

Review of the Research on the Relationship Between Intensive Agriculture and Water Resources Management and Environment

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Abstract: In this study, the purpose is to review the literature on water pollution and environmental impact caused by intensive agriculture. Human activities have greatly caused problems in the relationship between water use and environment in agricultural economy under climate uncertainty. Take the semi-arid area as an example. They are faced with a serious shortage of water resources, and at the same time, they are attacked by various kinds of pollution, which reduces the use function of water bodies. After the economic and social development, which focuses on agricultural water use, it has caused serious environmental damage to water ecosystems. Therefore, there are many health hazards related to the use of wastewater. This study puts forward some suggestions on preventive measures applicable to each site, which may ensure the overall safety.

Keywords: Agricultural Water; Pollution; Density Agriculture; Sustainable Water Management; Coexistence Problem

1. Introduction

According to the data, water accounts for about 71% of the earth's surface, but it is still one of the scarcest resources, especially in developing countries around the world ^[1]. At the same time, they also put forward that water is one of the most convenient facilities in all towns and is indispensable to human activities and agricultural practices. However, in agricultural practice, too much attention is paid to agricultural output, while the health of water resources itself is neglected. For example, in the European Union, 38% of water bodies are under great pressure from agriculture. Water pollution is aggravated by the decrease of water flow, which is mainly driven by the need of agricultural irrigation. In some high-income countries, agriculture has surpassed the pollution of residential areas and industries, and has become the main factor of eutrophication in inland and coastal waters and nitrate and salt pollution in groundwater ^[2]. Therefore, a sustainable water resources management is a very important research topic on the relationship between intensive agricultural development and environmental coexistence.

1.1 Statement of the Problem

In this study, the purpose is to outline how water management affects the relationship between intensive agricultural practices and the environment and how it affects it. Take the agricultural environment of different countries in the world and specific semi-arid areas in southern Portugal as an example. To investigate the impact of people's agricultural practices on water resources in southern Portugal. Through data research, the water situation affected by different specific geographical locations is studied, because water is regularly replenished, but its outflow is very small, which makes the water filtration unbalanced. This is also one of my main research directions.

1.2 The Purpose of the Research

Because of the conflict between the development of agriculture and the environment, the problem of sewage treatment appears in agricultural practice. Through the retrospective analysis of academic journal articles, Internet materials, textbooks, project reports and public data. Learn more about methodology, how to make sewage meet the discharge standard, protect the environment and ensure people's healthy life. Study the theoretical methods of some water strategies to alleviate some

environmental damages caused by intensive agriculture. With the development of agriculture, the area of intensive agriculture has increased, and the sewage treatment capacity is also large, and the water contains more nitrogen, phosphorus and organic matters. Therefore, more people need to realize that the sewage problems in neighboring towns in high-density planting areas are serious and take effective treatment methods, which can effectively solve the treatment of organic matters in water. This is also the main purpose of my research.

2. Literature Review

2.1 Under the global environmental change: the management right to water

Traditionally, the focus of water resources management in Europe is supply-side management. Comprehensive measures such as reservoir impoundment, inter-basin water transfer, and increasing surface and groundwater intake are taken to ensure the daily water supply. In the 1920s, the development of water supply was marked by the rapid growth of large reservoirs. At present, there are more than 7,000 large reservoirs in Europe, accounting for about 20% of the total freshwater resources in Europe. Incorporate socio-economic processes and natural systems into water resources management. According to the available data of agricultural and economic indicators which include 51 tribal countries. When the right to use land is affected by the environment of investment, land plunder requires not only fertile land, but also the occupation of land resources, among which water resources have a potential impact on the local population and environment ^[3]. The author's discourse analysis shows that there are still traces of arguments among actors over the meaning of water and sanitation rights in practice and how to implement rights-based water service methods ^[4]. Therefore, in the above summary of water rights and resource uncertainty, the risks faced by farmers depend on technology and water use efficiency.

2.2 Under the Global Environmental Change: Agricultural Water

Management

In a specific place, intensive planting brings water environment crisis. In the following review, some opinions on this same state are put forward. The GIS-MCDA framework put forward in (Alves et al., 2021) can provide better support for decision makers and stakeholders, and is conducive to reducing conflicts that may arise due to water shortage, diversifying irrigated crops, and improving the quality-quantity management of water resources in semi-arid areas ^[5]. By considering the relationship among irrigation, soil salinity, evapotranspiration and crop yield, the grey water footprint related to salinization was measured, and then it was incorporated into the agricultural water management model to support the environmentally sound irrigation decision ^[6]. Abd-Elaty et al. introduced a new method of delaying SWI by using the comprehensive surface-groundwater model, which includes using coastal land remediation (CLR) to place aquifer filling materials along the existing coastline^[7]. The above are some new water management methods proposed in recent years.

2.3 Under global Environmental Change: the Means of Water Resources

Management in Special Climate Change Areas (Semi-arid Mediterranean Areas)-a Case Study of Portugal

2.3.1 Means of Water Resources Management: Law

In Portuguese legal means of water resources management. Water Resources Portugal implements the "basic measures" of the Framework Convention on Water Affairs through the preparation, control and application of land use plans. Article 11 of the World Water Forum is used, and it is mentioned in the document that how spatial planning law, urban development law and Portuguese law can promote better integration of resources in land use planning, especially through river basin

management plans and regional territorial plans, and how to prepare for providing information for other planning tools, such as local plans ^[8]. From the analysis of the main laws on land use planning and water resources, it can be clearly seen in the article that Portugal recognizes the need to connect the two systems. In practice, although a great deal of work has been done, efforts can be made to better explore the advantages brought by the stronger connection between the territory and the water resources planning system. However, this does not guarantee that the selection of land use patterns and related routes and water resources measures are completely consistent with local planning, and it is necessary to provide necessary guidance for better utilization of land and water resources.

2.3.2 Means of Water Resources Management: Administration

Generally, administrative means mainly refer to the water administrative organs at all levels of government, which, according to the functions of state administrative organs and the organization and command power given by administrative regulations. Based on the public feedback on environmental issues submitted to the Department of Environment in Aveiro, Portugal from 2000 to 2011, an environmental diagnosis was put forward. One part focuses on the conceptual methods of environmental grassroots movements, the main actors involved in these movements and the role played by the government ^[9]. Views on the environmental quality of urban and suburban areas, as well as actors' views on environmental issues can be disclosed to researchers and technicians. This kind of knowledge is related to the self-evaluation of local authorities, and it is also a promising way for the public to participate in the local decision-making process.

2.3.3 Means of Water Resources Management: Economy

Economic means of water resources management in Portugal. Economic means refers to the law of value distribution and utilization in water resources management, using economic levers such as price, tax and credit to control the behavior of producers in water resources development, regulate the allocation of water resources, promote rational water use and save water. The main methods of economic means include examining and approving water price and collecting water fee and water resource fee.

2.3.4 Means of Water Resources Management: Technology

Technical means of water resources management in Portugal. Under the shortage of water resources in Portugal, developing technical means can improve productivity, to achieve the purpose of effective management of water resources. Therefore, irrigation areas play a decisive role in agriculture, and it is necessary to adapt to the new water resources management mode by changing the knowledge of technology and practice-making farmers' technology and sustainability. Water balance method has been applied to irrigation supply, including pumping gravity irrigation distribution. In 2018, the average amount of irrigation water distributed was 7,400 m³/ha, of which 9.3% was replenished by pumping, with a global efficiency of about 67% ^[10]. The results show that the priority action to consolidate water resources management is to better maintain and protect water conservancy infrastructure in order to reduce water loss and increase flow rate. Technology innovation is an essential factor in the modernization of irrigation population, which can prove that the development of synergy between various actors (i.e. farmers, water users' associations and researchers) and water resources and environment will be in a good development direction.

3. Conclusion

Adhere to the principle of coexistence of agricultural water resources utilization and ecological environment protection. With the deterioration of the ecological environment, the protection of ecological environment is gradually attached great importance by the society and the public. This paper mainly analyzes and expounds the utilization of agricultural water resources and the protection of ecological environment, and puts forward relevant measures from three aspects: adhering to the principle of common development, encouraging water users to participate in the management and strengthening the management of water resources, hoping to give reference to relevant departments in China. While promoting China's agricultural development, realize the social and economic benefits of water conservancy projects.

In the process of utilizing and developing agricultural water resources, we must take the concept of sustainable development as the guide, follow the principle of common development of social benefits, economic benefits and ecological benefits, insist on paying attention to environmental protection in development, and carry out development on the premise of environmental protection. Relevant departments should change their thinking from focusing only on engineering benefits and construction management in the past to comprehensive consideration of safety production, ecological environment and construction management, and seek a reasonable match between ecological benefits and engineering benefits. Deal with the relationship between nature and construction, reduce the factors affecting the environment, and ensure that the ecosystem will not be affected by water conservancy projects. In the process of agricultural planting, we should also scientifically handle the relationship with the natural environment in order to achieve mutual benefit, cooperation, coexistence and common development.

In the process of construction and application of agricultural water conservancy facilities, we should actively introduce clean treatment technology of fresh water resources with good allocation function and stable operation, ensure that in the process of concrete management of irrigation fresh water resources for agricultural production and recycling, we should earnestly do a good job in basic ecological environment protection intervention, and create and provide stable and solid support and guarantee conditions for the sustainable development of modern agriculture and the optimization of rural basic water conservancy irrigation facilities.

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