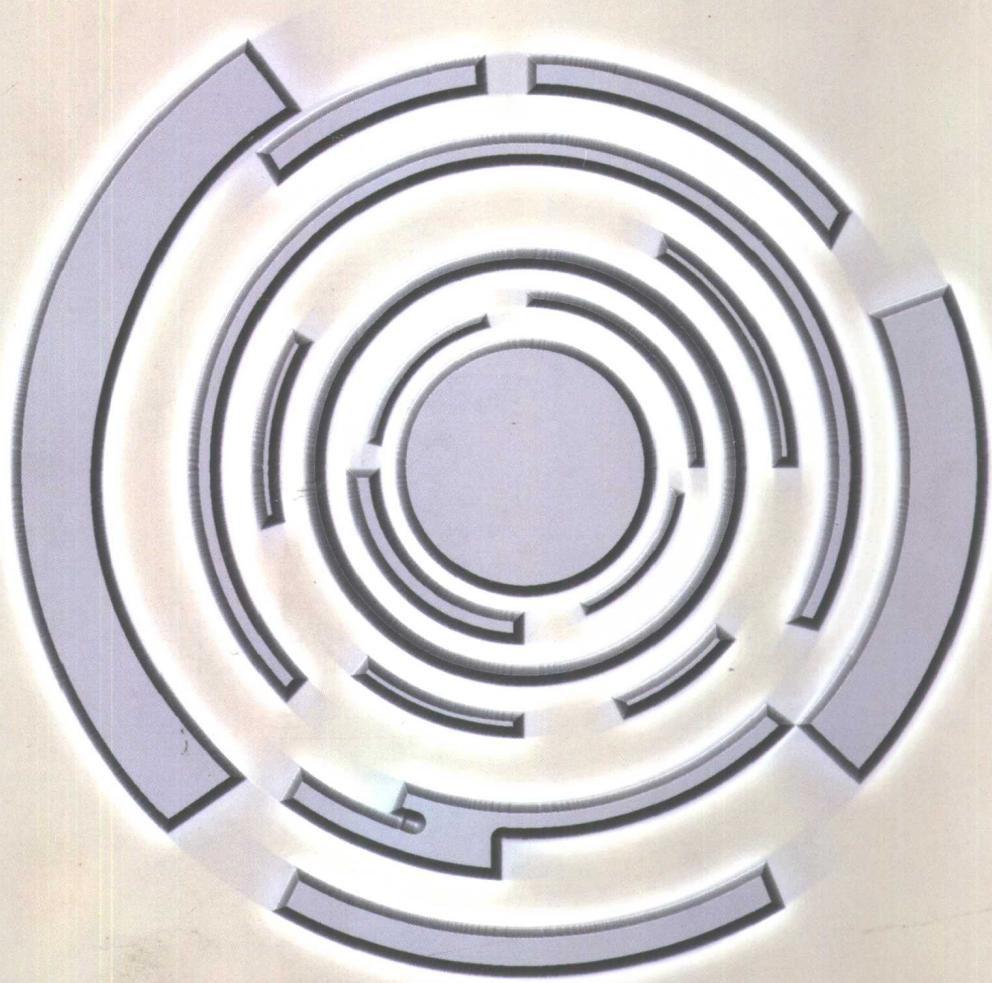


ECONOMY

中国经济运行丛书

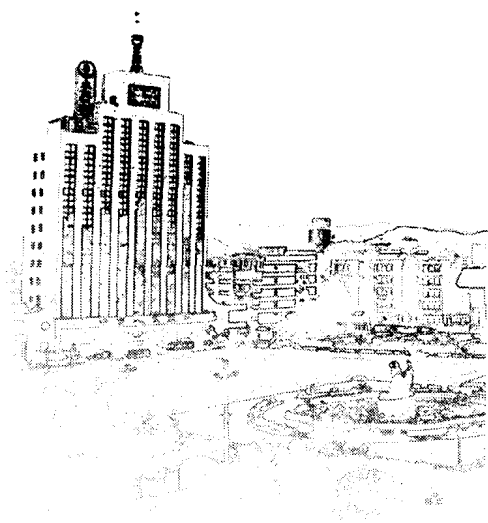
中国农业生态经济与可持续发展

张淑焕 著



社会科学文献出版社

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《中国经济运行丛书》总序

李 京 文

20 世纪世界经济发展史上的一大“奇迹”，就是近 50 年来中国经济取得了举世瞩目的成就，由一个殖民地半殖民地的贫穷落后国家发展成为独立的社会主义大国。特别是改革开放 20 年来，中国经济以年均 10% 的速度持续、稳定、高速发展，大大增强了中国的综合国力和国际竞争力，大大提高了人民生活水平和中国的国际地位，也为亚洲和世界经济发展与社会稳定作出了自己的贡献。特别是近期中国经济在东南亚金融风波中表现得最为明显。

对世界经济发展中的这个“奇迹”，对中国经济近 20 年的快速、稳定发展有许多问题值得深入探讨。例如，这个发展进程有什么特点，它的运行机理是什么？如何保持中国经济持续、稳定、高速运行？中国生产率增长和资本、劳动等生产要素对保证中国经济运行有什么贡献？中国经济运行中的热点和难点何在？如何培育新的经济增长点？数量经济、技术经济、区域经济等经济学科的深入研究和对中国经济运行有什么促进作用？中国经济运行中的政策取向是什么？中国应如何迎接知识经济时代的到来？对 21 世纪的中国经济如何展望？等等一系列问题，都是经济学工作者、企业家、各级领导干部与管理人员，以及全国人民十分关心的大事，也是国际社会关注的焦点。这套《中国经济运行丛书》就是试图将对这些问题做出初步回答而组织编写的。

社会科学文献出版社在世纪之交推出的这套《中国经济运行

丛书》，经过了有关专家的精心策划、精心选题、精心安排，并邀请国内外知名学者为丛书作者，力求在内容上和形式上都使人耳目一新，争取成为中国经济类图书的样本。这套丛书的出版，对中国经济运行的研究具有重要的理论意义和现实意义，必将产生深远影响。

这套丛书之所以值得一读，我以为其原因就在于它将具有三大特点：科学性和先进性、系统性和全面性、应用性和启示性。

首先，这套丛书是中国著名经济学家和优秀中青年学者的创作或合作产物，代表了当今中国经济学研究的主流方向。他们吸收了国内外最新的研究成果，采用定量分析与定性分析相结合的方法，继承性与开拓性相结合，理论与实证研究相结合，如实地评价过去，科学地展示未来，提出新观念和新思想，构造新模型和运用新方法，使各有关课题研究处于国内或国际的领先地位，具有较深刻的理论探索意义和较高的学术价值。如《知识的兴起》、《中国生产率分析前沿》等。

其次，这套丛书反映了中国经济运行的方方面面，对经济增长趋势、科学技术进步、产业结构升级和支柱产业选择、人力资源和就业结构、消费和需求结构、发展战略和政策建议等，都有全面、深入、精辟的论述，既有系统的、权威的数学模型，又有详尽的统计资料和典型数据，在总量层次、部门（产业）层次、地区层次等各个层面都可为进一步跟踪研究和拓宽研究范围提供帮助。如《中国经济增长的理论与政策》、《中国经济增长与可持续发展》等。

最后，这套丛书的目的在于为中国实现“两个根本性转变”和实现 2010 年远景目标贡献力量，因此必然要紧密结合中国经济运行的实际，有针对性地对中国经济运行中出现的问题，提出切实可行的政策思路和政策建议，特别是始终强调科教兴国的基本国策，强调科学技术进步在中国未来经济发展中的重要作用。

这套丛书对中国经济运行中的现实问题和应用问题，给了我们一些很好的帮助和启示。

我希望，这套丛书的出版，既是对我国改革开放 20 年和中华人民共和国成立 50 周年的丰厚献礼，也是对我国继续坚持改革开放，实现我国经济的持续、快速、健康发展的有效促进，同时也是对不断变革与蓬勃发展的中国经济科学宝库的一个补充与丰富。

由于时间紧迫，水平有限，而且这套丛书涉及的范围非常广泛，研究对象十分复杂，其中很多因素带有极大的不确定性，因此尽管作者和出版者们作出了最大的努力，也仍然不可避免地会存在这样那样的不足之处，在此真诚期望各界读者批评指正，以便使这套丛书不断修正、补充、完善。

1998 年 6 月

序 言

20 世纪五六十年代以来，人类面临着人口、粮食、能源、资源、环境五大问题的挑战，而这五大问题都首先集中地反映在农业系统上，主要表现为：人口剧增带来了对粮食和其他农产品增长的追求，而过量使用农药、化肥，使农业生态系统超负荷运行，引起农业生态危机，使农业可持续发展受到了严重损害。为此，国内外学术界、经济界、科技界无不将农业生态经济系统可持续发展作为新的研究课题进行研究，并且自然成为技术经济学研究的一个新领域。研究表明，农业生态危机的产生既不是单纯的经济问题，也不是单纯的生态问题，其实质是复杂的生态与经济相互交叉作用而形成的系统问题。为了协调好农业发展中的经济与生态之间的关系，张淑焕同志在《中国农业生态经济与可持续发展》一书中以系统理论为指导，将农业系统视为生态经济复合系统（在本书中简称为农业生态经济系统），运用生态学、经济学、技术经济学理论对农业生态经济系统的特征、矛盾、复合结构、复合功能、复合价值、复合发展机制、生态与经济的供求平衡、农业生产的技术方式、管理和调控对策等内容进行综合性、系统性研究，探索农业生态系统与经济系统之间相互依存、相互制约的运动规律，以期为我国制定正确的农业发展方针和政策提供理论依据。

作者根据生态经济理论和耗散结构理论的原理提出，农业生态危机的产生有两个主要原因：一是农业系统内生态发展的有限

稳态机制与经济无限扩张机制之间的矛盾没有得到协调和解决；二是农业生态经济系统尚缺乏自组织能力和生态自调解功能。鉴于上述两个原因，对农业生态经济系统进行管理和宏观调控的重点就应该是利用经济、技术、法律等手段解决生态发展的有限稳态机制与经济无限扩张机制之间的矛盾，增强系统的自组织、自调节的经济和生态的双重调节功能。

由于农业生态经济学和农业可持续发展理论的创立和研究历史较短，加之已有的研究或多从生态学角度出发，或从经济增长的角度出发着重研究增加农业产出，而对生态经济复合系统的可持续发展问题进行综合、系统的研究还不多见。针对目前此项研究中的这些薄弱之处，作者以生态学、经济学、技术经济学原理和系统理论为指导，运用技术经济学的投入产出和边际分析方法，以及定性分析与定量分析相结合的方法对农业生态经济系统可持续发展的理论进行了探索研究，其主要研究内容为：①农业生态经济系统可持续发展的理论基础；②系统的特征与矛盾、系统的复合结构和复合功能；③系统的复合价值及可持续发展的判断；④系统可持续发展的复合机制；⑤系统可持续发展的供求机制及供求弹性；⑥系统可持续发展的生态、经济动态平衡；⑦系统可持续发展的管理和调控；⑧系统可持续发展的适度人口控制；⑨系统可持续发展的综合效益评价等。最后，本书对我国农业生态经济系统的可持续发展状况进行了总体评价，并在此基础上提出我国农业生态经济系统可持续发展的目标、方针和政策措施。

本书力求在前人研究的基础上有所创新，为推进农业生态经济系统可持续发展理论的研究作出了贡献，主要有：

①指出产生农业生态经济系统矛盾的原因在于生态负反馈机制和经济正反馈机制之间的不协调性，从而揭开了阻碍农业生态

经济系统可持续发展的症结所在；

②提出了生态成本的概念，并以此为基础引出了农业生态经济系统复合价值的计算方法和以复合价值的正值性为标准的可持续发展的判据，使人们认识农业经济活动既具有经济价值又有生态价值，而生态价值往往表现为负价值，农业生态经济系统的可持续发展就在于尽量减少生态成本，不断克服负价值；

③用系统发展的由“J”型和“S”型组成的复合发展机制来描述系统可持续发展的一般规律，及系统处于发展顶极时所面临的停滞循环、衰落灭亡和持续发展的三种状况，指出人类对农业生态经济系统的管理和调控，就是利用技术及经济手段使系统尽快跳跃到更高层次的发展阶段；

④提出农业生态经济系统的复合目标，即生态目标和经济目标及这两个目标的动态平衡问题，列出了几种平衡模式，指出农业生态经济系统的可持续发展的实现在于寻求生态目标和经济目标都能兼顾的最佳目标模式；

⑤指出对农业生态经济系统进行综合管理和调控的重点是对生态资源的“经济的外部性”进行合理调节，并提出了管理共享生态资源的一系列经济的和法律的手段，以保证农业生态经济系统和整个人类经济、社会、环境大系统的可持续发展；

⑥结合我国情况提出了保持我国农业生态经济系统动态平衡并持续发展的目标和政策建议。

作者分析农业生态经济系统矛盾的方法和为解决矛盾提出的政策建议，不仅对保持中国农业生态经济系统的平衡、协调有重大意义，而且对保证中国农业和整个国民经济的持续、快速、健康发展都有重要的参考价值。

需要特别指出的是，作者是在极端困难的条件下完成上述工

作的，她既要坚持日常公务，又要支持正值全力以赴高考的爱女。最终不仅把爱女送进了高等学府，而且向读者奉献了高质量的优秀成果。

是为序。

钟学义

1999年11月12日

ABSTRACT

Since the 50s and 60s of this century, Man has been faced with five major challenges Problems of population, grain, ecology, resources and environment. And these five problems are in the first place and concentratedly reflected on agricultural system, which is mainly shown in these respects; that the sharp increase of population has brought on the pursuit of grain and other produce while over-reliance on the amount of energy outside the agricultural system such as much use and / or overuse of farming chemicals and chemical fertilizers, has enabled agricultural ecosystem to operate in over-loaded way and thus caused a crisis in agricultural ecology, resulting in serious damage and destruction of sustainable development of agriculture and even of man's existence and development of agriculture. Naturally all this has widely attracted the world's attention. This is a prominent problem in China. Scholars both at home and abroad specialized in ecology and economics and scientific and technological circles, all make the study as a new subject of sustainable development of agricultural Eco-economy system. As one of the key contents of tech-economic research means the problem of economic benefit and social benefit in the application of research technology, the problem of sustainable development of agricultural Eco-economy system has naturally become a new field

of tech - economic researches. The study indicates that the engendering of agricultural ecological crisis is not a purely economic problem either. It is in essence a complicated problem of system, which has been taken shape through across - function of ecology and economy. For this reason, the agricultural system should be taken as a complex system of Eco - economy (in this paper it is called for short agricultural Eco - economy system). Guided by systematic theory, the author holds that a comprehensive and systematic study should be made in the light of ecology, economics, theory of tech - economics, features and contradictions of agricultural Eco - economy system, complex structure, complex function, complex value and complex mechanic of development, equilibrium of ecology and economic supply and demand, tech - pattern of agricultural production and countermeasures of management and control. And she also believes that a study should be made of the law of movement of the interdependence and interaction between agricultural ecosystem and economic system with a view to providing a theoretical basis for China to formulate correct policies of agricultural development. She has made every effort to use new viewpoints and new theory in her studies in order to push on the process of the modernization of China's agriculture. This is the reason why the author chooses the problem of sustainable development of agricultural Eco - economy system for the motif of her doctoral thesis.

When analyzing many problems which have cropped up in the agricultural eco - economy system in new China on the basis of the

eco – economic theory and the principles of the theory of dissipation structure, the author holds that there are two key causes for the engendering of the crisis in agricultural ecology; In the first place, the contradictions between the limited steady state mechanic and the limitless expansion mechanic in the ecological development within agricultural system remain to be coordinated and to be solved. In the second place, the agricultural eco – economy system lacks the ability to organize itself and ecological function to coordinate itself, which necessarily leads to the sharpening of the contradictions between the development of agricultural economy and ecological balance. In view of the two causes mentioned above, the stress of the management and macro – adjustment of the agricultural eco – economy system should be laid on solving the contradiction between the limited steady state mechanic and limitless expansion mechanic in ecological development by means of economy, technology and law, with a view of strengthening the system's double coordinating function of economy and ecology to organize itself and coordinate itself.

In a word, whether the agricultural ecological problem or the economical problem, neither of them can be solved satisfactorily when it is tackled from a single angle. As the agricultural system is a big complex system of complicated structure, multiple functions and changing dynamics, to relieve the contradictions between the development of agricultural economy and ecological balance is also a complicated problem of system. For this reason, it is necessary to be guided by the system theory, regarding agriculture as a highly self – organized complex system coupled by agricultural ecosystem and

economic system, namely AEECS (agricultural ecosystem economic complex system). As to the problem of agriculture, studies have been made widely of it both at home and abroad. But in most cases, the problem of agricultural economy and ecological problem have been studied in two separately moving systems. Therefore, a theoretical study is to be made of the features of structure, function, operation, mechanic, complex value, adjustment principle, model method and countermeasures of the agricultural eco - economy system in order to help reveal the source of the engendering of the crisis in agricultural ecology, explore paths for the sustainable development of agriculture and then lay down general and specific policies of the sustainable development of China's agriculture. In this sense, the present research task has certain theoretical value, and practical significance.

As the establishment and research of the theory of the sustainable development of agriculture and agricultural economy have a short history and in addition, the previous studies proceeded from the angle of ecology, the studies lay particular stress on the sustainable development of agricultural ecosystem or emphasize agricultural output, proceeding from the angle of economic growth with a view to meeting with paths and measures for the need of economic development. On the other hand, comprehensive and systematic studies have been seldom made of the problem of the sustainable development of complex eco - economy system. With these weak links in this research in mind, and under the guidance of ecology, economics, tech - economics , principles and systematic

theory , the present paper makes an exploring study of the sustainable development of agricultural eco – economy system, using input and output of tech – economics and marginal analysis and combined method of qualitative and quantitative analyses. The main contents include: Theoretical basis of sustainable development of agriculture eco – economy system; Features and contradictions of the system; Complex structure and complex functions of the system; Complex value and judgement of sustainable development of the system; Complex mechanic of sustainable development of the system and flexibility of supply and demand; Dynamic equilibrium of ecology and economy of sustainable development of the system; Management and control of sustainable development of the system; Moderate control of population of sustainable development of the system; Appraisal of comprehensive benefits of sustainable development of the system. Finally, the present paper gives a general appraisal of the situation of sustainable development of China's agricultural economy system and on the basis of which the author puts forward the goal, general and specific policies of sustainable development of China's agricultural economy system.

Basing herself on previous studies, the author has tried her best to bring forth some new ideas and has made a little contribution to promoting the studies of the theory of sustainable development of agricultural eco – economy system. The central points of her new ideas in this paper are as follows:1. She points out that the cause for the contradictions that exist or occur in agricultural ecosystem lies in the disharmony between the negative feedback and positive

feedback, thereby revealing the crux of the problem which has obstructed the sustainable development of agricultural eco-economy system. 2. She advances the concept of ecological cost, and on the basis of which, draws the counting method of complex value of agricultural eco-economy system and the grounds for judgement of sustainable development by the criterion of positive-value nature of complex value, which enables people to realize that the agricultural economic activities have both economic value and ecological value while ecological value always display its negative value. And the sustainable development of agricultural eco-economy system is aimed to decrease ecological cost as much as possible. 3. She depicts the general law of sustainable development of the system and the situation of stagnant circulation, declining doom and sustainable development when the system is in the state of top development by means of the complex mechanic composed of J-type and S-type system developments. And she further points out that man's management and control of the agricultural eco-economy system is to enable the system to jump to much higher level of development stage as quickly as possible by means of tech-economy. 4. The author raises the complex goal of the agricultural ecosystem, that is, the problem of dynamic equilibrium of ecological goal and economic goal. She lists several models of equilibrium, and thereby points out that the realization of the sustainable development of agricultural eco-economy system lies in the pursuit of the best model that gives consideration to both ecological goal and economic goal. 5. She points out that the stress of comprehensive management and control