The influence of farmland pollution on the quality and safety of agricultural products

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Abstract. The quality and safety of agricultural products is not only a major livelihood issues for people's health, but also the main barriers to international trade of agricultural products nowadays. The soil is the foundation to the production of agricultural products and the guarantee of agricultural development. The farmland soil quality is directly related to the quality and safety of agricultural products. Our country's soil has been polluted by a series of pollution, Such as the excessive discharge of industrial wastes, the encroachment of household waste, and the unreasonable use of pesticides and fertilizers. Soil degradation is a serious threat to the quality and safety of agricultural products, so eliminating soil degradation is the fundamental way out for quality and safety of agricultural products. By analyzing problems of the quality and safety of agricultural products in our country, and exploring the farmland soil influence on the quality and safety of agricultural products. This article provides a reference for improving the control level of quality and safety of agricultural products and the farmland soil quality.

1. The current situation of the quality and safety of agricultural products in China

A steady quantity rise of China's agricultural products and a rapidly increasing level of its quality and safety, which make basic guarantee of safety consumption, but the situation of the quality and safety of agricultural products are still grim. At present, the quality and safety of agricultural products has become the focus of attention of the public and the government decision-making in China. It has a very important practical significance to improve the level of quality and safety of agricultural products and promote the healthy development of the society. Since 30 years reform and opening-up, China's agricultural production gradually changed from the simple pursuit of quantity security into equal emphasis on safety of quantity and quality, which also from the emphasis on the terminal detection of quality and safety of agricultural products to pay attention to the whole regulation. The routine monitoring system of the quality and safety of agricultural products starts from 2001[1]. The monitoring results show that the qualified rate of main agricultural product remain high in recent years, the quality and safety of agricultural products has improved significantly in China. The monitoring pass rate of vegetables, aquatic products, livestock and poultry products are more than 94% in 2013[2]. But the quality and safety of agricultural products in China is still exist certain problems like

pesticides, exceeds bid of heavy metal, and other harmful substances pollution. The incidents of quality and safety of agricultural product have occurred now and then, the situation is still severe. So improving the quality and safety of agricultural products will still to be a complicated and arduous task for a long time.

2. The relationship between farmland quality and the quality and safety of agricultural products

2.1. Pesticide pollution has an impact on the quality and safety of agricultural products.

Pesticide utilization in our country is only 10% ~ 20%, 10% ~ 20% lower than the developed countries. Soil contaminated by pesticide from multiple pathways, such as spraying pesticide, soil fungicide and herbicide , underground pest control agent, which all attached to the crops. The atmosphere and rainfall precipitation makes the 80% ~ 90% of pesticide finally into the soil [3]. In addition to evaporation and loss of pesticides in soil, the rest can be absorbed and accumulated directly by crops, which is harmful to human health. The underground parts of crops such as potatoes, carrots and other crops contaminated with organ-chlorine pesticides are serious. Pesticide pollution is a potential threat to people, livestock and poultry.

2.2. The pollution of heavy metal in farmland has an impact on the quality and safety of agricultural products.

The enrichment of heavy metals in the natural environment is not easy to be soaked by water, nor microbial degradation. Compared with other forms of pollution, heavy metal pollution is more concealment, long-term and cumulative. In recent years, due to mining non-ferrous metal mine, the industrial wastes emission, the sewage irrigation of containing heavy metal to agricultural production, and the unreasonable use of agricultural chemicals and fertilizer, which directly or indirectly caused the harmful heavy metal elements into the soil environment. According to the survey, about half of the land in some southern Chinese cities is contaminated with lead, cadmium and arsenic. The polluted land area is 18,000 square meters, accounting for 46% of the total rural land area [4]. Nationwide, about 2*1011 square kilometers of land is threatened by heavy metal pollution, accounting for one-sixth of the country's total arable land. Therefore, the heavy metal pollution of soil has been a prominent problem restricting the development of modern agriculture in our country [5].

The content of heavy metal pollution in soil has a high side, leading to excessive levels of heavy metals in certain agricultural products, and then entering the body through the food chain to affect human health. In recent years, accidents of agricultural products safety has happened frequently, which caused by heavy metal pollution in soil environment. In 2013, more than eight batches of cadmium content in rice and rice products were found in the sample survey by the food and drug administration of Guangzhou, and six were caused by excessive soil accumulation in the survey. Experts point out that the problem of quality and safety of agricultural products was caused by heavy metal pollution, which haves seriously restricted the sustainable development of agriculture and the improvement of people's living standard [6].

2.3. The effect of fertilizer pollution on the quality and safety of agricultural products

Over fertilization and blind fertilization not only increase the cost of agricultural production, waste resources, but also lead to the acidification of arable land and soil. A single application of physiological alkaline fertilizer for a longtime will be jams, harden and reduce microbial activity, and then reduce the crop yields. Some heavy metal elements or harmful substances are produced in the process of fertilizer production, and harmful heavy metal elements were activated by the acidified soil. Lead, zinc, cadmium and other heavy metals seriously excessive in agricultural products because of the excessively use of phosphorus. As nitrogen levels rise, nutrient quality, vitamin C and soluble sugar in vegetables are reduced, but the soil is heavily polluted by nitrates [7].

2.4. The dialectical relationship between quality of farmland soil environment and agricultural product

The production environment has an important influence on the quality and safety of agricultural products. The investigation of the relationship between quality of agricultural product and the land environment can helps us take corresponding measures to guide agricultural production. Most studies have shown that it has a very close relationship between the environmental quality, safety and quality of agricultural products, and the health of all bio-ecological [8]. The degradation of soil quality and its safety performance will pose a direct threat to the quality and safety of agricultural products, and then human health. The arable land is very scarce in our country, food and soil conditions are more serious than any other country [9]. Reducing soil pollution is an important component of the ecological security system. Healthy farmland environment will be an important guarantee for the quality and safety of agricultural products.

3. The summary

The above analysis shows that the healthy farmland soil can produce healthy products, then making a healthy life for human. Adhere to the road of sustainable development of agricultural, to strength the administrative management, supervision and the regulation of human behavior at the same time. The treatment and rehabilitation technology of soil environmental pollution should been positively researched. Timely and proper use of chemical fertilizers, pesticides, beast medicine; Strengthen environmental protection slow release and controlled release, compound fertilizer, low toxicity and high, easily degradable plastic mulch of the pollution-free, green, organic agricultural production. Promote the green control integration technology, vigorously promote synthesize rule, improve the control effect, protect ecological environment of farmland, promote the coordinated development between production and ecology. That is the source solution to improve the quality of farmland soil environment for controlling the quality and safety of agricultural products.

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