Study on the Ownership of Plant Genetic Resources on Farmers' Land

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Abstract In order to protect Chinese farmers' sharing benefits and make legal preparation for accession to the *International Treaty on Plant Genetic Resources for Food and Agriculture*, this paper analyzed differences between state sovereignty and ownership of genetic resources and between natural resources and plant genetic resources on farmers' land. Then, it studied the regulations of the United States, European Union and Indian on the ownership of plant genetic resources on farmers' land. On the basis of the analysis and study, the authors stated that the sovereignty of plant genetic resources can not replace the ownership system. The plant genetic resources on farmers' (community) land should be in the possession of farmers or communities, which should be confirmed by the State.

Key words Plant genetic resources, Ownership, Farmers, Community

1 Introduction

According to opinions prevalent in the past and now, all genetic resources are owned by the state, including plant genetic resources grown on farmland. If farmers can possess and harvest crops, why they can not possess the plant genetic resources on their land? If these plant genetic resources are owned by the state, do farmers have duty to keep them safe? How does the state protect plant genetic resources on farmers' land? Therefore, the problem of who will possess plant genetic resources on farmers' land concerns the protection and utilization of plant genetic resources, how to implement the *Convention on Biological Diversity*, and registration system of plant genetic resources and design of benefit sharing system in China. To register plant genetic resources, China has to solve the problem of who owns the plant genetic resources. Only when ownership is clear can the adjustment mechanism of laws act on actual society, and regulate, adjust and protect benefit sharing pattern of the actual society[1].

2 State sovereign rights and property rights of genetic resources

According to provisions of the *Convention on Biological Diversity*, China has sovereign rights over all genetic resources within the scope of its jurisdiction. But does this mean China has the ownership over them?

Sovereign rights are the rights, which appertain to independent sovereign states, to legislate, manage, exploit and control access to their own natural resources. They include the right to determine property regimes applicable to those resources, who owns them, what rights of ownership can be entertained, and how ownership can be established. Sovereignty and sovereign rights imply independence and exclusivity: the rights appertain only to the sovereign power concerned and not to any outside power.

Property rights, on the other hand, are rights to own, control and alienate property, within the system of property law established by the State. Property rights may be rights over material or tangible property, such as crops growing on farmers' land. They may also be rights over intangible property, including information or innovations, such as patent rights and Plant Breeder's Rights[2].

Therefore, sovereign rights are relative to other countries, while property rights are the institutional arrangement within a country. Sovereign rights are not equal to property rights. It can not be inferred that a state has property rights over all natural resources within the scope of its jurisdiction just because the *Convention on Biological Diversity* stipulates that States have sovereign rights over their own biological resources. This is just like that a state has sovereign rights over its territory, but may not have property rights over all land within the state. Similarly, a state may have sovereign rights over genetic resources within the scope of its jurisdiction, and may own property rights over some genetic resources, for example, genetic resources in the nature reserves are owned by the state. However, it can not be inferred from sovereign rights that a state has property rights over all genetic resources within its jurisdiction.

3 Natural resources and plant genetic resources on farmers' land

Natural resources are materials and energy that exist in nature and can be used by human beings to improve production and livelihood in certain economic and technical conditions, and usually in a natural form, not including raw materials changed by human be-

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ings[3]. Therefore, natural resources are generally in the possession of social public or states. However, plant genetic resources on farmers' land are natural resources? If no, who will own these resources?

For historical reasons, there is no definite provision of the ownership of plant genetic resources in the *Constitution* and major legislation of China[1], but there is clear legal provision on the ownership of land.

According to Article 10 of the *Constitution*, land in the cities is owned by the state. For example, forests, lakes, rivers and mountains are owned by the state. Land in the rural and suburban areas is owned by collectives except for those portions which belong to the state in accordance with the law. In other words, land in the rural and suburban areas is possessed by village collectives of these rural and suburban areas.

Biological genetic resources belong to the property in the civil law. Therefore, arrangements of rights on obtaining, handling, using and benefiting of biological genetic resources should be applicable for provisions of civil laws on real right. Since ownership is the most basic real right, all rights about possession, use, benefiting and handling of biological genetic resources are derived from real right. Thus, the issue of ownership of biological genetic resources is the core issue[4]. Article 48 of the *Real Right Law of the People's Republic of China* (passed on March 16, 2007 and came into force on October 1, 2007) provides that "natural resources such as forests, mountains, grasslands, waste lands and tidal flats shall be in the ownership of the state, except for those that shall be in the ownership of collective as provided for by law". According to this provision, in principle, natural resources shall be owned by the state. However, plant genetic resources on farmers' land owned collectively, especially crop genetic resources, are not in natural form, but selected and cultivated by generations of farmers. It is generations of farmers' hard working that creates rich and diverse plant genetic resources, which are important sources for developing new varieties and lay solid foundation for seed breeder. Therefore, we should not deem that genetic resources on farmers' collectively owned land are owned by the state in accordance with Article 48 of the *Real Right Law of the People's Republic of China*. Article 49 of the *Real Right of the People's Republic of China* provides that the wildlife resources that shall be owned by the state as prescribed by law shall be owned by the state. However, the genetic resources on farmers' land are not wildlife resources, but parts of crops in their fields, and cultivated by farmers from generation to generation. In addition, some of these genetic resources have been developed into local varieties, so they should be in the collective ownership of farmer community (original residents)[4]. These genetic resources are cultivated not by the whole society, but by farmers in these communities, thus crop genetic resources on farmers' collectively owned land should be owned by farmer collectives (communities).

Besides, in accordance with Article 58 and Article 59 of the *Real Right Law*, farmers are vested with management right of collectively owned land for agricultural purpose through household contract. Contractual management right is confirmed as a real right from Article 124 to 134. "The holder of the right to the contracted management of land has the rights to possess, utilize and seek proceeds from the cultivated land, wood land and grassland…" Naturally, these rights include rights over genetic resources on their contracted land. As a result, plant genetic resources cultivated on the contracted land should be owned by farmers.

In accordance with principles of the *Real Right Law*, any resource appurtenant to land should be owned by the same person who owns the land. Therefore, even if genetic resources on farmers' collectively owned land are variants, they are still appurtenance of farmers' collectively owned land and should be owned by farmers' collective (the most common exception of this principle is mineral products and space, while wild animals and plants should follow provisions of *Law of the People's Republic of China on the Protection of Wildlife*).

In the case of ownership of new variety Red-fleshed Sweet Pomelo, one of the top ten cases of intellectual property right judicial protection of China Court in 2010, Fujian Academy of Agricultural Sciences admitted that Lin Jinshan was the owner of seed tree of Sweet Pomelo, and the court confirmed that Lin Jinshan found the Sweet Pomelo tree in his fruit gardens that can be used to develop new variety of Sweet Pomelo, which he made great contribution to future development of new varieties[5]. In the final verdict, the court did not deny farmers' ownership over genetic resources on their land.

4 The ownership of plant genetic resources on farmers' land in other countries

4.1 Regulations on ownership of plant genetic resources in the United States Access to genetic resources in the United States, apart from complying with laws of the federal and States on species, habitat and nature reserves, mainly depends on rights of land owners. The ownership of land is divided into public ownership, private ownership and indigenous ownership according to the difference of land owners. Public land, which is owned by the Federal or States, can be collected and exploited by individuals for genetic resources, unless explicitly prohibited or restricted. Besides, once a material is obtained in the conformity of laws from public land, it will be owned by the collector and can be used, sold or disposed at his will. If individuals or companies own private land, they will own plants on the land. Generally, unless expressly forbidden, private owners can collect and exploit any genetic resource on the land they own, and can transfer or lease such rights. Aboriginal tribes have rights to control activities of accessing to and exploiting the resource on their land[6].

4.2 Regulations on ownership of plant genetic resources in the European Union Most EU countries carry out indirect adjustment of benefit sharing activities through land ownership law and laws on accessing to and exploiting land and natural resources[6]. Article 94 and Article 953 of the *Civil Code* of Germa-

ny provide that from the time of planting, plants become attached to the land, while fruits will naturally be possessed by the land owners as product of the plants. In France, Switzerland and Italy, there are similar provisions that plant genetic resources appurtenant to private land will be owned by private person.

4.3 Regulations on farmer's variety in India In August 2001, India issued the *Protection of Plant Varieties and Farmers' Rights Act* (2001), which came into force in 2005. According to this Act, farmers not only have right to register new varieties, but also have right to register farmers' variety (Section 39(1)(i)). In the Act, farmers' variety means a variety which – (i) has been traditionally cultivated and evolved by the farmers in their fields; or (ii) is a wild relative or land race or a variety about which the farmers possess the common knowledge (Section 2(1)); the Act gives protection not only to newly-developed varieties but also to existing varieties (the term "extant variety" is used, including farmers' variety). From 2007 to May 31, 2010, a total of 1 138 extant varieties were registered[7].

Section 39(1)(iii) of the *Act* provides that a farmer who is engaged in the conservation of genetic resources of land races and wild relatives of economic plants and their improvement through selection and preservation shall be entitled in the prescribed manner for recognition and reward from the Gene Fund. Provided that material so selected and preserved has been used as donors of genes in varieties registrable under this *Act*[8].

Therefore, Indian laws admit farmers' ownership over plant genetic resources, on the condition of registering in gene bank of the state as donors of genes, but farmers (communities) reserve the right to share benefits.

5 Significance of recognizing farmers' (community's) rights over plant genetic resources

5.1 Favorable for protecting plant genetic resources In-situ conservation is an important means for protection of plant genetic resources. While crops are planted by farmers on their land, crop genetic resources are just protected in *in-situ*. If the ownership of farmers over their genetic resources is recognized, it will summon up the enthusiasm of farmers, rural communities and farmers' cooperatives for participating in *in-situ* conservation, and farmers will actively plant crops to maintain their status as owner of the crop resources.

5.2 Favorable for promoting constant evolution of plant genetic resources and sustainable development of seed breeding The gene bank has collected substantial plant genetic resources and made great contribution to seed breeding. These genetic resources stored in the gene bank are static and can be kept out of loss, but will not ensure constant evolution of genetic resources. If farmers plant these genetic resources on their land, it will constantly evolve and generate genes suitable for local environment, and keep the plant genetic resources in constantly developing status, which is favorable for diversified development of plant genetic resources. Seed breeder have noticed this situation. For example, the Chinese Academy of Sciences signed the agreement with farmers in Guangxi and asked farmers to participate in the seed breeding in order to promote breeding of maize, and proposed that the investment of local farmers in improving crop varieties should be acknowledged in the national intellectual property right system. It is essential to recognize the contribution of farmers in in-situ conservation and protection of variety resources, protect farmers' rights in the participatory plant breeding, and keep them share the fair benefits[9].

5.3 Favorable for protecting Chinese rare and precious genetic resources China has sovereign rights over all genetic resources within the scope of his jurisdiction. According to the *Convention on Biological Diversity*, China has sovereign rights over the plant genetic resources within the scope of his jurisdiction and can claim benefit sharing arising out of their use. However, according to *Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity*, the fundamental role of the International Treaty on Plant Genetic Resources for Food and Agriculture and the FAO Commission on Genetic Resources for Food and Agriculture in this regard are acknowledged[10]. That is to say that access to and benefit sharing of plant genetic resources for food and agriculture should comply with provisions of the Multilateral System of the *International Treaty on Plant Genetic Resources for Food and Agriculture*. By now, China has not joined the *Treaty*. Once China joins the Treaty, if it is still provided that China has ownership over all plant genetic resources, it will fall into the scope of "under the management and control of the Contracting Parties and in the public domain" (Article 11.2), all plant genetic resources of China that conform to this condition will be incorporated into the Multilateral System, including rice, wheat, and sorghum, *etc*. Then, "access shall be accorded expeditiously, without the need to track individual accessions and free of charge, or, when a fee is charged, it shall not exceed the minimal cost involved" (Article 12.3.b). Such provision is extremely unfavorable for China's rare and precious plant genetic resources. Through recognizing rights of farmers and communities and registering plant genetic resources at both the state and community levels[9], it is expected to diversify subjects of rights of China's plant genetic resources, and effectively exclude some rare and precious local varieties from the Multilateral System. This is favorable for China's claiming sovereign rights and benefit sharing rights over plant genetic resources according to the *Convention on Biological Diversity*, too.

6 Conclusions and recommendations

Sovereign rights over plant genetic resources can not replace institutional arrangement of ownership over plant genetic resources. Sovereign rights are rights claimed by a state, while the ownership is the arrangement of property system within a country. China must establish definite ownership system of plant genetic resources and make clear which resources are owned by the state, which are

owned by rural collectives, and which are owned by farmer individuals. Plant genetic resources on farmers' (communities') land are not natural resources, but fruits of farmers' hard work from generation to generation and have been added with labor of farmers, so they should be collective or individual resources owned by farmers or communities.

In conclusion, the ownership of farmers and communities over plant genetic resources on their land should be admitted by the state. In the *Outline of National Strategies on Agricultural Intellectual Property Rights* (2010 – 2020) issued by the Ministry of Agriculture, it is planned to formulate *Regulation on Registration Management of Ownership of Agricultural Biological Genetic Resources*, gradually establish management system of ownership of agricultural biological genetic resources, promote connection of the system with patent law and plant variety protection system, and set up and perfect the disclosure and benefit sharing system[11]. To formulate the *Regulation*, we must firstly solve the problem of ownership of genetic resources. In the *Regulation*, it should recognize rights of farmers and communities over plant genetic resources on their land, promote multiple subjects of the ownership for plant genetic resources, to make full preparation for China's accession to the *International Treaty on Plant Genetic Resources for Food and Agriculture*.

References

[1] SONG M, ZHAO YF, CHEN JM. Agricultural Intellectual Property Rights [M]. Beijing: China Agriculture Press, 2010: 83. (in Chinese).

[2] Gerald Moore and Witold Tymowski (2005), Explanatory Guide to the International Treaty on Plant Genetic Resources for Food and Agriculture. IUCN, Gland, Switzerland and Cambridge, UK. P102.

[3] QI DM. Natural Resources Law[M]. Beijing: China Fangzheng Publishing House, 2005 (in Chinese)

[4] XUE DY, LIN YM. Theory of Property Rights on Biological Genetic Resources and System of Benefit Sharing[EB/OL]. (2006 – 04 – 29) [2011 – 5 – 14], http://www.biotech.org.cn/news/news/show.php? id = 33476

[5] The Intermediate People's Court of Fuzhou. Civil Verdict on the Dispute of the New Plant Variety's Ownership between LIN JS and Fruit Tree Research Institute of Fujian Academy of Agricultural Sciences, LU XM, LU XK[EB/OL]. (2010 – 07 – 05)[2011 – 5 – 30], http://ipr.chinacourt.org/public/detail_sfws.php? id = 38345

[6] XU TB. Study on Legal Issues of Access to Genetic Resources and Benefit Sharing [M]. Wuhan: Wuhan University Publishing House, 2006: 225 – 227 (in Chinese).

[7] NAGARAJAN S, TRIVEDI RK, RAJ GANESH DS, *et al*. India registers plant varieties under PPV&FR Act, 2001[EB/OL]. (2011 – 05 – 15) http://www.ias.ac.in/currsci/25sep2010/723.pdf: 724.

[8] The protection of plant varieties and farmers' rights act 2001[EB/OL]. (2011 – 05 – 15) http://agricoop.nic.in/PPV&FR%20Act,%202001.pdf.

[9] SONG YC, LI JS, ZHANG SH, *et al*. Exploration on farmers' right and benefits-sharing mechanism in development and utilization of plant new varieties[C]// Agriculture Plant New Variety Protection Office, Department of Science, Technology and Education, Ministry of Agriculture. The Agriculture Intellectual Property Rights 2007. Beijing: China Agriculture Press, 2008: 407. (in Chinese).

[10] The Secretariat of the Convention on Biological Diversity, The United Nations Environment Programme. Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits arising form their Utilization to the Convention on Biological Diversity. (2011 – 05 – 19) https://www.cbd.int/abs/doc/protocol/nagoya – protocol – zh.pdf:3. (in Chinese).

[11] Ministry of Agriculture. Outline of the Agricultural Intellectual Property Strategy 2010 – 1020[EB/OL]. (2011 – 3 – 25)[2011 – 5 – 14], http://www.farmer.com.cn/gd/zcfg/201006/t20100611_553835_2htm.

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[15] WANG X. Rural biogas sustainable development in China[J]. Guizhou Agricultural Science, 2010, 38(11): 248 – 250. (in Chinese).

[16] HUANG ZX, ZHU JP, LIU YQ, *et al*. Status analysis of new rural biogas construction and development countermeasures[J]. Jiangsu Agricultural Journal, 2008, 20(3): 109 – 111. (in Chinese).

[17] YI XY. Thoughts about Jiangsu rural biogas construction[J]. China Agriculture Resource and Zoning, 2010, 31(3): 90 – 94. (in Chinese).

[18] LIU XY. Comparative analysis of urban and rural biogas development pattern[J]. China Population Resource and Environment, 2010, 2(3): 302 – 305. (in Chinese).

[19] WANG YL, ZHANG Q, LIU J, *et al*. Application status of biogas in agro – crops and forecasting[J]. Nanfang Agriculture Journal, 2011, 42(11): 1365 – 1370. (in Chinese).

[20] CHENG X, LIANG JG, ZHENG HS, *et al*. Development and application prospect of industry biogas in China[J]. Agriculture Engineering Journal, 2010, 26(5): 1 – 6. (in Chinese).

[21] LIU XL, ZHENG XG. Co – integration analysis on the relationship between methane energy – development and economic growth in the city of Huixian[J]. Asian Agricultural Research, 2011, 3(7): 35 – 38.

[22] MA J, LI H, CUI WW, *et al*. Research on large – scale biogas production technique in north low temperature area[J]. Journal of Anhui Agricultural Sciences, 2011, 39(8): 4634 – 4636. (in Chinese).