



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search  
<http://ageconsearch.umn.edu>  
[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

# An Empirical Analysis on Agricultural Materials Logistics Control and Agricultural Products Safety: A Case Study of Bi-chains Management Model for Veterinary Drugs in Pinggu District

Tianqi ZHANG\*

Beijing Vocational College of Agriculture, Beijing 102442, China

**Abstract** Through an empirical analysis of the agricultural logistics model and agricultural products quality control system in Pinggu district of Beijing, a model was studied to control the agricultural quality by agricultural logistics. The model adopts modern logistics supply chain, which firstly, establishes a modern logistics distribution system for veterinary drugs by the means of suppliers control, chain management and cold chain distribution; secondly, organizes the veterinary experts and doctors to provide real-time technical services so as to control the abuse of drugs; thirdly, realizes the supervision of local veterinary drugs and diseases. Thus the quality of animal products is guaranteed, and the model is worthy to be popularized.

**Key words** Agricultural materials logistics, Agricultural products safety, Analysis

The safety of agricultural products in China has been upgraded to a new level through a series of laws and regulations, and is referred to in the "Central Files" each year. In December, 2009, the state council proposed to accelerate the establishment of agro-products quality and inspection system and actively develop the harmless, green and organic agricultural products<sup>[1]</sup>. It was also pointed out in another regulation to transform the mode of development and improve the agro-products quality<sup>[2]</sup>. The issues of agricultural products safety concern not only the national economy and social stability, but also the people's livelihood and healthy.

## 1 Present status of animal husbandry products

The present yield of meat, eggs and milk in China ranks the front, the safety of animal husbandry products, however, is quite worrying. Given the frequent occurrence of food safety incidents, such as "Sanlu milk powder", "lean meat powder" and "red yolk", the quality of animal husbandry products is receiving more and more public attention. The existing problems in animal husbandry products include a lack of knowledge about the influence of feeds on animal products safety, the backward techniques of diseases monitoring and drug residue detection, imperfect prevention system, abuse of illicit drugs in feeds, neglect of withdrawal time, weak management of animal slaughter, and frequent occurrence of illegal slaughter, especially the abuse of drugs and additives, such as growth hormone, stimulant, sedative, antibiotics and so on whose residues are of great risks. If leaving these problems unsolved, both the quality of animal husbandry products and the healthy of consumers will be seriously affected<sup>[3]</sup>.

## 2 HACCP analysis of animal husbandry products

The quality of animal products is mainly affected during the process of breeding, processing, storage and sales. The critical control points will be analyzed in the following paragraph:

According to HACCP analysis, there are three critical points during the whole production process of livestock products. The first is environmental control, which can be realized through right site selection, reasonable distribution, harmless processing of wastes and safe production model; the second is diseases control, which can be solved by establishing a veterinary medical system focusing on prevention of animal epidemics; the third is the management of input products, which is the most important and also the most intricate and difficult part of animal products management<sup>[4]</sup>. In view of the safety control of animal products in foreign countries, the supervision of input products is organically combined with modern logistics system, and the chain management and control of input products are established, which is one of the important means to guarantee the safety of animal products and improve its supervise efficiency. The present safety issues of animal products, basically, are related to the safety of their input products. The safety of animal products cannot be guaranteed without a relatively safe logistics network for input products, and thus the insecure food incidents cannot be fundamentally eliminated.

With a case study of the bi-chains model of veterinary drug inputs in Pinggu district, a new model combining the supervision of input products with modern logistics will be illustrated in details.

## 3 The logistics model for veterinary drugs in Pinggu district (bi-chains of agricultural materials and techniques)

The gross products of animal husbandry in Pinggu district in Beijing are showing an upward trend in recent years and the traditional mode of production is transforming. The livestock production

Received: June 25, 2011 Accepted: December 8, 2012

Supported by the Social Science Project "Circulation Problems of Characteristics Fruits in Beijing Mountainous Areas and Their Solutions of Beijing Municipal Commission of Education(No. SM201212448002).

\* Corresponding author. E-mail: zhang709118@163.com

has entered a new stage of development, focusing on pigs, chickens and sheep. The total output value of animal husbandry in 2009 was 909 651 000 Yuan in Pinggu district, accounting for 34.5% of the total agricultural output. In this district, there were 2 508 900 egg chickens, 789 200 meat chickens, 1 207 cows, 9 344 meat cattles 205 051 pigs, 76 997 goats and sheep in stock while 335 750 pigs, 6 397 700 meat chickens, 102 966 goats and sheep, 10 823 meat cattles and 26 782 t eggs for slaughter<sup>[5]</sup>.

**3.1 Background of the model** Veterinary drugs are the key factors influencing the safety of livestock products, the traditional decentralized management has been unable to accommodate to modern development requirements, under which the quality and safety of veterinary drugs cannot be protected, which produces a directive impact on the development of animal husbandry development. In the premise of safe livestock products, the sales of veterinary drugs in Pinggu district have been developed from the simple chain management to the bi-chains management model characterized by unified purchase and distribution as well as standard techniques and regulations.

The bi-chains services of products and techniques referred to above mean that the sales of veterinary products adopt modern logistics supply chain. During the links of purchase and distribution, firstly, a modern logistics system for veterinary drugs is established by the means of suppliers control, chain management and cold chain distribution; secondly, the veterinary experts and doctors provide real-time services to control the abuse of drugs. Moreover, relying on the animal diseases prevention and control center of Pinggu district as well as the bi-chains management model, the supervision department can update the drug and disease information timely for local safety department to supervise the use of veterinary drugs and diseases.

## 3.2 Practical implementation

**3.2.1 Settings and responsibilities of institutions.** ① Distribution center of veterinary drugs. A veterinary drugs distribution center is established based on the drug management department of local disease control center. The job of distribution center is to take charge of the purchase, quality, management, distribution and supervision of veterinary drugs. ② Chain stores of veterinary drugs. twenty chain stores dealing with veterinary drugs are set up in seventeen towns, and each is equipped with a veterinary technician who has a college degree and is responsible for the management and technical services of the chain store. ③ Veterinary drugs supervision committee. Two veterinary drugs supervision committees are set up. One is composed of the directors from twenty chain stores. The other one is consisted of ten directors voted from the large-scale breeding farms.

The veterinary drugs supervision committees are mainly responsible for the public evaluation and supervision of the quality, variety, price and effect of the purchased and distributed veterinary drugs, and then propose some improving suggestions so as to guarantee the clear and fair quality and price of the veterinary drugs.

**3.2.2 Mode of distribution and management.** After a bulk purchase, the distribution center distributes the veterinary drugs to the chain stores and large-scale breeding farms. ① The veterinary drugs were distributed to twenty chain stores at a unified price and then distributed by the chain stores to the surrounding breeding farms at a unified price. ② The veterinary drugs are sold to the large-scale breeding farms at a favorable price with little or no profits added.

**3.2.2.1 The first links—distribution center logistics.** The veterinary drugs distribution center, which is in the direct charge of local agricultural department, has twelve workers and is equipped with the veterinary warehouse, specialized cold warehouse, fridge, cold storage cards, drugs demonstration platform and other facilities.

① Unified bidding and purchasing. The veterinary drug enterprises and products in whole China are investigated and checked to determine the enterprises and drugs to be purchased, which is then submitted to the committee to be discussed and approved.

② Uniform price management. According to the factory price, recommended sales price and the real price of veterinary drugs, both the wholesales price and retail price of each drug are determined and then submitted to the committee for approval.

③ Uniform distribution. According to the practical management of each chain store as well as the drug use of scaled breeding farms, the veterinary drugs are distributed to the chain stores and breeding farms based on their needs.

④ Establishing management system. According to the *Quality Management Specifications of Veterinary Drugs*, a quality management system is established, and the training and assessment system of quality management is improved; a management and operating process involving the purchase, inspection, warehousing, display, storage, transport, sales and delivery of veterinary drugs is formulated; the quality assessment records are improved, covering the records during the process of purchase, inspection, warehousing, storage, and delivery; a quality database is established.

⑤ Regular assessment. The chain stores are regularly supervised on their management, use, prices, records and account of veterinary drugs, in order to guarantee the veterinary drugs and their delivery at the same price.

**3.2.2.2 The second link—chain stores.** The twenty chain stores are separately managed and financially independent. They are managed by the veterinary drugs distribution center from five uniform aspects, and equipped with the cold chain facilities. A veterinary drug information network is built. With the distribution center as the platform and the twenty stores as the ends, a technical propaganda and guide network of veterinary drugs is established, which provides each store with related information about the quality, use and identification of veterinary drugs. Meanwhile, each store provides the surrounding breeding farms with the services of information inquiry.

① Unified computer management. The chain stores are uniformly managed by one computer software.

② Uniform facilities. The stores are equipped with the same facilities, including the drugs shelves, sales counter, fridges, computers, desks, file cabinet, sofa and other office necessities.

③ Unified purchase channels. The veterinary drugs of chain stores all come from the distribution center and purchased at the lowest wholesale price. No drugs, except some special drugs, are allowed to be purchased from other channels, and those purchased via other channels should be reported in advance.

④ Uniform price. The drugs in each store should be sold at the price recommended by the distribution center.

⑤ Uniform account. Using the special management software of veterinary drugs, all stores carry out a unified management of the purchase and sales of veterinary drugs and establish a database about the drugs from their purchase to their sales.

**3.2.3 Means of payment.** In order to guarantee the successful purchase and business of veterinary drugs, the payment of veterinary drugs allows no credit. Given some special situation, the farmers can refer to the headquarters in written form.

**3.2.4 Technical service forms.** The veterinary drugs distribution center in Pinggu district will organize some experts both regularly and irregularly to provide the farmers with technical trainings, and popularize the knowledge about animal breeding and scientific drug use. ① A list of veterinary drugs is provided for the breeding farms, including the name of manufacturers, name of drugs, pharmacological functions, specifications and usage, etc., so as to improve their knowledge about various drug products; ② Centralized distribution system. The drugs are centrally distributed to all drugs management stores every week. Every Monday to Friday are the statutory dates of delivery, when the drugs will be supplied timely after an emergency call from the store to the distribution center. ③ The bidding of new products is carried out in order to promote the new products to farmers; ④ The drug manufacturers hire some veterinary experts to provide technical trainings, so as to improve the professional technical level of technicians and uplift their services to farmers.

**3.2.5 Security check.** The security check should always be the first. The distribution center, through the account and table management of each drug stores, grasp the drug use and diseases in the whole district so as to facilitate the supervise of local epidemics.

**3.3 Effectiveness and analysis** The veterinary drug management of Pinggu district has made great achievement since the adoption of bi-chains model. ① The veterinary drug market is regulated and the drug quality is protected from the source. All the drugs supplied are qualified from regular manufacturers to guarantee their quality. A random inspection of the veterinary drugs showed that all the drugs meet the requirements of agricultural department. ② The purchase price is lowered and thus the farmers are benefited. Among the present drugs purchased, the price of more than half is lowered to different degrees. ③ The drug stock is reduced and the capital turnover rate is improved. The drug stock is lowered by 25.3% after unified purchase. ④ The drug

use is effectively supervised from the source. No economic damages by the inferior drug quality have been brought to the farmers since the operation of drug management department. ⑤ The technical advantages are centralized, and the services level is improved. The use of drugs is standardized, and the abuse of drugs is decreasing. ⑥ The animal epidemics and diseases can be known in time. All in all, the bi-chains model of veterinary drugs is advantageous to the implementation of related laws and regulations like the *Management Regulations of Veterinary Drugs*, and is a fatal blow on the sales of inferior drugs, which guarantee that no illegal drugs are used and sold in Pinggu district. The drug quality is guaranteed and the farmers' interest is protected, which helps promote the development of green animal husbandry in this district.

The bi-chains management model of veterinary drugs in Pinggu district is a model combining modern agricultural logistics and safety supervision. In this logistics system, there are logistics links, namely, the distribution center and chain stores, which realize the three functions of veterinary drugs logistics. ① Cohesive function. The logistics (veterinary drugs), information (safety and technical information), and capitals are seamlessly combined, connecting each links into one system and making each link more smoothly. ② Informational function. The distribution center and chain stores are responsible for the information transmission, collection, processing and sending of the whole logistics system, which forms a information network guiding, managing and regulating the whole drugs logistics system, which is a precondition for the establishment of modern logistics system. ③ Management function. The two links enable the orderly and normal operation of the whole logistics. Meanwhile, a drug traceability system is established through the control of links and the management of database, which effectively control the supervision of veterinary drugs and guarantee the safe production of animal products.

The bi-chains model in Pinggu district organically combine the modern logistics management, information traceability supervision and technical services together, which breaks traditional agricultural materials management model and is worthy to be popularized in the management of other agricultural input products or agricultural logistics.

## References

- [1] Several suggestions for further tamping rural agriculture development foundation by the State Council [EB/OL]. (2010-01-31) [http://www.gov.cn/jrzq/2010-01/31/content\\_1524372.htm](http://www.gov.cn/jrzq/2010-01/31/content_1524372.htm).
- [2] Several suggestion for promoting a new round basket project by General Office of the State Council [EB/OL]. (2010-03-18) [http://www.anshun.gov.cn/gov\\_xxdm/gov\\_zcfg/2010/3/2010031810220858008.html](http://www.anshun.gov.cn/gov_xxdm/gov_zcfg/2010/3/2010031810220858008.html).
- [3] HOU WY. Main problems and countermeasures of livestock products safety [J]. Pigs and Poultry, 2010, 30(2): 82-83. (in Chinese).
- [4] SHE XL, QIAN H, LIU J. Modern food safety control system [J]. Food Science and Technology, 2003(8): 46-50. (in Chinese).
- [5] Pinggu Statistical Bureau. Well-operation of agro-economic in Pinggu in 2009 [EB/OL]. (2010-02-23) <http://www.pg.bjstats.gov.cn/tjfx/tjbg/14409.htm>.