

EKURHULENI AGRICULTURAL COLLEGE Accreditation No. AGRI/c prov/1492/21





RURAL ENTREPRENEURSHIP INITIATIVE

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2022 SHORT COURSES





TRAINING PROGRAMME

These short courses outlines the challenges associated with emerging farmers in the agricultural sector specifically; provides an overview of the various types of agribusiness models that can be pursued and what outcomes can be expected; it also engages participants in a discussion on critical success factors for the establishment and operations of agribusiness. Concepts are illustrated by practical examples drawn from agribusiness failures and successes, and a set of templates for various aspects of the agribusiness planning process and operations are included.

1: CLUSTER 1: PLANT PRODUCTION MODULES FOR:

Cash crops, Grain, Subtropical fruit and Citrus Production

Module 1. INTRODUCTION

1.1 Economic importance

1.2 Production areas

1.3 Production potential

Module 2. GROWTH AND DEVELOPMENT OF THE CROPS PLANT

2.1 Plant Description

2.1.1 Botanical relationship

2.1.2 Morphology and development

2.1.3 Pollination

2.1.4 Identifiable growth stages

2.1.5 Critical growth stages

2.2 Growth requirements of the Crops plant

2.2.1 Cultivar traits

2.2.2 Climatic requirements

2.2.3 Soil requirements

Module 3. PREPARATION AND THE PLANTING OF CROPS

3.1 Preparation before planting

3.1.1 Soil tillage

3.1.2 Fertilization

3.1.3 Production systems

3.1.4 Cultivar selection

3.2 Planting, managing and harvesting of Crops

3.2.1 Preliminary planning

3.2.2 Planting of Crops

3.2.3 Managing planted Crops

3.2.4 Harvesting of Crops

3.2.5 Grading of Crops

3.2.6 Inspection and grading of seed Crops

Module 4. CROP PROTECTION/CHEMICAL HANDLING

4.1 Weed control

- 4.1.1 Weed classification
- 4.1.2 Methods of weed control
- 4.1.3 Mechanical weed control
- 4.1.4 Chemical weed control

4.2 Insect control

- 4.2.1 Insects that attack Crops in the soil
- 4.2.2 Insects that attack plants above the soil
- 4.2.3 Other insects
- 4.3 Disease control
- 4.3.1 Bacterial diseases
- 4.3.2 Virus diseases
- 4.3.3 Fungal diseases

Module 5: MECHANISATION

1.1 Crops Mechanisation

- 1.2 Tractors, ploughs, trailers, cultivators, planters, drills, sprays, hay & silage, pumps, boreholes, harvesting, etc.
- 1.3 Select the appropriate tools, implements and/or equipment, from a limited range, to use in a specified combination of activities within a single agricultural process.
- 1.4 Select the appropriate tools, implements and/or equipment, from a limited range, to use in a specified combination of activities within a single agricultural process.
- 1.5 Maintain and store tools, implements, equipment and/or machinery according to specifications.
- 1.6 Explain and apply the necessary safety measures in the use of agricultural tools, equipment and/or implements.



Table 1. Cash Crops: Tomato, Potato and Cabbage etc.

Unit Standard Title	ID	NQF	Credits	Duration			
		L		5Days	10Days	15Days	21Days
Monitor the establishment of a	116079	2	4				
crop							
Understand basic soil fertility	116053	2	5				
Control pests, diseases and weeds	116124	2	2				
on all crops effectively and							
responsibly.							
Harvest Agricultural crops:	116111	2	4	3600	7200	10800	15000
Procedures							
Apply Marketing principles in	116126	2	2				
agriculture							
Use mathematics to investigate	7469	2	2				
and monitor the financial aspects							
of personal life.							
Utilise and perform minor repair	116060	2	5				
and maintenance tasks on							
implements, equipment and							
infrastructure							
Total credits			24				

Table 2. Grain Crops: Sorghum, Maize and Beans etc.

Unit Standard Title	ID	NQF	Credits		Du		
		L		5Days	10Day	15Days	21Days
					S		
Monitor the establishment of a	116079	2	4				
crop							
Understand basic soil fertility	116053	2	5				
Control pests, diseases and	116124	2	2				
weeds on all crops effectively and							
responsibly.							
Harvest Agricultural crops:	116111	2	4	3600	7200	10800	15000
Procedures							
Apply Marketing principles in	116126	2	2				
agriculture							
Identify and recognise factors	116081	2	2				
influencing agricultural enterprise							
selection							
Utilise and perform minor repair	116060	2	5				
and maintenance tasks on							
implements, equipment and							
infrastructure							
Total credits			24				

Table 3: Subtropical Fruit and Citrus

Unit Standard Title	ID	NQF L	Credits		Dura	ation	
				5Days	10Days	15Days	21Days
Monitor the	116079	2	4				
establishment of a crop							
Understand basic soil	116053	2	5				
fertility							
Control pests, diseases	116124	2	2				
and weeds on all crops							
effectively and							
responsibly.				2600	7200	10800	15000
Harvest Agricultural	116111	2	4	3000	7200	10000	12000
crops: Procedures							
Apply Marketing	116126	2	2				
principles in agriculture							
Define and understand	116115	2	2				
production systems and							
production management							
Utilise and perform minor	116060	2	5				
repair and maintenance							
tasks on implements,							
equipment and							
infrastructure							
Total credits			24				

2: CLUSTER 1: HYDROPONIC VEGETABLE PRODUCTION

Hydroponics is a technology for growing plants in nutrient solutions (water containing fertilizers) with or without the use of an artificial medium (sand, gravel, vermiculite, rockwool, perlite, peatmoss. coir, or sawdust) to provide mechanical support.

The course will cover the following area

- **4** Basics of hydroponics
- Differences between hydroponic vegetable production and soil production
- **4** The different types of hydroponic systems available
- **4** Advantages of hydroponics
- Disadvantages of hydroponics
- **4** Harvesting
- Pests and diseases
- **4** Tips to prevent spread of diseases
- Uses of pesticides
- Legal aspects

and soil production

Table 4: Hydroponic Vegetable Production

Unit Standard Title	ID	NQF L	Credits		Duration		
				5Days	10Days	15Days	21Days
Perform basic routine							
operations in a defined	116148	1	5				
hydroponic context							
Maintain basic water							
quality	116168	1	1				
Operate and maintain							
irrigation systems	116202	1	2				
Perform routine				26.00	7200	40800	45.000
operations and identify	116072	2	3	3000	/200	10000	15000
basic problems in							
hydroponic systems							
Produce crop in a							
hydroponic system	116314	4	4				
Manage a hydroponic							
production unit	116383	5	10				
Total credits			25				

2: CLUSTER.2: TUNNEL VEGETABLE PRODUCTION

Content of Course:

- 1. Introduction to tunnel farming
- 2. Type of Tunnel Farming
- 3. Tunnel maintenance
 - 3.1 Preparing inside tunnel
 - 3.1.1 Laying floor plastic
 - 3.1.2 Packing planting bags
 - 3.1.3 Spacing dripper pipe
 - 3.1.4 Testing dripper system
- 4. Setting of water schedules
- 5. Preparing seedlings 5.1 seedling nursery
- 6. Heating systems
 - 6.1 Coal heaters
 - 6.1.1 Air to air circulation
 - 6.1.2 Hot water circulation
 - 6.1.3 Paraffin heating
 - 6.1.4 Diesel heating



7. Fertiliser programmes

7.1 Soluble fertiliser

7.2 Geranial fertiliser

7.3 Water analysing

7.4 Soil analysing

7.5 Water pH affects availability of plant nutrients

7.6 Soil pH affects availability of plant nutrients

7.7 Growing of tomato with hydroponics and in soil

7.8 Growing of cucumbers with hydroponics and in soil

7.9 Growing of Sweet pepper with hydroponics and in soil

7.10 Seed selection for clients (winter summer productions)

7.11 Tomato disorders

7.11.1 Fungicides

7.11.2 Pesticides

7.11.3 Deficiencies

7.12 Cucumber disorders

- 7.12.1 Fungicides
- 7.12.2 Pesticides
- 7.12.3 Deficiencies

7.13 Sweet Pepper disorders

- 7.13.1 Fungicides
- 7.13.2 Pesticides
- 7.13.3 Deficiencies

7.14 Plant protection

- 7.14.1 Tomato
- 7.14.2 Cucumber
- 7.14.3 Sweet Pepper
- 7.14.4 Open field crops
- 7.15 Plant nutrient deficiencies
 - 7.15.1 Nutrient (element)
 - 7.15.2 Function
 - 7.15.3 Symptoms of deficiency
 - 7.15.4 Crops & Pastures most susceptible

7.16 Foliar sprays



Unit Standard Title	ID	NQF L	Credits		Dura	tion	
		•		5Days	10Days	15Days	21Days
Perform basic routine							
operations in a defined	116148	1	5				
hydroponic context							
Maintain basic water	116168	1	1				
quality							
Operate and maintain	116202	1	2				
irrigation systems							
Perform routine				2600	7200	10800	15000
operations and identify	116072	2	3	3000	/200	10800	15000
basic problems in							
hydroponic systems							
Produce crop in a	116314	4	4				
hydroponic system							
Manage a hydroponic							
production unit	116383	5	10				
Total credits			25				

3: CLUSTER 1: ANIMALS PRODUCTION MODULES FOR:

3.1: LARGE STOCK (BEEF CATTLE)

This popular course gives Learners the opportunity to learn the principles of beef cattle management, breeding and production. While no one course can be expected to deal in comprehensive detail with all aspects of the beef industry, this course provides a detailed overview of the necessary subject matter for Learners who are already in the industry or those who are new to the industry. Elements such as nutrition, production, reproduction, and disease recognition, control and treatment, are dealt with in detail.

Course Aim:

To help Learners to analyse and make informed decisions about the management requirements of beef cattle. On completion of this course you should be able to describe **and** cattle husbandry and management.

There are 10 Modules in this course:

- Module 1: Introduction to beef cattle and beef cattle breeds
- Module 2: Beef Cattle Production Systems
- Module 3: Beef Cattle Breeding
- Module 4: Diseases in Beef Cattle Viral and Bacterial
- Module 5: Parasitic and Other Diseases in Beef Cattle
- Module 6: Nutrition in Beef Cattle
- **Module 7:** Commercial Herd Management

Module 8: Feed Lot ManagementModule 9: Stud Herd ManagementModule 10: Management, Economics and Marketing

Each module culminates in an assignment which is submitted to for assessment, marked by the assessor and returned to learners with any relevant suggestions, comments, and if necessary, extra reading.

NQF Unit Standard Alignment Table 4: LARGE STOCK (BEEF CATTLE)

US	ID	NQF L	Credits	Duratio	n		
				5Days	10Days	15Days	21Days
3	10976	Convey livestock	8				
2	116074	Observe and inspect animal health	5				
2	116107	Identify basic breeding practices for farm animals	5	3600	7200	10800	15000
2	116126	Apply marketing principles in agriculture	2				
3	116211	Minimise risk in animal management	3				
Total	Credits		23				





Figure 2: Key areas for palpating cows when body condition scoring.

3.2: SMALL STOCK (SHEEP, GOATS, AND RABBITS.)

Sheep, Goat and Rabbit farming is not a new enterprise. Rearing Sheep, Goat and Rabbit s is a profitable business. Sheep, Goat and Rabbit has been rearing since the time immemorial. Generally Sheep, Goat and Rabbit farming means rearing Sheep, Goat and Rabbit's for the purpose of harvesting milk, meat and fiber. At present, Sheep, Goat and Rabbit farming has become a profitable business and it requires a very low investment because of its multi-functional utility. Commercial Sheep, Goat and Rabbit farming business is contributing greatly to the economy and nutrition of a country. Sheep, Goat and Rabbits are multi-functional animal. You can produce a wide variety of products from Sheep, Goat and Rabbit s, such as milk, meat, fiber, manure etc. Sheep and Goat milk is used for producing full cream Sheep and Goat powder, skimmed Sheep or Goat milk powder, Sheep or Goat butter, Sheep or Goat milk cream, fresh Sheep or Goat milk etc. Sheep, Goat and Rabbit meat is a great source of consumable meat which is very testy, nutritious and healthy. And Sheep and Rabbit's wool is being used in many purposes and skin of Sheep, Goat and Rabbit plays a vital role in leather industry. However, here we are describing more about the advantages of Sheep, Goat and Rabbit farming business and the required steps for starting a lucrative business.

All aspects relating to the Sheep, Goat and Rabbit production will be dealt with

- Steps for Starting Sheep, Goat and Rabbit Farming Business
- Selecting Farm Area
- Sheep, Goat and Rabbit Breeds
- Housing
- feeding
- Care & Management
- Vaccination
- Marketing
- Total Expenditure & Profit
- Advantages of Sheep, Goat and Rabbit Farming
- Some Essential Tips for Raising Sheep, Goat and Rabbit s



NQF Unit Standard Alignment TABLE 5: SMALL STOCK (SHEEP, GOAT AND RABBIT)

LEVEL	US ID	US TITLE	CREDIT/S		DURA	TION	
				5Days	10Days	15Days	21Days
2	116055	Understand animal nutrition	7				
2	116074	Observe and inspect animal health	5				
2	116107	Identify basic breeding practices for farm animals	5	3600	7200	10800	15000
2	116126	Apply marketing principles in agriculture	2				
2	116121	Apply sustainable farming practices to conserve the ecological environment	5				
Total Cre	edits		24				

4: CLUSTER 3: POULTRY (BROILER & LAYER PRODUCTION)

These informative courses are highly recommended for emerging farmers, extension officers, supervisors and trainee farmers/farm managers as they provide a very good basic general knowledge of what has to be done, why it has to be done and when it has to be done. Visual and practical assignments are emphasized

POULTRY PRODUCTION TRAINING MODULES.

1. Introduction

- 1.1 What will I learn from the course
- 1.2 Why keep chickens
- 1.3 The business of poultry farming
- 1.4 Background information

UNIT II

- 2. Poultry breeds
- 3. Housing
- 3.1 Floor



4. Equipment 4.1 Drinkers 4.2 Feeders UNIT III 5. Brooding

6. Feeding

6.1 Choice feeding

UNIT IV

7. Health and disease prevention

UNIT V

8. Commercial broiler meat production

- 8.1 Marketing
- 8.2 Manure
- 8.3 Record keeping

UNIT VI

9. Commercial egg production

- 9.1 Hatching chicks
- 9.2 Pullets
- 9.3 Battery cages
- 9.3.1 Small cage unit
- 9.4 Barn hens
- 9.5 Free range
- 9.6 Force mounting
- 9.7 Egg quality
- 9.7.1 Internal egg quality
- 9.7.2 External egg quality

UNIT VII

- 10. Record keeping
- 11. Conclusion
- 12. Survey (feasibility study)
- 13. Budget
- 14. Poultry groups
- 15. Community ownership
- NQF Unit Standard Alignment



Unit Standard Title	ID	NQF L	Credits		Durat	tion	
				5Days	10Days	15Days	21Days
Brood poultry chicks	119448	2	10				
Apply health	119382	2	12				
management practices							
poultry							
Handle the collection and	119397	2	10				
storage of the eggs on							
the farm				3600	7200	10800	15000
Total credits			34				

 Table 3.1 Poultry Production Management (broiler & Layers)

5: CLUSTER 4: PIGGERY PRODUCTION

Pigs are kept for the production of pork and bacon. Most breeds, if properly managed and fed are capable of producing either pork or bacon. The pig industry in South Africa is characterized by low input low-output poorly managed pig production enterprises. Small-scale producers in the rural areas have largely sustained the industry. These producers keep on average 2-5 pigs under very poor hygienic and management conditions. There are just a few commercial pig farmers in the country. Unlike the dairy and beef industries, the pig industry has largely been unable to attract any foreign and internal investment. This has been exacerbated by the high costs of inputs especially in intensive pig production. The major constraints to production include; diseases and parasites, poor breeding, capital investment, inadequate advisory services, inadequate research, lack of organized marketing, lack of processing plants and poor product quality.

This training covers the following aspect

Housing - basic principles for design and management

Nutrition - choice of rations to meet requirements

Feeding systems -

Health Management - vaccination and medication programmes

Biodiversity

Breeding and Selection - traits of economic importance, selection and breeding methods

Management of breeding herd - service management, farrowing, management of lactating sow and piglets

Management of grower herd - weaning to marketing

Economics - record keeping, gross margins and economics of scale

Marketing - value adding, decisions to sell

Table 7: Piggery Production

ID	LEVEL	TITLE	CREDITS	Durat	ion		
				5Days	10Days	15Days	21Days
116 120	2	Explain Basic Pig Husbandry Practices	4				
116 153	1	Apply Basic Pig Husbandry Practices	5				
116 173	1	Evaluate Basic External Animal Anatomy & Morphology	5				
116157	1	Demonstrate an understanding of the basic concepts of sustainable farming systems	4	3600	7200	10800	15000
116191	1	Apply standard animal feeding procedures	6				
Total cred	lits		24				

6: CLUSTER 5: AQUACULTURE PRODUCTION

Fish farming may be a relatively old and well established technique; but it is an industry sector that is rapidly changing, and growing. Fish (and crustacean) farming can be carried out on a small scale (even in a home garden); or on a large scale (covering dozens of acres).

This course provides the foundation for undertaking aquaculture on any scale **Duration:** 100 hours

There are 6 lessons in this course:

- 1. Introduction To Aquaculture
- 2. Production Systems EP and IP
- 3. What Species To Farm
- 4. Setting Up A Fish Farm
- 5. Fish Foods & Feeding
- 6. Harvesting



Price On Request

7: CLUSTER 6: Agricultural Equipment Maintenance

The regular maintenance of tractors and farm machinery is often neglected by farmers and tractor operators and can lead to expensive machine failures and downtime. Therefore, preventive maintenance is one of the most important tasks that can be performed on agricultural machinery. Time that is spent in the offseason to conduct these maintenance tasks will be well rewarded during the working season. Maintenance costs are often small compared with repair costs that result from the lack of proper maintenance. Many of these maintenance tasks can be carried out in a simple but well equipped farm workshop, if the operator has the proper knowledge, experience and tools.

The following module will constitute on this short courses

- 1. INTRODUCTION
- 2. SAFETY INSTRUCTIONS
- 3. A WELL ORGANIZED FARM WORKSHOP
- 4. BASICS OF METAL WORKING
- 5. BASICS OF MAINTENANCE MECHANICS
- 6. BASICS OF TRACTOR- AND ENGINE TECHNOLOGY
 - 6.1. The Engine Lubrication System
 - 6.2. The Engine Intake- And Exhaust System
 - 6.3. The Engine Fuel System
 - 6.4. The Engine Cooling System
 - 6.5. The Engine Electrical System
 - 6.6. Bearings And Rotating Components
 - 6.7. The Hydraulic System
 - 6.8. The Steering Mechanism
 - 6.9. The Wheels And Tires
 - 6.10. The Brake-System
 - 6.11. The Transmission System
 - 6.12. The Mechanical Front Wheel Drive
 - 6.13. The PTO
 - 6.14. The Three-Point Hitch
 - 6.15. Summary Of The Maintenance Intervals6.16. Trouble Shooting
- 7. STORAGE OF THE TRACTOR
- 8. FUEL SAVING ON THE FARM
- 9. REFERENCES AND FURTHER INFORMATION
- 10. APPENDICES
 - 10.1. Recommended Lubricants
 - 10.2. Essential Workshop Tools For Tractor Maintenance
 - 10.3. Tire Inflation Pressure Chart
- 10.4. ELECTRIC AND HYDRAULIC SYMBOLS
- 10.5. TAP AND DRILL CHART
- 10.6. TRACTOR MAINTENANCE LOG SHEET



Table 8: Agricultural Equipment Maintenance

Unit Standard Title	ID	NQF L	Credits		Durat	tion	
				5Days	10Days	15Days	21Days
Care for, select and use hand and measuring tools	13159	1	4				
Conduct a scheduled service on agricultural equipment	246761	2	4				
Utilise and perform minor repair and maintenance tasks on implements, equipment and infrastructure	116060	2	5	3600	7200	10800	15000
Overhaulminorhydrauliccomponentsonagriculturalequipment	251923	2	8				
Total credits			21				
	Benn						

