The contribution of small animals

Editorial

The keeping of livestock is a part of most farming systems, from pastoral systems in which people rely solely on their animals, to extensive livestock keeping as a complement to the cropping activities, to situations where livestock keeping is an integrated component in intensified agriculture. The importance of livestock keeping lies primarily in its ability to convert biomass that is not directly useful for humans (grass, leaves, twigs, agricultural waste-products) into animal products and services that are. Not only do livestock provide highly nutritious milk, eggs and meat, but also feathers, fibre (wool) and hides. In addition, they provide nutrient rich manure which can be used in the growing of crops. Larger livestock are often used for transport purposes and provide draught power. The manure can also be an important source of energy for the farm. As the animals may live for many years, they often serve as security for difficult times, like a savings account, to be used in times of crisis. In this way, the animals themselves as well as the way in which they are kept and utilized is closely related to the particular environment in which the livestock keeping takes place. Man and animals have developed together over time and in most traditional societies, this relationship is reflected as an essential part of the culture.

In the conventional agriculture of today, however, the major focus has been on simplifying the production process and on maximizing the yield of the final product, be it grain, meat or milk. In this process, an increasing amount of external inputs have been used to achieve the production goals and research has been focused on developing animal breeds which respond well to increased amounts of nutrient rich feed. As a result of this, grain production and livestock production have become increasingly specialised and separated from each other. The grain is grown with inorganic fertilizer and the livestock are fed on this grain. In this way, livestock production has lost its role as a complement and support to agriculture and has become a competitor for grain which could otherwise be consumed by humans.

Livestock in small scale farming

For most small scale farmers, for whom it is important to make optimal use of available resources, livestock still has an essential role to play. In this issue of the LEISA Magazine, we take a closer look at how livestock can be integrated into diverse farming systems and in particular at the importance of smaller livestock for poorer households. Factors that smaller livestock such as sheep, goats, rabbits, ducks, chickens and many others have in common, are that they are relatively undemanding in their feeding requirements and easy to house and manage. They provide the same products and services as larger livestock, such as cattle, but are less risky, are easier to replace as they are not so costly and reproduce faster. By optimising the management of the animals as well as the integration of the animals into the farming system, the total production of the farm can increase considerably. The raising of small animals also offers opportunities for a regular cash income throughout the year. Small animals are often cared for by women and children, and the introduction of milk goats to HIV/AIDS affected families in Tanzania has proved to be a viable strategy in improving the nutritional status of these families (Kinsey, p 18).

In many cases, existing systems can be improved by integrating the different components in a better way. Jianbo (p 22) describes how researchers in China are promoting the integration of chickens into an existing agroforestry system based on bamboo. Keeping chickens and growing bamboo are both common - but separate - systems in the area. By introducing chickens into the bamboo forests a more efficient use of the land is achieved, nutrient cycling is enhanced and additional income generated. Daniel (p 12) provides an example of the development of vermicomposting in India, which has led to increasing demand for vermicompost to improve the soil, but also to income generation for landless women. In Vietnam, the introduction of goats and fodder crops into upland farming systems has improved the total farm production and given a substantial increase in income (Van Hao, p 11). Ogle (p 30) describes an initiative to train researchers for the further development of livestock based small scale farming systems.

It is also possible to combine different livestock species in such a way that they complement and support each other. Juniati (p 29) describes how an Indonesian farmer adapted the existing rice-fish farming system by integrating chickens with the fish component on the farm, thereby obtaining a higher and more constant income from the fish as well as the chickens. Another example of integration of different livestock species, in this case rabbits, guinea pigs and chickens in an urban setting, is given by Sánchez (p 28).

Small livestock are also an important source of cash income. In Peru, guinea pig meat is highly valued and Gomero (p 14) describes how he has built an integrated farm where the raising of guinea pigs is the key component and the main source of income. The manure produced by the guinea pigs and the other animals on the farm is carefully used in various ways to provide nutrients for the crops.

Many traditional production systems are under increasing pressure, or have changed or disappeared due to social, economic or political changes. Unnikrishnan (p 36) describes how social changes and changes in agricultural practices have made traditional duck farming in India increasingly difficult, and how farmers have made successful adaptations to the duck keeping system and still manage to maintain it. In Cambodia the long civil war resulted in loss of agricultural knowledge and thereby also in loss of the traditional, diversified farming systems. These systems were replaced by monocultures of rice. Increasing problems with maintaining the rice yields and surviving on the rice production has led to an effort to diversify the farms into integrated production systems similar to those existing before. Small livestock are a major component in this diversification (Simmons, p 8) and the presence of (small) animals and an optimal use of the manure produced on the farm are two essential criteria in striving towards sustainability.

Taking care of small animals

The productivity of livestock depends on a number of different factors including the breed, how well the animal is adapted to its environment, general care, the quality of feed supplied, housing, protection from predators and the quality of health care provided. To increase the productivity of small livestock in a sustainable way, all these factors need to be optimized.

Indigenous breeds

One key consideration is the selection of breed. Exotic or "improved" breeds have been widely promoted because of their high production potential, often replacing local breeds. However, the exotic breeds are often not well adapted to their new living

conditions. This makes it difficult to keep the animals healthy and leads to low productivity. Local breeds, on the other hand, are well adapted to the environment and to the farmers' management practices. They tolerate heat or cold well, can cope with low quality feed and have low maintenance requirements. Animals adapted to arid environments have lower water requirements. Indigenous breeds are often resistant to or can tolerate diseases that can be deadly to exotic animals. To realize the genetic potential of indigenous breeds better quality feed and selective breeding is necessary, but unfortunately research and extension has so far shown little interest. Directly related to the neglect of indigenous breeds is the problem of inbreeding. Inbreeding increases the incidence of genetic diseases and lowers productivity.
Fulcrand (p 16) describes how farmers and technicians have tackled this problem in indigenous sheep breeds in Peru by setting up a breeding programme based on proper selection of breeding animals. This initiative has led to improved production while the beneficial traits of the local breeds are maintained.

Feed
The supply of nutritious and well balanced feed is another important aspect in the management of livestock, as improved feeding gives healthier and more productive animals. Realizing this, Emuria, a Kenyan farmer, was able to build a healthy stock of goats by buying cheap, undernourished animals and providing them with good fodder and the necessary care (Jeremiah, p 31).

The availability of sufficient amounts of high-quality local feed is important for small-scale farmers, who usually do not have the resources to buy animal feeds. By making efficient use of the farm, fodder crops can be grown without occupying land necessary for the production of food crops (Preston, p 6). In addition, extensive indigenous knowledge often exists about which local plants can be used to feed small animals, especially during periods of drought and fodder shortage. Research has also come up with novel feed sources that are highly nutritious and can replace commercial feed (Pillai, p 26).

Animal health
The use of locally adapted breeds and the supply of good feeds are important for obtaining a stock of healthy animals, which is the first step in avoiding disease. In addition to good fodder, animal sheds should be suitable and kept clean, high animal densities should be avoided and general hygiene is essential when caring for livestock. Nevertheless, general management practices alone cannot prevent losses caused by a number of diseases and specific measures to control these diseases may be required. Historically, people have managed to control animal diseases to some extent by using traditional cures and medicines. This ethno-veterinary medicine is still important and merits attention. Conroy (p 24) describes how ethno-veterinary knowledge was used to develop a treatment against gastro-intestinal parasites in goats, thereby offering a local alternative to an expensive commercial de-worming drug. Novel technologies, for example vaccines, also play an important role in preventing disease. Newcastle disease, a viral disease in chicken, can cause very high levels of mortality, but recently a new vaccine has been developed. The vaccine is available in small doses and does not require refrigeration, qualities which make it possible for small-holders to make use of it. The vaccine will reduce mortality considerably. Apart from diseases, predators also pose a real threat to small livestock. In most cases farmers have found ways to cope with this problem, but it requires attention.

A people-centred approach

Technological issues are important in small livestock management, but cannot be separated from the social and environmental context in which the animal is being raised. By working closely together with the local population and jointly analyzing a situation, major bottlenecks can be identified and common action can be taken to overcome them. This is part of an empowerment process whereby farmers obtain important information and organize themselves to carry out necessary change. The establishment of farmer organizations, cooperative networks or self-help groups may be necessary in order to gain better access to outside services such as credit, animals, information and markets, or to improve community collaboration to successfully implement joint undertakings (Zoebish, p 20).

Small livestock make valuable contributions to farming systems and to people's livelihoods. They are of special value to poorer households and should therefore be part of national and international poverty reduction strategies. This awareness should be translated into policies that support the development of integrated farming including small livestock production systems suitable to cultural and social realities. A people-centred approach will help ensure that the most critical issues, technological, social or economic, are addressed and that changes will lead to lasting improvements for farmers as well as for society as a whole. ■

Call for articles

Issue 22.1, March 2006
Documenting for change
Agriculture or natural resource management projects often aim to improve the productivity of and/or regenerate natural resources. But how do you know what the results and impacts of your undertakings are? And how do others get to know about the results? A thorough documentation of what you have been doing as well as of the outcomes will make it possible to monitor and evaluate your activities and further improve them. On the basis of this documentation, it is also possible to inform others of your experiences and findings.

Documentation can take many forms; from short field observations, records of inputs and outputs, to multidisciplinary scientific findings at a more detailed level. However, the aim is the same: To try to understand what has been going on so that we can improve our work and get better results. But how do you go about it? In this issue we would like to highlight examples of processes and methodologies which have helped people to document, analyze and further develop their activities.
Deadline for contributions is 1 December, 2005.

Issue 22.2, June 2006
Agriculture in transition
Many of the different agricultural systems practised today have one thing in common – they are under severe stress and are increasingly failing to meet the needs of the producers. In this issue of the LEISA magazine we would like to examine how farmers manage the transition process towards more sustainable farming systems and how they can be supported by fellow farmers, outside organisations, or external incentives. We would also welcome examples of how institutions have adapted to be able to support these processes better.
Deadline for contributions is 1 March 2006