ABSTRACT: The safety of agricultural products has become increasingly prominent, but the participants in the supply chain of agricultural products are in a dilemma lacking of motivation in the construction of the traceability system. This paper summarizes the definition and origin of the tracing motivation, and analyzes the main motivation based on information sharing demand and product differentiation demand. Accordingly, it builds agricultural traceability system and designs process, then evaluate the application effect of the system. The traceability system of agricultural products is the concrete realization of food safety traceability system, which is of great significance to food safety management.

KEYWORDS: Agricultural products; Motivation; Traceability system; Information sharing.

1 INSTRUCTIONS

With the expansion of production and circulation of agricultural products and agricultural products safety issues become increasingly prominent, our government pay more attention to agricultural product safety management. Since 2003, China has begun the implementation of agricultural products traceability system of pilot projects, and has made many achievements. In recent years, our government has also increased the scientific research on the traceability system, in this area to carry out extensive research. Obviously, the government is to promote the agricultural product traceability system research, construction of agricultural products, one of the driving force behind the system. However, the previous research and work are to construct the agricultural product traceability system from the negative power of retrospection. What is the negative power of retrospective? That is to say, the purpose of building traceability system is to find out the problem of raw material and processing link in the process of product quality, and to carry out product recall and punitive measures to improve product quality. No one is willing to be punished, companies will naturally participate in the construction of a negative attitude, and agricultural quality information mainly from the enterprise, so the negative power of agricultural products under the guidance system is even behind the mandatory requirements of the government is slow implementation and bear fruit slower. It is also true that China's agricultural product traceability system is still in its infancy, and there is still a certain distance compared with the developed countries, and many problems still need to be solved further, and the overall lack of motivation.

2 THE DEFINITION AND SOURCE OF TRACEABILITY MOTIVATION

2.1 Definition of traceability motivation

A complete farm traceability system typically has the dual function of "Tracking" and "Tracing". Traceability refers to the ability to follow the path of agricultural products in the supply chain from the upstream to downstream of the supply chain of agricultural products. Traceability refers to the ability to identify the source and characteristics of specific raw materials in the supply chain from downstream to upstream of the supply chain. In Newton's mechanical system, "power" is used to indicate the power to promote the movement of objects. In the field of social sciences, the term "impetus" contains the following meanings: First, motivation is the driving force of things movement, development and change; second, the need and motivation are internal motives of behavior. The tracing power described in this article refers to the
different levels of driving forces and the inherent needs and motivations of the leading forces in the process of recording, storing, sharing, and trading all kinds of relevant information about the products in the whole process of product supply.

2.2 Source of traceability motivation

In order to comply with laws and regulations, to avoid punishment, passive participation of enterprises, the overall construction of the process of retrospective system, showing the lack of motivation. In order to comply with regulations, to avoid punishment, enterprises passive participation, or dynamic slack characteristics.

In general, agricultural products from planting to consumption of raw materials to be planted, processing, storage and transportation, consumption and other aspects, which involves a variety of driving factors, but there are primary and secondary points. Only consider the main participants, according to the main source of different power, can be divided into enterprises (including manufacturers, logistics providers, distributors), consumers, government. According to the different direction of the power source, it can be divided into external tracing power which is derived from the external environment of the subject; internal tracing power comes from the inner driving force of the subject. According to the nature of the different sources of power can be divided into passive retrospective force that is simply defensive defense, passive and always want to give up the power; active retrospective driving force that both offensive and defensive, active and always thinking of aggressive power. According to the demand of power source, it can be divided into the tracing power of information sharing needs, and each subject participates voluntarily in the construction of traceability system in order to solve their information asymmetry problem. Win-win in information sharing is the sustainable system of traceability Development of the driving force. Product differentiation needs of the retroactive driving force, enterprises to improve product traceability to differentiate the competitive advantage.

2.3 The main motivation analysis

2.3.1 Information sharing needs of the motivation

In general, the economic decision-making, sales decision-making accuracy of the economic main body of the market is often dependent on the mastery of the information, if the information asymmetry between the two sides of the transaction will make the wrong decisions, resulting in resources cannot achieve the optimal configuration. For the agricultural market, due to information asymmetry, adverse selection and moral hazard coexistence, consumers will change the purchase decision, resulting in lower quality product profits, high-quality price mechanism is difficult to form, fake and shoddy products flooding the market, leading to agricultural products in the market part of the failure.

In the case of information symmetry, the production cost of agricultural products with high quality and safety level is higher than that of agricultural products with low quality and safety level, and the price is higher than that of natural products. Consumers will choose different consumption according to their income and preference. Quality and safety of agricultural products, different levels of quality and safety of agricultural products will be the corresponding return on profits. However, in the case of asymmetric information, consumers to obtain product quality and safety information to spend a lot of information search costs, some information cannot even get, assuming that consumers buy the proportion of quality agricultural products to 50%, they will defining the quality and safety level of all agricultural products as "medium" will inevitably result in the consumer being willing to pay only the average price based on the average quality.

As the production of agricultural products (high-quality agricultural products) of high quality and safety level requires that the input means of production do not harm the production of agricultural products, the cost is necessarily high, the raw materials used in the production of agricultural products, production technology, production environment, staff quality requirements is also high, manufacturers need to invest a higher cost. However, in the case of consumers willing to pay only the average price, the profits of high-quality agricultural products will be greatly reduced, cannot guarantee that enterprises receive the appropriate report, and sometimes losses, cannot form a "high quality" mechanism, which will cause enterprises The production of high quality and high quality agricultural products, the motivation weakened to reduce the supply of quality agricultural products, and even reduce the level of product quality and safety.

Enterprises, consumers and governments all seek different information sharing to solve the problem of information asymmetry, which is one of the driving forces to construct the agricultural product traceability system. For enterprises, through the implementation of traceability system, the product quality information fully passed to the consumer to meet consumer demand and expectations, to achieve high quality and better price dynamic balance. Information can be used to optimize the internal operation of enterprises, and upstream suppliers and downstream consumers to strengthen the information sharing and communication and cooperation. The problem can be traced back in the
event of agricultural product safety problems, the problem areas identified and the recalled products recalled in a timely manner to avoid the recall of products that are not defective, thereby saving the company a lot of costs and reduce the negative impact; for consumers, Traceability systems increase the transparency of information to meet the consumer's right to know and the right to choose, in order to protect the interests of consumers provides a means; for regulators, government departments have sufficient agricultural safety information for the implementation of More effective regulation provides the conditions\(^5\).

2.3.2 Product differentiation needs of the motivation

The complexity of agricultural field, the particularity of agricultural production, led to the particularity of agricultural product quality information. These particularities in the agricultural production, processing, circulation, consumption and other processes gradually evolved into obstacles to the competitive advantage of agricultural products effectively formed the culprit. Enterprises need to improve product traceability so that the characteristics of high-quality products and unique interests of consumers convinced to get the product differentiation of the competitive advantage. Differentiation itself can bring a higher premium to the enterprise products. This premium not only compensates for the increased cost of differentiation, but also can bring higher profits to the enterprise. The greater the degree of product differentiation, the characteristics or functions with the more difficult to replace and imitate, the more customers are willing to pay higher fees for this differentiation, the difference is that the greater the advantages of the enterprise. Because differentiated products and services are competitors cannot provide the same price, giving customers lack of comparable product selection and thus significantly weakened the customer's bargaining power. Companies that adopt a differentiated strategy will be in a better position to compete for alternatives than their competitors. Because customers who buy differentiated products are reluctant to accept alternatives. Product differentiation will form a certain barrier, the more obvious differences in the product industry, product differentiation due to the formation of barriers to entry is higher. Differentiation to the interests of consumers is more obvious, because the health of consumers and green food needs to be more appropriate to meet \(^6\).

3 AGRICULTURAL PRODUCTS TRACEABILITY SYSTEM

The system takes the agricultural production standard as the basic frame, collects the environmental information and production history information of the place of production through the portable agricultural information gathering equipment and manual recording, collects the information into the database, and when the product is packed or manufactured, transmits data through the system unified data interface To the central database, and through bar code electronic scales or bar code printers to print two-dimensional bar code, its structure as shown below.

![Figure 1. The structure of traceability system.](image)

3.1 Land information subsystem

The base information subsystem mainly collects and stores the following information: plot area, plot description (air pb value, air cd value, air hg value, air as value, air cr value, air F value, air dej value, air pH value, soil cd value, soil hg value, soil value, soil cr value, soil cu value, soil pb value, soil pH value, air SO2 value, air NO value, air F value, air TSP value) Plots name, information collection date, collection personnel number.

3.2 Raw material information subsystem

The main raw materials involved in agricultural production are seeds, agricultural fertilizers and pesticides. The raw material information subsystem mainly collects and stores the following information: seed information, agricultural fertilizer information, pesticide information.

Seed information: seed type, seed name, manufacturer, date of manufacture, date of purchase, seed ID, seed image, purchase ID.

Fertilizer information: fertilizer type (fertilizer, fertilizer, potash fertilizer, fertilizer, organic fertilizer, compound fertilizer, etc.), fertilizer name, fertilizer manufacturer, date of manufacture, purchase date, purchase quantity.

Pesticide information: pesticide type (pesticides, fungicides, herbicides, etc.), pesticide name, manufacturer, date of manufacture, dosage form (oil, powder), concentration, date of purchase, batch number, Volume, Purchasing Person ID.
3.3 Production information subsystem

The production of agricultural products includes planting, fertilizing, spraying, irrigation, harvesting five processes. The production information subsystem mainly collects and stores the following information:

Planting information: plots ID, water, soil and other environmental quality information, planting personnel ID.

Fertilization information: fertilizer ID, plots ID, date of fertilizer, fertilizer ID, fertilizers, fertilization methods (with water facilities, page facilities, scattered facilities).

Application information: Applicant ID, plots ID, date of application, pesticide ID, dosage, application method (spray method, spray method, dusting method, spreading method, sprinkle casting method, fumigation method).

Irrigation Information: Irrigation Person ID, Lot ID, Irrigation Quantity, Irrigation Date.

Harvest information: harvesting personnel ID, land ID, harvest, harvest date.

3.4 Detection information subsystem

The detection information subsystem mainly collects and stores the following information: parcel ID, product ID, inspector ID, test name, inhibition rate, detection date, test result.

3.5 Package information subsystem

Package information subsystem collect and store the following information: Packers ID, product ID, bar code number, print number, date of packaging.

4 INFORMATION SHARING AND TRANSACTIONS

In the traceability system for small and medium-sized growers, information providers, i.e. producers, need to do their work in the past planting experience and the discovery of the latest technology and product transport process, transportation time through the traceability system to share in a timely manner Shared platform. The information receiver is the producer and the consumer, in the information reception process, the producer may through the system study other producers' advanced technology and absorbs the valuable experience, thus may enhance own product quality. (Including local soil information, climate information, information about fertilizers, etc.), supply time (including transportation time, time at the transfer station and other relevant information) can be obtained through the system. So as to obtain the trust of consumers, to be sustainable development.

5 APPLICATION EVALUATION

5.1 Cooperation mutually benefit us and promote the virtuous circle

At old age, the relationship between the product producers and sellers is single. Producers send products to the seller and the seller pays money to producers. When the traceability system is coming, consumers can purchase products directly to the seller over producers, which limit the long-term development of sales. So in order to have better development, sellers and producers of cooperation mutual benefit, producers have their own products, sellers have their own customers and marketing channels. The mutual cooperation, common in the market to find their best interests.

The production of various producers on the market product quality is jagged, so it is difficult to achieve uniform standards. But the traceability system can establish records of all producers share their experience about planting and planting technology. By learning the advanced technology of
others, can keep pace with the times, cooperation and innovation [8].

5.2 Eliminate information asymmetry and obtain the trust of consumers

The traceability system can record the growth of agricultural products, all aspects of the sale time, including businesses transplanting seedlings, businesses to fertilize the crops. By the time the enterprise timely login system, these data will be timely feedback to the hands of consumers. On the one hand, it can enhance enterprise product responsibility, on the other hand, can cultivate consumer trust in Enterprises and products. In the long run, to get the trust of consumers at the same time it shows that the consumer products have to rely on.

5.3 Effectively distinguish responsibility and promote the safety of agricultural products

Control the safety of agricultural products from the source, when the agricultural product burst safety problems. We can immediately cut off the source to prevent the spread of the traceability system. You can quickly find the problem and clear security responsibility system. Knowledge of technology will overcome the fortress. The process of agricultural production to the standardization, the comprehensive construction of a well-off society and the improvement of people's living on the quality of agricultural products.

5.4 To promote the internationalization of products, to adapt to economic globalization

Especially in recent years, the spread of many diseases is making many countries on the import and export of agricultural products and higher requirements, set up check points and batch more. The traceability system can satisfy the requirements about the agricultural products, including agricultural production information management, information relating to the sale of the planting process, transport information and so on. To satisfy the traceability of the sources and management of agricultural product requirements. Clear product information, to enhance the international competitiveness of countries on imports of agricultural products, strengthen the cooperation of international trade.

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