

THE UNIVERSITY OF WEST INDIES  
ST. AUGUSTINE, TRINIDAD AND TOBAGO, WEST INDIES  
**The Open Tropical Forage-Animal Production Laboratory**  
**[OTF-APL]**  
**Department of Food Production**  
**Faculty of Food and Agriculture**  
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**AGLS3003 [AL36A]: RUMINANT PRODUCTION SYSTEMS**  
**[3 credits]**  
**SEMESTER I 2012-2013**  
**MODULE 1: COURSE INTRODUCTION**

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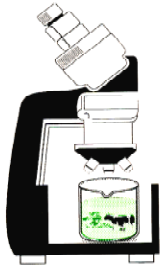
**AGLS2003 [AL36A]**  
**RUMINANT PRODUCTION SYSTEMS**

**Course Group e-mail address:**

**MODULE 1.1: COURSE INTRODUCTION**

**Table of Contents**

**Table of Contents**



..... 1

**THE UNIVERSITY OF WEST INDIES** ..... 1

**MODULE 1.1: COURSE INTRODUCTION** ..... 2

    1.1.1 WELCOME !! .....4

    UNIT OBJECTIVE .....5

    PLEASE READ CAREFULLY AND UNDERSTAND THE CONTENTS OF THIS UNIT!!!!!!!!!!!!!! .....5

**SAANAN DAIRY GOATS** ..... 6

**MACHINE MILKING OF A DAIRY COW** ..... 6

**A DAIRY GOAT MILKING PARLOR** ..... 6

    1.1.2 COURSE DESCRIPTION .....7

    1.1.3 GENERAL OBJECTIVES AND AIMS: .....7

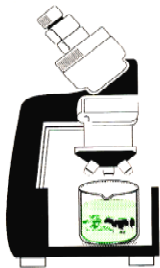
    1.1.4 LEARNING OBJECTIVES: .....7

    1.1.5 COURSE LOGICAL FRAMEWORK .....8

**VISIT TO LIVESTOCK FACILITIES** ..... 8

## AGLS 3003 [AL36A] Module 1.1

<b>COURSE REVIEW</b> -----	<b>8</b>
1.1.6 COURSE EXECUTION METHODOLOGY: -----	9
1.1.7 COURSE TEXT MODULES:-----	11
1.1.8 STUDENT ASSESSMENT: -----	11
1.1.9 SEMESTER SCHEDULE (SEPTEMBER TO DECEMBER 2012):-----	12
<b>[4<sup>TH</sup> TO 10<sup>TH</sup> NOV] LECTURE 9: BEEF CATTLE PRODUCTION</b> -----	<b>13</b>
1.1.10 ESSENTIAL TEXTS: -----	15
<b>COURSE INTRODUCTION</b> -----	<b>15</b>
1.1.11 RECOMMENDED READINGS:-----	15
1.1.12 VIDEO TAPES -----	17
<b>BEEF CATTLE</b> -----	<b>17</b>
<b>DAIRY CATTLE</b> -----	<b>18</b>
<b>SHEEP PRODUCTION</b> -----	<b>18</b>



-----	<b>1</b>
-------	----------

### **THE UNIVERSITY OF WEST INDIES** ----- **1**

### **MODULE 1.1: COURSE INTRODUCTION** ----- **2**

1.1.1 WELCOME !!-----	4
UNIT OBJECTIVE -----	5
PLEASE READ CAREFULLY AND UNDERSTAND THE CONTENTS OF THIS UNIT!!!!!!!!!!!!!! -----	5
<b>SAANAN DAIRY GOATS</b> -----	<b>6</b>
<b>MACHINE MILKING OF A DAIRY COW</b> -----	<b>6</b>
<b>A DAIRY GOAT MILKING PARLOR</b> -----	<b>6</b>
1.1.2 COURSE DESCRIPTION -----	7
1.1.3 GENERAL OBJECTIVES AND AIMS:-----	7
1.1.4 LEARNING OBJECTIVES:-----	7
1.1.5 COURSE LOGICAL FRAMEWORK-----	8

### **VISIT TO LIVESTOCK FACILITIES** ----- **8**

### **COURSE REVIEW** ----- **8**

1.1.6 COURSE EXECUTION METHODOLOGY: -----	9
1.1.7 COURSE TEXT MODULES:-----	11
1.1.8 STUDENT ASSESSMENT: -----	11

## AGLS 3003 [AL36A] Module 1.1

1.1.9 SEMESTER SCHEDULE (SEPTEMBER TO DECEMBER 2012):-----	12
<b>[4<sup>TH</sup> TO 10<sup>TH</sup> NOV] LECTURE 9: BEEF CATTLE PRODUCTION -----</b>	<b>13</b>
1.1.10 ESSENTIAL TEXTS: -----	15
<b>COURSE INTRODUCTION -----</b>	<b>15</b>
1.1.11 RECOMMENDED READINGS:-----	15
1.1.12 VIDEO TAPES -----	17
<b>BEEF CATTLE -----</b>	<b>17</b>
<b>DAIRY CATTLE-----</b>	<b>18</b>
<b>SHEEP PRODUCTION -----</b>	<b>18</b>

### *Module 1.1 General Introduction*

#### **1.1.1 Welcome !!**

*Welcome to this very compact and interesting course on Ruminant Production Systems!!!*

**Some of you will be taking this as your only course on animals from the standpoint of utility and production. While for others this may lead you into a very interesting and rewarding world of animals. Here you may choose to spend the rest of your life.**

I do hope that all students enjoy this course as much as I have enjoyed developing it for you and teaching it to wonderful learners like yourselves over the years.

**A very important feature of this course [that was designed to help make your learning enjoyable] is that the course has three (3) learning approaches:**

- **Didactic or Face to Face mode** i.e. You listening to the lecturers, but this year for the very first time, we shall be doing very little talking,
- **Farm and Livestock Facilities visits** i.e. You making your own observations within a real Animal Production Environment and
- **Future Simulation Game** i.e. you will learn by doing through group discussions, role playing and thinking about the future and presentations. This will be the main focus of the learning method being used this year. This teaching methodology is being used for the first time this year in this course. Last semester it was used for the first time anywhere in the world in the course AGLS6502:Tropical Zoo and Wildlife Production and Management. We all had a wonderful time and I hope that this term would be equally enjoyable.

**I assure you, that if you work on the activities within the group or company to which you will be assigned this semester, that by the end of the 13th week of the semester you can walk out of the classroom and write the exam with ease!!**

## **AGLS 3003 [AL36A] Module 1.1**

### **Unit Objective**

This unit is going to describe for you the manner in which this course has been organized and how it will be conducted for your enjoyable learning.

**Please read carefully and understand the contents of this unit!!!!!!!!!!!!**



**A Biogas Digestion Unit at a Pig Farm  
But could be used on a zero grazed  
dairy farm**



**Saanan Dairy Goats**



**Machine Milking of a Dairy Cow**



**A Dairy Goat Milking Parlor**



**Intensive Tropical Hair Sheep  
Production on Deep Litter**



**Barbados Black Belly Type Tropical Hair  
Sheep**

## 1.1.2 Course Description

Structure of the ruminant industry in CARICOM, brief physiology of ruminants, management practices including breeds and breeding, nutrition and feeding, health and disease prevention and control, housing and waste management, record keeping, planning new enterprises and use of new technologies.

## 1.1.3 General Objectives and Aims:

- (i) to become familiar with the structure of ruminant production in Caricom;
- (ii) to briefly review the important physiological principles governing ruminant production and
- (iii) to apply the principles of animal production to ruminant production in the tropics.

## 1.1.4 Learning Objectives:

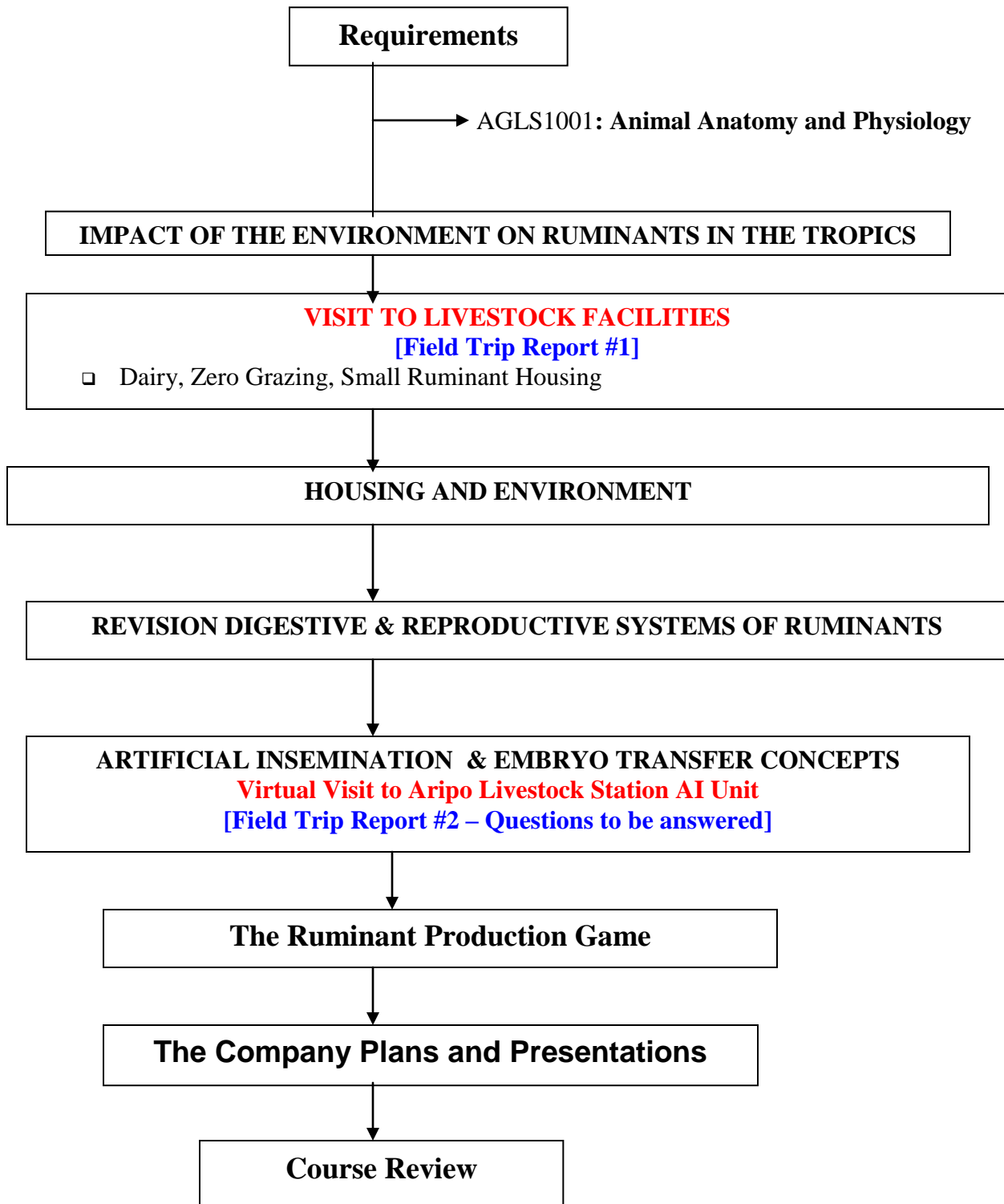
**The following is a list of the learning objectives for your guidance. It is the exit knowledge profile for you at the end of this course. If you read the end of the game manual you will get this information in another form. This is the information on which you will be examined in the written exam.**

- (i) To list and understand the Factors affecting Ruminant Livestock Production in the Tropics.
- (ii) To be able to state the role of environment and housing in commercial ruminant livestock production.
- (ii) To be able to list the essential features of ruminant livestock production systems.
- (iii) To be able to explain the effect of the tropical environments of ruminant livestock production.
- (iv) To be able to list the Physiological States involved in production systems involving the following animals:
  - Dairy Cattle
  - Beef Cattle and Buffalo
  - Sheep and Goats.
- (v) To be able to list and describe the essential components and management practices involved in the production systems of the following animals:
  - Dairy Cattle
  - Beef Cattle and Buffalo
  - Sheep and Goats.

**This seems to be a mouthful but when you are preparing for the examinations this is what you will have to use as your study preparation checklist!!!!!!!**



### 1.1.5 Course Logical Framework





### 1.1.6 Course Execution Methodology:

**“How is this course organized for you to learn enjoyably? “**

This course will be taught using **Didactic Teaching, Farm Based Observations and the Future Simulation Game** methods. This mixed approach to learning will now be described.

1. **Module 1** is the **Course Introduction**. **Module 1** has two (2) parts.

These are:

**a. Unit 1.1 General Introduction**

**b. Unit 1.2 Ruminant Production Systems Game Instructions**

*I do hope that you will find them to be lots of fun and very enjoyable!!!!!!!*

2. In this course you would cover

(i) **Large Ruminants and**

(ii) **Small Ruminants,**

2. **Students would be divided into groups at the beginning of the semester. This would be your Company for Purposes of the Future Game Simulation.**

3. **Activities:** Students would be exposed to **two (2) main activities**, beside the limited number of Lectures.

4. **Activity #1: Visit to Livestock Facilities.**

**Activity #1 Expectations:**

(i) You would be guided by the following questionnaire format.

Guidelines for the Report on The Visit to the Livestock Facilities

- Name of Facility
- Type of Enterprise
- Location
- Area
- Form of Ownership
- Objectives of the Enterprise
- Products and Services
- Species of Animals
- Physiological States
- Housing and Environmental Management
- Feeding Systems and Programme Employed
- Health and Disease Prevention Programme
- Major Disease problems
- Breeding and Reproduction Management

## AGLS 3003 [AL36A] Module 1.1

- Genetic Improvement Programme
- Product Marketing
- Other Observations

**Each student would be expected to do an individual write up which will be due on the on the 10<sup>th</sup> Week of Semester.**

### Activity #2: Future Game Simulation

- (i) Each group would be given a Company's Name and the Instructions on how to play the game would be outlined in Unit 1.2
- (ii) **Note:** The Game and the Final Report and presentation would be a group effort.
- (iii) Attendance at all Presentations is mandatory.

### 6. Course Work/ Student Marks

#### Activity #

	Presentation	Write-up Participation & Attendance	Total
<b>#1 Farm Visits [Saturday and Sunday ALL day]</b>		2.5%	2.5%
<b>#2 Virtual Visit Aripo Livestock Station</b>		2.5%	2.5%
		[Due Wk 10]	
<b>#3 Company Future Simulation Presentation and Report</b>	10%	25%	35%
<hr/>			
<b>Total</b>	<b>10%</b>	<b>30%</b>	<b>40%</b>
<hr/>			

### 7. About the Presentations

The group would be **expected to make a presentation to the class on the Future of their company** as outlined in Unit 1.2. **Each Company's Presentation would be for thirty (30) minutes** duration with **fifteen (15) minutes for questions and answers.**

The instructions for the company's written Report is outlined in Unit 1.2

**The marks for the group presentations would be allocated as follows:**

**Time 10%; Content 50%; Visuals 10%; Response to Questions 20%; Clarity and Diction 10%**

## AGLS 3003 [AL36A] Module 1.1

### 1.1.7 Course Text Modules:

This is available from the website [www12.brinkster.com/ostasp/index.aspx](http://www12.brinkster.com/ostasp/index.aspx)  
Click under undergraduate courses.

<b>Module #1*</b>	<b>Course Introduction</b>
<b>Module #2*</b>	<b>Ruminant Form and Function</b>
<b>Module #3</b>	<b>Sheep Production in the Tropics</b>
<b>Module #4</b>	<b>Goat Production in the Tropics</b>
<b>Module #5</b>	<b>Dairy Production in the Tropics</b>
<b>Module #6</b>	<b>Beef Production in the Tropics</b>
<b>Module #7</b>	<b>Buffalo Production in the Tropics</b>
<b>Module #18</b>	<b>Approaches at Developing Animal Production Systems</b>

### 1.1.8 Student Assessment:

<b>Course work</b>	<b>40%</b>
<b>Final Exam</b>	<b>60%</b>

### 1.1.9 Semester schedule (September to December 2012):

**Week #1**            **Mon 3<sup>rd</sup> Sept 10-12 am [FSA B]: Course Introduction and Registration**  
**[2-8 Sept]**            **Gary Garcia**

**Wed 5<sup>th</sup> Sept 4-5pm [FSA C3]:**  
**Lecture 1: Housing and Environment– Cicero Lallo**

**Week #2**            **Mon 10<sup>th</sup> Sept 10-12 am [FSA B]:**  
**[9-15 Sept]**            **Lecture 2: Housing and Environment – Cicero Lallo**

**Wed 12<sup>th</sup> Sept 4-5pm [FSA C3]:**  
**Lecture 3: Housing and Environment– Cicero Lallo**

**Week #3**            **Mon 17<sup>th</sup> Sept 10-12 am [FSA B]:**  
**[16-22 Sept]**            **Let the Game Begin: Game Sessions 1, 2 and 3**  
**Gary Garcia**

**Wed 19<sup>th</sup> Sept 4-5pm [FSA C3]:**  
**Let the Game Begin: Game Sessions 1, 2 and 3**  
**Michele Singh**

**Sunday 23<sup>rd</sup> September Morning Field Trip**

**Sugarcane Feeds Centre**

Depart Sir Frank Stockdale Building 7:30 am

- SFC Abattoir
- SFC Animal Facilities
- SFC Bio Gas Digestor
- Composting
- Forages

- **Lunch and GAME SESSION 3**

**Week #4**            **PUBLIC HOLIDAY [Republic Day] Monday 24<sup>th</sup> September**  
**[23-29 Sept]**

**Wed 26<sup>th</sup> Sept 4-5pm [FSA C3]:**  
**Lecture 4-Species Characteristics and Systems of Production Concepts**  
**Michele Singh**

**Saturday 29<sup>th</sup> September Morning Field Trip**

Depart Sir Frank Stockdale Building 5:30 am

- UFS Milking and Milking Management
- UFS Milk Processing Unit
- UFS Abattoir
- Forages
- Poultry Housing

**Sunday 30<sup>th</sup> September 6 am: to 4 pm**  
**Field Trip: Marialisa Farms Ltd Penal**

## AGLS 3003 [AL36A] Module 1.1

- Week #5**  
[30<sup>th</sup> – 6<sup>th</sup> Oct] **Mon 1<sup>st</sup> Oct 10-12 am [FSA B]:**  
**Lecture 5: Dairy Cattle and Milk Production Management [LIME]**
- Wed 3<sup>rd</sup> Oct 4-5pm [FSA C3]:**  
**Virtual Trip: Surge Island Dairies Jamaica**
- Week #6**  
[7-13 Oct] **Mon 8<sup>th</sup> Oct 10-12 am [FSA B]:**  
**Game Session 5**
- Wed 10<sup>th</sup> Oct 4-5pm :**  
**Virtual Field Trip to the Artificial Breeding Centre Aripo**  
**Virtual Trip**
- Week #7**  
[14<sup>th</sup> -20<sup>th</sup> Oct] **Mon 15<sup>th</sup> Oct 10-12 am [FSA B]:**  
**Lecture 6: Sheep Production**
- Wed 17<sup>th</sup> Oct 4-5pm :**  
**Virtual Trip: Intensive Sheep Farms Trinidad and Martinique**  
**Game Session 6**
- Week #8**  
[21-27 Oct] **Mon 22<sup>nd</sup> Oct 10-12 am [FSA B]:**  
**Lecture 7: Goat Production**
- Wed 24<sup>th</sup> Oct 4-5pm:**  
**Virtual Trip: INRA Goat Farm Guadeloupe**  
**Virtual Trip: INRA Reproductive Lab Guadeloupe**
- Week #9**  
[28 Oct-3 Nov] **Mon 29<sup>th</sup> Oct 10-12 am [FSA B]:**  
**Lecture 8: Reproductive Management**
- Wednesday 31<sup>st</sup> October**  
**Virtual Trip: Bodles Research Station Jamaica**
- Week #10**  
[4<sup>th</sup> to 10<sup>th</sup> Nov] **Mon 5<sup>th</sup> Nov 10-12 am [FSA B]:**  
**Lecture 9: Beef Cattle Production**
- Wednesday 7<sup>th</sup> Nov**  
**Game Session 7**
- Week #11**  
[11<sup>th</sup> to 17<sup>th</sup> Nov] **Mon 12<sup>th</sup> Nov 10-12 am [FSA B]:**  
**Lecture 10: Water Buffalo Production**  
**Tuesday 13<sup>th</sup> November - DIVALI**
- Wednesday 14<sup>th</sup> Nov**  
**Game Session 8**
- Week #12**  
[18<sup>th</sup> -24<sup>th</sup> Nov] **Mon 19<sup>th</sup> Nov 10-12 am [FSA B]:**  
**Game Session 9: Presentations**
- Week #13**  
[25<sup>th</sup> to 1<sup>st</sup> Nov] **Mon 26<sup>th</sup> Nov 10-12 am [FSA B]:**  
**Game Session 10: Presentations**

**The Groups/ Companies**

Company 1 Creole Dairy Goat, Sheep and Deer Farm	Company 2 Sam's Dairy Farm	Company 3 Ali's Abattoir and Ethnic Foods Restaurant	Company 4 Forage Farm	Company 5 National Feed Mills	Company 6 Artificial Breeding Centre

**Closing Note**

Please become familiar with the course guidelines.

**1.1.10 Essential Texts:**

**Course Introduction**

Course Module #1: Course Introduction and Outline

Course Module #2\* Physiology of Ruminants  
Course Module #3 Sheep Production in the Tropics  
Course Module #4 Goat Production in the Tropics  
Course Module #5 Dairy Production in the Tropics  
Course Module #6 Beef Production in the Tropics  
Course Module #7 Buffalo Production in the Tropics

Ensminger, M.E. [1993]: Dairy Cattle Science, Third Edition, Interstate Publishers, INC, Danville Ill. USA

Ensminger, M.E. [2002]: Sheep and Goat Science (Animal agriculture Series), Sixth Edition, Interstate Publishers, INC, Danville Ill. USA

**1.1.11 Recommended Readings:**

1. Anon (1983): Feeding of Animals in the Caribbean: An SFC-CARDI Sponsored Workshop 11-16 April, 1983 UWI. Editors; F. Neckles; W. Cateau and D. Walmsley
2. Anon (1979)  
The Management and Diseases of Sheep, CAB, UK.
3. ANON (1983)  
Livestock Manual for the Tropics.  
The Jamaica Livestock Association Ltd; Kingston, Jamaica
4. ANON (1990)  
Caribbean Middle-Level Management Livestock Training Manual-  
Volume 1 Ruminants; Commonwealth Secretariat
5. Anon (1993)  
Opportunities and Constraints for the Development of A Sustainable  
Small Ruminant Sub-Sector in the Caribbean  
Seminar Proceedings, Barbados, 15-17 September 1992, CARDI
6. Cole, H. H. and Ronning, M. (1974)  
Animal Agriculture. The Biology of Domestic Animals and their use by  
man. W. H. Freeman and Co., San Francisco
7. Devendra, C. and Burns. M (1983)  
Goat Production in the Tropics; CAB, UK.
8. Devendra, C. and Mc Leroy, G.B. ( 1982)  
Goat and Sheep Production in the Tropics, ITAS, Longman.
9. FACT SHEETS ON RUMINANTS FROM THE DEPARTMENT OF  
AGRICULTURAL EXTENSION



## AGLS 3003 [AL36A] Module 1.1

- Available from Ms. M. Jiminez-Spence, Dept. of Ag. Extension, Faculty of Agriculture Cost - \$25
10. Ferguson, T. U. and Garcia, G. W. (Editors) (1992)  
Leucaena in Agricultural Development  
Proceedings of the 1st International Conference on Leucaena  
Port of Spain, Trinidad and Tobago, 10-13 July, 1989  
Faculty of Agriculture, UWI, St Augustine, Trinidad and Tobago.
  11. Humphreys, L.R. ( 1988)  
Tropical Pastures and Fodder Crops; ITAS, Longman, Second Edition
  12. Hill, D. (1988)  
Cattle and Buffalo Meat Production in the Tropics; ELBS, Longman
  13. Jarrige, R. (EDITOR) (1989)  
Ruminant Nutrition, Recommended allowances and Feed Tables  
INRA. Paris, France; John Libbey EUROTEXT, London-Paris.
  14. Morand-Fehr, P Editor (1991)  
Goat Nutrition; Pudoc Wageningen
  15. National Research Council (NRC) (1978)  
Nutrient Requirements of Dairy Cattle,  
National Academy of Sciences, Washington DC
  16. National Research Council (NRC) (1984)  
Nutrient Requirements of Beef Cattle,  
National Academy of Sciences, Washington DC
  17. NRC (1985)  
Nutrient Requirements of Sheep,  
National Academy of Sciences, Washington DC
  18. NRC (1981)  
Nutrient Requirements of Goats,  
National Academy of Sciences, Washington DC
  19. Nelson, R. (1986)  
Stockman's Veterinary Handbook  
Livestock Development Company; 58 High Street, Georgetown,
  20. Payne, W.J.A. (1990)  
An Introduction to Animal Husbandry in the Tropics  
ELBS, Longman: Fourth Edition.
  21. Preston, T.R (1986)  
Matching Livestock Systems with available feed resources in  
tropical countries  
CTA, The Netherlands, 14 January 1986.
  22. Preston, T.R. and Leng, R.A (1987)  
Matching Ruminant Production Systems with available resources in the  
Tropics and Sub-Tropics. CTA, Netherlands.
  23. Preston, T.R (1989)  
The Development of Milk Production Systems in the Tropics  
CTA, The Netherlands.
  24. REGIONAL LIVESTOCK MEETINGS:  
Department of Livestock Science; Faculty of Agriculture

## AGLS 3003 [AL36A] Module 1.1

25. Roy, J.H.B (1980)  
The Calf  
Fourth Edition, Butterworths, London-Boston
26. Walmsley, D (EDITOR) (1987)  
Forage Legumes and other local protein sources as substitutes for imported protein meals. Seminar Proceedings, Kingston Jamaica, 1-4 December, 1987.; CTA and CARDI
27. Walmsley, D (EDITOR) (1990)  
Agricultural Diversification in the Caribbean  
Seminar Proceedings, Barbados, 27 November to 1 December, 1989.  
CTA and CARDI
28. Walmsley, D (EDITOR) (1993)  
Dairy Development in the Caribbean  
Seminar Proceedings, Jamaica, 20 November to 3 December, 1992.,  
CTA and CARDI

### 1.1.12 VIDEO TAPES

*Please note that these videotapes are housed in the audiovisual room on the third (3<sup>rd</sup>) floor of the main library. Arrangements will have to be made with the librarian in charge of the Floor (Mr. R. Clarke) for groups to view the tapes. These tapes are all very informative and should be viewed by each student at least once.*

#### **Beef Cattle**

Beef Production: Management Practices for Beef Cattle I & II VHS; 24, 47 minutes

Beef Production: Beef Reproduction I, II & III VHS; 23, 43, 21 minutes

Reproduction: Fundamental of Livestock Parturition VHS; 25 minutes

Artificial Insemination: Beef and Dairy Cattle VHS; 14 minutes

Reproduction: Artificial Insemination Striving for Perfection; VHS 17 minutes

Cattle Breed Identification: Zebu VHS; 20 minutes

8. Beef Forequarter: Fabrication & Retail Identification VHS; 18 minutes: Call #: TS1962.B443 1999

9. Beef Grading: Quality VHS; 27 minutes: Call #: TS373.B4 1998

10. Beef Grading: Yield VHS; 31 minutes: Call #: SF140.C37 B44 1998

11. Beef Hindquarter: Fabrication & Retail Identification VHS; 18 minutes: Call #: TS1960.B44 1999

## AGLS 3003 [AL36A] Module 1.1

15. Beef Slaughter and Dressing VHS; 18 minutes: Call #: TS1960.B43  
51. Meat Judging Fundamentals VHS; 50 minutes: Call #: SF140.C37 M43 1998

### **Dairy Cattle**

- Dairy Production: Dairy Management Practices VHS; 37 minutes  
Dairy Safety; VHS: 39 minutes  
Dairy Production: The Dairy Cow; VHS; 15 minutes  
Dairy Judging: Cows; VHS; 50 minutes  
Dairy Judging: Heifers; VHS; 25 minutes  
Dairy Judging: I VHS; 52 minutes  
Dairy Judging II; VHS 35 minutes

### **Sheep Production**

- Sheep Production: Sheep Management Practice I, VHS, 55 minutes  
Sheep Production: Sheep Management Practice II, VHS, 44 minutes  
Sheep Production Series: Selection and Care of Market Lambs; VHS, 44 minutes  
Market Lamb Evaluation: VHS; 47 minutes  
Market Lamb and Breeding Sheep Evaluation, VHS; 60 minutes  
Fitting and Showing Market Lambs, VHS, 56 minutes

36. Lamb Carcass Fabrication VHS; 24 minutes: Call #: TS1963.L3 1991  
37. Lamb Retail Cut Identification VHS; 17 minutes: Call #: TS1962.L36 1992  
Lamb Retail Cut Identification Update; VHS 23 minutes  
38. Lamb Slaughter and Dressing VHS; 28 minutes: Call #: TS1960.L363 1991