

Resource Utilization of Livestock Manure from the Perspective of Rural Revitalization and the Exploration of Processing Mechanisms

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Abstract

The rapid development of the livestock and poultry breeding industry has brought people a richer variety of meat, poultry, egg and milk products, but at the same time it has also caused serious environmental pollution problems, affecting the healthy and sustainable development of animal husbandry. As a kind of agricultural biological resources, manure is often treated in the form of returning the full amount to the field and washing pens because it has been neglected for a long time. Its true value is not reflected and it also causes serious environmental pollution. Therefore, accelerating the comprehensive utilization of animal manure is an important way to improve the level of resource utilization of manure, which has far-reaching significance. This paper analyzes the current situation of domestic livestock and poultry environmental pollution and the specific situation in Anhui Province, and puts forward suggestions for the effective use of manure from the perspectives of the government and enterprises.

Keywords

Rural Revitalization; Economic Development; Manure Treatment and Utilization; Green Comprehensive Treatment.

1. Research Background and Significance

1.1. Research Background

The concept of green development and the construction of ecological civilization are a major task of the cause of socialism with Chinese characteristics. It is an important guarantee for building a beautiful China, promoting social harmony and people's happy life. It is the object that our country has always attached importance to.

In 2021, the State Council issued the "Guiding Opinions on Accelerating the Establishment and Improvement of a Green, Low-Carbon, and Circular Development Economic System", which made a top-level design and overall deployment for accelerating the establishment of a sound economic system for green, low-carbon, and circular development, aiming to coordinate economic development and the ecological environment. Protect the relationship between construction, promote the comprehensive green transformation of economic and social development, and build a modernization where man and nature coexist harmoniously. Also in the 14th Five-Year Plan, it is emphasized that my country will continue to deploy ecological environment governance, and accelerate the establishment and improvement of an ecological cultural system and an ecological economic system. Take the road of sustainable development, promote the transformation of economic and social development to green development, and the construction of ecological civilization has always been an important indicator emphasized by our country. The harmonious coexistence between man and nature, the balance between man and nature and the construction of a beautiful China are contemporary society. I have been pursuing. In recent years, due to changes in lifestyles, consumption patterns, and economic development patterns, we have brought us many environmental pollution problems. These

environmental pollutions come from all aspects of our lives, so it is imperative to persist in the fight against pollution and continuously improve environmental quality. Tracing back to the source, for us in a large agricultural country, agriculture is the focus of development and the foundation of farmers' lives. However, the negative impact brought by the rapid development of agriculture is extremely serious, especially the development of the livestock and poultry industry. , water sources, organisms, and air pollution seriously endanger natural safety, such as greenhouse gases, toxic gases, and excrement emitted in the production of livestock and poultry. Most of the livestock and poultry in my country are raised in a centralized way, and the operation is highly concentrated. The waste left over from production is the environment, which may lead to the imbalance of the original ecosystem, and even the spread of various diseases, endangering human health.

The concept of green sustainable development was not formed overnight. Our country has long been aware of the importance of green development. General Secretary Xi Jinping put forward the concept of " lucid waters and lush mountains are golden mountains and silver mountains " , and it is advancing in the process of continuous reform and development. Based on the resource-saving and environment-friendly socialist ecological development concept, our country hopes to return to the fundamentals and return to agriculture, with the goal of building a harmonious and beautiful socialist society, with green development as the guiding ideology. Dealing with pollution problems, rationally optimizing the structure, improving the production and consumption patterns of the livestock and poultry industry, and combining scientific and green production technology to recycle resources, so as to promote the green and sustainable development of the livestock and poultry industry, drive economic growth, and promote the implementation of the rural revitalization strategy.

1.2. Research Significance

With the development trend of the social era, the primary, secondary and tertiary industries in the country are developing as much as possible. As a large agricultural country, the significance of agricultural development is indelible. In recent years, agriculture has developed rapidly, and the livestock and poultry industry is its pillar industry. However, the environmental pollution problems brought about by the development are indeed extremely serious. How to balance the economy and the environment, how to coordinate the two are the problems we should solve. According to our country, the pollution of the livestock and poultry industry is mainly due to the relatively backward breeding and processing technology and old customs. Therefore, if the waste processing of the livestock and poultry industry can be used in the planting industry, it will not only produce pure natural organic food, but also drive the green and sustainable development of the entire planting industry. The two industries can promote each other and develop in a coordinated manner. Although compared with the one-sided pursuit of economic development in the past, a lot of attention has been paid to the environment, and the anti-pollution recycling technology has also been significantly improved, but there are still certain problems. Therefore, if a complete, reasonable, and feasible circular economic model from production to marketing and after-sales is formed, advanced breeding technology and science and technology to quickly dispose of waste and turn waste into treasure will bring great benefits to the development of the livestock and poultry industry. meaning. The green and sustainable development of the livestock and poultry industry can promote the green development of the entire agriculture, drive the green and sustainable development of related industries, alleviate the shortage of resources, and promote the development of circular economy; it can also protect the ecological environment of villages and cities and complete the "double carbon " strategy ; Improve farmers' income and overall economic level; promote rural revitalization strategy to help get rid of poverty, promote high-quality economic development, and ultimately promote the harmonious coexistence between man and nature.

2. Current Status of Livestock and Poultry Environmental Pollution

2.1. Current Status of Domestic Livestock and Poultry Environmental Pollution

With the development of economy and society and the change of social demand, my country's livestock and poultry industry is becoming more and more intensive and urbanized, transforming from traditional livestock and poultry industry to modern livestock and poultry industry, becoming the industrial pillar of my country's agriculture. However, the environmental pollution caused by such a farming model cannot be ignored. According to statistics, China's livestock and poultry industry produces about 3.8 billion tons of feces and 3.23 billion tons of industrial solid waste every year, and the chemical oxygen demand of livestock and poultry farming emissions reaches 12.68 million tons; at the same time, the livestock and poultry breeding process will produce methane, carbon dioxide, carbon monoxide and other gases. Statistics show that among the 10 billion tons of carbon emissions in China in 2020, agricultural carbon emissions will be about 2 billion tons, and the aquaculture industry accounts for the main part in agriculture; therefore, behind the livestock and poultry industry it is the environment that bears the consequences for it. A large amount of carbon emissions cause temperature rise, climate change and the emergence of extreme weather; fertilizers and feeds used in the production process have chemical content exceeding the standard and remain in the soil, destroying the original soil and causing soil pollution. Pollution; toxic gases produced by long-term stacking and fermentation of wastes cause air pollution; trees produced and developed by the livestock and poultry industry lead to the destruction of other biological habitats, etc., and these contradictions between the economy and the environment are constantly destroying social harmony. In China, the pollution of the livestock and poultry industry is mainly point source pollution. In response to this kind of pollution, China's "Livestock and Poultry Farm Pollution Prevention and Management Measures" pointed out that "reduced collection, harmless treatment and resource utilization" should be adhered to. The basic principle is to improve the reasonable treatment of pollutants through the improvement of recycling technology. Now my country's livestock and poultry industry currently has three main methods of processing and utilization: making feed, processing fertilizers and energy development. However, the handling of these aspects is inseparable from the support of advanced technology. Therefore, as of now, my country has made many policies on the livestock and poultry industry. Among them, it is pointed out that the implementation of overall planning, rational layout, comprehensive utilization, incentives and guidance, technological development, and adherence to source control and comprehensive measures. It is required to deal with the environmental pollution of the livestock and poultry industry with the method of "prevention first, combination of prevention and control, and combination of economy and practicability".

2.2. Status Quo of Livestock and Poultry Environmental Pollution in Anhui Province

Current status of livestock and poultry environmental pollution in Anhui Province Anhui Province is a major province of livestock and poultry industry. In 2018, the total output of feed production in the province reached 6.1402 million tons. In 2021, the total output value of the province's feed industry will be about 4.07 million tons. In recent years, a set of more scientific and perfect production and breeding technology has also been formed in agriculture and animal husbandry, and there are also more reasonable solutions to the widely concerned livestock and poultry environmental pollution problems.

In recent years, Anhui Province has paid more attention to agricultural development, and the livestock and poultry industry is the first to bear the brunt. Therefore, various pollutions brought about by the development of the livestock and poultry industry have also become the

focus of attention. With the massive development of the livestock and poultry industry, Anhui Province has Science and technology such as sewage treatment system and waste discharge treatment system are constantly improving, and the efficiency of pollutant treatment has been significantly improved. However, as elsewhere, there are still certain problems. In recent years, the pollution problems caused by the scale, urbanization and intensification of the breeding industry are more difficult to deal with than the traditional form of livestock and poultry industry. Farming and animal husbandry are out of touch. Planting farmers failed to obtain the organic fertilizers needed for planting in time, and livestock farmers also failed to dispose of production waste in time. With the development of the rural economy, the stimulation of the increase of farmers' income also makes them pursue the maximization of benefits. They pay attention to economic benefits while ignoring environmental and social benefits, and ideologically ignore the consequences of environmental pollution caused by the livestock and poultry industry. In order to pursue high-quality economic development and green development, the province has also issued many policies on livestock and poultry environmental pollution control, requiring that the comprehensive utilization rate of livestock and poultry manure should reach more than 85% in 2025 , and the comprehensive utilization rate of livestock and poultry manure should reach 90% in 2030 The above, but not all farms are down-to-earth towards the goal, and there is also the phenomenon of bluffing.

3. Process Design of Livestock and Poultry Environmental Pollution Treatment

3.1. Government Level

3.1.1. Play an Administrative Role

All administrative departments should clarify their responsibilities, strengthen departmental cooperation, and include creating a low-carbon livestock and poultry environment and promoting the control of non-point source pollution from livestock and poultry breeding on their agenda and goals. On the one hand, it is necessary to increase the government's capital investment in the environmental pollution control of livestock and poultry farms, and establish relevant special funds ; for enterprises that actively cooperate with the government, adopt advanced technologies, or have obvious effects in reducing emissions from livestock and poultry farming, investment subsidies and corresponding policy preferences will be given. On the other hand , environmental protection departments should also strengthen supervision and management , severely crack down on illegal sewage discharge activities , and strictly investigate illegal activities of livestock and poultry breeding pollution.

3.1.2. Increase Publicity

The government and relevant functional departments can carry out publicity through newspapers, television, the Internet and other news media to guide farmers to strengthen the ideology of " development of low-carbon livestock and poultry industry " , focusing on " energy saving and emission reduction, combination of planting and breeding, and resource recycling " , and actively promote the development of rural livestock and poultry industry in the direction of high yield, high quality, high efficiency, low consumption and sustainable development. Relevant departments of the breeding industry should take the initiative to organize training activities for farmers, demonstrate new low-carbon farming technologies, and drive farmers to understand low-carbon farming and livestock and poultry pollution treatment mechanisms . In order to further establish a livestock and poultry team with innovative ideas, clear thinking, and excellent technology; build and improve the social public mechanism, so that the majority of farmers actively develop low-carbon livestock and poultry industry.

3.1.3. Make Reasonable Planning and Scientific Layout for the Livestock and Poultry Industry

The government and relevant functional departments should coordinate production development, energy conservation and emission reduction, and improve people's life relations, make scientific plans for the future development of the livestock and poultry industry, and determine the development direction and development priorities. Under the premise of the development plan of the livestock and poultry industry, fully consider resources, environment, transportation, market and other factors, properly adjust the breeding structure, and make a reasonable layout.

3.2. Enterprise Level

3.2.1. Introduce Excellent Talents

At present, there are still deficiencies in the recovery and treatment mechanism of livestock and poultry pollution. Therefore, it is necessary to introduce excellent talents to provide better technical support for enterprises so as to further promote the modernization, high efficiency, safety and industrialization of the livestock and poultry industry. At the same time, the introduction of excellent talents will also promote the development of the enterprise itself and enhance its core competitiveness.

3.2.2. Constantly Update Technology

Introduce new technologies from the source, process and end, and implement emission reduction measures. At the source, vigorously promote clean breeding such as ecological fermentation beds to achieve zero-emission farming; improve feed technology and feed formula, do a good job in nutrition control programs, and reduce manure nitrogen and phosphorus emissions. In the process, optimize the housing environment and livestock management methods. At the end, tools such as reverse osmosis membrane technology and mobile treatment vehicles are used to realize the discharge of manure after reaching the standard. For the utilization of livestock and poultry manure bedding, the mode of manure water backwashing pens is carried out to realize resource cleanliness. Through scientific planning and layout, the outdated technology and production methods are continuously improved, and the production mode of combining planting and breeding, energy saving and emission reduction is continuously promoted.

3.2.3. Establish a Research Base

At present, the use of inorganic fertilizers in the livestock and poultry industry still accounts for a large proportion, and the resulting waste of resources and environmental pollution cannot be ignored. It is necessary to continue to study how to realize comprehensive pollution control of livestock and poultry breeding, how to update the existing treatment mechanism, and how to continue to promote the implementation Rural biogas construction and organic fertilizer processing construction. Therefore, enterprises can establish research bases, cooperate with agricultural colleges and universities, conduct on-the-spot investigations and inspections, make full use of their scientific research resources, and collect excellent research results.

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