Appendix A: Central Policy documents and leaders’ statement on GMOs

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| Year | Document Title | Entities | Key Messages |
| 2007 | Remark by Wen Jiabao, the then Primer  | Central Leadership | ‘To solve the food problem, we have to rely on big science and technology measures, rely on biotechnology, rely on GM technologies’ |
| 2008 | No.1 Central Document | CPC Central Committee and State Council  | Start new varieties of GMO breeding science and technology major special projects, accelerate the implementation of seed projects and livestock and aquatic species project |
| 2008 | Third Plenary Session of the 17th CPC Central Committee | CPC Central Committee | Implementation of major special projects in the breeding of new varieties of GMOs to obtain a number of excellent varieties with important application value |
| 2008 | Medium- and Long-term Food Security Plan (2008– 2020), | State Council | Vigorously promote scientific and technological innovation, strengthen the application of agricultural biotechnology and information technology, strengthen scientific research and development, implement scientific and technological projects such as new variety selection and breeding, grain yield, etc., start major special projects for breeding new varieties of genetically modified organisms, improve the research and development capacity and expansion capacity of biological breeding, strive to make new breakthroughs in the selection and breeding of high-yielding and high-quality varieties of grain, efficient cultivation patterns, efficient use of agricultural resources, etc., and accelerate the cultivation and formation of a number of high-yielding, high-quality, high resistant grain and oil varieties with independent intellectual property rights |
| 2009  | No.1 Central Document | CPC Central Committee and State Council  | Accelerate the Mega-engineering Programme for Cultivation of new varieties of GMO |
| 2010 | No.1 Central Document | CPC Central Committee and State Council  | Accelerate the construction of agricultural biological breeding innovation and promotion system. Continue to implement the major special projects in science and technology for breeding new genetically modified, develop new functional genes and biological varieties with important application value and independent intellectual property rights, and promote the commercialization of new genetically modified varieties on the basis of scientific evaluation and legal management. |
| 2010 | Plan on seven strategic emerging industries (SEIs) | State Council  | Biotechnology, including biological breeding, is designated as one of the seven strategic emerging industries |
| 2011 | No.1 Central Document | CPC Central Committee and State Council  | No mention of GM technology (Entire document was devoted to Water Conservancy) |
| 2011 | Wen Jiabao Qiushi article | Central leadership | China’s top worries is food security, and there is no other way to handle the problem except relying on high-yield variety breeding and GM technologies to transform the agricultural sector |
| 2012 | No.1 Central Document | CPC Central Committee and State Council  | Strengthen basic agricultural research, in agricultural biogene regulation and molecular breeding, agriculture and forestry plants and animals resistance mechanism, efficient use of farmland resources, agriculture and forestry ecological restoration, pest control, biosafety and agricultural product safety and other major breakthroughs in basic theory and methods Continue to implement major special projects in science and technology for breeding new varieties of genetically modified organisms. |
| 2013 | No.1 Central Document | CPC Central Committee and State Council  | No explicit mention of GM technology, but calls for “continuing to implement key science and technology special projects such as seed industry development” |
| 2013 | Speech by Xi Jinping at the Central Rural Work Conference | Central Leadership | ‘Boldly research and innovate, [and] dominate the high points of GM technologies |
| 2014 | Annual two session Press conference by MARA | MARA | Outlined the GMO commercialization roadmap—first non-edible, then indirectly edible, and finally edible  |
| 2014 | No.1 Central Document | CPC Central Committee and State Council  | Strengthening basic research and biotechnology development with emphasis on molecular breeding |
| 2015 | No.1 Central Document | CPC Central Committee and State Council  | Strengthen research, safety management, and scientific popularization of GM technologies  |
| 2016 | No.1 Central Document | CPC Central Committee and State Council  | reinforcing agricultural GM technology development and oversight and promoting the commercialization of GMOs in a cautious manner on the basis of guaranteeing its safety |
| 2016 | 13th Five-Year Plan for Science and Technology Innovation | State Council | Biotechnology is designated as a strategic emerging industry in China, and China aims to push forward the commercialization of a new domestic type of Bacillus thuringiensis (Bt) corn, Bt cotton, and herbicide-resistant soybeans by 2020 |
| 2016 | 13th Five-Year Plan on National Rural Economic Development | NDRC | Focus on biological breeding, agricultural machinery and equipment, intelligent agriculture, ecological and environmental protection and other fields, the organization and implementation of key agricultural science and technology innovation special projects and projects to improve the overall capacity of independent innovation. Strengthen agricultural GM biotechnology research and development and supervision |
| 2016 | 13th Five Year Plan on Agricultural and Rural Science & Technology Innovation | Ministry of Science and Technology; Ministry of Agriculture; Ministry of Education; Ministry of Industry and Information Technology; and others | In-depth implementation of major special projects for breeding new varieties GMOs |
| 2017 | 2017 No.1 Document | CPC Central Committee and State Council  | Increase the implementation of the major project of independent innovation in the seed industry and the key crop seed joint research efforts to speed up the selection and breeding of the varieties which are suitable for mechanized production, high quality, high yield, multi-resistant. |
| 2017 | Annual two session Press conference by MARA | MARA | GM technology is the frontier technology of modern biotechnology and has great potential in saving cost and increasing efficiency, reducing the application of pesticides and promoting green development in agriculture… Many international authorities, such as the World Health Organization, the European Commission, and the International Council for Science, have been tracking, evaluating, and monitoring the safety of genetically modified products for a long time, and the results have shown that government-approved genetically modified products that have been evaluated for safety are as safe as non-GM product. China’s attitude towards the development of GMO is firm, the commercialization roadmap is starting from cash crops to feed crops to processing crops and to edible crops.  |
| 2018 | 2018 No.1 Document | State Council | Construct high standard of national Nanfan breeding base |
| 2019 | 2019 No.1 Document  | State Council | Accelerate breakthroughs in key agricultural technologies. Strengthen innovation-driven development, the implementation of key agricultural technology research and development actions, cultivate a number of strategic agricultural science and technology innovation forces, and promote the biological breeding industry |
| 2020 | 2020 No.1 Document  | State Council | Strengthen the role of science and technology support. Strengthen the key core technologies of agriculture, the deployment of a number of major science and technology projects, to seize the high ground in science and technology. Strengthen agricultural biotechnology research and development, vigorously implement the seed industry independent innovation project, the implementation of the national agricultural germplasm resources conservation and utilization project, and promote the construction of Nanfan research and breeding base |
| 2020 | Press conference at the annual two Sessions | MARA | Biosafety certificates are issued for domestically grown GM) corn and soybean traits, moving towards to commercialisation of GM grain production in China |
| 2021 | 2021 No.1 Document  | State Council | Provide long-term and stable support to basic research on breeding and key breeding projects. Accelerate the implementation of major scientific and technological projects of agricultural biological breeding. In-depth implementation of crop and livestock and poultry breeding joint research. Implement a new round of livestock and poultry genetic improvement program and modern seed industry upgrading project. Respect for science, strict regulation, and the orderly promotion of the commercialization of biological breeding varieties |
| 2021 | Action Plan for Revitalizing the Seed Industry | CPC Central Committee | On July 9, 2021, the 20th meeting of the Commission for Deepening Overall Reform of the China Central Committee deliberated and approved the “Action Plan for Revitalizing the Seed Industry.” It showed China’s top management puts great importance on the innovations brought on by biological breeding, especially the R&D and industrialization of genetically modified organisms (GMO). |
| 2021 | Revitalization of the seed industry Plan | State Council | Accelerate the implementation of major scientific and technological projects of agricultural biological breeding, carry out key core technology research of seed source, and solidly promote the construction of innovation bases such as the Southern Propagation Silicon Valley |
| 2021 | New Seed Law | State Council | Boost the commercialization and standardization of GMO and support research institutes and institutions of higher learning to focus on basic, frontier and applied technology research in breeding and biological breeding technology |
| 2021 | Revision to the “Safe management of GMOs and development of a modern seed industry” | MARA | Added a rules for genetically modified crop varieties variety validation, paving ways for commercialization of GM crops in China  |
| 2021 | The 14th five-year plan (2021-2025) on Advancing Agricultural and Rural Modernization  | State Council | Focusing on breeding innovation research and development. Centred around key crops and livestock and poultry, achieve breakthrough in the core technology of agricultural seeds. Accelerate the implementation of major scientific and technological projects in agricultural biological breeding, and orderly promote the commercialization of biological breeding varieties.  |
| 2022 | The 14th five-year plan | MARA | Initiate the implementation of major projects in agricultural biological breeding and promote the commercialization of genetically modified soybeans in an orderly manner |
| 2022 | 2022 No.1 Document  | State Council | Vigorously promote the seed source and other key core agricultural technology research and development. Fully implement the seed industry revitalization action program. Accelerate the census and collection of agricultural germplasm resources and strengthen the accurate identification and evaluation. Promote the construction of national major innovation platforms in the field of seed industry. Launch major projects in agricultural biological breeding. |
| 2022 | Press conference at the annual two Sessions  | MARA | China's GM crop commercialization trail pilot was conducted smoothly, genetically modified corn and soybean involved in a pilot program have obtained safety certificates for production and application after an assessment of food and environmental safety that lasted nearly 10 years. |

 Source: Compiled by the authors based on search results from PKUlaw, CNKI, and other resources

Appendix B Molecular Breeding, Biological Breeding and GMOs in China

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| Term | Definition | Usages in China |
| Molecular breeding | is defined in a broad-sense as the use of genetic manipulation performed at DNA molecular levels to improve characters of interest in plants and animals, including genetic engineering or gene manipulation, molecular marker-assisted selection, genomic selection, etc. In short, GM technology the most important technique of molecular breeding. | In January 2014, at the press conference, Chen Xiwen, the then Director of the Central Financial and Economics Leading Small Group (LSG), while responding a question regarding the difference between GMO and traditional breeding method such as hybrid breeding stated, “We call hybrid breeding cellular breeding where we cross two different cells and try again and again to see if we can achieve our goal; we call GM breeding molecular level breeding where we open the cell, extract the DNA chain from the cell, either removing or adding gene and it is done inside the cell”[[1]](#footnote-1). In other words, in the Chinese context, molecular breeding, though a broader concept, is used to cover GM technologies;[[2]](#footnote-2)some scientists and state media regarded molecular breeding as same as GM technologies.[[3]](#footnote-3) For instance, an article published in the People’s Daily in 2015 referred to “molecular breeding” a similar term to GM technology. Against the backdrop of growing demonization of GMOs in China, it is no surprise that Chinese scientists and officials opted for alternatives terms when it comes to GM technologies.  |
| Biological breeding | the collective name for modern agricultural biotechnology breeding, which includes the use of transgenic, gene editing, whole genome selection, synthetic biology and other technologies to carry out efficient, precise and targeted genetic improvement and breeding of varieties of plants and animals.  | In Chinese official documents and media, despite the fact that biological breeding includes genetically modified crops among others, both terms are used interchangeably[[4]](#footnote-4) or bundled together (See for instance GM biological breading [[5]](#footnote-5)). A very recent example is that on 11 January 2022, the 10th National Media Workshop on GMO Reporting was held in Beijing, and the theme of the workshop was "Promoting the industrialization of biological breeding in an orderly manner and promoting the revitalization of the seed industry in a comprehensive manner”. [[6]](#footnote-6) |

Appendix C Heilongjiang’s efforts to promote its green food sector

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| 2010 | Heilongjiang Provincial government | Listed green food the 1st of the top 10 priority sectors |
| 2013 | Lu Hao’s speech the provincial food sector development conference | Governments at all levels and relevant departments have the responsibility and obligation to support, maintain and protect the overall image of Heilongjiang Province green organic pollution-free (special) food, for the implementation of the province's Longjiang Green Excellence Strategy, for developing a big the green food industry  |
| 2013 | Heilongjiang Provincial government | In August 2013, the eighth executive meeting of the Heilongjiang Provincial People's Government decided to hold the first Heilongjiang Green Food Industry Expo in Harbin and formulated the Heilongjiang Green Food Industry Development Guidelines which listed non-GM soyoil as one of the priority areas.  |
| 2014 | Lu Hao’s provincial government work report  | To build Heilongjiang into a national green food base |
| 2014 | Lu Hao’s statement at the province's green food market promotion symposium | The current consumer demand for food safety and health is increasingly strong, which brings huge market opportunities for the development of green food industry in our province. However, it does not mean we are bound to succeed. We have to rely on wisdom and hard work to turn the opportunity into results. Enterprises and government departments should have a sense of urgency. We should not only ensure product quality but also to make great efforts to strengthen the marketing and branding.  |
| 2015 | Lu Hao’s statement at annual two sessions | The key to the green food industry is to grasp food marketing. We cannot just rely on state procurement, instead, we need to sell our products to the ordinary consumers. This year, Heilongjiang should vigorously implement the overall green food branding and marketing strategy, to provide market opportunities for more Heilongjiang food entrepreneurs |
| 2016 | Lu Hao’s statement at a special meeting of the Heilongjiang provincial government on rice, soybean and other green food products marketing | Relevant government departments and the industry should strengthen study the basic theory of green food marketing, domestic and international experience, and effectively promote the marketing of green food such as rice, non-GMO soybeans and mixed grains in our province  |
| 2016 | Lu Hao’s statement at annual two sessions | Heilongjiang has no intention to turn black soil soybean to GM soybean |
| 2016 | Lu Hao’s statement at the special meeting of Heilongjiang provincial governmentResearch and deployment to strengthen the province's green food marketing work | Focusing on the combination of green food brands and geographical indications, peer-to-peer marketing, custom marketing, Internet marketing, equity crowdfunding marketing and other new business model applications…enhance the visibility, market share and overall competitiveness of green food brands in Heilongjiang Province |
| 2017 | Lu Hao’s statement during his visit to the fifth Green Expo  | Agriculture, forestry and ecological resources are the biggest advantageous in our province, and we should grasp the valuable opportunity of the rapid growth in the total demand for high-quality food in our country. We need to change the past practice of selling "raw food", and transform these advantageous resources into competitive high-quality products, and accelerate the development of our green food industry. |
| 2018 | Lu Hao’s provincial government work report  | Heilongjiang had held dozens of large-scale promotion activities are in the main consumption provinces, and more than 100 flagship stores and 3,000 brand chain stores are established nationwide, which helped to achieve comprehensive marketing and promotion of the province's non-GMO products, cold black soil, green and organic high-quality food.  |

Source: Compiled by the authors based on search results from PKUlaw, CNKI, and other resources

1. <http://www.scio.gov.cn/video/gxsp/Document/1361271/1361271.htm> [↑](#footnote-ref-1)
2. <http://scitech.people.com.cn/n/2015/0202/c1007-26490982.html> [↑](#footnote-ref-2)
3. Cong Cao, *GMO China: How Global Debates Transformed China’s Agricultural Biotechnology Policies* (Columbia University Press, 2018). [↑](#footnote-ref-3)
4. http://www.moa.gov.cn/xw/bmdt/202110/t20211029\_6380850.htm [↑](#footnote-ref-4)
5. <http://www.most.gov.cn/ztzl/qgkjgzhy/2016/2016jlcl/2016jlzdzx/201601/t20160111_123546.html>; <https://news.cctv.com/2022/01/20/ARTI7fCElzbT1HkEHbfG0QBu220120.shtml> [↑](#footnote-ref-5)
6. <https://szb.farmer.com.cn/2022/20220111/20220111_007/20220111_007_6.htm> [↑](#footnote-ref-6)