

Research on Quality and Safety Monitoring Strategy for Shaanxi Fruit and Vegetable Supply Chain*

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Abstract—For a long time, the quality and safety governance on agricultural products in Shaanxi is in the situation of “attaching more importance to grain and less importance to fruits and vegetables” so that there are still outstanding problems on quality and safety of fruits and vegetables. Therefore, it is of significant meaning to make research on the quality and safety monitoring mechanism of fruit and vegetable supply chain in Shaanxi Province. Over a discussion on the problems existing in quality and safety of fruit and vegetable supply chain in Shaanxi, this paper puts forward the applicable strategies and suggestions for the production and transportation of fruit and vegetables in Shaanxi from the perspective of supply chain.

Keywords—fruit and vegetable supply chain; quality and safety monitoring; agricultural products

I. INTRODUCTION

With the continuous improvement of consumers' living standards, people's consuming demand is developing towards high-quality demand for nutrition, health and safety and so on. However in recent years, the quality and safety problem of agricultural products has become increasingly prominent and thus attracts people's highly attention. In May 2015, General Secretary Xi Jinping emphasized in the 23rd collective study of the Political Bureau of the CPC Central Committee, "We must practically improve the quality and safety of agricultural products, make great effort to control the quality and safety of agricultural products, improve the agricultural products quality and safety supervision system, regard quality and safety control as a key link in the transfer of agricultural mode and adjustment of agricultural structure so that the people can eat safely and securely." On March 18, in order to conscientiously implement the spirit of the 2016 Central Committee Document No. 1 on the Quality and Safety Supervision of Agricultural Products and practically keep agricultural product quality and safety in Shaanxi under supervision, Xi'an Agriculture and Forestry Committee organized and held a conference on the work of agricultural product quality and safety in the city and put forward the strategy to "get agricultural product quality and safety

supervision closely combined with agricultural industry development and modern agricultural construction, enhance control on production source, promote standardized production and adhere to the concept of law enforcement supervision and standardization production dual-control and paying more attention to both production and management, with close orientation to the quality improvement and efficiency increase transfer mode". For a long time, the quality and safety governance on agricultural products in Shaanxi is in the situation of “attaching more importance to grain and less importance to fruits and vegetables” so that there are outstanding problems on quality and safety of fruits and vegetables. Therefore, it is of significant meaning to make research on the quality and safety monitoring mechanism of fruit and vegetable supply chain in Shaanxi Province.

II. MAIN PROBLEMS EXISTING IN THE QUALITY AND SAFETY OF FRUIT AND VEGETABLE SUPPLY CHAIN IN SHAANXI

It is necessary to play the regulation and control role of the government, enhance and improve quality and safety supervision on the entire agricultural products supply chain in order to get Chinese quality management on agricultural products improved to a new level and realize a full-process quality control "from farmland to dining table". The quality and safety supervision of fruit and vegetable supply chain in Shaanxi is a systematic project. Missing or malfunctioning of any element in this system will reduce the overall efficiency of the system. So, it is need to discuss the safety supervision system structure, the relation among various elements in the system and the operation mechanism of the supervision system, high-level decision-making problems and implementation problems of supervision body in each link to be solved from the perspective of the government serving as the supervision body, meanwhile establishing efficient information feedback path, realizing closed-loop management and providing reference for Shaanxi government in improving and perfecting the fruit and vegetable quality and safety supervision system and formulating a scientific and rational quality and safety supervision policy. The problems existing in quality and safety monitoring of fruit and vegetable supply chain in Shaanxi Province are as follows:

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A. Regulatory Institutions Are Not Sound Enough, Duties Are Vague and Management Is Chaotic

Due to joint management of multiple departments, the power is scattered so that it is difficult to coordinate with each other, posing serious negative effect. At the same time due to the lagged setting in related professional institutions and other problems, the quality and safety supervision efficiency of fruit and vegetable supply chain has always been no improvement and "supervision gap" phenomenon occurs from time to time. According to functional division of labors, fruit and vegetable quality and safety management institutions in Shaanxi Province mainly include agriculture, quality inspection, industry and commerce, health, food and drug supervision and management, development planning, environmental protection, standardization and many other aspects of department and are distributed in all sections of food supply chain.

Different regulatory institutions have different functions in the quality and safety supervision of fruits and vegetables. Wherein, agriculture, industry and commerce, quality inspection and health departments undertake the most important functions in the supervision process. Although each institution has its own management focus, the investigation data indicates that there are serious cross-cutting problems among various functional departments. Many sections of the supply chain are under joint management of multiple departments. Cross-management by various departments may easily form a phenomenon of fuzzy duties and chaotic management. According to the institutional reform and functional transformation plan of the State Council proposed on March 10, 2013, the State Council established the China Food and Drug Administration to implement unified supervision and management on food and medicine. Its implementation effect needs to be further investigated and analyzed.

B. Fruit and Vegetable Quality and Safety Testing System Is Not Perfect

The supervision and guarantee of quality and safety of fruit and vegetable in Shaanxi depends on a perfect quality and safety testing system for fruit and vegetable. After the issue and execution of the Agricultural Products Quality and Safety Law, Shaanxi Province established corresponding agricultural product quality and safety testing institution to conduct quantitative and qualitative testing on agricultural products to ensure the quality and safety of agricultural products within the region. However, because provincial and municipal testing institutions have no direct effect on the production source and consumer terminal of fruit and vegetable, the guarantee of quality and safety of local fruits and vegetables mainly depends on the lagged basic testing institutions. The testing institutions at the source of fruits and vegetables have many problems such as the poor-level or even lacking quantitative detection, the imperfect infrastructure, the unsuitable testing equipment, unsound inspection teams, low testing levels, insufficient construction funds, etc., which seriously affect the quality and safety inspection of agricultural products in basic testing institutions. At the same time, the supervision on agricultural

input management, agricultural product packaging identification and market access system is also weak. Specifically, pesticide residues and veterinary drug residues become one of the main safety problems in fruits and vegetables in Shaanxi at present as there is not a monitoring system of management on safe and rational use of agricultural input products, not a standardized production management system, not an effective monitoring and supervision system in circulation section and so on.

C. Fruit and Vegetable Production and Management Are Scattered, Without a Unified Organization and Management, Production and Circulation Sections Are Difficult to Be Monitored and It Is Difficult to Control at the Source

Standardized production of agricultural products is one of the important measures to ensure the quality and safety of agricultural products. Standardized production requires that all aspects of production be arranged and implemented in uniform standards. However in Shaanxi Province, individual operation body and partnership operation body are the main ways of circulation of fruits and vegetables. For operation bodies of fruits and vegetables, their professional quality is relatively low due to the small operation scale, numerous operation bodies, large mobility, low degree of systematization, sample operating conditions and lagged operation mode. Although there are many farmer circulation cooperative economy organizations, the small scale, weak strength and low market coverage cause that the fruit and vegetable production in Shaanxi can neither form a unified standard, unified organization and unified management nor meet the requirement for production in a standardized, scaled and industrialized way. At the same time, it also brought great difficulties to the quality and safety supervision of fruits and vegetables. In addition, most of the stakeholders in the food supply chain have low production technology level, weak consciousness of quality and safety and high personnel mobility. In order to pursue immediate interests, they often use high-toxic and high-residue pesticides which are banned by China. All of these elements make it difficult to supervise the quality and safety production section of fruits and vegetables in Shaanxi Province and to carry out supervision effectively.

D. Insufficient Social Supervision

The quality and safety management of fruits and vegetables in Shaanxi Province is still in its initial stage. Producers' consciousness of quality and safety is still weak and social supervision on it needs to be further strengthened. In production process, producers are lack of social supervision and self control, unilaterally pursue production and neglect quality. Multiple factors collectively make it difficult to fully implement scientific fertilization, medication and standardized production procedures in production. At the same time, due to the lack of agricultural technology knowledge, farmers blindly use drugs for the purpose of prevention and control. Large doses, high concentrations, and mixed use of a variety of pesticides not only cause waste but also affect the quality and safety of

fruits and vegetables in Shaanxi. In circulation, due to lack of supervision from social organizations or governmental agencies, some illegal traders illegally use banned drugs, causing re-contamination of fruits and vegetables. In consumption, consumers lack awareness of food safety and have not that strong consciousness of using pollution-free foods and green foods. Consumer and media fail to conduct relevant knowledge popularization and effective supervision on quality and safety of fruit and vegetable.

E. Laws and Regulations Are Not Perfect and the Legislative Level Is Not High

In terms of circulation of agricultural products, there is no special legal system to regulate and the behaviors of various relevant entities in the circulation of agricultural products on the market. Due to the lack of unified planning, the developments in agricultural products market and agricultural resources market are unbalanced and the layout is unreasonable. Meanwhile due to the cross-sectorial supervisions, various professional laws and regulations, and the poor coordination between laws and poor matching nature, cross, overlapped, contradicted or blank part among them cause the confusion in law enforcement and further affect the supervision work.

III. STRATEGIES AND SUGGESTIONS FOR MONITORING ON QUALITY AND SAFETY OF FRUIT AND VEGETABLE SUPPLY CHAIN IN SHAANXI FROM THE PERSPECTIVE OF SUPPLY CHAIN

The quality and safety supervision problems of fruits and vegetables in Shaanxi are manifested in many aspects. Quality and safety supervision is a systematic engineering problem and a long-term and arduous task and thus needs to be considered and analyzed in many aspects in depth. In response to the quality and safety problems of fruits and vegetables in Shaanxi, all regulatory authorities have made applicable countermeasures accordingly. The various links of the fruit and vegetable supply chain interact and contain each other in the supply chain system, and the supervision on its quality and safety also has different effects due to the interlocked links in the supply chain. Among them, the various links of fruit and vegetable supply chain are connected to fruit and vegetable producers, operators and consumers. So, creating a healthy and green supply chain is helpful to ensuring the quality and safety of fruits and vegetables. From the perspective of supply chain, the quality and safety supervision measures for Shaanxi fruits and vegetables are mainly reflected in the source management in production and process management in circulation.

A. Supervision Measures in Production

First, it is necessary to actively carry out special rectification on agricultural inputs. In order to solve the problem of quality and safety of agricultural products in Shaanxi from the source of production, the agricultural department has successively carried out three special rectification activities on pesticide residues in plant products, abuse of illicit drug and animal products, veterinary drug residues and chloramphenicol pollution of aquatic products

and continuously increased the supervision extent on agricultural inputs. In the aspect of pesticide management, agricultural department executed a plan for eliminating and reducing five high-toxic organophosphorus pesticides such as methamidophos and put into practice the high-toxic pesticide sales archive management system.

Second, it is necessary to implement the market access system for fruit and vegetable products. Relevant agricultural departments of Shaanxi Province should establish a rapid testing room in designated fruit and vegetable agricultural products wholesale market to pesticide residues in food. Such rapid testing room should be equipped with testing instruments, provide training for testing personnel, carry out market access testing work and get the market access under control. Meanwhile in the wholesale market, it is necessary to promote the "Connecting wholesale market to production base" and "connecting butchery to the market" and other operation modes, encourage both producers and sellers to sign contracts and establish a quality and safety agreement and access system for fruit and vegetable agricultural products in Shaanxi." The government should support some pilot counties (districts) to implement the origin coding system in large farm product markets, wholesale markets and supermarkets and implement a quality tracing system on the quality and safety of fruit and vegetable agricultural products from production to sales.

Third, it is necessary to strengthen the routine monitoring on quality and safety of fruit and vegetable agricultural products. Relevant governmental institutions in Shaanxi should request making careful rectification on the problems found in the monitoring, accordingly follow up and make sampling supervision check on the quality and safety fruit and vegetable agricultural products and seriously deal with unqualified fruit and vegetable agricultural products and their production and operation enterprises together with relevant departments. At the same time, it is necessary to continue taking special rectification actions for high-toxic pesticide residues and fake and inferior agricultural materials in fruits and vegetables, severely crack down on illegal activities, strengthen supervision on source control and planting, eliminate potential safety hazards and further improve the quality and safety of food.

B. Supervision Measures in Circulation

In transportation, the main supervision measures are to test in fixed points and check the quality of transported fruits and vegetables on the way. However, due to the current unsound system norms, it is basically not available to inspect fruits and vegetables on the way. In addition, it is also suggested to actively implement "green channel" preferential policies to realize unimpeded transportation of fruits and vegetables, improve the transportation efficiency of fruits and vegetables, perfect the sales channels of fruits and vegetables and strictly control the sales of fruits and vegetables. It is also necessary to actively open a "green channel" for the development of fruit and vegetable transportation and marketing, practically strengthen the advertising and guiding to fruit farmers and sellers, establish a green fruits and vegetables transportation distribution

station major fruit and vegetable planting area, realize a green and unblocked sales channels and ensure the quality of fruits and vegetables.

IV. CONCLUSION

As analyzed in the paper, the quality and safety of fruits and vegetables supply chain in Shaanxi mainly has the following problems: regulatory institutions are not sound enough; fruit and vegetable quality and safety testing system is not perfect; fruit and vegetable production and management are scattered; insufficient social supervision; laws and regulations are not perfect and so on. On this basis, the paper puts forward the following countermeasures and suggestions for production of fruits and vegetables in Shaanxi: first, it is necessary to actively carry out special rectification on agricultural inputs; second, it is necessary to implement the market access system for fruit and vegetable products; third, it is necessary to strengthen the routine monitoring on quality and safety of fruit and vegetable agricultural products. It also puts forward countermeasures and suggestions for circulation of fruits and vegetables as follows: to test in fixed points and check the quality of transported fruits and vegetables on the way and actively implement “green channel” preferential policies to realize unimpeded transportation of fruits and vegetables, improve the transportation efficiency of fruits and vegetables, perfect the sales channels of fruits and vegetables and strictly control the sales of fruits and vegetables. It is also necessary to actively open a “green channel” for the development of fruit and vegetable transportation and marketing and realize a green and unblocked sales channel so as to improve the safety and quality of fruits and vegetables in Shaanxi.

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