

improved 55% of average growth rate compared to goats fed on grass diet ($P < 0.01$). These forage trees generated additional annual gross incomes of US\$ 246 per household generated 115 mandays and reduce the cost of fencing around homesteads by 34%.

Conclusion

Implementation of agroforestry systems of forage tree plantations on farms may create fodder banks for high quality forage supplies, increase livestock productivity, soil fertility and provide sustainable household income to small holder farmers in Bangladesh.

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Sustainable and integrated livestock farming systems in the hot zones of the world

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Livestock farming systems encompass a whole variety of techniques and practices used by a community to exploit a given area's vegetative resource using animals and consistent with socioeconomic, cultural and environmental constraints. This paper outlines some ruminant livestock systems in Africa and in South America.

Development

Whilst animal breeding and production is an universal activity it can varied greatly from area to area. This variability can be illustrated by the following examples:

Pastoral livestock systems – a tradition relating to ethnic groups:

In Africa, pastoral systems are distinguished into two social groups: Sedentary farmers, who live off primarily products, generally in the wettest zones and wondering pastoralists whose life is entirely organized around their herd, which provides for their needs, generally in the more arid zones. The two groups share the use of common ground. Low demographic density has traditionally allowed this system to be one of very extensive breeding, even in zones which are favourable to agriculture.

Pastoral livestock farming systems are very extensive systems. The livestock load on the land and animal productivity per hectare are low. Pastoralists systems have the following common features: they manage large herds, herd one or more species belonging to one or more owners, maintain native livestock by grazing them on various natural species. There are wondering pastoralists present on all continents who move with their animals to maintain their livelihoods as well as possible. In South American sedentary farmers let their cattle free range in immense meadows.

Semi-nomads move from fixed dwelling to other fixed or temporary dwellings over a know area and route. Some undertake Transhumance, which is the seasonal displacement of herds under the guard of animal keepers, generally of paid shepherds or young men of the family. Nomadism is a means of utilising a dry area's fodder resources but nomadism is currently in decline in the world. The reduction of grazing areas and the increased population growth impose a significant reduction of fodder resources to accelerate this trend. In the Touareg peoples of North Africa animals are selected according to their robustness, of their ability to resist water deprivation and their aptitude to withstand displacement. These include camels and goats in desert zones, zebus and sheep in wetlands. Production from pastoral systems is very varied. Herds can consist of bovines and small ruminants with bovines dominating nomadic herds and small ruminants being more numerous among sedentaries systems. The control of the animals is based on selection, affects only the males, which are considered as productive at the age of 4 to 5 years old. Castration is carried out at 2 years old for males not required for breeding. Young animals are separated usually around the age of 14 to 16 months.

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Ranches and farms

On breeding ranches in Africa, the production and fattening of young calves is undertaken at the same time on one farm. Other systems involve fattening where young animals are bought in from outside. These are generally located near the larger towns to be near the consumers and to utilise cheap residues from agro-industrial industries (mélasse, cotton seeds) as feed stuffs to maximise profits. Animals are often sold before two years age to maximise income. The level of exploitation depends on their size: the small herds are often overexploited while the large herds in contrary under exploited.

Conclusions

Livestock farming systems are an important part of developing farming areas. There are many opportunities to use livestock to achieve good farming outcomes. Livestock can both ameliorate problems and increase production. Livestock farming systems are different in different parts of the world. Large scale animal farming requires significant investment. These can be more important than small animal farming and are not yet developed in developing countries.

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Diagnosis of diversified farming systems in Guadeloupe: First step to implement an agroecological intensification of agricultural production in tropical islands

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Introduction

The project which gathers the Local Public High School of Agricultural Education and Training, the Farmers' association of Guadeloupe and the Center INRA Antilles-Guyane has as its objective the aim of putting alternative agricultural models of production of regional interest, estimated and referenced agroecologically and socio – economically, within reach of developers, teachers and students of tropical island countries. It will thus eventually be a question of integrating into experimental units, training and demonstration, the present various activities on the farms of Guadeloupe, which are currently separately managed.

Materials and method

The hypothesis is proposed that integration encourages significant reductions in environmental damage while increasing profitability and impact and strength of these innovative systems. The project has to assist in the validation of certain research activities. It also has, through diagnosis, to fully identify currently underestimated endogenous innovations on farms of Guadeloupe. This initial phase aims to characterize the mixed farming systems and the practices of integration between various production enterprises inherent within them. It will thus become the object of the present contribution.

A first exploratory survey was undertaken throughout the archipelago of Guadeloupe. Discriminating criteria were determined by collective expertise. Several hypotheses are discarded. The present SPE in agricultural regions with small traditional food-producing gardens (Marie-Galante, Grands-Fonds) do not appear as very integrated in contrast to those areas of more specialized production (sugar cane areas and banana area). Very small-sized farms (less than 5 ha) have no more integrated systems than big ones (more than 15 ha). On average the production variability (number of productive activities on farm) is not correlated at a farm level or by production practices with level of integration. Indeed, the number of productive activities is similar whatever the class of integration considered.

Results and Discussion

The results of this diagnosis show that the characterization of current integrated farms systems in Guadeloupe cannot be undertaken just on the basis of first examination of combinations of production enterprises and their technical management. The functional features of the farms are thus an important part of this phase of diagnosis. With a more accomplished degree of information and analysis, territorial dynamics are highlighted. The preferred productive orientation of a zone and conditions of pedology, climate and socioeconomic of agricultural activity

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