



Republic of Rwanda
Ministry of Education



RTB | RWANDA
TVET BOARD

ANHDC302

CONCENTRATES FEEDS PREPARATION AND DISTRIBUTION

Prepare and distribute concentrates feeds

Competence

RQF Level: 3

Learning Hours



60

Credits: 6

Sector: Agriculture and food processing

Trade: Animal health

Module Type: Specific

Curriculum: AFPANH3002- TVET Certificate 3 in Animal Health

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Elements of competency	Performance criteria
1. Select animal's feed ingredients	1.1. Protein feedstuffs and amino acids are properly selected as per their types
	1.2. Energy provider ingredient feeds are properly selected as per their species origin
	1.3. Mineral and vitamin ingredient feeds are properly selected as per their types
2. Prepare animal's feeds rations	2.1. Feed ingredients are properly stored as per their conservation techniques
	2.2. Bromatological and nutrients requirements/needs tables is correctly used according to the sources and type of animal to feed
	2.3. Rations are properly calculated according to the type of animal to feed and formulated tables
	2.4. Rates of ingredients are correctly incorporated according to the source and type of animal to feed
3. Perform feeds concentrates preparation and conservation	3.1. Feed ingredients are properly prepared as per their types
	3.2. Feed ingredients are properly mixed according to the type of animal to feed and formulated tables
	3.3. Prepared concentrates are appropriately packaged and labeled according to the types of feeds and animal to feed
	3.4. Mineral block are properly made according to the type of animal to feed
	3.5. Concentrates and mineral blocks are appropriately conserved according to the manufacturer's instructions
4. Distribute animal feeds and water	4.1. Concentrates, minerals, vitamins and water quantities to distribute are correctly calculated according to the type of animal to feed and feeding tables
	4.2. Concentrates are properly wet (with water or molasses)) according to the type of animal to feed and types of concentrates
	4.3. Correct distribution of Concentrates and water are correctly distributed according to the types of fed animals and sanitary requirements
	4.4 Hygiene of shelters, Feed trough and water trough are properly maintained according to sanitary requirement
5. Manage nutritional deficiencies and excesses	5.1 Mineral deficiencies and disorders are correctly managed according to their causes and clinical signs
	5.2. Vitamin deficiencies are correctly managed according to their causes and clinical signs
	5.3. Proteins and amino acids deficiencies and disorders are properly managed according to their causes and clinical signs

Purpose statement	This module covers the knowledge, skills and attitudes required to properly prepare and distribute feed’s concentrates to domestic animals. It is intended for learners who have successfully completed ordinary level, level II in animal health or its equivalent and pursuing TVET level III in animal health or other related qualification. Upon completion of this module, the trainee will be able to: select animal’s feed ingredients, prepare animal’s feeds rations, perform feeds concentrates preparation and conservation, distribute feeds and water to animals;						
Learning 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

Course content

Learning outcomes	At the end of the module the learner will be able to: 1. Select animal's feed ingredients... 2. Prepare animal's feeds rations 3. Perform feeds concentrates preparation and conservation 4. Distribute animal feeds and water 5. Manage nutritional deficiencies and excesses
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Learning outcome 1: Select animal's feed ingredients		Learning hours: 5
Indicative content		
• Selection of protein feed stuffs and amino acids ✓ Nutrient groups ✚ Protids, lipids, carbohydrates, minerals, vitamins, water ✓ Source of protein and amino aci ✚ Oil cakes and legumes grains,animal meal,synthetic methionine and lysine • Selection of energy provider ingredient feeds ✓ Introduction on energy provider ingredient feeds ✓ Sources of carbohydrates ✚ Cereals and by-products, tubers and by-products, molasses, oils ✓ Other sources energy • Selection of mineral and vitamin ingredient feeds ✓ Introduction on minerals and vitamins ✓ Sources of minerals ✓ sources vitamins		
Resources required for the learning outcome		
Equipment	– Animal feed production unit	
Materials	– Animal feed ingredients, animal farms, research centers	
Tools		
Facilitation techniques	Brainstorming, group discussion, visit ,demonstration and simulation,individual and group work,practical exercise	
Formative assessment methods	Written assessment, Oral presentation, Performance assessment, Product based assessment	

Learning outcome 2: Prepare animal's feeds rations		Learning hours: 20
Indicative content		
• Storage of feed ingredients ✓ Techniques to Store feed ingredients ✓ parameters to Store feed ingredients: ✓ Control of rodents and insects ✓ Prevention of secondary contamination (foreign bodies)		

- Use of Bromatological and nutrients requirements/needs tables
 - ✓ Bromatological tables
 - ✓ **Nutrient requirements tables**
 - ✓ Types of Feed Ingredients values
 - ✓ Requirements and needs variation factors
- **Calculate rations**
 - ✓ Animal's feeding rations formulation
 - + Rations formulation methods, feed formula and proportions of ingredients, major livestock production systems used in ration formulation, types of rations
- **Incorporation of ingredients feeds**
 - ✓ Tips to Ration Ingredient incorporation
 - ✓ Incorporation rates standards
 - + Limiting factors
 - + Inhibition
 - + Digestibility
 - + Organoleptic quality of the product and palatability

Resources required for the indicative content

Equipment	PPES, Animal feed production unit, Research centers, audiovisual equipment, projector, computer, software.
Materials	Livestock Farms, Animal feed ingredients, Flip chart, Board, requirements and needs tables, Feed Manufacture's labels
Tools	
Facilitation techniques	Group discussion, practical works, visits, audio-visual, brainstorming, tutorials
Formative assessment methods	Written assessment, Oral presentation, Performance assessment

Learning outcome 3: Perform feeds concentrates preparation and conservation

Learning hours: 20

Indicative content

- **Preparation of feed ingredients**
 - ✓ Steps for Ingredients preparation
- **Mixing of feed ingredients**

✓ Methods for Feed Ingredients mixing ✚ Manual ✚ Mechanical ✓ Functions of mixer ✓ Categories of Mixers: • Package and label Prepared concentrates ✓ Objectives of Packaging and labelling ✓ Types of Concentrates packaging ✓ Major labelling information • Making mineral block ✓ Importance of mineral block ✓ steps to make Mineral block • Conservation concentrates and mineral blocks ✓ Tips for Storage conditions ✓ Storage methods	
Resources required for the indicative content	
Equipment	PPEs, hand truck, oven, grinders, dryers, mixer, packing machine, Labelling machine, trays, pelleting machine
Materials	Pallets, Pesticides, Insecticides, Ingredients, Plastic bags (sacs), Sheeting, Cement, urea, wood, Warehouse, Bags, Boxes, Cans, Cartons, Wrappers
Tools	Thermometer, Hygrometer, Pans, Shovel, Sieves, Traps, Trays
Facilitation techniques	Tutorials, group discussion, audio-visual, practical works, demonstration.
Formative assessment methods	Written assessment, Oral presentation, Performance assessment

Learning outcome 4: Distribute animal feeds and water	Learning hours: 5
Indicative content	

- **Calculate concentrates, minerals, vitamins and water quantities**
 - ✓ use of feed calculation tables
 - 📊 Dairy,beef,layers and broilers
 - ✓ Pigs
 - 📊 Starter,grower,finisher
 - ✓ Calculation of forage quantities
 - ✓ Calculation of concentrates quantities
 - ✓ Calculation of minerals, vitamins and water quantities
- **Wetting concentrates (with water or molasses)**
 - ✓ Introduction on Forage and concentrate preparation
 - ✓ Molasses dilution
 - ✓ Forage and concentrates wetting
- **Distribution of concentrates and water**
 - ✓ Introduction to Animal feeding behaviors
 - ✓ Introduction to manger and drinker hygiene
 - ✓ Types of livestock Feed
 - ✓ Checking the quality of forage, concentrates, minerals and vitamins
 - ✓ Types of distribution
 - ✓ Feeds distribution techniques
 - ✓ Water distribution techniques
- **Maintaining of hygiene of shelters, Feed trough and water trough**
 - ✓ Animals shelters hygiene
 - ✓ hygiene and maintenance of feed trough and water trough
 - ✓ Disposal of refused feeds
 - ✓ Use Manure pit
 - ✓ Enrichment of manure with phosphate or lime
 - ✓ Compost pit and compost making

Resources required for the indicative content

Equipment	Computer, PPEs, chaff cutters, Audio-visual equipment
Materials	Rations tables (poultry), Rations tables (cows) rations tables (pigs), Water, Molasses, Watering cans, Buckets, Farm Animals, Forage, concentrates, minerals and vitamins Feeders, digestive organs, Animals shelters, manure/composting pit Cleaning materials and equipment
Tools	Calculator

Facilitation techniques	Group discussion, practical works, visits, audio-visual, brainstorming, tutorials.
Formative assessment methods	Written assessment, Oral presentation, Performance assessment

Learning outcome 5. Manage nutritional deficiencies and excesses		Learning hours: 10
Indicative content		
• Manage mineral deficiencies and disorders ✓ Clinical signs of Mineral deficiency ✚ Calcium, iron, manganese, magnesium, phosphorus, potassium, sodium, zinc ✓ Treatment and prevention of mineral deficiencies diseases • Manage vitamin deficiencies ✓ Clinical signs of Vitamin deficiency ✚ Vitamin A, vitamin D3, Vitamin E, treatment and prevention of vitamins deficiencies • Manage proteins and amino acid deficiencies and disorders ✓ Clinical signs of Proteins and amino acids deficiency ✓ Treatment and prevention of proteins and amino acids deficiencies and disorders ✓ clinical signs of energy metabolic disorder ✓ Treatment and prevention energy metabolic disorders		
Resources required for the indicative content		
Equipment	PPEs, Audiovisual equipment	
Materials	Animal farm, Feedsadditives, Veterinary drugs Internet connection	
Tools		
Facilitation techniques	Group discussion, practical works, visits, audio-visual, brainstorming	
Formative assessment methods	Written assessment, Oral presentation, Performance assessment	

Integrated/Summative assessment (For specific module)

Integrated situation

KAMARI is a farmer in Rutsiro District, he needs to increase his farm productivity and he called upon you to prepare a weekly concentrate feeds for one dairy Cow, 100 layer hens and 3 pregnant sows and help him to distribute them within 3 hours. Prepare the concentrate feeds for a dairy cow, prepare the concentrate feeds for 100 layer hens, prepare the concentrate feeds for 3 pregnant sows

Resources

Tools	Calculator, Pans, Shovel, Mould
Equipment	PPEs, scales
Materials/ Consumables	Proteins and amino acids sources: oil cakes and legume grains (cotton, palmist, sunflower, soya), animal meal (fish, blood), synthetic methionine and lysine Energy sources: cereals and by-products (maize, sorghum, rice, wheat), tubers and by-products (cassava), molasses, oils, Minerals and vitamins sources: bone powder, lime, shells (eggs and snails), phosphate, salt, minerals and vitamins complexes Bromatological tables, Tables of animal's nutrients requirements, Ingredients, incorporation rates standards, Warehouse, Plastic bags (sacs) Cement, urea, sheeting

Assessable outcomes	Assessment criteria (Based on performance criteria)	Indicator	Observation		Marks allocation
			Yes	No	
Learning outcome 1: Select animal's feed ingredients (16%)	1.1. Protein feedstuffs and amino acids are properly selected as per their types	Ind.1 Protein feed stuffs are identified			2
		Ind.2 Protein feed stuffs are selected			2
	1.2. Energy provider ingredient feeds are properly selected as per their species origin	Ind.1 Energy provider ingredient feeds are identified			2
		Ind.2 Energy provider ingredient feeds are well selected			2

	13. Mineral and vitamin ingredient feeds are properly selected as per their types	Ind.1: Sources of minerals are identified			2
		Ind.2: Sources of minerals are selected			2
		Ind.3: : Sources of vitamins are identified			2
		Ind.4 Sources of vitamins are identified			2
Learning outcome 2: Prepare animal's feeds rations (24%)	2.1. Feed ingredients are properly stored as per their conservation techniques	Ind.1 Feed ingredient storage damages are identified			2
		Ind.2 Feed ingredients are stored			2
		Ind.3 Control of rodents and insects are applied			2
	2.2. Bromatological and nutrients requirements/needs tables is correctly used according to the sources and type of animal to feed	Ind.1.Nutrient requirements tables are used			2
		Ind.2 Feed Ingredients values are identified			2
		Ind.3. Requirements and needs variation factors are identified			2
	2.3. Rations are properly calculated according to the type of animal to feed and formulated tables	Ind.1 Rations formulation methods are identified			2
		Ind.2 Major livestock production systems used in ration formulation are identified			2
		Ind.3 Types of rations are identified			2

	2.4. Rates of ingredients are correctly incorporated according to the source and type of animal to feed	Ind.1. Rates of ingredients are correctly incorporated			3
		Ind.2. Limiting factors are identified			3
Learning outcome 3: Perform feeds concentrates preparation and conservation (20%)	3.1. Feed ingredients are properly prepared as per their types	Ind.1. Steps for Ingredients preparation are identified			3
		Ind.2. Feed ingredients are prepared			3
	3.2. Feed ingredients are properly mixed according to the type of animal to feed and formulated tables	Ind.1. Methods for Feed Ingredients mixing are identified			2
		Ind.2. Methods for Feed Ingredients mixing are followed.			2
		Ind.3. Feed ingredients are mixed			2
	3.3. Prepared concentrates are appropriately packaged and labeled according to the types of feeds and animal to feed	Ind.1. Prepared concentrates feeds are packaged			2
		Ind.2. Prepared concentrates feeds are packaged			2
		Ind.3. Prepared concentrates are labeled			2
	3.4. Mineral block are properly made according to the type of animal to feed	Ind.1. steps to make Mineral block are identified			2
		Ind.2. Mineral block are prepared			2
	3.5. Concentrates and mineral blocks are appropriately conserved according to the	Ind.1. storage conditions are respected			2
		Ind.2. Produced concentrates feeds			2

	manufacturer's instructions	are conserved			
		Ind.3.mineral blocks are Conserved:			2
Learning outcome:4 Distribute animal feeds and water(20%)	4.1.Concentrates, minerals, vitamins and water quantities to distribute are correctly calculated according to the type of animal to feed and feeding tables	Ind.1. feed calculation tables are used			2
		Ind.2. amount of concentrates feeds are Calculated			2
		Ind.3 amount of minerals and vitamins are Calculated			2
	4.2. Concentrates are properly wet (with water or molasses)) according to the type of animal to feed and types of concentrates	Ind.1. molasses quantities are measured			2
		Ind.2.Water quantities are measured			2
		Ind.3.Concentrate feeds are Wetted			2
	4.3. Correct distribution of Concentrates and water are correctly distributed according to the types of fed animals and sanitary requirements	Ind.1.Hygiene of manger and drinkers are respected			2
		Ind.2. Concentrate feeds and water are Distributed			2
	4.4 Hygiene of shelters, Feed trough and water trough are properly maintained according to sanitary requirement	Ind.1.Animals shelters hygiene are maintained			2
		Ind.2.refused feeds are disposed			2
Learning outcome:5 Manage nutritional deficiencies and	5.1 Mineral deficiencies and disorders are correctly managed according to their causes and clinical signs	Ind.1. clinical signs of Mineral deficiencies are identified			2
		Ind.2 Mineral deficiencies and			2

excesses(20%)		disorders are managed			
	5.2. Vitamin deficiencies are correctly managed according to their causes and clinical signs	Ind.1.Clinical signs of Vitamin deficiencies are identified			2
		Ind.2. Vitamin deficiencies are managed			2
	5.3. Proteins and amino acids deficiencies and disorders are properly managed according to their causes and clinical signs	Ind.1Clinical signs of Proteins and amino acids deficiency are identified			2
		Ind.2. Proteins and amino acids deficiencies and disorders are managed			2
Total marks		100			
		100%			
Minimum Passing line % (Aggregate): 70%					

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