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Is there a future for small farmers in bioeconomy? The case of improved seeds in South Punjab, Pakistan

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Abstract

Small farmers are key players in agrarian value chains, particularly in the Global South, but they are often neglected in the planning of technology-oriented agricultural interventions featured prominently in bioeconomy policies. As global demand for food and biomass is expected to rise, production increase through (bio)technological means is framed as a necessity, but has been debated for its ecological and social sustainability. We add to this debate by investigating the possibilities and challenges for smallholder farmers to participate in the intensification of production in an emerging bioeconomy. We scrutinize the case of Pakistan, an agricultural country where 65 percent of farms operate less than 2 ha of land and where bioeconomy approaches such as biotechnology and advanced plant breeding have gained momentum in policy debates. We specifically analyse a cornerstone of the bioeconomy value chain—namely 'improved' seed varieties—by looking at the experiences of small farmers with genetically modified cotton and hybrid maize. This contribution builds on qualitative data from South Punjab between 2019 and 2022. Small farmers value improved seeds and prefer shorter duration crops for faster profit cycles. Informal exchanges through seed saving and sharing enable widespread access of market seeds. However, the poorest strata are hindered from adopting improved seed varieties due to lack of resources, established crop rotation patterns, and frequent oscillations of the cropping trends. Market and climatic factors also limit the profitability of improved seed varieties as higher input costs disproportionately affect small farmers. Furthermore, highly productive crops and frequent crop cycles result in surging tenancy rates for small land holders and can lead to their expulsion from agriculture. Our results contribute to the understanding of the complex role of small farmers in the Global South under a bioeconomy scenario.

Keywords: Bioeconomy, global south, improved seeds, small farmers

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