

## **Sustainable Ecological Agricultural Systems in Bangladesh: Environmental, Economic and Social Perspective of Compost**

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**Abstract :** The sustainability of conventional agriculture in Bangladesh is under threat from the continuous degradation of land and water resources, and from declining yields due to indiscriminate use of agrochemicals. NASL (Northern Agro Services Limited) is pursuing efforts to promote ecological agriculture with emphasis on better use of organic fertilizer resources and the reduction of external inputs. This paper examines the sustainability of two production systems in terms of their environmental soundness, economic viability and social acceptability based on empirical data collected through making demonstration land cultivation, a household survey, soil sample analysis, observations and discussions with key informants. Twelve indicators were selected to evaluate sustainability. Significant differences were found between the two systems in crop diversification, soil fertility management, pests and diseases management, and use of agrochemicals & Organic Compost. However, significant variations were found in other indicators such as land-use pattern, crop yield and stability, risk and uncertainties, and food security. Although crop yield and financial return were found to be slightly higher in the ecological system, the economic return and value addition per unit of land show the positive difference of using compost rather than chemical fertilizer. The findings suggest that ecological agriculture has a tendency towards becoming ecologically, economically and socially more sound than conventional agriculture, as it requires considerably fewer agro-chemicals, adds more organic matter to the soil, provides balanced food, and requires higher local inputs without markedly compromising output and financial benefits. Broad-policy measures, including the creation of mass awareness of adverse health effects of agrochemical-based products, are outlined for the promotion of ecological agriculture.

**Keywords :** Bangladesh, compost, conventional agriculture, organic fertilizer, environmental sustainability, economic viability, social acceptability

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