

Sustainable Livestock Farming in the Environment

Introduction to the Course

Welcome to the course

Welcome to *Sustainable Livestock Farming in the Environment*. This is an optional course in the Livestock Health and Production programme of the Royal Veterinary College. This course uses a large number of examples of environmental challenges in describing the principles of environmental science in livestock production, and is designed to allow you to become familiar with the way environmental science can be applied, as well as understanding some of its foundations. Key issues examined in the course include the effects that the disappearance of livestock can have on an ecosystem, urban livestock farming and keeping companion animals in cities, some of the emerging and re-emerging animal diseases and the types of environmental change that may be responsible for their development, and the interrelationships between wildlife and both zoonotic and livestock diseases.

The course has a UK and European focus in topics such as pollution from farm wastes and the impact of livestock farming on wildlife. When considering topics such as soil erosion, soil salinity and landscape change, attention is directed at semi-arid regions of the world. In the case of vertebrate pest management, much of the material is based on experience in Australasia. Overall, the focus is at the farm and regional level, rather than on global environmental issues. Nevertheless, many examples with worldwide relevance are described.

Some historical cases where there has been wildlife extinction and soil erosion are being repeated today. This is partly connected with population growth and urbanization. There are, however, two subcontinents where the population is growing rapidly in remote rural regions. In the western states of Brazil, and more recently in the Amazon basin, large areas have been deforested, and agriculture, including livestock farming, has taken over. The population has also been rising in the mountain regions of the Central Asian Republics (Uzbekistan, Kyrgyzstan and Tajikistan) because of natural growth as well as immigration from the more crowded and competitive cotton-growing valleys. Vine growing and nut production are the growth sectors providing new employment opportunities in the Central Asian hills. One of the consequences of the rising population of the Brazilian forest land and the hills in central Asia is wildlife endangerment. In Brazil the jaguar (*Panthera onca*) is now a near-threatened species and in Central Asia wild goats and sheep have now been declared endangered. There is also the risk of erosion. Overgrazing of the summer mountain pastures in Tajikistan is said to have reduced productivity in the region by almost half in the last 20 years of the 20th century.

What will you learn from this course?

The aims of this course are to give you an understanding of how:

- plant and animal successions occur in changing landscapes
- wildlife conservation can interact with the farm environment
- soil is eroded in pastoral farming systems
- water resources can be protected
- livestock wastes can be rendered safe
- the changing environment is affecting disease patterns in livestock
- rising soil salinity is affecting some semi-arid livestock properties
- natural disasters present threats to animals
- national environmental policies can be translated into objectives at farm level.

Course structure

The course consists of ten units of study, all of which you should complete. They make up the following three modules.

Module 1 *Managing the Farm for Environmental Sustainability*

This module (Units 1–3) provides material that will help you to appreciate how animal production and environmental sustainability have to be balanced. It focuses on some of the impacts that livestock farming can have on the environment. These include changes in plant and wildlife composition in ecosystems, soil erosion, effects on groundwater and surface water quality, and disease hazards for other species.

Module 2 *Ecology, Environment and their Effect on Livestock*

The second module (Units 4–7) examines some of the hazards and impacts of climate change and rising population density. It is predicted that the present trend towards urbanization of the world's population will continue for at least another 25 years.

Along with this there will be continued growth in horticulture and in the production of crops and poultry around the major towns and cities, as ungulate farming is displaced to more remote areas which are generally less suitable for arable farming. This module looks at the effects that these trends are having on the sustainability of livestock farming. It also examines the parasite hazards associated with climate change, urban livestock farming and keeping companion animals in cities, as well as some of the emerging and re-emerging animal diseases.

Module 3 *Wildlife Biology and Habitat Encroachment*

In the final module (Units 8–10) you will consider the issue of wildlife habitats in relation to livestock production and other forms of agriculture. There is growing emphasis in farming policy on conserving wildlife species, especially those that are at risk of becoming endangered or rare. In the European Union large amounts of financial assistance are now going towards this aim, replacing some of the former commodity-based subsidies. Traditionally there has been a need to control unwanted wildlife, and in particular wildlife that transmits diseases to livestock, companion animals and humans. This need still exists, but traditional methods are to some extent being replaced by schemes that aim at damage control rather than pest elimination.

Tutor-marked assignments

In addition to your work on the ten units, you are required to complete and submit at least one tutor-marked assignment (TMA) for assessment. If you submit more than one – and you may submit up to three – your best TMA will be used in the calculation of your final mark. Full information on how to approach and submit TMAs is provided in your *Student Handbook* and in the assignments themselves. You should bear in mind that your TMA will count for 20% of your final mark for the course.

Study time

The entire course, including revision and examination, is designed to take approximately 240 hours to complete. This is made up of between 15 and 20 hours' study time for each unit, 10–20 hours for the TMA(s) – so that the units and assignments will require a total of about 190 hours – and the remaining time for personal study and revision. You may find that some units will take you more or less time than estimated, depending on your familiarity with the subject.

Assessment

Your work for this course will be assessed by means of a 3-hour unseen written examination paper which will take the form of essay questions. In addition, you must submit at least one and up to three TMAs.

The grade awarded will be based on the mark obtained in the written examination (80%) and on the mark for the compulsory TMA (20%).