

湖北省社会科学院文库

现代农作物种业发展路径研究

基于湖北省的调查与分析

彭 玮 著

Xiandai Nongzuowu Zhongye Fazhan Lujing Yanjiu

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摘 要

“国以农为本，农以种为先。”我国作为农业生产大国和用种大国，农作物种业始终是国家战略性、基础性的核心产业，是促进农业长期稳定发展、保障国家粮食安全的根本。

改革开放特别是进入新世纪以来，优良品种对提高农业综合生产能力、保障农产品有效供给和促进农民增收做出了重要贡献。但同时，农业科研体制僵化、品种创新能力薄弱、企业规模小、竞争力不强、种子市场监管手段落后、法律法规不完善等问题长期困扰我国农作物种业发展，难以适应形势发展的需要。在粮食“十连增”的光环背后，我们应该看到我国种业目前基本上处于“吃老本”的状态。在种业国际化的大背景下，外国种业公司近年来大举进入中国种业市场，致使我国部分种业公司面临被挤出种业市场、市场份额被蚕食、自主品种被外国种子代替等困境，危及我国粮食安全。保证国家对种业的控制力和主导力，做大做强中国的民族种业，牢牢掌控中国粮食的“命脉”，已经迫在眉睫。

本研究分为八个章节，主要是四大部分内容：

第一部分包括第一章和第二章，介绍有关本研究的国内外研究现状及理论基础；

第二部分包括第三章、第四章、第五章，对中国种业的起源于发展现状、发展趋势进行分析；对中国种业竞争力进行分析，通过种子国际贸易以及知识产权保护现状分析影响我国种业竞争力偏弱的关键因素，指出中国种子企业规模小、研发投入少、研发成果转化率低、知识产权保护不力、缺乏先进的管理和运营经验是导致竞争力偏弱的主要因素；

第三部分包括第六章、第七章，对湖北省种业发展现状进行梳理，通过对湖北省种子企业、管理机构、生产基地、农户的800余份问卷调查进行统计分析，对湖北省科研机构的科研水平、科研体制进行实证分析，对

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湖北省种子企业的规模、研发投入、人才结构、销售收入等进行相关性分析，对农户用种行为及市场监管情况进行统计分析，找出制约湖北省种业发展的的问题所在；

第四部分包括第八章，在前七章的研究基础上，提出加快国内资源整合、完善企业为主体的商业化育种机制、加快知识产权保护、推动现代农作物种业发展的对策建议，并提出湖北种业可持续发展的具体政策建议，供相关职能部门参考。

本研究的主要结论：

1. 中国种业发展历史悠久，现代种业发展经历了非商品化阶段、部分商品化阶段、垄断经营阶段、市场化经营阶段四个阶段。近年来，中国种业取得了显著成效，品种选育水平逐步提升、良种供应能力逐步提高、种子企业实力逐步增强、种子法律法规和管理体系逐步完善；中国种业发生了深刻变化，种子技术实现了高新化、科研成果实现了产权化、种子生产实现了区域化、种子经营实现了市场化；同时随着国外种业巨头的进军及市场需求的变化，世界种业对中国种业新品种培育及企业经营产生深远的影响。同时，对中国种业发展趋势做了初步判断，传统育种技术向着与生物技术为代表的高新技术结合转变，种子的生产由粗放型向集约化大生产转变，种子的生产由粗放型向集约化大生产转变，种子经营由分散、小规模区域计划经营向专业化、集团化和参与国际化市场竞争转变，由科研、生产、经营脱节向育繁推、产加销一体化转变。

2. 从世界种子贸易状况及知识产权现状来看，中国种子处于净进口状态，中国虽然拥有世界上第二大的种子市场，但在世界种子市场竞争中，得到的国外市场份额少，而失去的国内市场份额多，显然处于市场竞争的劣势地位。从中国种子企业品种权的申请和授权数量比较来看，中国植物品种权的年申请量一直保持在国际植物新品种联盟（UPOV）成员国第四位，有效品种权量居 UPOV 成员国前十名。国内农业科研所在植物新品种申请和授权方面占据了绝对主导地位。影响中国种业核心竞争力的主要因素在于企业规模小、科研投入少、转化率低、知识产权保护效果尚未充分体现、缺乏先进的管理和运营方法与经验。中国种业市场未来竞争趋势是未来种业竞争将日趋激烈，行业集中度快速增强，研发能力、营销能力及标准化、规模化程度成为企业获得持续竞争优势的重要途径。

3. 从世界种业发展的历程来看，与中国种业发展相似，也是由政府

管理到过渡阶段、垄断阶段、市场化竞争阶段，说明从种业发展的规律来看，种业最终应该走向市场化；通过对种子市场化管理体制、种子产业管理模式、质量认证管理、农业科技创新体系等方面的国外经验借鉴分析，种子企业对研发投入的快速增长是种业发展巨大推动力，同时重视品牌的建设与保护，以法治种，保证质量也是其成功的经验之一。从世界种业发展的特点及趋势来看，种业作为国家战略产业地位进一步明确，种业发展迅速，市场价值快速增长，引发种子公司重组、兼并热潮，产业集中度明显提高，私人公司或组织逐步成为种业主体。

4. 通过调研数据分析发现，湖北省种业发展严重滞后，与全国农业大省、用种大省的身份严重不符。全省 21 家科研机构的调查问卷统计分析显示科研机构科研经费投入严重不足，科技创新动力不足，科研体制约束导致科研工作困难重重；全省 106 家种子企业的调查问卷显示，湖北省的种子企业规模小，基本上属于经营型企业，无力进行种子科研活动，企业核心竞争力薄弱；全省 672 户种子种植户的调查问卷显示，农村劳动力结构发生了重大的变化，妇女、老人、儿童比例的提高对保障种业生产提出了挑战。农户对种子重要性的认识有了很大提高，基本上通过经销商的渠道进行购买种子，同时农户对种子品牌还没有建立一定的忠诚度，种子企业的品牌建设急需加强。大部分农户认为种子价格偏高，市场上品种多、乱、杂，种子经营主体经营行为混乱，市场监管急需加强。在此基础上，提出制约湖北省种业发展的四大因素，即科技创新能不强、供种保障能力面临威胁、企业核心竞争能力不强、种业发展环境不佳。

5. 建立了湖北省种业发展的指标体系，包括科技创新能力、供种保障能力、企业竞争能力、市场监管能力四个方面，量化未来湖北省种业发展的主要目标。进一步明确了为保障目标实现的具体内容，加快提升种业科技创新能力、供种保障能力、种子企业市场竞争能力和市场监管能力，形成以产业发展为主导、企业为主体、基地为依托、产—学—研相结合和“育繁推一体化”的现代农作物种业体系。根据湖北农业资源禀赋条件和未来十年保障国家农产品供给安全的需要，结合湖北优势和特色，按品种对湖北省粮食作物和经济作物的种业区域布局进行合理规划；最后根据重点内容和区域布局设计重点项目，更加具体地规划湖北省种业发展的路径。

在此基础上，提出中国的种业发展要有一个宏观发展规划和一条清晰

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的路线图。一是加快国内种业资源整合，快速提升国内种子企业国际竞争力；二是构建和完善以企业为主导的产、学、研紧密结合的创新体制；三是加强知识产权保护，提高自主知识产权保护能力；四是湖北省要构建种业发展的长效机制，必须从产权和种业的机制活力等关键环节上突破；利用竞合优势，加大种业科技开发和优化资源配置；资源重组，打造现代化种业航母；提高供种能力，保障国家粮食安全；健全管理机构，提高市场监管能力。

关键词：种业；科技创新；供种保障能力；企业竞争能力；市场监管

Abstract

“Country is agriculture – based. Agriculture is seed – based.” China is a big country of large agricultural production with big request of seed. Crop seed industry has always been a national strategic, basic and core industry. It promotes agriculture development with long – term stability and protects the foundation of national food security.

Since the reform and opening – up, especially since the new century, good stains of seeds has made important contributions to improve the overall agricultural production capacity, to ensure effective supply of agricultural products and to increase farmers’ income. But at the same time, there are a lot of problems: the agricultural research system is rigid, the seed innovation capability is weak, the seed enterprises are small – scale and low competitiveness, the seed market supervision means is backward, the laws and regulations is imperfect etc. These problems have plagued the crop seed industry development for a long time. It is difficult to adapt to the needs of the crop seed industry development. Although we have achieved a great success of “ten years increase of agricultural products”, we should see that the seed industry is still remain in a state of “rest on our laurels”. With the backdrop of the internationalization of the seed industry, foreign seed companies have entered Chinese seed market in recent years. It results in part of the Chinese seed companies facing difficult position: been squeezed out of the seed market, been eroded of market share, being replaced by foreign seeds. It endangers our food security very much. It is really urgent to ensure the nation to control of seed industry, to develop and strengthen Chinese seed industry, to firmly control of the Chinese food “lifeline”.

This study is divided into eight chapters, mainly for four contents:

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The first part consists of Chapters I and II. It introduces the research status of domestic and oversea, and theoretical basis.

The second part consists of Chapter III, Chapter IV, Chapter V. It analyzes the origin, the status and the trend of the Chinese seed industry. It also analyzes the competitiveness of Chinese seed industry. By analyzing the seed international trade and intellectual property protection status, it point out the key factors which result in low competitiveness of China's seed industry: Chinese seed companies are small scale, less R & D investment, low response rate of R & D results, inadequate protection of intellectual property, lack of advanced management and operation experience etc.

The third part consists of Chapter VI, Chapter VII. It analyzes the development status of seed industry in Hubei Province. By statistical analysis with more than 800 questionnaires from seed enterprises, regulatory agencies, the production bases and farmers in Hubei Province, by positive analysis of Hubei scientific research institutions' capability and system, by correlation analysis of scale, R&D investment, employee structure, turnover of Hubei seed enterprises, by statistical analysis with farmer seed selection behavior and market regulatory status, it point out the key factors which restrict the development of Hubei seed industry.

The fourth part consists of Chapter VIII. Based on the study of the first seven chapters, it proposes the solution of accelerating the integration of domestic resources, improving the enterprises as the mainstay of the commercial breeding mechanism, accelerating the protection of intellectual property and promoting the development of modern crop seed industry. It also proposes the suggestion for policy which could promote the sustainable development of Hubei seed industry, which could be the reference of relevant functional departments.

The main conclusions of this study are:

1. Chinese seed industry has a long history. The development of the modern seed industry has undergone a non-commercialization stage, part of the commercialization stage, the monopoly stage and the market-oriented stage. In recent years, Chinese seed industry has achieved remarkable results: seed selection and breeding capability has been promoted gradually, improved variety

supplying capacity has been increased gradually, the seed enterprises business strength has been increased gradually, the laws and regulations and the management system has been gradually perfect. Chinese seed industry has undergone profound changes: the seed technology has become high - tech, the result of scientific research has become intellectual property, the seed production has achieved regionalization, the seed business has achieved market - oriented. With the foreign seed enterprises entering and market demand changed, it profoundly impact on the cultivation of new varieties and the business of Chinese seed industry. This study makes a preliminary estimation for the development trend of Chinese seed Industry: the traditional breeding techniques shift toward the high - tech of biotechnology, the seed production shift from extensive to intensive large - scale production, the seed business shift from scattered, small - scale regional and planned economy to professionalization, collective and international market economy.

2. from the world seed trade situation and intellectual property the current situation of Chinese seed in the net import status, China has the world's second largest seed market in the world seed market competition in the foreign market share, while the lossdomestic market share is clearly at a disadvantage in market competition. Variety Rights application of Chinese seed companies and the authorized number of comparisons, applications of plant variety rights in China has remained at the fourth of the members of the International New Varieties of Plants Union (UPOV), effective variety rights ranks UPOV member 10 names. Domestic agricultural research institutes in the application and authorization of new plant varieties accounted for the absolute dominance. The main factors to affect the core competitiveness of China's Seed Industry is small scale, less investment in research, conversion rate, intellectual property protection effect is not yet fully reflected in the lack of advanced methods and experience of the management and operation. China's seed market competition in the future trend of the future will become increasingly fierce competition in the seed industry, industry concentration is rapidly increasing R & D capabilities, marketing capabilities and standardization, the degree of scale become an important way to sustainable competitive advantage.

3. The history of the world's seed industry development is similar with the history of Chinese seed industry development which has been the stage of managed by the Government to the transitional stage, and then the stage of monopoly, finally the market competition stage. It shows that the seed industry development law is finally marketization. By using and analyzing the foreign seed industry experience of the seed market - oriented management system, the seed industry management model, certified quality management, agricultural science and technology innovation system etc, it shows that the rapid increase of seed companies R & D investment is a huge driving force of the seed industry development, focusing on brand building and protection, rule of law and quality guarantee are a good experience of the seed industry success. Characteristics and trends of the world's seed industry development shows that the seed industry, as a national strategic industry, has developed rapidly. The market value rapid growth causes seed companies restructuring and merger. It makes that seed industry concentration has been improved obviously, private companies or organizations gradually become the main part of seed industry.

4. The survey data analysis shows that the development of Hubei seed industry is seriously hysteretic which is quite discrepancies with the status of Hubei as a major agricultural province. The statistical analysis of 21 Hubei seed research institutions' questionnaires shows the lack of R&D investment, the lack of motivation of scientific and technological innovation, the difficult of R&D due to R&D system constraints. The statistical analysis of 106 Hubei seed enterprises' questionnaires shows that they are small scale, has only production capability but without R&D capability. The statistical analysis of 672 Hubei seed farmers' questionnaires shows that the rural labor structure has undergone significant change, the increasing proportion of women, the elderly, children posed a challenge for the protection of seed industry production, farmers are already aware the importance of seed and they bought it from the dealer, but farmers have not yet established a certain loyalty for seed brand which shows urgent need to strengthen the brand building of the seed enterprises. The majority of farmers thought that seed prices are high, the market is messy and complicated, seed business entities operation behavior is chaotic, it is urgent to strengthen market

supervision. With the analysis, the study summarizes four major factors which restrict the development of Hubei seed industry: few innovation of the scientific and technological, threat of seed supply capacity, low core competitiveness of seed enterprises and poor development environment of seed industry.

5. The study establishes the index system of Hubei seed industry development, which includes science and technology capability, seed supply capacity, enterprise competitiveness, market supervision capability. It quantifies the main objective of the future development of Hubei seed industry, further clarifies the details content of achieving the target: enhancing scientific and technological innovation capability, seed supply capacity, enterprise competitiveness and market supervision capability, forming a modern crop seed industry system of industrial development - oriented, of enterprises subjected, of production bases depended, of research and production combined. On the basis of Hubei agriculture resource and following the need of national agricultural products supply security in the next decade, combining the advantages and features of Hubei agriculture, the study programs the regional distribution of Hubei food crop and cash crop. Last but not least, the study programs the path of Hubei seed industry development with the key content, regional layout design and the major projects.

Key words: Crop Seed; Industry Technological innovation; support capacity for the species; enterprise competitiveness; market supervision

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