

Review Article

# A Review Article on the Importance of Intellectual Property Protection for Agricultural Innovation: The Case of Ethiopia

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## Abstract

The Ethiopian agriculture sector is challenged by different natural and human made factors. Low land productivity, climate change, subsistent farming practices, high cost of input supply, lack of agricultural insurance, and other factors are the manifestations of the Ethiopian agriculture. Therefore, unless the rights of agricultural technology creators, innovators and researchers are protected, it would be difficult to invest on R&D. This review was conducted on relevant Ethiopian IP laws, to analyze the applicability of specific IP laws on agricultural innovations, on the associated benefits and challenges of agricultural innovations IP protection. The result shows Ethiopian IP laws like invention; minor invention and industrial design law, copyright law, trademark law, plant breeder's right law can apply on agricultural invention. IP provide lots of advantages for the inventors, technology users, and the community at large. However, IP has also several challenges like, it may limit access to essential agricultural technologies, and weak enforcement of IP laws may discourage innovation, complexities of IP management system and others. The study concluded to grasp the benefits of IP, revising the current IP laws and executing them effectively would maximize the benefits of inventors and the community at large.

## Keywords

IP, Agriculture, Innovation, Ethiopia

## 1. Introduction

Agriculture is at the heart of human civilization through providing food, fiber, and raw materials essential for survival. However, the sector is now facing numerous challenges, including increasing population demands, climate change, soil degradation, high cost of agricultural inputs, and subsistence farming practices. In order for the agricultural sector to cope up with these problems, increasing agricultural investment and encouraging innovation should be considered.

Intellectual property (IP) right incentivizes agricultural research and development (R&D) by providing legal protection to

inventors and innovators in the agriculture sector. This protection allows individuals and organizations to recoup their investments in developing new technologies, such as biotechnology products, precision agriculture tools, and sustainable farming practices. Without adequate IP protection, there would be little motivation for companies and researchers to invest time, resources, and knowledge into innovative projects.

IP rights create a legal framework that encourages private investment in agricultural research. By securing exclusive rights, companies are more likely to invest in the development

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of innovative solutions, such as high productive crop variety, drought-resistant crops, pest-resistant technologies, agricultural inputs, and innovative farming systems. Research indicates that stronger IP protection correlates with increased R&D spending in agriculture [1].

IP facilitates the transfer of technology from research institutions to the market. Studies show that effective IP management can enhance collaboration between public and private sectors, and boosting innovation [2]. For agricultural firms, IP provides a competitive edge by safeguarding unique products and processes. This exclusivity can lead to higher market shares and profitability. For example, companies that develop patented seeds can dominate the market by ensuring that competitors cannot replicate their products [3].

IP plays a crucial role in addressing global agricultural challenges. By protecting innovations in sustainable practices, new crop variety, pest management, agricultural inputs, and climate resilience, IP can support efforts to enhance food security and environmental sustainability. The development of bio-fortified crops, which can alleviate micronutrient deficiencies, exemplifies the potential of IP in tackling such issues [4]. IP is vital for fostering agricultural innovation by protecting the rights of inventors, facilitating economic growth, enhancing food security, and promoting sustainable practices. To maximize these benefits, awareness, education, and effective enforcement of IP laws are essential tools.

Agricultural innovation is essential for addressing global challenges such as food security, climate change, and sustainable resource management. IP rights provide a framework that incentivizes innovation by granting creators exclusive rights to their inventions. This review article explores the Ethiopian IP laws and their implementation on agricultural innovation, the significance and challenges of IP protection in agricultural innovation.

## 2. Objective of the Study

The objective of this review study is to assess the contribution of IP for agricultural innovation and to identify the specific IP tools that apply for protecting agricultural innovations, and identifying major challenges to protect the IP rights of agricultural innovations in Ethiopia.

## 3. Methodology

This study is conducted through reviewing relevant Ethiopian IP laws, and different literatures. This review has identified some of the key aspects of the IP laws that contribute for the country's agricultural innovation.

## 4. Intellectual Property Protection in Agricultural Innovation

IP encompasses various legal rights for creators or inven-

tors or invention companies over their inventions, new plant varieties, designs, brands and publications. Ethiopia's IP laws play a crucial role in fostering agricultural innovation, which is vital for the country's development. Ethiopia has established a legal framework for IP protection, including the proclamation on inventions, minor inventions and industrial designs, trademarks, copyrights, and plant breeders' right laws.

### 4.1. Application of Invention, Minor Invention and Industrial Design Law on Agricultural Inventions

The invention, minor invention and industrial design law proclamation number 123/1995, (commonly called the patent law) protects inventions and innovations in different fields. The law provides exclusive right for inventors to exclude others from making, using, or selling their inventions for a limited time [5]. Agricultural inventions in the fields of, agricultural machineries, agricultural biotechnology, food science and nutrition, plant protection, animal health, medicinal and aromatic, and others could get protection in the patent law. Patent encourages investment in R&D by ensuring that inventors can get exclusive benefit from their innovations for 15 years, and upon its proper implementation for additional 5 years.

### 4.2. Application of Plant Breeder's Right Law

The law that provides plant breeder's right protection in Ethiopia is proclamation number 1068/2017. Plant breeder's right (PBR) is a *sue-generous* form of IP that provides exclusive rights on new plant varieties for breeders' [6]. It allows breeders to control the production and sale of their varieties, and acquiring financial rewards from the variety. PBR is critical for encouraging the development of new crop varieties that can provide high productivity, special taste, withstand climate change and pests, and any other distinguishing characteristics. This encourages the development of new and improved crop varieties that can enhance food security and agricultural productivity. The PBR law provides exclusive protection for new plant breeders' for 20 years in case of annual crops and 25 years for perennial crops.

### 4.3. Application of Trademark Registration and Protection Law

The law that protects trademark registration and protection is proclamation number 501/2006. This law protects brand names, logos, and symbols associated with agricultural products. The law helps consumers to identify and distinguish products in the marketplace [7]. Strong branding can lead to increased consumer trust and loyalty, which is essential for agricultural businesses aiming to differentiate their products. Trademarks protect brand names and logos, helping con-

sumers to identify products. This is particularly important for organic and specialty crops. Ethiopia has begun to protect geographical indications (GIs), which help in promoting unique agricultural products. In agriculture, GIs can add value by differentiating products based on quality, origin, or production methods.

#### 4.4. Application of Copyright Law

The law that protects copyright and neighboring rights is proclamation number 410/2004. The copyright law protects the original works of authorship, including agricultural research publications, protocols, training materials, and data storage software used in the agriculture sector [8]. By safeguarding these original works, copyrights encourage the sharing of knowledge and advancements in agricultural practices.

### 5. Importance of IP for Agricultural Innovation

IP has several advantages for the flourishing agricultural innovation. Some of these advantages are;

1. Strong IP protection incentivizes private-sector investment in agricultural R&D [9]. Companies are more likely to invest in developing innovative solutions if they can secure exclusive rights to their inventions, thereby ensuring a return on investment. The legal protection encourages more individuals and organizations to invest time and resources into developing new agricultural technologies and practices. IP rights incentivize research and innovation by ensuring that inventors can reap the rewards of their efforts. Strong IP protection provides inventors and businesses with the assurance that their innovations will be safeguarded, encouraging them to invest time and resources in developing new products and technologies.
2. IP facilitates technology and knowledge transfer. IP rights facilitate technology transfer by allowing inventors to license their innovations to other entities. Technology transfer is essential for disseminating new technologies, particularly in developing countries, where access to advanced agricultural practices can significantly enhance food security [10]. IP facilitates the transfer of technology from research institutions to commercial entities. A solid IP framework can facilitate partnerships between local and international entities, and promoting technology and knowledge transfer.
3. IP has crucial role to boost agricultural productivity. Research indicates that IP protection correlates with increased agricultural productivity. Countries with robust IP systems experienced higher rates of agricultural output due to the adoption of innovative practices and technologies [11].
4. A strong IP is a tool of attraction for investment. A robust IP framework can attract foreign investment, as companies are more likely to invest in countries where their innovations and trademarks are protected. IP encourages local entrepreneurs to invest in innovation, knowing their ideas can be legally protected.
5. IP enhances competitiveness. Strong IP systems help farmers and agribusinesses to differentiate their products in the market. Trademarks and branding strategies enable producers to command premium prices, thereby increasing their profitability and competitiveness [12]. By providing legal protections for innovations, Ethiopian IP laws encourage both local and foreign investments in agricultural research and development. IP protection enhances the competitiveness of agricultural products in the global market. This competitiveness not only benefits the economy but also promotes better agricultural practices worldwide.
6. IP supports sustainable agricultural practices. Strong IP laws can safeguard traditional knowledge, ensuring that local communities benefit from their innovations without exploitation by outsiders. IP facilitates fair benefit-sharing agreements for the use of traditional agricultural practices and products. IP protection can encourage investment in sustainable agricultural practices and technologies, which are essential for food security and environmental conservation.
7. IP laws facilitate partnerships between local and international entities, fostering technology and knowledge transfer and the introduction of new technologies that can enhance agricultural productivity.
8. Robust IP protection can attract both domestic and foreign investments in agricultural R&D. As agricultural innovations are developed and commercialized, new jobs are created in research, production, and distribution. IP drives economic growth by fostering entrepreneurship and attracting investment in the agricultural sector. Strong IP protection can lead to job creation in various sectors, especially agriculture, technology, and manufacturing.
9. Strong IP enhances food security. IP encourages the development of improved crop varieties, such as high productive, drought-resistant and pest-resistant crop varieties, which are crucial for maintaining food security in the face of climate change and population growth. Innovations protected by IP can lead to more sustainable agricultural practices, promoting environmental conservation alongside productivity. New agricultural technologies can increase yields, improve resilience to pests and diseases, and reduce the environmental impact of farming. By encouraging the development and adoption of these technologies, IP contributes to global food security.
10. IP laws can recognize and protect traditional agricultural practices and knowledge, ensuring that indigenous communities benefit from their contributions to biodi-

versity and sustainable farming techniques.

11. IP provide exceptional tool to support smallholder farmers. IP can empower smallholder farmers by providing them access to improved seeds and technologies. IP allows smallholder farmers to use patented technologies, improving their productivity and income.
12. IP protection helps in maintaining brand integrity, which builds consumer trust and loyalty. Consumers can be assured of the quality and authenticity of products, which is vital for market development.

## 6. Challenges of IP for Agricultural Innovation

While the benefits of IP in agriculture are substantial, there are also several challenges associated with its implementation;

1. Stringent IP laws may limit access to essential agricultural technologies, particularly for smallholder farmers in developing countries. Excessive IP protection can lead to monopolistic practices, hindering equitable access to innovations [13]. Farmers may struggle to afford patented seeds or technologies, exacerbating inequalities [14]. IP rights may restrict access to essential technologies, particularly for smallholder farmers in developing countries. Ensuring equitable access to innovations is a significant challenge.
2. Balancing protection and innovation between protecting inventors' rights and fostering an environment conducive to further innovation. IP rights promote investment in R&D, facilitate technology transfer, and enhance economic competitiveness [15]. However, addressing the challenges of access and equity is crucial in ensuring that the benefits of agricultural innovations are widely distributed. There is a delicate balance between protecting IP and ensuring access to essential agricultural innovations for the public good.
3. Farmers and other stakeholders often lack awareness of IP rights, limiting their ability to leverage these protections effectively.
4. Weak enforcement of IP laws can undermine their effectiveness, leading to a lack of confidence in the system and discouraging innovation. Effective enforcement of IP rights can be challenging in the agricultural sector, particularly in regions with limited legal frameworks or resources.
5. Agricultural businesses must navigate the complexities of IP management to protect their innovations while fostering partnerships with researchers and farmers.
6. The concentration of IP rights among a few multinational corporations can stifle competition and reduce diversity in agricultural practices and products [16].
7. The commercialization of patented crops may lead to decreased biodiversity, as farmers may opt for a limited

range of patented seeds over traditional varieties [17]. The appropriation of traditional knowledge and genetic resources without proper compensation to indigenous communities poses ethical concerns. Ensuring that IP laws respect biodiversity and traditional practices is crucial.

## 7. Conclusion

At this time the importance of IP for agricultural innovation should not be questionable. By providing legal protection for agricultural innovations, it incentivizes private-sector investment in agricultural R&D, facilitates technology and knowledge transfer, boosts agricultural productivity, used as a tool of attraction for investment, enhances competitiveness, supports sustainable agricultural practices, facilitate partnerships between local and international entities, attract both domestic and foreign investments in agricultural R&D, enhances food security, recognize and protect traditional agricultural practices and knowledge.

However, IP has also several challenges that should be addressed. Some of these challenges may include, it may limit smallholder farmers access to essential agricultural technologies, lack of awareness level on IP rights, weak enforcement of IP laws leading to a lack of confidence in the IP system and discouraging innovation, complexities of IP management system, fear of concentration of IP rights among a few multinational corporations, commercialization of patented crops may lead to decreased biodiversity.

Therefore, producing balanced IP legal frameworks and implementing these laws should be needed for developing countries like Ethiopia. The Ethiopian IP laws are not well articulated to promote agricultural innovation, they lack clarity on some provisions of the invention, minor invention and industrial design proclamation number 123/1995. Art. 4 (1 (a)) of the proclamation about the non-patentability of inventions contrary to public order or morality; and Art. 4 (1 (b)) non-patentability of plant or animal varieties or essentially biological processes for the production of plants or animals. The justifications why these inventions are non-patentable are clear; however to what extent these inventions are not patentable is still open for arbitrary interpretation and these may limit the patentability of agricultural biotechnology, microbial, plant protection, animal health and related inventions. Therefore, this law should need revision in accordance of the international instruments, like the Trade-Related Aspects of Intellectual Property Rights (TRIPS) agreement Art. 27(3). However, other national IP legal instruments are clear and applicable in the protection of agricultural inventions and innovations.

## 8. Recommendation

Transforming Ethiopian agricultural innovation through IP protection involves several processes. Ethiopia can harness



the power of IP protection to foster agricultural innovation, boost economic growth, and improve food security. In this review article, some key recommendations were identified to use IP as a strategic tool for agricultural innovation;

1. Conduct awareness creation trainings for researchers, inventors, farmers, and entrepreneurs about importance of protecting innovations.
2. Strengthen existing IP laws and frameworks that are conducive to agricultural innovation.
3. Establish IP support centers that provide guidance on IP protection, IP application, and IP commercialization issues.
4. Foster collaborations between government, private sector, and academic institutions to promote R&D in agriculture.
5. Promoting traditional knowledge and implement measures to protect the traditional agricultural practices and knowledge of local communities, ensuring they benefit from any commercialization.
6. Develop digital tools to help innovators manage their IP rights effectively. Encourage the development of agricultural technologies that leverage IP protection, enhancing productivity and sustainability.
7. Establish clear enforcement mechanisms to protect the rights of innovators and address IP infringements.
8. Conduct regular audits to ensure compliance with IP laws and to assess the impact of IP protection on agricultural innovation.
9. Conduct assessments to evaluate the impact of IP protection on agricultural innovation and productivity, using the results to inform policy adjustments.

## Abbreviations

IP	Intellectual Property
GIs	Geographical Indication
TRIPS	Trade-Related Aspects of Intellectual Property Rights
R&D	Research and Development

## Author Contributions

Nahom Mesfin Kebede is the sole author. The author read and approved the final manuscript.

## Conflicts of Interest

The authors declare no conflicts of interest

## References

- [1] Becker, G. & Stein, H. (2018). The Role of Intellectual Property in Agricultural Innovation. *Journal of Agricultural Economics*.
- [2] Khan, M. & Hossain, M. (2020). Intellectual Property Rights and Agricultural Innovation. *International Journal of Intellectual Property Management*.
- [3] Maredia, M. K., et al. (2017). Seed Systems and Technology Transfer in Agriculture. *Agricultural Systems*.
- [4] Bouis, H. E., et al. (2020). Biofortification: A New Approach to Improving Human Nutrition. *Nature Plants*.
- [5] Ethiopian invention, minor invention and industrial design proclamation number 123/1995.
- [6] Ethiopian plant breeder's right proclamation number 1068/2017.
- [7] Ethiopian trademark registration and protection proclamation number 501/2006.
- [8] Ethiopian Copyright and neighboring rights proclamation number 410/2004.
- [9] Pardey, P. G., et al. (2016). "The Role of Intellectual Property in Agricultural Research and Development."
- [10] Thirtle, C., et al. (2003). "Explaining the Growth in Agricultural Productivity in the UK."
- [11] Falcon, W. P., & Fowler, C. (2002). "The Future of Agricultural Biotechnology: Global Perspectives."
- [12] Koo, W. W., & Mullen, J. D. (2007). "Intellectual Property Rights and Agricultural Competitiveness."
- [13] GRAIN. (2015). "The Role of Intellectual Property in Agricultural Development."
- [14] Filatova, Elena A., "Intellectual Property Rights in the Seed Industry: Barriers to Sustainable Agriculture."
- [15] (2021). Electronic Theses and Dissertations. 1917. López, R. A., & Thiel, H. (2020). "Intellectual Property Rights in Agriculture: Balancing Protection and Innovation."
- [16] GRAIN. (2019). The Global Corporate Concentration in Seed and Agriculture. GRAIN Report.
- [17] Vanloqueren, G. & Baret, P. (2009). How Agricultural Research Systems Shape a Technological Regime that Hinders Sustainability. *Research Policy*.