	Machetes, scythes, cutters, sickles, yield squares,
Facilitation techniques	Visits (pastures, farms, botanical and agrostological gardens, research centres), Group discussion on trees and shrubs, grasses and legumes, Practical works on herbarium, grasses and legumes, Presentation of trees and shrubs, grasses and legumes specimen
Formative assessment methods	Written assessment, Oral presentation, Performance assessment

Learning outcome 3: Manage pasture grazing	Learning hours: 15
Indicative content	
• Organization of the herd and flock in the pasture ✓ Herd/flock composition ✓ Considerations when organizing herd or flock in the pasture • Estimation of pasture productivity	

✓ Definition of pasture Productivity ✓ Techniques of pasture productivity estimation • Calculation of pasture carrying capacity ✓ Definition of carrying capacity ✓ Carrying capacity calculation formula • Application of pasture rotation and ranching methods ✓ Rotational grazing systems ✓ Ranching system ✓ Grazing habits of livestock	
Resources required for the indicative content	
Equipment	Oven, audio-visual material, weighing scale
Materials	Fodder plantation , black board, pen ,chalks ,marker, pastures, polyethylene bags, tape measure, land, farms records, internet , animals, pastures
Tools	Machetes,yield squares
Facilitation techniques	Visits,practical works,brainstorming, discussion,practical works,Internet research.
Formative assessment methods	Written assessment, Oral presentation, Performance assessment

Learning outcome 4:Improve nutritive value of crops residues and straws	Learning hours: 5
Indicative content	
• Identification of crops residues ✓ Types of crop residues • Improvement of crops residues and straws qualities ✓ Methods of improving crop residues and straws quality 🔧 Treatment of crop residues with urea 🔧 Treatment of crop residues with molasses	

- Use of crops residues and straws
 - ✓ Estimation of crop residues to use
 - ✓ Benefit of using crop residues
 - ✓ Limitation of using crop residues

Resources required for the indicative content

Equipment	Barrel, chaff cutter.
Materials	Fodders, crop residues, land markers, polyethylene bags, farms records, pen, black board, chalks, papers, sheeting plastic, urea molasses salt, water
Tools	Machetes, scythes, sickle, hoes.
Facilitation techniques	Demonstration, visits, practical works, brainstorming, groups discussion, internet research, tutorials.
Formative assessment methods	Written assessment, Oral presentation, Performance assessment

GATABAZI a cattle farmer of Shyogwe sector has got a field where he wants to cultivate fodder crops to solve its problem of lack of forages for his cattle. His plan is to cultivate grasses and legumes and improve his pasture which is dominated by gramineous. The farm has 3Ha as total farm area of which 1ha of pasture. In his farm there are different plots (seedlings of leguminous plants, plot of fodder plant at harvesting time and the availability of cereal and leguminous residues crops, seeds of legumes). He wants to recruit an animal care technician for helping him and the exam is composed by the following tasks that may be carried out in 4 hours.

Task1: Plant and sow the fodder crops in already prepared land

Task2: Maintain and improve the available pasture

Task3: Harvest the fodder plant in the harvesting period

Task4: Improve crop residue using urea and molasses

Task5: Calculate the carrying capacity and pasture productivity

As an animal care technician you are requested to perform the given tasks in order to be appointed as employee by this farmer.

NB: Note that all needed resources are available.

Resources

Tools	Hoes, machetes, sickle
Equipment	Wheelbarrow, PPE, sprayer pump, chuff cutter
Materials/ Consumables	Land, basket, ropes, post, tape measure, penicillium, desmodium seeds, urea, molasses, fertilizer, manure, alfalfa beans haulms, maize stover, sorghum stover, wheat straws, pigeon pea husks, papers, pen, calculator, balance, pesticides, detergent, plastic bags, plastic sheeting, bucket, water

Assessable outcomes	Assessment criteria (Based on performance criteria)	Indicator	Observation		Marks allocation
			Yes	No	
Learning outcome 1: Cultivate	1.1. Fodder crops are appropriately identified according to their	Ind.1. Grasses are identified			2
		Ind.2. Legumes are			2

fodder crops (30%)	characteristics	identified			
	1.2. Site of fodder crop cultivation is properly selected as per soil types and fodder species	Ind.1 Edaphical requirements are respected			2
		Ind.2 Climatic requirements are respected			2
	1.3. The land is properly prepared according to fodder species	Ind.1 Land clearing is performed			2
		Ind.2 Primary tillage is performed			2
		Ind.3 Secondary tillage is performed			2
	1.4. Seeds are properly selected according to fodder species	Ind.1 Graminous are selected			2
		Ind.2 Legumes are selected			2
		Ind.3 Selection criteria are respected			2
	1.5. Fodder crops are properly planted according to their species.	Ind.1 Seeding is done			2
		Ind.2 Planting seedlings is done			1
		Ind.3 Planting vegetative parts			1
	1.6 Fodder maintenance techniques are properly applied according to the species and growth stage	Ind.1 Fertilization is applied			1
		Ind.2 Weeds are controlled			1
		Ind. Pests are controlled			1
	1.7. Harvesting techniques are appropriately applied according to fodder species	Ind.1 Harvesting time is respected			1
		Ind.2 Harvesting frequency is respected			1
		Ind.3 Harvesting techniques are			1

		applied			
Learning outcome 2: Perform pastures lay out and improvement (30%)	2.1. Common pasture trees and shrubs are properly identified according to their botanical characteristics	Ind.1 Pasture fodder trees are identified			2
		Ind.2 1 Pasture fodder shrubs are identified			2
	2.2. Common pasture grasses and legumes are properly identified according to their botanical characteristics	Ind.1 Pasture grasses are identified			2
		Ind.2. Pasture legumes are identified			2
	2.3. Maintenance of pasture is appropriately applied according to their levels of exploitation	Ind.1 Bush and weeds are controlled			2
		Ind.2 Fertilisation is applied			2
		Ind.3 Provision of water is done			2
	2.4. Integration of legumes within pastures is properly done according to their types and requirements of animals	Ind.1. Annual legumes are integrated			2
		Ind.2 Multiannual legumes are integrated			2
		Ind.3 Climbing legumes are integrated			2
	2.5. Fencing and paddocking of the pasture are properly done according to the size and animal species	Ind.1 Pasture fencing methods are identified			2
		Ind.2 Pasture fencing methods are applied			3
	2.6. Water is properly supplied according to the farm requirement	Ind.1 Sources of water are identified			2
		Ind.2 Water is supplied			3
Learning outcome 3: Manage pasture grazing	3.1. Herd and flock in the pasture are properly organized according to their species	Ind.1 Considerations of herd and flock organization are identified			2
		Ind.2 Herd and flock composition is			2

(25%)		identified			
		Ind.3Livestock animals are organized in herd and flock .			3
	3.2. Pasture productivity is adequately estimated according to the standard	Ind.1Techniques of pasture productivity estimation are identified			3
		Ind.2Techniques of pasture productivity estimation are applied			3
	3.3 Pasture carrying capacity is adequately calculated according to the size of pasture and animal species	Ind.1. Carrying capacity calculation formula is applied			3
		Ind.2.Carrying capacity is determined			3
	3.4.Pasture rotation and ranching methods are properly applied according to the size of pasture and number of animals	Ind.1 Paddocks size and number of animals are respected			3
		Ind.2 Grazing habits of livestock are respected			3
Learning outcome4: Improve nutritive value of crops residues and straws (15%)	4.1. Common crop residues are properly identified according to their nutrient content	Ind.1Legumes residues are identified			3
		Ind.2Gramineous residues are identified			2
		Ind.3Other crop residues are identified			2
	4.2.Crop residues and straws qualities are properly	Ind.1 Treatment of crop residues with urea			2

	improved according to their nutritional values	is applied			
		Ind.2 Treatment of crop residues with molasses Is applied			2
	4.3.Crop residues and straws are properly used according to their standards	4.1.Crop residues are used			2
		4.2. Limitations of using crop residuesare respected			2
Total marks		100			
Percentage Weightage		100%			
Minimum Passing line % (Aggregate): 70%					

References:

- 1.Gordon McL. Dryden (2008). Animal nutrition science. CABI, 302 pp.
- 2.Katunguka-Rwakishaya E., J.Ndikuwera & Azuba Musoke R. (2008). A handbook on livestock nutrition, Guide 5, Fountain Publishers, 85 pp.
- 3.M. F. TOMME (2010). Feeding of Farm Animals. The Great Soviet Encyclopedia, 3rd Edition (1970-1979).
- 4.G.S.Pandey and all,2011,Feeding of dairy cattle by smallholder farmers ,GART,Lusaka, Zambia.
- 5.<http://encyclopedia2.thefreedictionary.com/Feeding+of+Farm+Animals>