

Policy Brief

Key Messages

- The new Chinese seed law offers a much broader protection for plant breeders' rights and foresees much harsher punishments and damage compensations for infringement on intellectual property rights (IPRs).
- The inclusion of the concept of Essentially Derived Varieties (EDV) brings the new seed law much more in line with the provisions of the 1991 UPOV Convention Act.
- If China would sign to the 1991 UPOV Convention Act, it would most likely increase the competitiveness of local seed companies as well as the number of new plant varieties and lead to a greater availability of improved varieties for Chinese farmers.

Policy Brief on the new Chinese Seed Law and its introduction of Essentially Derived Varieties (EDV)

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Introduction

In March 2022, the new Chinese seed law will come into effect. The revision of the seed law with its stronger protection of plant breeders' rights has been strongly welcomed by many stakeholders of the seed sector.

The new law extends the protection of plant varieties to so called Essentially Derived Varieties (EDV). In doing so, the seed law is adopting many clauses of the 1991 UPOV Convention Act.

This policy brief provides an overview of the current situation of the seed sector in China including its scope and relevance for the national economy. It also explains the concept of EDV and the background of UPOV and what possible benefits China could reap if it would become a member of the 1991 UPOV Convention Act.

1) The Chinese Seed Sector and its scope and relevance for the national economy

The Chinese seed market with an annual turnover of around 21 billion USD is the second largest in the world with a volume of about 12 million tons of seeds. Within the last few years, the number of seed companies has increased from 700 to more than 6,000, most of them being registered just at county level.

The issue of seeds has become a topic of national importance since seeds have been dubbed as the chips of modern agriculture by the Chinese government. With recent trade disputes and the disruption of many supply chains due to the Covid pandemic, seeds are important not only for food security, but also for national security.

President Xi Jinping has declared the seed industry to be a top priority for the development of the agriculture sector. On the road to food and feed self-sufficiency and rural revitalization, modern seeds will play a crucial role in China. Some excerpts of recent policy documents related to the seed sector are presented below.

In February 2021, the Central Committee of the Communist Party of China and the State Council jointly issued the annual policy guidelines on agriculture and rural development, known as the “No.1 Document”. The 2021 No.1 Document has set commercialization of high-quality seeds and livestock genetics as important factors for national food security, while stable supplies of grains and pork remain important.

Last year in July, the Central Committee for Deepening Overall Reform signed the Seed Industry Revitalization Action Plan at its twentieth meeting. It is only the second action plan in 60 years devoted to the seed sector, indicating how much importance China attaches to this subsector. The overall goal is self-reliance in seed technologies and to have control of seeds sources. The plan foresees a concentration of seed production for major food crops in selected regions of the country.

New varieties of plants with features such as improved yield, high nutritious quality and resistance to plant pests and diseases are a key element in increasing productivity and product quality in agriculture. The tremendous progress in agricultural productivity in various parts of the world is largely based on improved plant varieties. As more and more arable land in China has been converted for other uses and the remaining crop land is under increased environmental pressure, future increases in total grain yield can only be achieved through more efficiency. Modern seed varieties will play a major role to ensure this.

A German study on the relevance of new seed varieties and the proportion of plant breeding to the overall increases in productivity of major crops concluded that in the last 40 years, between 80% and 90% of yield increases have been due to the impact of advances in research on plant breeding and the introduction of new varieties.

As modern seeds are the result of long-term investments and technology and research, the protection of its intellectual property rights (IPRs) is essential for a continuous advancement in new innovations. Whereas in the past rather the foreign seed companies were urging the authorities to amend the current seed law and to improve the implementation of existing rules and regulations, it is now in the interest of the evolving domestic seed industry to ensure a better protection of their plant breeders rights.

There is a growing recognition in government circles that without real protection of IPRs, there will be no growth or improvement of the seed industry, a marked difference from the past. More resources have been made available

for research and development of plant and animal breeding; notably with the opening of the Nanfan Breeding Research Center on Hainan Island in the last year. The Center is administered by the Chinese Academy of Agricultural Sciences and is expected to integrate basic research, applied basic research, key technology innovation as well as product research and development. This is in line with the announcement of the Ministry of Agriculture to build the largest gene bank in the world with a capacity of more than 1,5 million plant specimens.

2) The new Chinese Seed Law including the system of Essentially Derived Varieties (EDV)

In December last year, the Standing Committee of the National People's Congress of the People's Republic of China published an amended Seed Law of the People's Republic of China. Prior to this publication, the draft version of the amended Seed Law was released for public comment in August 2021.

The changes in the amended law appear welcome by most segments of the industry as they have sought these changes for several years. The amended law will come into effect on March 1, 2022. The new seed law is first and foremost about strengthening the protection of plant breeders' rights in all its aspects and the encouragement to initiate original innovation of plant breeding.

An important amendment in the new seed law is the reversal of "burden of proof" from the producer to the party which is accused of infringement of IPRs. Since in most court cases the judicial decisions have gone against parties who bear the burden of proof, this reversal of proof is a substantial strengthening of the plant breeders rights of the domestic seed companies.

The new law also grants protection to a protected variety at further stages of commercialization: from production, propagation and sale to offering for sale, export, import and storage. The new seed law also contains a provision which will enable owners of new plant variety rights to license the new variety in exchange for fees which can be contracted as fixed amounts, commissions from the sale of the new variety or other mechanisms.

The amendment increases the damages for infringement of the breeders' right. In case of intentional violations with serious consequences, punitive damages of five times the basic compensation may be imposed instead of the previous one to three times the basic compensation. The amendment, moreover, raises the maximum compensation from 3 million to 5 million RMB.

A reference to the growing efforts to nationalize seed production is the new provision in the seed law that requires any company or entity that wants to share germ plasm resources with other countries or intends to do research with foreign companies or institutions to apply for permission directly to the State Council instead of the Departments of Agriculture or Forestry.

Another indication that the government is placing increasing importance on the seed sector is the provision that arable land in designated seed production areas be declared permanent basic farmland, which would make it impossible to redesignate for purposes other than seed production.

In line with a stricter control or more direct involvement of the government into the affairs of leading private companies and to ensure food security for major crops, the new seed law requests the domestic seed enterprises to carry out research on breeding of staple crops as well as on major cash crops.

The new law also paves the way for a further relaxation of restrictions regarding Genetical Modified Organisms (GMO) as it explicitly supports research on biological breeding technologies.

To improve the overall efficiency of seed production in the country, the law also requires the departments of agriculture and forestry to assume greater responsibilities concerning guiding and supporting local seed producers to ensure seed quality.

The new seed law will also strengthen the judiciary to enforce the stricter regulations towards infringement of breeders' rights and other unlawful activities. In May 2021, the Supreme People's court and the Ministry of Agriculture and Rural Affairs jointly held a forum on the protection of IPRs within the seed industry.

The Hainan Free Trade Port Intellectual Property Court was established last year as only the fifth intellectual property court in the whole country. During the National Seed Congress, held last year in Hainan, the Vice Minister of the Supreme People's Court pointed out that it is necessary to further clarify the new plant variety judgment rules, to further unify the judicial judgment standards and increase judicial protection. This was followed by an official statement of the Supreme People's Court of the People's Republic of China in July 2021 in which the court announced the Interpretation (II) on Relevant Issues Concerning the Application of Law in the Trial of Cases Involving the Disputes over Infringement upon the Rights of New Plant Varieties ("Judicial Interpretation II").

China has developed technologies for identifying EDV and evaluating infringing plant material, e.g. a DNA fingerprinting based on molecular markers, a DNA fingerprinting database of more than 10,000 varieties and molecular evaluation standards for 35 species.

Besides strengthening the protection of legal rights and interests of owners of new plant varieties, the new law establishes a system of Essentially Derived Varieties (EDV). It defines the term "essentially" in the same way as the 1991 UPOV Convention Act. The new law will establish a benefit sharing mechanism between the owner of the original variety and the owner of the derived variety.

The amendment requires the State Council to stipulate the relevant implementing steps and to define the methods for an EDV regime. The State Council will do so when it amends the Regulations on the Protection of New Plant Varieties. By including the EDV concept and extending the scope of protection to include the harvested material of a protected plant variety, in addition to its propagating material, the new seed law is moving closer to adhere to all the provisions of the 1991 UPOV Convention Act.

With the onset of modern biotechnology breeding methods in the 1990s, it became necessary to adapt the existing UPOV convention and create a balance of protection between breeders using molecular tools and breeders using traditional breeding methods. Hence, the EDV concept was introduced in 1991. As modern technologies have evolved further (e.g., gene editing) and enable breeders nowadays to change more than one gene from an initial variety at the same time, seed industry stakeholders have recognized the need to clarify the existing article of the

1991 UPOV Convention Act on EDV. As the understanding and implementation of the EDV concept influences breeding strategy of seed companies, it is important to bridge the gap between the existing legislation and the lived practice among plant breeders. The extension of protection to EDV in the 1991 UPOV Convention Act has been controversial from the outset, as it creates tension with the breeders' exemption. Pressure on the legitimacy of the existing UPOV system also came from breeders seeking IPRs through patent laws, as these laws have a potentially broader scope of protection and do not include breeders' exemption rights, e.g., by giving more economic benefits to rights holders at the possible expense of society as a whole by restricting further research on new varieties.

In 2009, UPOV adopted the first explanatory note to the EDV. Given the complexity of the implementation of this article, in 2013, UPOV began to organize seminars and roundtables to revise the purpose of EDV. This resulted in the adoption of a second explanatory note on EDV in 2017 which is subject of controversial discussions on a whole range of technical issues. It also led to new series of consultations within the UPOV system which started in 2019 with a seminar on the Impact of Policy on EDV on Breeding Strategy. As a result of this seminar, UPOV established a working group on EDV which just concluded its discussions at its last meeting in October 2021. The proposed revision of the explanatory note on EDV has been submitted to UPOV's Administrative and Legal Committee. It is expected that the adopted changes in the explanatory note will be officially enacted by the relevant UPOV bodies in the coming months.

Although such explanatory notes are not legally binding on UPOV member countries, they provide valuable guidance to stakeholders such as judges who have to decide on disputes. Most of the controversy revolves around what constitutes an EDV, what testing methods should be used to assess whether a variety is an EDV, and what scope of protection is provided for EDVs. The existing imprecision in the wording of the Article on EDV has led to cases where the Courts of Appeal made different judgments for the same variety than the original court.

There are also different opinions among stakeholders as to whether the decision to declare a variety to be an EDV should be the responsibility of the National Plant Variety Offices or the judiciary.

3) Possible implications of the new Chinese Seed Law on China's membership in the International Union for the Protection of New Varieties of Plants (UPOV)

The International Union for the Protection of New Varieties of Plants (UPOV) is an intergovernmental organization based in Geneva, Switzerland. It was established in 1961 by the International Convention for the Protection of New Varieties of Plants (the "UPOV Convention"). The UPOV Convention provides the basis for members to encourage plant breeding by granting breeders of new plant varieties an IPR: the breeders' right. One of its main objectives, the promotion of innovation in plant breeding, relies on a comprehensive set of mechanisms to protect the investment of breeding companies from unfair exploitation. At the technical level, UPOV supports its members through the development of technical guidelines, such as the Guidelines on DUS Testing.

China joined UPOV in 1999, two years after it had introduced its own national Plant Variety Protection System. China's annual PVP application numbers have been the highest among UPOV members for three consecutive years. China has signed the 1978 UPOV Convention Act.

The 1991 UPOV Convention Act makes it compulsory for breeding companies of member states to grant exemption from the breeder's rights for the purpose of breeding other varieties, for scientific research and for farmers who reuse the harvested crops for their own purpose. As the 1991 UPOV Convention Act interferes with the legislation of its member states, many countries decided not to join, but to remain a signatory of the less strict 1978 UPOV Convention Act. Among these countries are many large agricultural producers like Argentina, Brazil, China, Chile, Colombia, Italy, Mexico, New Zealand and South Africa.

With the adoption of the New Seed Law and the inclusion of EDV, China is approaching the rules of the 1991 UPOV Convention Act. The signing of this Act would most likely increase the competitiveness of local seed companies and expand their scope of production, as they would have easier access to valuable varieties from abroad to be included in their breeding programs.

Based on a study of the impact of the UPOV system and general observations of the stakeholders involved, it was found that membership in UPOV is associated with the following:

- (a) increased breeding activities,
- (b) greater availability of improved varieties,
- (c) increased number of new varieties,
- (d) diversification of types of breeders (private breeders, researchers),
- (e) increased number of foreign new varieties,
- (f) increased competitiveness of domestic seed companies
- (g) improved access to foreign plant varieties and enhanced domestic breeding programs.

Recommendations¹

1. It is recommended that the People's Republic of China signs the 1991 UPOV Convention Act and fully implements the standard for plant variety protection contained in it at national level.
2. To strengthen the position of domestic plant breeders and to support their legal efforts in case of infringements of their intellectual property, the Chinese seed association might set up an organization similar to the German Seed Trust Administration which collects fees from farmers on behalf of the breeding companies and represents the companies in courts in legal disputes.
3. Breeding companies should be informed of the means available to them in the event of infringements of protected plant varieties. In this respect, the German Plant Breeder's Union (BDP) could support the Chinese Seed Trade Association (CNSTA) with the development of a "tool kit" that can be used by breeding companies.

¹ Based on Otten, D. & von Köckritz, M. (2019): Seed Cooperation: Recommendations. DCZ Policy Paper.

References

- [1] Peter Button, Vice Secretary-General, UPOV Benefits of China's accession to UPOV '91, Brussel, July 2016; <https://ipkey.eu/sites/default/files/legacy-ipkey-docs/upov---benefits-of-chinas-accession-to-upov-91.pdf>
- [2] Canadian Food Inspection Agency, Essentially Derived Varieties (EDV): What you should know, CSTA – 2019/12/02; <https://seedinnovation.ca/wp-content/uploads/2020/01/EDV-CSTA-Anthony-Parker-CFIA.pdf>
- [3] Concept of essentially derived variety (EDV), Position Paper Euroseeds, Brussel, January 2014; <https://euroseeds.eu/app/uploads/2019/07/11.0043.1-Euroseeds-position-on-EDV.doc-1.pdf>
- [4] Die gesellschaftliche Bedeutung der Pflanzenzüchtung in Deutschland, Steffen Noleppa & Harald von Witzke; https://www.bdp-online.de/de/Service/Download-Center/GFP_Studie_Bedeutung_der_Pflanzenzuechtung_in_Deutschland.pdf
- [5] GAIN, Seed Industry Development a High Priority of Top Chinese Leadership, June 10, 2021; https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Seed%20Industry%20Development%20a%20High%20Priority%20of%20Top%20Chinese%20Leadership_Beijing_China%20-%20People%27s%20Republic%20of_06-08-2021.pdf
- [6] GAIN, Final Seed Law Published, December 29, 2021; https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Final%20Seed%20Law%20Published_Beijing_China%20-%20People%27s%20Republic%20of_12-24-2021.pdf
- [7] Global Times, China to release milestone agricultural action plan to secure food, seed security. September 8, 2021; <https://www.globaltimes.cn/page/202109/1233721.shtml>
- [8] Introduction to the Notion of Essentially Derived Varieties, By Angela Martinez Lopez, Euroseeds, September 25, 2019; <https://european-seed.com/2019/09/introduction-to-the-notion-of-essentially-derived-varieties/>
- [9] Introduction to UPOV; <https://www.upov.int/overview/en/upov.html>
- [10] Dr.Edgar Krieger, CIOPORA, Roundtable on Feasibility of China's accession to UPOV'1991, Brussels,06/07/2016; <https://ipkey.eu/sites/default/files/legacy-ipkey-docs/ciopora---impact-of-chinas-potential-accession-to-the-act-1991-of-upov.pdf>
- [11] Proceedings of the Meetings of the UPOV Working Group on Essentially Derived Varieties; https://www.upov.int/meetings/en/topic.jsp?group_id=343
- [12] The Ten Pillars: The Position of the European Seed Industry on the Interpretation and Practical Application of the EDV Concept; [https://www.google.com/search?q=12\)+The+Ten+Pillars%3A+The+Position+of+the+European+Seed+Industry+on+the+Interpretation+and+Practical+Application+of+the+EDV+Concept&rlz=1C1GCEA_enUZ907UZ908&oq=12\)%09The+Ten+Pillars%3A+The+Position+of+the+European+Seed+Industry+on+the+Interpretation+and+Practical+Application+of+the+EDV+Concept&aqs=chrome..69i57.827170j0j4&sourceid=chrome&ie=UTF-8](https://www.google.com/search?q=12)+The+Ten+Pillars%3A+The+Position+of+the+European+Seed+Industry+on+the+Interpretation+and+Practical+Application+of+the+EDV+Concept&rlz=1C1GCEA_enUZ907UZ908&oq=12)%09The+Ten+Pillars%3A+The+Position+of+the+European+Seed+Industry+on+the+Interpretation+and+Practical+Application+of+the+EDV+Concept&aqs=chrome..69i57.827170j0j4&sourceid=chrome&ie=UTF-8)
- [13] UPOV Seminar on the Impact of Policy on Essentially Derived Varieties (EDVs) on Breeding Strategy (UPOV/SEM/GE/19); https://www.upov.int/meetings/en/details.jsp?meeting_id=50787

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About the project

The Sino-German Agricultural Centre is a joint initiative of the German Federal Ministry of Food and Agriculture (BMEL) and the Ministry of Agriculture and Rural Affairs of the People's Republic of China (MARA). It was established in March 2015 as a central contact and information point and for coordinating bilateral cooperation between Germany and China in the agricultural and food sector. The DCZ brings together stakeholders from the public and private sector and the scientific community. It creates forums in which agricultural issues of common interest are addressed. The spectrum of Sino-German cooperation in the agricultural sector is reflected in the three components of the DCZ: Agricultural Policy Dialogue, Agri-Food Business Dialogue and Scientific Dialogue.

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