

## Suitable Integrated Crop-livestock Production System in Char area of Bangladesh

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### Abstract

Bangladesh is an agricultural country. Agriculture contributes a large amount in national GDP. But the huge population and their food safety is a great challenge. For meets this challenge integrated crop-Livestock systems can plays an important role. Large amount of roughage demands of both milch and fattening cattle can be easily fulfilled with Napier grass cultivation. At least three times harvesting can be done through a year. Especially the lands of char areas are suitable for cultivation of this type of perennial grasses. Maize is also a suitable crop for char lands. Marginal and landless people of char areas can be benefited by cultivating this type of crops.

**Keywords:** Integrated farming system (IFS); Gross domestic product (GDP); Perennial; Napier; Maize

### Introduction

Mixed Farming is a system of farming where crops, livestock, poultry, fish etc. are raised in a farm. In other words, mixed farming utilizes cropping patterns which involve the raising of crops, animals, and or trees [1]. The objectives of the IFS are multiple: to enhance food production for the household, to maintain the natural resource base that contributes to food security and the well-being of the rural people, to contribute to income generation, and to be accepted by local communities.

In Asia, the integration of livestock, fish and crops has proved to be a sustainable system through centuries of experience. In China, for example, the integration of fishpond production with ducks, geese, chickens, sheep, cattle or pigs increased fish production by 2 to 3.9 times [2], while there were added ecological and economic benefits of fish utilizing animal wastes. Environmentally sound integration is ensured where livestock droppings and feed waste can be poured directly into the pond to constitute feed for fish and zooplankton. Livestock manure can be used to fertilize grass or other plant growth that can also constitute feed for fish. Vegetables can be irrigated from the fishponds, and their residues and by-products can be used for feeding livestock. Bangladesh is an agricultural country, where majority of people depends directly upon their own farm production for survival. Here agriculture is complex, labor-intensive, and has a low technological and resource base. Moreover, agro ecological conditions are complex in most parts of Bangladesh. There are several distinct land types in the country. These land types determine different cropping patterns and make land use very complicated. Most farmers follow cropping patterns that involve sequential cropping, mixed-cropping, and relay cropping. Mixed cropping involves the simultaneous growing of two or more crops intermingled on the same land. Most of the large farms may have more than one enterprise that may be complementary or supplementary depending upon the situation. Agriculture in Bangladesh is dominated by rice-rice mono cropping system. Rice covers about 77% of the total cultivated area in Bangladesh [3]. The farmers are mainly marginal and small, who have already exploited 80% of the potential of rice and further scope for enhancing yield is limited. The natural resource is exhausted. The need for diversification of farming practice is thereby needed as the income of farmers who depend solely on the produce of their traditional mono crop of rice pattern is decreasing due to narrow margin of profitability and changed food consumption habits. The increasing pressure on land and the growing demand for livestock products makes it more and more important to ensure the effective use of feed resources, including

crop residues. In Bangladesh like other countries, farming systems research views the whole farm as a production unit and the household as the consumption unit. Researchers on farming system, however, demand that the resources of the farmer be given major emphasis so that any improved technology can be accepted. In addition, farm resource utilization should be considered together with the production technology in arriving at an improved farming system.

The best known type of integrated mixed farming is probably the case of mixed crop-livestock systems. Cropping in this case provides animals with fodder from grass and nitrogen-binding legumes, leys (improved fallow with sown legumes, grasses or trees), weeds and crop residues. Animals graze under trees or on stubble, they provide draught and manure for crops, while they also serve as a savings account. In the above circumstances Napier grass production can play an important role in mixed farming system in Bangladesh. Especially in char area of this country are more suitable for cultivation of this grass. The nutritive value of Napier grass is very high. At least three times harvesting can be done through one year. Farmers can be benefited more by selling the grass as well. Napier grass can easily meets the roughage demands of cross-bred dairy cow as well as local. Maize is also a suitable crop for char lands. The leaf of Maize contains large amount of nutrients which is very useful for cattle health. Marginal and landless people of char areas can be benefited by cultivating this type of crops.

Diversified systems consist of components such as crops and livestock that coexist independently from each other. In this case, integrating crops and livestock serves primarily to minimize risk and not to recycle resources. In an integrated system, crops and livestock interact to create a synergy, with recycling allowing the maximum use of available resources.

Crop residues can be used for animal feed, while livestock and livestock by-product production and processing can enhance agricultural productivity by intensifying nutrients that improve soil fertility, reducing the use of chemical fertilizers [4].

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Received October 27, 2015; Accepted December 29, 2015; Published January 01, 2016

Citation: Ehsanul HMD (2016) Suitable Integrated Crop-livestock Production System in Char area of Bangladesh. J Fisheries Livest Prod 4: 156. doi:10.4172/2332-2608.1000156

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A high integration of crops and livestock is often considered as a step forward, but small farmers need to have sufficient access to knowledge, assets and inputs to manage this system in a way that is economically and environmentally sustainable over the long term.

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**Citation:** Ehsanul HMD (2016) Suitable Integrated Crop-livestock Production System in Char area of Bangladesh. J Fisheries Livest Prod 4: 156.  
doi:[10.4172/2332-2608.1000156](https://doi.org/10.4172/2332-2608.1000156)

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