

# Directions towards sustainable agricultural systems in Korea

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## Abstract

The question of how to establish sustainable agricultural systems has become as prominent as questions related to water, energy and climate change. High input/high output agriculture has brought with it many adverse effects; the massive deterioration of soil and water in both quantity and quality, increased greenhouse gas emissions and an increased prevalence of unsafe foods. Additionally, urbanization and climate change has worsened the shortage of farmland and reduced the supply of agricultural water. Given these challenges, maintaining, conserving and efficiently using agri-environmental resources, through fostering of sustainable agriculture, have emerged as key tasks in solving these problems. What is needed therefore is research, based on systematic and comprehensive empirical analyses, that can propose plans and methods for establishing an appropriate sustainable agricultural system. The empirical analysis of sustainable agricultural system is approached separately from economic, environmental and social aspects. An analysis of environment effect reveals that the available phosphate level is 1.3~2.1 times greater than the optimal amount in rice paddies, upland fields and orchards. Further examination has revealed that the excess nutrient is polluting both ground water and surface water. Analytical results for economic feasibility show that factors of production have been invested heavily in the rice crop. Under these conditions, sustainable agriculture, including low-input agriculture, appears to be a possible alternative that will facilitate simultaneous improvements in both economic feasibility and environment effects. Analysis results for sociality reveal that social factors include the value of producer, association and interior networks. Social conditions are comprised of leadership, consumers' awareness, education and conflict solutions. In addition, analysis as to the degree investments contribute to improving agricultural value added has revealed that the direct payment program is the most effective instrument. Experts confirm that economic feasibility can be improved by scientific and well-reasoned nutrient management on the basis of soil testing. Farmers pointed to 'economic factors' as being the largest obstacle to switching to the practice of sustainable agriculture. They also indicate 'uncertainty with regards to sustainable agriculture technology' as an impediment to practicing sustainable agriculture. Even so, farmers who believe environmental and regional issues to be the most pressing problems have expanded their practice of sustainable agriculture. The keys to establishing sustainable agriculture system are classified into the following four aspects. Firstly, from an economic aspect, the research indicates that agricultural policy needs to be integrated with environmental policy and that the function of market making based on the value chain needs to be revitalized. Secondly, from an environmental aspect, there is a need for an optimal resource management system to be established in the agricultural sector. In addition, sustainable agriculture practice will need to be extended with attendant environmentally-friendly and sustainable intensive technology also requiring further development. Thirdly, from a social aspect, green agriculture management needs to be fostered, technology and education extended, and social conflict mediated. Lastly, from a governance aspect, it will be necessary to strengthen good governance, assign and share suitable roles and responsibilities, build a cooperation system and utilize community supported agriculture.

Keywords: sustainable agriculture, environmental effect, economic feasibility, social aspects, governance

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