中华农业文明研究院文库·中国近现代农业史丛书

中国与美国：农业、经济和政治发展研究

The United States and China: Agricultural, Economic, and Political Affairs

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关于《中华农业文明研究院文库》

中国有上万年农业发展的历史，但对农业历史进行有组织的整理和研究时间却不长，大致始于20世纪20年代。1920年，金陵大学建立农业图书研究部，启动中国古代农业资料的收集、整理和研究工程。同年，中国农史事业的开拓者之一——万国鼎（1897—1963）先生从金陵大学毕业留校工作，发表了第一篇农史学术论文《中国蚕业史》。1924年，万国鼎先生就任金陵大学农业图书研究部主任，亲自主持《先农集成》等农业历史资料的整理与研究工作。1932年，金陵大学改农业图书研究部为金陵大学农经系农业历史组，农史工作从单纯的资料整理和研究向科学普及和人才培养拓展，万国鼎先生亲自主讲“中国农业史”和“中国田制史”等课程，农业历史的研究受到了更为广泛的关注。1955年，在周恩来总理的亲自关心和支持下，农业部批准建立由中国农业科学院和南京农学院双重领导的中国农业遗产研究室，万国鼎先生被任命为主任。在万先生的带领下，南京农业大学中国农业历史的研究工作发展迅速，硕果累累，成为国内公认、享誉国际的中国农业历史研究中心。2001年，南京农业大学在对相关学科力量进一步整合的基础上组建了中华农业文明研究院。中华农业文明研究院承继了自金陵大学农业图书研究部创建以来的学术资源和学术传统，这就是研究院将1920年作为院庆起点的重要原因。

80余年风雨征程，80春秋耕耘不辍，中华农业文明研究院在几代学人的辛勤努力下取得了令人瞩目的成就，发展成为一个特色鲜

明、实力雄厚的以农业历史文化为优势的文科研究机构。研究院目前拥有科学技术史一级学科博士后流动站、科学技术史一级学科博士学位授权点，科学技术史、科学技术哲学、专门史、社会学、经济法学、旅游管理等7个硕士学位授权点。除此之外，中华农业文明研究院还编辑出版国家核心期刊、中国农业历史学会会刊《中国农史》；创建了中国高校第一个中华农业文明博物馆；先后投入300多万元开展中国农业遗产数字化的研究工作，建成了“中国农业遗产信息平台”和“中华农业文明网”；承担着中国科学技术史学会农学史专业委员会、江苏省农史研究会、中国农业历史学会畜牧兽医史专业委员会等学术机构的组织和管理工作；形成了农业历史科学研究、人才培养、学术交流、信息收集和传播展示“五位一体”的发展格局。万国鼎先生毕生倡导和为之奋斗的事业正在进一步发扬光大。

中华农业文明研究院有着整理和编辑学术著作的优良传统。早在金陵大学时期，农业历史研究组就搜集和整理了《先农集成》456册。1956—1959年，在万国鼎先生的组织领导下，遗产室派专人分赴全国40多个大中城市、100多个文史单位，收集了1 500多万字的资料，整理成《中国农史资料续编》157册，共计4 000多万字。20世纪60年代初，又组织人力，从全国各有关单位收藏的8 000多部地方志中摘抄了3 600多万字的农史资料，分辑成《地方志综合资料》《地方志分类资料》及《地方志物产》共689册。在这些宝贵资料的基础上，遗产室陆续出版了《中国农学遗产选集》稻、麦、粮食作物、棉、麻、豆类、油料作物、柑橘等八大专辑，《农业遗产研究集刊》《农史研究集刊》等，撰写了《中国农学史》等重要学术著作，为学术研究工作提供了极大的便利，受到国内外农史学人的广泛赞誉。

为了进一步提升科学研究工作的水平，加强农史专门人才的培养，2005 年 85 周年院庆之际，研究院启动了《中华农业文明研究院文库》（以下简称《文库》）。《文库》推出的第一本书即《万国鼎文集》，以缅怀中国农史事业的主要开拓者和奠基人万国鼎先生的丰功伟绩。《文库》主要以中华农业文明研究院科学研究工作为依托，以学术专著为主，也包括部分经过整理的、有重要参考价值的学术资料。《文库》启动初期，主要著述将集中在三个方面，形成三个系列，即《中国近现代农业史丛书》《中国农业遗产研究丛书》和《中国作物史研究丛书》。这也是今后相当长一段时间内，研究院科学研究工作的主要方向。我们希望研究院同仁的工作对前辈的工作既有所继承，又有所发展。希望他们更多地关注经济与社会发展，而不是就历史而谈历史，就技术而言技术。万国鼎先生就倡导我们，做学术研究时要将“学理之研究、现实之调查、历史之探讨”结合起来。研究农业历史，眼光不能仅仅局限于农业内部，要关注农业发展与社会变迁的关系、农业发展与经济变迁的关系、农业发展与环境变迁的关系、农业发展与文化变迁的关系，为今天中国农业与农村的健康发展提供历史借鉴。

王思明

2007 年 11 月 18 日

《中国近现代农业史丛书》序

20 世纪的一百年是中国历史上变化最为广泛和巨大的一百年。在这一百年中，中国发生了翻天覆地的变化：在政治上，中国经历了从满清到中华民国，再到中华人民共和国的历史性变迁；在经济上，中国由自给自足、自我封闭被迫融入世界经济体系，再由计划经济逐步迈向市场经济，中国由一个纯粹的农业国逐渐建设成为一个新兴的工业国，农业在国民经济中的比重由原来的 90%下降到 13%，农业就业由清末的 90%下降到今天的不足 49%；在社会结构方面，中国由原来的农业社会逐步迈向城镇社会，城市化的比重由清末的不到 10%攀升到 44%。

政治、经济和社会的这种结构性变迁无疑对农业和农村产生着深刻的影响。认真探讨过去一百年中国农业与农村的变迁，具有重要的学术价值和现实意义。它不仅有助于总结历史的经验教训，加深我们对中国农业与农村现代化历史进程的必然性和艰巨性的认识，对加深我们对目前农业与农村存在问题的理解及制定今后进一步的改革方略也不无裨益。有鉴于此，中华农业文明研究院自 2002 年开始启动了“中国近代农业与农村变迁研究”项目。这一系列研究以清末至今农业和农村变迁为重点，主要关注以下几个方面：过去一百年，中国农业生产与技术发生了哪些重要的变化？中国农业经济发生了哪些结构性变化？中国农村社会结构与农民生活发生了哪些变化？造成这些变化的主要原因有哪些？中国农业现代化进程如何，动因与动力何在？现代化进程中区域差异的历史成因；经济转型过程中城乡互动关系的

发展，等等。

经过几年的努力，部分研究工作已按计划结束，形成了一些成果。为了让社会共享，也为了进一步推动相关研究工作的开展，我们决定推出《中国近现代农业史丛书》。本丛书有两个特点：一是将农业与农村变迁置于传统社会向现代社会这一大的历史背景下考察，而不是人为地将近代与现代割裂；二是不单纯地就生产而言生产，而是将农业生产及技术的变迁与农村经济和农村社会的变迁做综合分析和考察。目前，全国各地正在掀起建设社会主义新农村的热潮。但新农村建设不是新村舍建设，它包括技术、经济、社会、政治、文化和生态等多方面的建设，是一个系统工程。只有从国情出发，既虚心学习国外的先进经验，又重视发扬自己的优良传统，才能走出一条具有中国特色的农业现代化道路。

美国著名农史学家施密特（C. B. Schmidt）认为“农业史的研究对农村经济的健康发展至关重要”“政府有关农业的行动应建立在对农业经济史广泛认知的基础之上”。美国农业经济学之父泰勒（H. C. Taylor）博士也认为历史研究有助于农业经济学家体会那些在任何时期对农业发展都可能产生影响的“潜在力量”。我们希望《中国近现代农业史丛书》的出版对我们认清国情、了解今天“三农”问题历史成因有所帮助，对寻求走中国特色农业与农村发展的道路有所贡献。

王思明

2007 年 11 月于南京

Introduction

This collection of essays result from of the papers presented at the Second Annual Conference of the Purdue Nanjing Joint Center for China Studies, held at Purdue University from October 17–18, 2016. Professor Wang Siming, President of the Institute of Chinese Civilization and the leading agricultural historian in China, arranged for the delegates from the People's Republic of China to participate in the conference. Dr. David Reingold, Justin S. Morrill Dean of Liberal Arts, opened the conference by welcoming the participants and extending his best wishes for a fruitful meeting. Dean Reingold also offered his support for the continuation of this international scholarly exchange.

The conference theme of "U. S. China Relations: All Things Considered" created a forum for the engagement of scholarly thought about the relationship between China and the United States from the broadest perspective possible, with emphasis on agricultural and rural history. The conference also continued the scholarly exchange initiated at Nanjing Agricultural University in October 2015 at the First Annual Conference of the Purdue Nanjing Joint Center for China Studies. Nineteen Chinese scholars, representing eight universities (Hunan University, Jilin University, University of Jinan, Nanjing Agricultural University, Nanjing Normal University, Northwest Agriculture and Forestry University, and South China Agricultural University, and Wenzhou Vocational College of Science and Technology) presented papers at the conference. They joined twenty-one historians, political scientists, and sociologists from ten American universities (Butler University, Georgia Southern University, Indiana University, Indiana University Northwest, Iowa State University, New York University, The Ohio State University, and Purdue University, and the University of California-Berkeley and the University of Chicago).

This collection of essays constitute a selection of the conference

proceedings. They present the most recent scholarship on the agricultural, economic, and diplomatic, as well as the political, social, and industrial developments between the United States and China and in China alone, primarily during the nineteenth and twentieth centuries. Each essay not only presents new and important knowledge for the historical record, but also suggests avenues for further research. The conference ended with an invitation from Professor Wang Siming to reconvene in October 2017 at Nanjing Agricultural University to open the Third Annual Conference of the Purdue Nanjing Joint Center for China Studies.

前　言

第二届普渡大学—南京农业大学中国研究联合中心学术论坛于2016年10月17~18日在普渡大学举办。本论文集是在与会学者会议论文的基础上编撰而成。中华农业文明研究院院长、中国农业史专家王思明教授组织来自中国的学者参加了此次论坛。普渡大学人文学院院长David Reingold博士为大会致辞并预祝会议圆满完成，他同时也表达了对于持续开展这项国际学术交流活动的支持。

大会以“中美关系”为主题，搭建了学术思想交流的平台。在这里学者们从广泛的视角出发讨论中国与美国关系问题，并重点着眼于农业历史和乡村历史。本次会议也是2015年10月在南京举行的首届普渡大学—南京农业大学中国研究联合中心学术论坛和学术交流的延续。来自8所中国高校的19位学者做了会议报告（湖南大学、吉林大学、济南大学、南京农业大学、南京师范大学、西北农林科技大学、华南农业大学和温州科技职业学院）。他们与来自10所美国大学的21位历史学家、政治学家和社会学家们进行了交流（巴特勒大学、佐治亚南方大学、印第安纳大学、印第安纳大学西北分校、爱荷华州立大学、纽约大学、俄亥俄州立大学、普渡大学、加州大学伯克利分校和芝加哥大学）。

这些会议论文组成了本次的会议论文集。学者们展现了中国和美国农业、经济、外交、政治、社会和工业发展的最新研究，其中，专门关于中国问题的讨论则主要集中在19~20世纪。每篇文章不仅对史料进行了新颖而重要的挖掘，更对未来的研究提出了建议。大会最后，王思明教授邀请大家于2017年10月在南京农业大学再相聚，共同参加第三届普渡大学—南京农业大学中国研究联合中心学术论坛。

目　录

Creating Abundance in American and Chinese Agriculture: The Unintended Consequences of Biological Science

R. Douglas Hurt
(Purdue University)

Abstract: American and Chinese agricultural scientists are skilled plant breeders. They have crossbred grain plants, particularly wheat, maize, and rice, to develop new varieties to help increase farmers' yields and food production. During the late twentieth century, they began developing high-yielding varieties by using genetic modification in laboratories rather than by traditional crossbreeding methods in test fields. These new genetically modified (GM) varieties quickly became the concern of consumers in both nations and around the world regarding food safety. American farmers argued that genetically modified crops meant greater productivity and farm income. In the People's Republic of China, The military and the National Security Policy Committee, however, argued against the importation of American genetically modified seeds to protect China's food security, but supported Chinese agricultural scientists who worked to develop their own GM varieties. This paper provides a brief, historical survey of biotechnological developments in American and Chinese agricultural science to show that the admirable goal of producing more food from new crop varieties caused unintended social, economic, and political consequences for both nations.

Key words: American and Chinese agriculture; agricultural science and technology; food crops; genetically modified technology

美国和中国农业中的丰富创造：生物科学带来了意想不到的结果

R. Douglas Hurt
（普渡大学）

【摘　要】美国和中国的农业科学家们都是技术精湛的植物育种者。他们从事粮食作物的杂交育种工作，尤其对小麦、玉米、稻的杂交，开发了新品种，增加了农民收益和粮食产量。20世纪后期，他们改变传统的田间作物杂交育种，开始转向在实验室内通过转基因技术开发高产的作物品种。这些新的转基因作物品种的食品安全问题，迅速成为中美和全世界消费者所关注的问题。美国农民认为，转基因作物意味着产生更大的作物产量和农业收入。为保障中国食品安全，中国反对进口美国转基因作物种子，但支持中国的农业科学家们努力研发自己的转基因品种。本文对美国和中国农业科学生物技术的发展做了简要的历史考察，从而揭示了意在通过开发新品种而创造更多作物这一值得称赞的目标，对中国和美国都产生了意想不到的社会、经济和政治影响。

【关键词】中美农业；农业科技；粮食作物；转基因技术

Agricultural scientists and knowledgeable farmers have made major contributions to plant breeding, particularly for corn and rice production, for decades and in China for centuries. By cross-breeding various grain plants, they have developed new varieties that have increased production to meet immediate food needs and, in time, contributed to the international trade of grain and meat from these hybrid varieties from livestock fattened. By the late twentieth century, however, agricultural scientists began working to improve and develop new crop varieties in the laboratory rather than in experimental fields where they traditionally relied on nature in the form of pollen and the wind to crossbreed corn and rice varieties to produce new, highly yielding varieties (HYVs). Although American agricultural scientists developed new corn and soybean varieties that resisted drought, insects, and chemical pesticides,

consumers soon worried about the health and environmental hazards resulting from these new crop varieties. In China, agricultural scientists confronted similar concerns. This paper provides a brief, historical survey of biological agricultural science to show that the admirable and seemingly benign goal of producing more food from new crop varieties caused unintended social, economic, and political consequences that originated in the laboratories of each nation. ①

In 1900, the United States produced approximately 2.6 billion bushels of corn. By 1950 when most farmers planted hybrid varieties developed from natural cross-pollination methods, they harvested about 3.3 billion bushels. By 2000, American corn production reached 353 million metric tons, and by 2010 approximately 316.2 million metric tons. Agricultural science, particularly biological science provided the basis, for this increased production with new genetically modified(GM) varieties during the late twentieth and early twenty-first centuries. In China, farmers bred rice varieties, but this production often did not feed the growing population. Famine during the 1930s and 1950s indicated that China needed agricultural reform, including strong government support for agricultural science. By 1970, agricultural scientists had largely made Chinese food secure albeit with a thin margin of safety. Since the late twentieth century, Chinese agricultural scientists, however, have turned to experimental biological control methods to produce new rice varieties. By 2002, China consumed 177.6 million tons of rice, primarily produced from Green Revolution (GR) breeding methods, but they also experimented with genetically modified crop development. Although both nations have increased production, biological agricultural science has confronted criticism from consumers

① John E. Losey, Linda S. Raynor, and Maureen E. Carter, *Transgenetic pollen harms monarch larvae*, *Science* 399(May 20, 1999) : 214; David Dickson, *UK debates public's role in science advice*, *Nature*, 399(May 20, 1999) : 188.

regarding food safety. It also has created international trade problems. ①

The United States, which is known world-wide for its scientific and technical developments in agriculture, experienced revolutionary change in these areas during its relatively brief agricultural history. The first revolution occurred with the rapid adoption of horse-powered equipment during the late nineteenth century. The second came with the application of tractor power, chemical fertilizers, pesticides, and herbicides, as well as hybrid seed during the early twentieth century. Genetics brought the third revolution to the American farm near the end of the century. A new word, biotechnology, reflected the merging of agricultural science with engineering and the promise of improved production. Critics, however, charged that biotechnology threatened to create a Pandora's Box from which new problems would escape to trouble the land and society. In some respects their fears proved justified. ②

The advocates of biotechnology supported the scientists who worked to develop drought-resistant wheat and herbicide-resistant soybeans and tomatoes, cotton immune to caterpillars, and corn that repelled armyworms. Agricultural scientists developed bacterial sprays that lowered the freezing point of some crops to prevent frost damage; and growth hormones injected into hogs and cattle enabled better gains on less feed for reduced costs and greater monetary returns. Scientists

① *Statistical Abstracts of the United States, 1950* (Washington, D. C.: Government Printing Office, 1950), 608; *Statistical Abstracts of the United States, 2001—2005* (online), 534; *Statistical Abstracts of the United States, 2012* (online), 548; Xiaobai Shen, "Understanding the Evolution of Rice Technology in China-From Traditional Agriculture to GM Rice Today," *Journal of Development Studies* 46(July 2010): 1029; Paul K. Conkin, *A Revolution Down on the Farm: The Transformation of American Agriculture since 1929* (Lexington: University Press of Kentucky, 2008), 115, 120, 122; See also Alan L. Olmstead and Paul W. Rhode, *Creating Abundance: Biological Innovation and Agricultural Development* (New York: Cambridge University Press, 2008); Robert L. Paarlberg, "Reinvigorating genetically modified crops: poor farmers in developing nations will benefit if the United States asserts itself in the international arena to develop and promote biotechnology," *Issues in Science and Technology* (March 22, 2003), http://www.find.galegroup.com, accessed, August 14, 2014.

② R. Douglas Hurt, *American Agriculture: A Brief History*, rev. ed. (West Lafayette, IN: Purdue University Press, 2002), 379, 283; Losey, Raynor, and Carter, "Transgenetic pollen harms monarch larvae," 14.