Livestock and Environment

In recent decades, livestock production has increased rapidly, particularly in the developing world. This expansion of the livestock sector is exerting mounting pressure on the world’s natural resources: grazing land is threatened by degradation; deforestation is occurring to grow animal feed, water resources are becoming scarce; air, soil and water pollution are increasing; and locally adapted animal genetic resources are being lost.

About 20 percent of the world’s pastures and rangelands, with more than 70 percent of the rangelands in dry areas, have been degraded to some extent, mostly through overgrazing, compaction and erosion created by livestock keeping. Dry lands are particularly affected by these trends, as livestock are often the only source of livelihoods for the people living in these areas.

Clearing of land for feed crop production and expansion of pastures for livestock production has been one of the driving forces behind deforestation. Deforestation causes significant environmental damage, releasing enormous amounts of carbon dioxide into the atmosphere and causing the extinction of many animal and plant species each year.

Freshwater is becoming increasingly scarce with the livestock sector accounting for nearly one tenth of global human water use. The livestock sector is probably the largest source of water pollution, contributing to eutrophication, ‘dead’ zones in coastal areas and degradation of coral reefs.

Much of the increased production comes from industrial farms clustered around major urban centres. Such large concentrations of animals close to dense human population often cause considerable pollution problems. The major sources of pollution are animal wastes, antibiotics and hormones, chemicals from tanneries, fertilizers and pesticides used for feedcrops and sediments from eroded pastures.

The livestock sector and the development path it will take thus have deep and wide-ranging environmental impacts that urgently need to be addressed.

Poultry and Environment

Poultry waste management

Advances in technology favour the intensification of poultry production in developing countries. Globally, however, traditions and economic constraints continue to promote small systems for live bird markets, and village and backyard systems. To avoid conflict and ensure the sustainability and potential growth of all poultry production systems, fundamental knowledge of the environmental and health issues associated with poultry waste management will serve both small and large poultry producers now and in the future. Information about the topic is available from this website through links to information notes on specific subjects.

The by-products of poultry production are of value if managed and recycled properly, regardless of flock size. However, if not managed or recycled properly, they also represent elements, compounds, vectors for insects and vermin, and pathogenic microorganisms, which are of concern. The management of poultry by-products focuses on soil, water and air quality issues.

Concerns include the degradation of surface and groundwater owing to poultry waste nutrients and pathogenic microorganisms. Air quality issues include emissions of ammonia, hydrogen sulphide, volatile organic compounds and dust. Greenhouse gas emissions and health effects associated with nuisance odorants are also issues in the context of global climate change and increasing human population near poultry operations.

The planning, construction and operation of poultry installations of any size should consider the issues involved in storing, managing and utilizing waste by-products. On a global scale, much research has been conducted to identify ways of recovering value-added products from animal wastes to mitigate environmental impacts. Many systems and approaches, including land application as fertilizer, recycling as animal feed components, and recovery for fuel energy, are available and can be successful if properly operated and managed.
Pigs and Environment

In the context of the intensification of pig production and consequent higher animal densities, the environmental effects have to be considered. Global issues such as greenhouse gas emissions from livestock production are becoming internationally recognized.

The main direct environmental impact of pig production is related to the manure produced. Appropriate storage can reduce the amount of greenhouse gases released, and the production of combustibles through bio-digestion can help to make optimum use of the natural resources involved in the production cycle.

The level of manure utilization defines the amount of nutrients released into the environment. Such nutrients can contribute significantly to increased soil fertility when used appropriately, but an overload of nutrients and other substances can lead to soil and water degradation. High-density pig production can release excessive amounts of nitrogen and phosphorus into the environment, and the high doses of copper and zinc fed to pigs to promote growth eventually accumulate in the soil.

The Life Cycle Assessment (LCA) approach to measuring greenhouse gas emissions related to pork production indicates that it tends to have lower emissions than ruminant production systems.

More attention needs to be given to the positive environmental impacts of sustainable pig farming, especially when pig production is part of agro-silvo-pastoral systems or organic farming systems where outdoor production is integrated with crop rotation.