



# 农产品 质量安全 管理： 基于供应链成员的视角

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中国农业出版社

# 农产品质量安全 管理： 基于供应链成员的视角

The Management of Agricultural Products  
Quality and Safety from the Prospect  
of Supply Chain Member

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## 摘 要

农产品质量安全是当前农业和农村经济工作面临的一个重大问题,不仅关系到城乡居民的消费与健康,关系到农民增收和农业经济发展,更关系到区域经济发展、政府形象和社会稳定。近年来,我国农产品伤害危机频繁爆发,不仅使消费者感到震惊和担忧,还导致了农产品品牌面临危机、企业陷入困境,甚至相关联的行业或区域均遭受冲击。在我国国民经济持续发展、人民生活水平日益提高、工业化发展快速推进和农业产业化进程不断加快的背景下,如何有效地实施农产品质量安全管理,实现保障消费者人身安全、促进农业企业持续健康发展、维持社会和谐稳定的目标,是一个备受关注和迫切需要研究的课题。

农产品质量安全管理是一项复杂的系统工程,需要农产品供应链成员多方参与、均衡协调,实现整体最优。本书基于系统理论,以农产品伤害危机为研究背景,立足农业企业、消费者和政府等供应链成员的复合视角,对农产品质量安全管理的系统机理、农业企业质量安全控制意愿、安全农产品消费者购买行为,农产品伤害危机情景下消费者逆向行为等一系列问题进行了深入研究。首先,对系统视角下的农产品质量安全管理的要素、特征和机理进行了研究,探讨了农产品质量安全管理过程系统的可靠性、农产品质量安全管理技术系统的复杂适应性,进而提出了农产品质量安全管理的优化思路与对策。其次,实证研究了农产品供应链核心企业质量安全控制意愿模型,并对农产品供应链核心企业质量安全管理模式进行了比较研究。再次,实证研究了无公害农产品、有机农产品、可追溯农产品和冰鲜农产品消费者购买行为模型,揭示了安全农产品消费者购买决策形成机理和影响因素。此外,实证研究了农产品伤害危机情景下消费者信任与购买意愿模型、消费者逆向行为模型。最后,借鉴了农产品伤害危机管理的国际经验,并提出了农产品质量安全管理复杂性及其治理。本书的主要研究内容和研究贡献集中体现在以下几个方面:

(1) 运用过程系统及其可靠性的理论和方法,分析农产品供应链质量安全过程系统可靠性的“人—机—环境”综合作用。基于过程系统的综合集成,从提升人员素质,创新协作模式,加强技术支撑,统一技术标准,构建追溯体系,健全监管制度和坚持整体最优7个方面,探讨提高农产品供应链质量安全过程系统可靠性的策略建议。与此同时,农产品质量安全的关键在于技术创新

和应用。农产品质量安全技术系统的复杂适应性表现为聚集、非线性、流和多样性 4 个特征以及标识、内部模型和积木 3 种机制。基于复杂适应系统的运作机理，激励主体创新，促进主体协同，提供环境支撑，实现农产品质量安全技术系统的均衡发展和整体最优。

(2) 构建了农产品供应链核心企业质量安全控制意愿模型，分析了农业企业能力、农业企业社会责任、农产品供应链协同程度、农产品供应链信息共享程度、竞争压力、消费需求、政府监管力度和媒体监督力度 8 个前因变量对农产品供应链核心企业质量安全控制意愿的影响。实证结果表明，农业企业能力、农产品供应链协同程度、农产品供应链信息共享程度、消费需求和政府监管力度对农产品供应链核心企业质量安全控制意愿具有不同程度的显著的正向影响，媒体监督力度对农产品供应链核心企业质量安全控制意愿具有显著的负向影响。

(3) 农产品供应链核心企业是质量安全管理的关键主体，在实践中形成了农产品供应链核心企业源头控制型、加工控制型、流通控制型、终端控制型和营销控制型等质量安全管理不同模式。农产品供应链核心企业应立足各地区农业产业化进程、农业科技进步和消费需求变化等实际，进行角色选择和职能定位，选择内部控制、外部协同和环境调适等质量安全管理路径，发挥主导作用实现农产品供应链质量安全管理的整体最优。

(4) 从个人因素、社会因素、文化因素、心理因素、产品因素和购买意愿 6 个维度，构建消费者对无公害猪肉购买行为研究模型。实证结果表明，家庭成员对消费者购买无公害猪肉的认同程度，消费者对无公害猪肉的信任程度，消费者对无公害猪肉的购买意愿和支付意愿是影响消费者对购买无公害猪肉购买行为的最显著因素；亲朋好友对消费者购买无公害猪肉的认同程度，消费者对无公害猪肉的了解程度和消费者对无公害猪肉色泽的认可程度是影响消费者对购买无公害猪肉购买行为的较显著因素，性别和文化程度是比较显著的人口统计学影响因素。

(5) 基于营销组合、营销环境、消费者特征和消费者心理 4 个维度，构建了消费者有机蔬菜购买意愿和行为理论模型。实证结果表明，对有机蔬菜价格的认同程度是显著正向影响购买意愿的营销组合因素，对有机蔬菜产业技术环境的信心是显著负向影响购买意愿和行为的营销环境因素，文化程度和家庭月收入是显著正向影响购买意愿的消费者特征因素，消费者对蔬菜安全的忧患程度、对有机蔬菜的了解程度和查询意愿是显著正向影响购买意愿和行为的消费者心理因素，购买意愿对购买行为有显著正向影响。

(6) 构建了可追溯亚热带水果消费者购买行为模型，分析了信息质量、产品展示、可追溯性、安全性、信任和偏好 6 个前因变量对可追溯亚热带水果消

费者购买行为的影响,并讨论了购买经历的调节作用。实证结果表明,可追溯性、安全性、信息质量、产品展示、信任和偏好对消费者购买动机有不同程度的显著影响,购买经历对购买动机与其影响因素之间的因果关系具有重要的调节效应。

(7) 从认知因素(保鲜度、口感、质量安全性和溢价)和情感因素(习惯和创新性)两个方面构建了一个冰鲜鸡消费者购买决策模型,分析了购买动机的影响因素,并进一步讨论了风险感知的调节效应。实证结果表明,质量安全性、保鲜度、口感和创新性对购买动机有不同程度的正向显著影响,习惯对购买动机有负向显著影响,而溢价对购买动机没有显著影响;风险感知对影响因素与购买动机之间的因果关系具有重要的调节效应。

(8) 基于产品因素、企业因素和环境因素的综合视角,构建了由可追溯性、信息质量、伤害程度、应对态度、品牌声誉、政府监管、负面宣传、消费者信任和购买意愿9个结构变量构成的农产品伤害危机后消费者信任与购买意愿模型。实证结果表明,可追溯性、信息质量、应对态度、品牌声誉和政府监管对消费者信任具有不同程度的正向显著影响,伤害程度和负面宣传对消费者信任有负向显著影响;消费者信任正向显著影响购买意愿。

(9) 从农业企业产品伤害行为的性质出发,以自我感知理论为基础,基于品牌资产视角构建了一个消费者逆向选择理论模型,分析了过失伤害行为和蓄意伤害行为对品牌资产3个维度和消费者逆向选择的影响。实证结果表明,蓄意伤害行为和过失伤害行为对品牌忠诚和感知质量都有显著的负向影响,其中蓄意伤害行为的影响更大;不管是蓄意伤害行为还是过失伤害行为,其对品牌联想都没有显著的影响;品牌联想和品牌忠诚对消费者的逆向选择有显著的负向影响,而感知质量对消费者逆向选择没有影响。

(10) 运用系统工程方法论可构建时间维、逻辑维和专业维三维结构模型。其中,时间维分为七阶段,逻辑维包括七步骤,专业维涵盖七领域。基于此模型分析,可从整体效益、供应链模式、人才队伍建设等角度为农产品伤害危机管理提供可操作性的应用策略。

(11) 通过对美国1995—2014年1217例肉类和家禽产品召回事件的统计分析,探讨了美国食品召回的现状、特征与机制。美国食品召回的现状是:种类多、范围广;实行一级召回、二级召回和三级召回分级管理;深加工环节和生产环节是多发环节;食品企业能力局限是主要原因;政府、食品企业和消费者多方参与。美国食品召回依托食品供应链可追溯系统持续实施,坚持预防与控制并重的宗旨,有效地保护了消费者安全和社会福利。

(12) 农产品质量安全要素包括物理、事理和人理3类,实现农业经济发展和社会和谐稳定功能,呈现出要素、关系、规模、特征和演进的复杂

性，基于法制框架、追溯信息系统、技术支撑体系、多方联动机制、从定性到定量综合集成方法和整体最优原则等维度，提出推进我国农产品质量安全管理的关键环节和策略建议。

**关键词：**农产品质量安全 供应链 农业企业 消费者



## Abstract

Agricultural products quality and safety is a crucial problem in the current agriculture and rural economy. It is not only related to the consumption and health of urban and rural residents, but also related to the increase of farmers' income and the development of agricultural economy. It is more related to regional economic development, government image and social stability. In recent years, agricultural products harm crisis frequently break out in China, which makes the consumers shocked and worried, and also makes the agricultural brand suffered from crisis and the agricultural enterprises got into trouble, and even affects associated industries and regions. Under the background of the sustainable development of national economy, the improvement of people's living standard, the rapid development of industrialization and the accelerating process of agricultural industrialization, how to effectively implement the quality and safety management of agricultural products so as to ensure the safety of consumers and promote the sustainable and healthy development of agricultural enterprises to maintain social harmony and stability is a much-needed research topic.

Agricultural products quality and safety management products is a complex system engineering, it needs the multilateral participation and balanced coordination of agricultural products supply chain members, so as to achieve the overall optimum. Based on the system theory and the composite perspective of agricultural enterprises, consumers, government and other supply chain members, this study studies the system mechanism of management of agricultural products quality and safety, the control intention of agricultural enterprises quality and safety, consumer purchase intention of safe agricultural products, consumer dysfunctional behavior and other related issues with the background of agricultural products harm crisis. Firstly, this study studies the factors, characteristics and incentives of the quality and safety management of agricultural products from the system perspective, then it discusses the reliability of process system of agricultural products quality and safety management



and the complex adaptability of the techniques system of agricultural products quality and safety management, furthermore, the optimal ideas and counter-measures about quality and safety management of agricultural products are put forward. Secondly, this study studies the quality and safety control intention model of the core enterprises in agricultural products supply chain, and makes a comparative study on the quality and safety management mode of the core enterprises. Thirdly, this study experiments consumer purchase behavior model of pollution-free agricultural products, organic agricultural products, traceable agricultural products and chilled agricultural products, and it reveals the forming mechanism and influencing factors of consumer purchase decision about safe agricultural products. Furthermore, this study studies the consumer trust, purchase intention model and the consumer dysfunctional behavior model in the agricultural products harm crisis scenario. Finally, it borrows from the international experience of agricultural products harm crisis management and puts forward the complexity and government of agricultural product quality and safety management. The main research contents and research contributions of this study are embodied in the following aspects:

Firstly, Agricultural products quality and safety of supply chain is a complicated process system. This article uses the theory of the process system and its reliability to analysis the combined effects of people-machine-environment in agricultural product quality and safety of supply chain. Based on the comprehensive of the process system, this article puts forward several operational strategies to improve the reliability of agricultural products quality and safety of supply chain from the perspective of talent training, supply chain models innovation, technical supporting, technology standards uniting, traceability system constructing, improving regulatory regime and overall optimum.

Meanwhile, technological innovation and application is the key to agricultural product quality and safety. Technique of agricultural products quality and safety is a typical complex adaptive system. The specific system structure, hierarchy and function are formed during the course of interacting between the adaptive agents. Complex adaptive techniques system of agricultural product quality and safety has four characteristics such as aggregation, nonlinearity, flow and diversity, together with the three mechanisms including tagging, internal models and building blocks. Based on operating mechanism of complex adaptive system, it is necessary to incite motivation, carry out collaboration

between adapts and provide environmental support in order to achieve the balanced development and the overall optimum of techniques system.

Secondly, this study builds the quality and safety control intention model of the core enterprises in the agricultural products supply chain, analyzes the effects of the ability of agricultural enterprises, the social responsibility of agricultural enterprises, cooperation degree of agricultural products supply chain, information sharing degree of agricultural products supply chain, competitive pressure, consumption demand, government supervision and media supervision on the quality and safety control intention model of the core enterprises in the supply chain. The empirical results show that the ability of agricultural enterprises, cooperation degree of agricultural products supply chain, information sharing degree of agricultural products supply chain, consumption demand and government supervision have significant positive effects on the quality and safety control intention, media supervision has significant negative effect on the quality and safety control intention.

Thirdly, the core enterprise of agricultural products supply chain is the important subject of quality and safety management. There are multidimensional patterns of quality and safety management including manufacturing-led, processing-led, wholesale-led, retail-led and marketing-led in practice. The core enterprises of agricultural products supply chain play a leading role in carrying out the strategies consisting of internal control, external coordination and environmental adaptation according to the regional factors of agricultural industrialization process, agricultural science and technology and changes in consumer demand, thus to achieve the overall optimum of the quality and safety management of agricultural products supply chain.

Fourthly, based on the theory of consumer behavior, this paper builds a logistic model in six dimensions including the personal factors, social factors, cultural factors, psychological factors, product factors and purchase intention, and carries out an empirical investigation based on the purchase of "No. 1 Pork" in Guangzhou City. Consumer purchase behavior is studied through descriptive statistics analysis and regression analysis. The results shows that the understanding degree and trust degree of consumers for non-pollution pork, the recognition degree of consumers about the color of non-pollution pork, the purchase intentions and willingness to pay as well as the recognition degree of family members and friends are the main influence factors of consumers pur-

chasing non-pollution pork. Besides, sex and culture degree are relatively significant demographic factors.

Fifthly, based on the theory of consumer purchase behavior about marketing stimulations and psychological reactions, this study builds a theoretical model of consumer purchase behavior of organic vegetables from five dimensions including the marketing mix, marketing environment, consumer characteristic, consumer psychology and consumer will. With the empirical investigation to organic vegetables consumers in Guangzhou City, collecting 289 valid respondents, this study carries out descriptive statistics analysis and the ordinal logistic regressions of the factors affecting the consumer purchase behavior. The results show that marketing mix factors such as the recognition degree of organic vegetables prices have significant positive effects on purchase behavior, marketing environment factors such as confidence about production environment have significant negative effects on purchase behavior, consumer characteristic factors such as education degree and family monthly income have significant positive effects on purchase behavior, consumer psychology factors such as anxiety degree of vegetables safety and recognition degree of organic vegetables have significant positive effects on purchase behavior, and consumer willingness factors have significant positive effects on purchase behavior.

Sixthly, this study builds a model of consumer purchase behavior of traceable sub-tropic fruits and examines the effects of six antecedent variables including information quality, product display, traceability, security, trust and preference on purchase intention and purchase behavior. We collect 321 valid respondents from Guangdong, Guangxi and Hainan and use structure equation modeling for empirical test and analysis. The results show that information quality, product display, traceability, security, trust and preference have differently significant positive effects on purchase intention and purchase experience has important moderating effects on the causal relationships between purchase intention and its antecedents.

Seventhly, this study builds a model of consumer purchase decision of the chilled chicken and examines the effects of cognitive factors (fresh, taste, quality safety and price) and emotional factors (habit and innovation) on purchase intention. Collecting 392 valid respondents from Guangdong Province and using structure equation modeling for empirical test and analysis, the results show that quality safety, fresh, taste and innovation have positive influences

on purchase intention at different degree, and habit has negative influence on purchase intention. However, price has no significant effect on purchase intention. Furthermore, risk perception has different moderating effects on the relationships between purchase intention and its antecedents.

Eighthly, this study builds a model of consumer trust and purchase willingness and examines the effects of traceability, information quality, harm degree, attitude, brand reputation, government regulation and negative publicity on consumer trust and purchase willingness. Collecting 536 valid respondents from Guangdong and using structure equation modeling for empirical test and analysis, the results show that traceability, information quality, attitude, brand reputation and government regulation have differently positive influences on consumer trust and purchase willingness, and harm degree and negative publicity have differently negative influences on consumer trust and purchase willingness, and consumer trust has positive influence on purchase willingness.

Ninthly, based on the self-perception theory and the perspective of brand equity, and from the nature of the product harm behavior of agricultural enterprises, this study builds a model of consumer adverse selection and examines the effects of negligent harm behavior and deliberate harm behavior on perceived quality, brand association, brand loyalty and in turn consumer adverse selection. Collecting 324 valid samples and using structure equation modeling for empirical test and analysis, the results show that deliberate harm behavior has more negative influences on brand loyalty and perceived quality than negligent harm behavior does; both deliberate harm behavior and negligent harm behavior do not have significant effects on brand association; brand association and brand loyalty negatively affect consumer adverse selection, however, perceived quality does not influence it.

Tenthly, this study uses the three-dimensional model to analysis the crisis management of agricultural products quality and safety. The time dimension is divided into seven stages, the logical dimension consists of seven steps, and the professional dimension covers seven areas. Based on the three-dimensional model, this article puts forward several operational strategies for the crisis management of agriculture products quality and safety from the perspective of the overall efficiency, supply chain models and talent training etc.

Eleventhly, based on the statistical analysis of the recall of 1217 cases of

meat and poultry products from 1995 to 2014 in America, this study discusses the present situation, characteristics and mechanism of American food recall. The status of the US food recall is: more species and a wide range; hierarchical management of the primary recall, two recall and three recall; deep processing links and production links are multiple links; capacity limitations of enterprises are the main causes; government, enterprises and Consumers are involved. US food recall relies on the continuous implement of traceability system of food supply chain, adhere to put prevention and control in the important place, effectively protect the consumer safety and social welfare.

In the end, the factors of quality and safety management of agricultural products include physical, rational and humanistic categories. There are the complexity of factors, relations, scale, characteristics and evolution showed in the process of realizing the agricultural economic development and social harmony and stability. Based on legal framework, traceable information system and technical support system, multi-linkage mechanism, integration method from qualitative to quantitative perspectives and the overall optimum and other dimensions, this study puts forward the key links and strategic recommendations to promote the quality and safety management of agricultural products in China.

**Key words:** agricultural products quality and safety; supply chain; agricultural enterprises; consumer

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