Chapter 2
Technological Innovation and Intellectual Property in Agriculture:
A Critical Study With Reference to Farmers' Rights

Ananya Pandey
https://orcid.org/0000-0002-2419-6314
Christ University, Bangalore, India

ABSTRACT

The intersection of technological advancements and intellectual property rights in agriculture has created both opportunities and challenges for farmers and innovators. Modern agricultural technologies, such as genetically modified organisms (GMOs), precision farming, and digital tools, promise increased productivity and sustainability. However, the associated intellectual property frameworks often limit farmers' traditional rights to save, share, and reuse seeds, raising ethical, economic, and legal concerns. This chapter critically examines the balance between fostering innovation and protecting farmers' rights, emphasizing the implications of patents, farmers and plant breeders' rights in terms of plant variety protection. Furthermore, it advocates for equitable policy frameworks that promote innovation while ensuring farmers' access to affordable, adaptable, and sustainable technologies. By fostering collaboration among stakeholders, a harmonious balance between innovation and farmers' rights can be achieved, supporting long-term agricultural resilience and food security.

DOI: 10.4018/979-8-3373-5283-1.ch002

INTRODUCTION

In the current agricultural sector, innovation is more crucial than ever. The sector as a whole is dealing with a number of serious issues, including growing labor shortages and supply costs, as well as shifting consumer expectations toward sustainability and transparency (Javaid et al., 2022). A growing number of agriculture firms are realizing that these problems require quick fixes. This novel idea relates to the application of technology in farming and agricultural methods to boost food production's sustainability, productivity, and efficiency. It encompasses a variety of technologies, including automation, biotechnology, smart irrigation, and precision agriculture. Significant technological improvements have also been made in fields like blockchain, artificial intelligence, current greenhouse methods, cattle technology, and indoor vertical farming (Spanaki et al., 2021).

Farmers all throughout the world have been inventors and stewards of agricultural biodiversity since the beginning of agriculture. Some of these were tamed and cultivated as new crops were discovered in the wild. Crop varieties were developed and diversified by careful selection of their best seeds and propagation material, as well as interactions with other farmers. With a limited selection of early crops and variations developing into a multitude of plant genetic variety for food and agriculture, domesticated crops have been handed down through the generations of farmers (Bailey-Serres et al., 2019). Farmers rely on the variety of plants they grow to sustain yields and quality while adjusting their food production to various, frequently marginal, and challenging conditions. Crop diversity both within and between crops helps distribute the risk of crop loss from pests and diseases or unfavorable environmental factors like drought. Given that it facilitates adaptation to shifting environmental conditions, including those brought on by climate change, it is probably safe to argue that plant genetic variety is more significant for farming than any other environmental component (Khoury et al., 2022). Farmers provide the food that the globe relies on, feeding the planet. Never more so than in the current era of climate change and other significant challenges, farmers' rights in this regard are essential if they are to continue playing a crucial role in ensuring food security and nutrition because they are the creators and stewards of crop diversity in the field. In light of the above perspective, this chapter explores the intersection of innovation and farmers' rights, identifying challenges, and proposing solutions.