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Research on the Rules of Right Restriction under the Protection Regulations for New Varieties of Plants: Taking Farmers' Own Seed Saving as an Example

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Abstract: The protection of intellectual property for the new varieties of plants aligns with the needs of contemporary development, yet it also creates conflicts with the traditional practices of farmers who save their own seeds. Farmers' right to save their own seeds is a natural entitlement, and the clash between the public interest in this practice and the rights associated with new plant varieties remains a derivative issue of the intellectual property enclosure movement. The starting point of the problem lies in reconciling the private nature of intellectual property rights with public interests, while its resolution depends on the adaptation of limitations and exceptions within intellectual property law. Under the protection of intellectual property rights for new plant varieties, farmers face difficulties in determining reasonable boundaries for seed saving. At the legal level, it is necessary to recognize the legitimacy of farmers' seed-saving practices and reasonably define such activities; at the practical level, it is feasible to incorporate relevant systems from copyright law, establish a compensation mechanism, and set up collective management organizations for seed-saving fees to rebalance the interests of relevant parties.

Keywords: New Varieties of Plants, Intellectual Property, Rights Restriction.

1. Introduction

In the field of agriculture, seeds are the "chip" of agriculture, connecting the "big country". President of the people's Republic of China Xi Jinping put forward "consolidating the foundation of food security in all directions" and "carrying out seed industry revitalization action in depth" in the Party's Report to the 20th CPC National Congress, which pointed out the direction for the development of seed industry. Xi Jinping also pointed out at the Central Rural Work Conference held in December, 2022 that "China, with a population of more than 1.4 billion, must work on its own at all times". In the new era, the self-reliance of nearly 200 million farmers in China is also worthy of attention.

Farmers rely on their own labor and wisdom to improve crop yield and quality by improving planting techniques and management methods. The protection of new plant varieties involves the legal and technical protection of improved or cultivated plant varieties with specific excellent characters to ensure that the results of breeders are not illegally copied and abused. There is a close relationship between the two.

First of all, farmers' self-reliance is the basis for the protection of new plant varieties. In the long-term agricultural production practice, farmers keep trying and innovating, which provides rich practical experience and original materials for the cultivation of new plant varieties. Farmers' self-reliance and continuous efforts have made indelible contributions to the emergence of new plant varieties. Secondly, the protection of new plant varieties can encourage farmers to continue to be self-reliant. Through the legal protection of new plant varieties, the intellectual property rights of breeders are respected, and they can get economic returns from it, which will encourage more farmers to invest in the research and development and improvement of new varieties. At the same time, protective measures can also prevent new varieties from being illegally copied, maintain market order and protect farmers' legitimate rights and interests. However, excessive protection of new plant varieties may limit the free circulation of seeds and affect farmers' right to choose; Strict intellectual property protection may lead to an increase in seed prices and increase farmers' production costs. Therefore, it is the key to realize the coordinated development of farmers' self-reliance and the protection of new plant varieties to adjust the conflict between the private rules of intellectual property rights and public interests according to the rights restriction and exception rules of intellectual property rights and balance the interests of breeders and the needs of farmers.

2. The Necessity of Building Restrictions on Intellectual Property Rights of Farmers' Own Crops

In the social environment of China, private seed is a kind of "natural human right" for farmers. The conflict between the public interest of private seed and the right of new plant varieties still belongs to the proposition derived from the enclosure movement in the field of intellectual property. Traditionally, farmers can freely exercise their right to keep seeds, sow, keep seeds, reseed and exchange crops or seeds produced by their farmland with other farmers. The protection of new plant varieties by intellectual property rights has caused the conflict between the commercial interests of variety owners and the traditional interests of farmers to keep their own seeds. It is the natural right of farmers to reserve seeds. Protecting farmers' rights of reserved seeds can promote social equity, affirm farmers' contribution in preserving and improving germplasm resources and prevent breeders from absolute monopolization of authorized varieties.

One of the characteristics of intellectual property rights is its passivity, which enables the right holder to prevent others from using the creation protected by it. The core of the

intellectual property system lies in encouraging innovation and protecting the labor achievements of creators. However, if the protection of intellectual property rights to new plant varieties is too absolute, it may lead to farmers in the public not being able to approach and use these knowledge products reasonably, thus hindering the development of agriculture. Strong protection of the law is more favorable to plant breeders, but strong protection of new plant varieties may lead farmers to use outdated technology without competitiveness because they can not afford agricultural input, which is contrary to the purpose of protecting new plant varieties.

Farmers belong to the vulnerable groups in society, and their agricultural production is inevitably affected by natural conditions and national economic, social, cultural and legal systems. If the construction of the state system can not distribute agricultural resources equitably, it will be unfair to farmers. If only the interests of breeders are protected and farmers are forbidden to reserve seeds, it will inevitably affect the enthusiasm of farmers'agricultural production and the sustainable development of agriculture. Guaranteeing the rights of farmers to reserve seeds can reduce their expenditure on buying seeds, thus increasing their relative income and promoting social equity.

As the direct executor of agricultural production, farmersAs the direct executor of agricultural production, farmers preserving and improving germplasm disease-resistant or unique flavor varieties, these characteristics are of great value in agricultural production. Through self-reserved seed planting, farmers make long-term artificial selection and cultivation of plant varieties, retain good plant genetic genes, and make indelible contributions to the preservation and improvement of germplasm resources. The plant varieties preserved and improved by farmers enrich the germplasm resources and genetic basis of modern breeding, and the modern society should not forget the contribution made by farmers.

However, intellectual property itself has some restrictions and exceptions, thus allowing people other than the obligee to use the protected creation without the authorization of the obligee. By setting up rights restrictions, we can ensure the protection of the legitimate rights and interests of creators, promote the utilization of new plant varieties, and achieve the balance between personal interests and social public interests. The starting point of the problem is to coordinate the conflict between the private rules of intellectual property rights and public interests, and the solution of the problem depends on the adjustment of the rights restriction and exception rules of intellectual property rights.

3. The Dilemma of Understanding the Relevant Provisions of the Regulations on the Protection of New Plant Varieties for Farmers to Keep Their Own Seeds

In the agriculture field, as the carrier of plant varieties' genetic constitution, seeds are important tools for technology transfer. For many years, with the progress of plant breeding technology, protection of intellectual property rights of plant varieties has become an international trend. On one hand, it is the objective need of protecting plant breeders; on the other hand, it is also the requirement of performing international conventions of intellectual property rights. In order to meet the basic needs of farmers for new plant varieties, Article 10 of China's Regulations on the Protection of New Plant Varieties stipulates: "Under the following circumstances, authorized varieties may be used without the permission of the variety owner, but other rights enjoyed by the variety owner shall not be infringed: (1) Breeding and other scientific research activities using authorized varieties; (2) Breeding materials of authorized varieties for farmers' own use. "Among them, the regulation of "breeding materials of authorized varieties for farmers' self-propagation and self-use" is directly related to the legality of farmers' self-retention, as long as the behavior of self-retention conforms to the regulation of "breeding materials of authorized varieties for farmers' self-propagation and self-use", it is legal. However, based on this, there are still difficulties in determining the boundary of farmers' own seed.

3.1. The dilemma of defining the scope of "farmers"

Although the concept of "farmer" is not specifically defined in the Regulations on the Protection of New Plant Varieties and the Seed Law of China, there are relevant judicial opinions that explain the concept of "farmer" and define "farmer" as "individual farmer who signs rural land contract in the form of household contract responsibility system" (See Article 5 of the "Opinions on the Application of Relevant Provisions of the Seed Law by the Office of the Ministry of Agriculture and Rural Affairs".). With the development of agriculture and the deepening of rural reform, individual farmers in rural areas of China may contract the originally scattered land for large-scale agricultural production. In addition, Article 37 of China's "Seed Law" also stipulates that "farmers who have surplus conventional seeds for their own use can sell and exchange them in local markets without having to apply for a seed production and operation license". However, when the cultivated land area is large, the number of seeds required for farmers to keep their own seeds increases, and the remaining seeds may also increase. Allowing all farmers to keep their own seeds and sell the remaining seeds will also crowd out the potential seed sales market of variety owners and damage the legitimate rights and interests of variety owners. In this case, do individual farmers who contract a large area of land for agricultural planting belong to the "farmers" in the "breeding materials of authorized varieties for farmers' own use"? If we admit that individual farmers who contract large-scale land for agricultural planting have the right to keep their own seeds, it will lead to serious interest tilt, greatly damage the interests of breeders or variety owners, and dampen their enthusiasm for cultivating new plant varieties, which is not conducive to the sustainable development of agriculture. Therefore, it is necessary to make further detailed provisions on "farmers" who have the right to keep their own seeds.

3.2. The dilemma of defining the scope of "self-propagation and self-use"

What kind of understanding of "self-propagation and self-use" stipulated in the legal system for the protection of new plant varieties in China needs to be further defined. "Self-propagation and self-use" is the core of farmers' right to keep seeds[1], mainly limited is the way and purpose of seed use. Farmers keep their seeds for cultivation in the next season, which is a traditional behavior of "self-propagation and self-use". According to China's current Seed Law, "there are surplus conventional seeds for farmers' self-reproduction and

self-use, which can be sold and exchanged in local markets without a seed production and operation license". ([] See Article 37 of the Seed Law of the People's Republic of China.) Whether "selling or swapping" here is a kind of "self-proliferation and self-use" in a broad sense is still controversial in academic circles. Opposing scholars believe that the scope of keeping seeds for personal use is limited to farmers' own farming, but it does not include sales. Because farmers keep their own seeds for food production rather than commercial profit, and farmers keep their own seeds for farming in fact, it also provides conditions for the preservation and transmission of various plant genetic resources.[2] It is true that if the scope of "self-reproduction and self-use" includes "selling or swapping", it may lead to the situation that farmers keep seeds for sale for profit in reality. The number of farmers in China is huge and scattered. If farmers keep seeds for sale for profit, the market of variety owners will be squeezed out and the cost cannot be recovered from the subsequent seed sales.

3.3. The dilemma of defining the scope of "breeding materials"

According to China's Regulations on the Protection of New Plant Varieties, the object of the right of seed reservation is "the propagating materials of authorized varieties", which is also called "seeds" in China's Seed Law, including seeds, fruits, roots, stems, seedlings, buds, leaves, flowers and other planting or propagating materials.(Article 2, Paragraph 2 of the Seed Law of the People's Republic of China stipulates: "For the purposes of this Law, 'seed' refers to planting materials or propagating materials of crops and trees, including seeds, fruits, roots, stems, seedlings, sprouts, leaves, flowers, etc.".) However, UPOV1991 has extended the protection "materials" of new plant varieties to the propagation materials of protected varieties, harvested materials obtained by unauthorized use of the propagation materials of protected varieties, and products directly made from the harvested materials of protected varieties used without authorization. (See UPOV1991 Art.14 and UPOV1991 Art.16(2).) Therefore, there is a difference in concept between the "breeding materials" involved in farmers' self-reserved seeds in China and the provisions of UPOV1991. It is debatable whether the object of farmers' seed retention right in China is limited to traditional planting materials or propagation materials, or whether it is extended to the protection scope of new plant varieties in UPOV1991.

4. The Way to Reconcile the Interests of the Owners of New Plant Varieties and Farmers

Under the protection of intellectual property rights of new plant varieties, farmers are faced with the dilemma of determining the reasonable boundary of seed retention. On the one hand, it is necessary to standardize and define the relevant provisions of farmers' own seed from the legal level to solve its legitimacy problem; On the other hand, it is necessary to build a relevant operating mechanism for farmers to keep their own seeds, so as to balance the interests of relevant subjects.

4.1. The normative interpretation of the provisions of farmers' self-reserved seeds under the protection mode of new plant varieties

Intellectual property system is not only committed to encouraging innovation, but also to safeguarding the rights of social members to survive and develop. As an important member of society, farmers should also be concerned by the intellectual property system. Only by recognizing the legality of farmers' keeping their own seeds and reasonably defining this behavior can we achieve the balance between instrumental and ethical intellectual property system in the agricultural field.

In this regard, we should interpret the "breeding materials of authorized varieties for farmers' own use" as stipulated in Article 10 of the Regulations on the Protection of New Plant Varieties in China as follows:

First, the "farmers" who have the right to keep their own seeds should be "small farmers". The "farmers" who have the right to keep their own seeds should be distinguished from the farmers in the general sense, and it cannot be generally considered that all farmers have the right to keep their own seeds. As the main body of the right to keep seeds, "farmers" should be limited to the "small farmers" who cultivate a small amount of land in a scattered way-according to the international common standards, small farmers specifically refer to farmers whose land scale is less than 2 hectares. Article 37 of China's "Seed Law" stipulates that farmers are allowed to sell and exchange the remaining seeds in local markets. The main consideration is that China's per capita arable land is small, and allowing farmers who operate small-scale land to sell the remaining small amount of seeds will generally not harm the interests of variety owners. On the contrary, individual farmers who have a certain economic ability to contract large-scale land can obviously afford the cost of seeds and should not enjoy the right to keep them. The original intention of setting up the seed retention right system in China is to protect the interests of farmers with small arable land and low economic purchasing power and safeguard social public interests.[3] China's current agricultural production mode is still dominated by small-scale peasant economy.[4] The large number of small farmers is still the basic agricultural situation in China-there are nearly 200 million people engaged in agricultural production in China, and the number of small farmers accounts for more than 98% of the agricultural business entities. (See the National Bureau of Statistics, "China Population Census Yearbook 2020," China Statistics Press, 2020 edition, https://www.stats.gov.cn/tjsj/pcsj/rkpc/7rp/indexch.htm.) Therefore, it is still of practical significance to grant "small farmers" the right to keep their own seeds.

Second, China's relevant laws should further clearly stipulate that "self-reproduction and self-use" is limited to farmers' planting behavior, and does not include commercial use such as selling and swapping. The provisions of Article 37 of China's "Seed Law" show that it is legally allowed for farmers to exchange or sell the remaining seeds they keep for themselves. However, this is only a supplementary provision. It is only aimed at the commercial use of "surplus seeds" planted by farmers. It cannot be understood that the scope of "self-reproduction and self-use" includes commercial use such as selling and swapping, otherwise it may provide legal support for farmers' wanton seed sales. In practice, the seed

supervision department should stop and crack down on the behavior of selling a large number of commercial seeds in the name of Article 37 of China's Seed Law.

Third, the "breeding materials" that farmers keep for themselves are limited to the "planting materials or breeding materials" stipulated in Article 2 of the Seed Law of China. Since the "self-propagation and self-use" in the clause of farmers' reserved seeds in China does not involve the commercial use of propagation materials, but is only limited to farmers' reserved seeds, the "propagation materials" of farmers' reserved seeds do not need to cover two kinds of "materials" that have nothing to do with farmers' planting, namely, harvested materials obtained by unauthorized use of propagation materials of protected varieties and products directly made from harvested materials of protected varieties used without authorization. The "breeding materials" that allow farmers to keep their own seeds are different from the "materials" for the protection of new plant varieties in UPOV1991, and the object of farmers' right to keep seeds in China is only limited to traditional planting materials or breeding materials, which will not limit the scope of the right to keep seeds.

4.2. The specific path to solve the dilemma of farmers' private farming

After solving the legal problem of farmers' self-reserved seeds from the legal level, it is necessary to build relevant operating mechanisms to balance the interests of relevant subjects. As the cornerstone of the intellectual property system, interest balance requires a relatively balanced distribution of interests to relevant subjects under a certain interest pattern and system. In the agricultural field, how to balance and coordinate the conflict of interests between the owners of new plant varieties and farmers who have the right to keep their own seeds is the key to solve the dilemma of farmers' own seeds.

4.2.1. Build a compensation system

Compensation system was originally an independent system in copyright law, aiming at coordinating the conflict between the interests of copyright owners and private copying. In essence, copyright compensation is a form of economic compensation paid to the copyright owner by private replicators who copy and use copyrighted works without the consent of the copyright owner.[5] This system is suitable for solving the dilemma of farmers' self-cultivation. First of all, farmers, like users of works, have the characteristics of large number and dispersion. A large number of farmers with scattered geographical locations leave their seeds by themselves, which is very easy to damage the rights and interests of plant variety owners. In this case, it is also very difficult for rights holders to protect their rights, which is similar to the dilemma faced by private reproduction of works under replication technology. Secondly, it is difficult to distinguish between farmers selling seeds for profit and farmers selling surplus seeds reasonably after planting. Private copying is sometimes indistinguishable from the fair use of others' published works for the purpose of personal study and research. Finally, based on the self-replication of seeds, the results of farmers' self-reserved seeds are similar to those of private reproduction under the copyright law, and all of them will copy related knowledge products. These objective similarities make it feasible for the compensation system to coordinate the conflict of interests between breeders and farmers.

It needs to be clear that the compensation system is aimed at farmers' behavior of keeping seeds for themselves. If farmers buy seeds from variety owners and plant and sell the harvest, it is a reasonable and legal use behavior, and the compensation system is not applicable; If the farmers' sales are obtained by planting their own seeds, the compensation system is applicable in this case. Farmers will sell the harvest from their own planting, and they need to return part of the sales income to the breeder as compensation.[6] In order to solve the problem of identifying the source of the sale, it can be proved by the certificate of purchasing seeds. In practice, how should the specific amount of compensation be collected? Generally speaking, the amount of compensation can be negotiated between the variety owner and the farmers. If no consultation or negotiation fails, the amount of compensation is generally 50% of the usual amount of the same variety licensed for the production of propagating materials.[7] The construction of compensation system in the field of farmers' self-reserved seeds aims to re-plan the distribution of interests between breeders and farmers, so that both sides can get fairer economic treatment.

4.2.2. Set up a collective management organization for private seed charging.

If we construct the compensation system, we will still face the dilemma of who will collect the compensation and how to collect and distribute it in practice. Considering that the number of farmers is large and scattered, it is difficult for breeders to collect compensation for their own seeds. If most breeders act together, it may be a feasible plan to set up a special organization to collect compensation for reserved seeds on behalf of breeders in a region or a country. Therefore, we can learn from the idea of copyright protection of digital works and set up a collective management organization that collects compensation for private seed collection. Based on this collective management organization, the compensation collected can be distributed to breeders according to certain procedures. Of course, the premise is that the collective management organization must reach a unified standard on the collection standard of compensation, and the collection standard is accepted by breeders and farmers. In Germany, there is an organization that is responsible for collecting the cost of reserved seeds, called seed trust limited liability company (STV, Saatgut-Treuhandverwa1tungs Gmb H), which centrally manages all license agreements, collects the cost of reserved seeds for breeders, and allocates subsidies for breeding license fees under the framework of industry agreements.[9] In Britain and the Czech Republic, the BSPB (British Society of Plant Breeders) and the variety owners' cooperative are responsible for the farmers' self-reserved seeds.[10] From the purpose and responsibility of establishment, these organizations are similar in nature to copyright collective management organizations in the copyright system.

After the establishment of the collective management organization of private seed collection fees, we should also set up the corresponding operating mechanism to carry out scientific collection and distribution. As for the collection of compensation, first of all, as mentioned above, the collective management organization of private seed retention fees can negotiate with farmers instead of breeders to reach a unified compensation collection standard. If negotiation fails, it can collect 50% of the usual amount of the same variety licensed for the production of breeding materials. Secondly, it can provide farmers with convenient forms of self-reserved seed

declaration, such as opening an online declaration system. Finally, the collective management organization can send staff to verify and supervise the number of farmers' private seeds. In the distribution of compensation, first of all, breeders can join the association by signing an agent contract with the collective management organization for private seed collection, register the information about intellectual property protection of new plant varieties and pay the membership fee on time. Secondly, the collective management organization of private seed collection fees can distribute compensation to breeders according to their registration information and relevant standards.

Based on the above system design, it not only recognizes the right of farmers to keep their own seeds, but also makes the distribution of interests between breeders and farmers more balanced, which can effectively coordinate the conflict between intellectual property protection and farmers' own seeds.

5. Conclusion

As far as the current global situation is concerned, the protection of intellectual property rights of new plant varieties has become a universal trend. However, farmers' following traditional habits and keeping their own seeds also has its realistic needs and legitimacy. From the perspective of China's national conditions, as a developing country with relatively low productivity level and immature agricultural development, there are a large number of farmers engaged in agricultural production, so it is very important to protect farmers' right to reserve seeds and safeguard their interests. If the seed reservation right of farmers is restricted, it will destroy the traditional production mode of farmers and increase the cost of agricultural production of farmers, thus affecting the enthusiasm of farmers for grain planting. The right to new plant varieties plays an important role in China, which is not only a part of China's intellectual property system, but also closely related to China's agriculture, rural areas and farmers. While respecting and protecting the intellectual property rights of new plant varieties, we should also earnestly safeguard the traditional interests of farmers and realize the benign interaction between agriculture and intellectual property rights system.

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