SUBJECT BENCHMARK STATEMENT

IN

LIVESTOCK

Quality Assurance and Accreditation Council
University Grants Commission
Sri Lanka

December 2010

CONTENT

FOREWORD

The work in connection with the development of Subject Benchmark Statements was begun in August 2003 as a part of the overall quality assurance framework that supports academic standards and the furtherance and dissemination of good practice in Universities in Sri Lanka.

Subject Benchmark Statements will support and promote quality and standards by:

- Providing universities with a common and explicit reference point for internal and external programme approval and review;

- Guiding and promoting curriculum development, especially in new departments and new universities, and in other institutions of higher education;

- Evolving over time to take account of changes and innovations that reflect subject development and new expectations;

- Providing an authoritative and widely recognized statement of expectations of what is expected of a graduate in a specific (or designated) subject area in a form readily accessible to students, employers and others with a stake in higher education;

- Providing a clear and transparent reference point for External Examiners;

- Assisting international comparison and competitiveness of higher education awards and student achievement.

SUBJECT BENCHMARK STATEMENT
LIVESTOCK AND ANIMAL PRODUCTION

1. INTRODUCTION

1.1. Subject Benchmark Statement

Subject benchmark statements are a means of describing the nature and characteristics of programs in a specific subject for the academic community. They also serve to convey the general expectations with regard to the standards of the qualifications at a given level, and state the attributes and capabilities that those possessing such qualifications should be able to demonstrate. They serve as guidelines for those engaged in developing curricula by setting the minimum coverage and standards required. The statement also provides reference points for the periodic evaluation of programs for quality assurance purposes and helps in the comparison of programs between different educational institutions.

1.2. Nature and Extent of the Subject

Since the dawn of mankind, hunting animals for meat and skins had been his major occupation. At about the same time that he commenced cultivating crops - around 10,000 years ago - man also began to raise animals. This change not only increased his food security but also enabled him to use animals for a greater range of purposes such as milk, work and companionship. Since then, domesticated animals became established as part of agriculture. On small-scale rural mixed farms today, animals are an essential component providing farm power, a regular income and complementing the cropping activities.

The rapid advances in the basic sciences over the last two centuries or so, has enabled the development of breeding, feeding, management and disease control of animals resulting in the highly productive and sophisticated systems that are in place today. In the last few decades, moreover, the demand for milk, meat and eggs has been increasing rapidly - particularly in the developing world – and FAO has estimated that the value of animal products will equal those from all crops by the year 2020. To meet this demand, the productivity has to be continuously increased through research and development programs. The modern animal production sector today, therefore, needs personnel with a sound, science-based training at the undergraduate and postgraduate levels.

Degree programs in Animal Production are designed to develop the knowledge and skills required by those managing, regulating and developing the production and utilization of the major animal products - milk, meat, eggs, wool and hides. They also commonly deal with animals raised for work, ceremonial and recreation purposes and even as companions. Since animal production is an applied and professional activity, the nature of the training requires not only a sound basic training, but also extra-mural exposure to farm, field and the food processing industry. Students must also be exposed to experimental studies and research to appreciate the need for and participate in further development. Analytical and

problem solving skills together with good communications and the ability to work in groups and teams are also essential to work effectively in the sector.

Structure of the courses and levels of teaching

In Sri Lankan universities, animal production is mostly taught as part of the undergraduate degrees in agriculture, veterinary science and food science at a level equivalent to a subject in a general degree. In a few programs, it is also taught as the major subject in a complete degree program where it could be equated to a special (honours) degree. In both cases, the coverage is similar but the latter allows for a greater depth in the teaching as well as for specialization in selected areas such as dairy or poultry science. In both cases, the curriculum will follow a logical sequence with the more basic disciplines being taught before the applied aspects. This benchmark statement provides general guidance for articulating the learning outcomes. It is not prescriptive and should not be considered as a specification for a detailed curriculum on the subject.

Employment

Graduates with training in animal production would be employed at all levels from primary or on-farm production to product handling and processing, in the regulation of these processes and in related fields such as public health. They would also be engaged in research and development. They would, therefore, expect to find employment in both the private and state sectors but will also be self-employed with their own enterprise. Veterinarians would primarily be in practice and in animal disease regulation, but should be able to engage in animal production at all levels. A thorough knowledge of animal production and associated skills at the general degree level are essential for their activities.

2. SUBJECT AIMS

The training in animal production should aim to provide the following:

- A sound background knowledge in the basic sciences that underpin the production and use of animals
- An awareness of the social and economic importance of animal production in Sri Lanka and the world, particularly for the rural sector.
- A sensitivity to animal welfare and humane and ethical treatment of animals
- An understanding of the availability of resources – land, animals, funds – and their optimal utilization within socio-economic and legal frameworks.
- A comprehensive training in the current knowledge and development of primary or farm level production as well as the utilization of animal products
- Competence in subject specific as well as in other key intellectual skills such as analysis and problem solving
- Develop a professional approach to study and life-long learning.
- Develop communication and presentation skills together with team working abilities needed for promotion of animal production
- Develop the Ability and the confidence needed for self employment
- An appreciation of the issue of sustainability and some of the negative aspects of animal production activities that impact on the environment and human health with special emphasis on emerging zoonotic diseases.

3. SUBJECT KNOWLEDGE AND UNDERSTANDING

The products from animals include the food items milk, meat and eggs, the fibers, wool and mohair as well as hides and skins from which leather is prepared. In addition, animals are raised to provide farm power and for ceremonial purposes whilst a wide range of both edible and non edible items arise as by-products. These are produced in a variety of farming systems – from the nomadic and extensive to intensive agribusinesses - which are in turn, part of a range of socio-economic formations. The teaching/learning programs will, therefore, deliver the following components, although the emphasis may change in different curricula.

- History and development of animal production in Sri Lanka and the world
- Ancient and modern systems of animal production and their socio-economic importance
- Anatomy, physiology and biochemistry of domestic animals
- Genetic principles, breeds and breeding of animals
- Principles of nutrition, feed stuffs and feeding including nutritional assessments
- Natural grasslands and the cultivation and utilization of dry and succulent forages
- On-farm management of the following:
  - Dairy cattle and buffaloes
  - Sheep and goats
  - Swine
  - Poultry
- Composition, characteristics and testing of eggs, meat, milk, wool and other rendered products
- Handling and processing of milk and meat and their quality control aspects
- Utilization of animal by-products
- Management of animal disease and the hazards to human health from domestic animals or their products.
- Organic farming and sustainability of animal production
- A directed study which includes a literature search and a research Project

The program should ideally be structured in a logical manner with the applied aspects being preceded by foundation and basic subjects.

Whilst the list above will be considered as being part of “core” areas, the following related subjects should be made available as optional subjects or electives; further innovations may be introduced according to need, and are to be encouraged.

- Micro-livestock production
- Animal feed technology
- Hides and skins technology
- Farm planning and economics
- Farm mechanization
- Utilization and disposal of waste from animal production

4. SKILLS AND ATTITUDES

The program will be designed to develop the following attributes in their graduates.

Generic Skills

- Oral and written ability to communicate accurately, clearly and confidently to a variety of audiences
- Ability to browse the internet in a discerning manner for reliable information and competence in handling and processing Computer-based information and data
- The interpersonal skills required to work in groups and teams
- Intellectual skills to critically analyze information and creative thinking for finding solutions and innovation
- Coaching and mentoring skills needed to work at the primary production level.
- Numeracy skills required to appreciate issues of sample selection, accuracy, precision and the uncertainty present in data

Subject-specific Skills

- Ability to clearly demonstrate an understanding of subject matter
- Ability to perform and interpret laboratory findings in relation to different aspects of animal production
- Ability to assess housing, management, feeding and breeding practices on farms including the use of equipment, and to develop or correct them, when needed
- Ability to assess the practices used in handling and processing of animal products in relation to quality control and safety, and to develop or correct them
- Ability to read and interpret literature in subject areas and to apply the information correctly in practice

Attitudes

- Positive attitudes towards analyzing and solving problems in field and plants
- Sympathetic attitudes towards farmers and workers
- Caring attitudes towards animals and their welfare

5. TEACHING AND LEARNING STRATEGIES

The goal of learning in animal production will be the application of knowledge and skills and an appreciation of the need to integrate the different disciplines learnt in making such applications. As students progress through the degree program there will be increasing reliance on student-centered learning which will serve to foster an approach to lifetime learning.

The formal lecture will be the core of the teaching/learning method, supported by the following:

- Tutorials
- Laboratory practical classes
- Farm-based practical classes

- Small group sessions including discussions and problem-based learning
- Library and web-based assignments with presentations
- A research project with a compulsory literature review and Seminar
- Specialist external lectures by experienced practitioners to be arranged.

The applied nature of the training makes it imperative that students are not only taught in the classroom, but should be exposed to the field and processing plants in carefully selected extra mural activities such as the following:

- Structured (group) field visits of a short duration
- Work experience in a managed placement of a longer duration in farms and processing plants

Learning objectives - which are clear to students - should be developed separately for each of the classes including extra mural activities.

6. ASSESSMENT STRATEGIES

The assessments will be both formative and summative. A variety of such assessments will be made as shown in the examples below. The style of assessments will vary with the discipline and the Institution but should be clearly linked to learning outcomes:

- Written examinations
- Laboratory practical assessments
- Quizzes
- Assignments: Reports and oral presentations
- Scientific Project reports and Seminars
- Field visit reports
- Case study reports and presentations
- Field and farm practice (skills) tests
- Objectively structured viva voce tests (mainly to test attitudes)

7. MAINTAINING STANDARDS

The curriculum and the teaching/learning and assessment procedures should be under constant review with periodic revisions. The following procedures will be institutionalized in order to regularly provide the information needed for such reviews.

- Feedback from students
- Feedback from graduates and other stakeholders
- Peer reviews.

In order to keep up with developments in the animal production sector worldwide, the staff should undergo suitable training at regular intervals to update their knowledge and teaching methods. The use of external teachers from the AP sector as well as the use of external examiners and moderators will also help in keeping up with developments. The curriculum committee will be proactive in maintaining standards.
In addition, periodic external subject reviews should be mandatory.

8. STUDENTS ATTAINMENT AND BENCHMARK LEVEL

In the programs in which animal production is taught as part of another degree - for example, Agriculture, Veterinary Science, Food Science - the core subjects will be taught in around 30 Credit Units; together with the research projects and extra mural activities, the credits will increase to around 40 units. Up to another 5 units will be added for the electives giving a total of 45 units which will be equivalent to the level of a "general" degree in the subject. The threshold level for such graduates will be obtaining a 50% mark or a GPA of 2 in a scale from 1 to 4. The typical performance is likely to be higher with values around 60% and 2.8, respectively. Such graduates will possess the minimum level of knowledge and skills needed to be employed in the Animal Production Sector.

The standalone degrees in animal production will cover the same range of disciplines but to a greater depth. These degrees may be equated to "honours" degrees and will allow for specializations in different areas of Animal Production such as dairy science or poultry science. As in the case of general degrees, they will also possess the knowledge and skills to be employed in any aspect of the animal production sector, but will be more suited to undertake post-graduate research studies in the different animal production disciplines. Levels of achievement may be defined according to the standards used for special or honours degrees.

9. ANNEX1. MEMBERS OF THE BENCHMARK GROUP

Prof. S. S. E. Ranawana	Wayamba University of Sri Lanka
Prof. W. M. T. B. Wanninayake	Wayamba University of Sri Lanka
Dr. B. P. A. Jayaweera	Wayamba University of Sri Lanka
Dr. D. M. A. Gunaratne	Sabaragamuwa University of Sri Lanka
Dr. R. A. Maithreepala	University of Ruhuna
Dr. P. B. Terney Pradeep Kumara	University of Ruhuna
Mr. K. H. M. Ashoka Deepananda	University of Ruhuna