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Measuring Environmental and Economic Sustainability of Vegetable Production in Karnataka, India

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Abstract

India has witnessed tremendous growth in vegetable production, especially during the post-green revolution. Increased demand, high value, and excellent response to external inputs have resulted in vegetable cultivation's intensification. It is imperative to understand how sustainable this intensification of vegetable production is? Sustainability assessment is complex and multidisciplinary in nature, yet a key to plan and achieve sustainability in agriculture production. Environmental and economic dimensions are the most crucial for assessing sustainable agriculture development at the farm level. Against this backdrop, economic and environmental sustainability was studied for the two major vegetables, viz., onion and tomato in Karnataka state, India. *Indicators* for assessing sustainability were systematically chosen. First, through an extensive review of literature candidate indicators for both the dimensions were selected and then they were finalized by the multidisciplinary expert panel. Mean composite indicator scores of economic sustainability were 0.57 and 0.62 for onion and tomato, respectively. Cultivating onion in rainfed conditions had healthier economic sustainability than irrigated conditions for all its principals, except productivity. Apart from profitability, drip cultivation was found more economically sustainable than flood irrigation for all its principals. The two crops had peripheral differences in composite environmental indicators, with average scores of 0.47 and 0.49 for onion and tomato. The environmental performance of flood and drip-irrigated cultivation of tomato farms was similar, although drip cultivation marginally outperformed the flood system in relation to space organisation and energy consumption. In total, though both the composite economic and environmental sustainability scores were low, the economic dimension had better accomplishment than the environmental dimension. Production practices that have environmental impact were far below the sustainable path in vegetable cultivation. Thus, imparting environmental consciousness directly or controlling farming practices indirectly through taxation and subsidy policies on inputs is required to maintain and enhance environmental health.

Keywords: Composite indicator, economic sustainability, environmental sustainability, farm-level, vegetables

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