Abstract

The potential harmful effects of conventional agriculture (CA) and the alleged multiple benefits of organic agriculture (OA) in conjunction with the prevalence of coherent conceptual linkage between the principles of OA and Bhutan’s development philosophy of Gross National Happiness have motivated the Bhutanese government to declare in 2008, to fully convert farming in the country to OA by 2020.

However, the benefits accruing from OA along with the practicality and performance of OA are being increasingly questioned globally. Amidst these controversies and accentuated by the lack of empirical data from Bhutan, questions arise as to whether or not the country should convert its agricultural sector to fully organic. Therefore, to determine the possible performance and prospects of OA in Bhutan, using paddy rice as the model crop, this study investigates wide-ranging issues between OA and CA in terms of yield, soil nutrient contents and economics in Bhutan. This study also compares organic and conventional farmers’ happiness as well as analyzes the strengths, opportunities, weaknesses and threats (SWOT) of OA.

The comparative investigation on yield and different soil parameters, conducted during two cropping seasons (2012 and 2013) in three agro-ecological zones (AEZs) (low, mid and high altitude) of the country, involved 120 organic and 120 conventional farmers. The socio-economic study was based on randomly selected 393 organic and 353 conventional farmers from all 20 districts of Bhutan. The SWOT analysis was conducted among 35 agricultural experts, policy makers, NGO officials and private sector members to assess experts’ views on pros and cons as well as the potentials and challenges of OA, and its promotion in Bhutan. The study thus provides the first empirical data of paddy rice production, the country’s most important crop, under OA and CA schemes in various parts and AEZs of Bhutan.

The comparative study on paddy yield and various soil properties, including soil organic matter (OM), nitrogen, phosphorus and potassium in the three AEZs did not reveal significant differences between organic and conventional production systems within each AEZ. However, the three factorial interaction analysis involving farm types, AEZs and years found significant differences in SOM, P, K, cation exchange capacity (CEC), bulk density and yield. Furthermore, significantly higher gross production cost ($61,892 \text{ Nu ha}^{-1}$) and total labor cost ($49,483 \text{ Nu ha}^{-1}$) in organic, and significantly higher inputs costs ($11,600 \text{ Nu ha}^{-1}$) and benefit-cost ratio (BCR) (2.8) in the conventional system were found. The premium price that organic paddy generally attracts was not considered in calculating either BCR or other costs/returns, yet there was no significant difference in gross and net returns between OA and CA. The happiness rating shows that the proportion of organic farmers who were subjectively happy or very happy was marginally higher at 87% as compared to conventional ones at 77%. The findings of the SWOT analysis show a considerable number of opportunities and strengths in favor of OA, together with many weaknesses and threats constraining the approach.

Based on the findings of this study, it can be concluded that OA, using paddy rice as the model crop, is in no agronomic aspect inferior to CA in Bhutan and their performances are comparable. On the basis of this and given the alleged ill effects of CA on human and ecosystem health, Bhutan may heed precautionary principle and thereby continue to adhere to its declaration to convert its entire agriculture to fully organic. Whether or not converting to OA can help to achieve food self-sufficiency (FSS) is hard to answer, because agriculture in Bhutan is constrained by several factors. But considering OA’s alleged superior adaptability to the threat of looming climate change and is multiple benefits, it has the potential to achieve FSS. However, certain misgivings about OA and critical challenges, such as arranging adequate organic fertilizers and effective alternatives to conventional plant protection interventions must be addressed in order to smoothly transit to fully organic production.