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**HOW DOES DAM CONSTRUCTION AFFECT CULTIVATED
LAND? THE IMPLICATION FOR AGRICULTURAL
PRODUCTION AND RIPARIAN ZONE MANAGEMENT**

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Dam construction is an important means for mankind to transform nature and adapt to it. The construction of dams, especially in important watersheds or key locations, can effectively prevent flooding, also serving the functions of power generation, navigation, and agriculture irrigation [1; 12] (Chen et al., 2019; Ruiz-González, et al., 2012). Therefore, with the construction of the dam will also bring a series of long-term impacts on the ecology of the reservoir area, such as deterioration of water quality, loss of biodiversity, and microclimate changes, which is certainly a difficult challenge in the context of the globe ecology conservation [3; 12] (Forsberg et al., 2017; Ruiz-González et al., 2012). However, it should not be overlooked that dam construction also creates large areas of fluctuation zone in the reservoir and downstream channel that are so similar to those of wetlands that some researchers consider them to be part of the wetlands [4; 9; 11] (González et al., 2016; Mitsch & Gosselink, 2000; Robert & Henri, 1997).

This part of the area plays an important role in slowing down surface runoff, purifying water quality, preserving soil and water, resisting surface pollution, etc. [6] (Gregory et al., 1991). It is also an important reservoir for carbon and nitrogen sequestration, which undoubtedly have positive significance for the maintenance and restoration of ecological environment [7] (Harms & Grimm, 2008).

Dam construction not only reshapes the ecological environment around the reservoir area but also has far-reaching effects on agricultural production. Such cross-ecosystem interactions have not received sufficient attention in past studies, although they have been addressed to some extent [8; 10] (Liu, et al., 2011; Qian et al., 2018).

Many researchers have mentioned the negative impact of agricultural production on the surrounding riparian zone, especially the input of nitrogen and phosphorus, which are closely related to both nutrient turnover in the riparian zone and water quality, while litter attention has been paid to the synergistic relationship between them.

The management of riparian zone has always been an important issue in reservoir management, and the issue of human-land conflict is still an important challenge for managers. Managers often prefer to reforest near riparian areas to improve ecological benefits, but it would be better if these measures were linked to economic benefits, which is not necessary.

Many scholars have tried more economic tree species near the riparian zone in an attempt to better balance the ecological benefits with the economic benefits [13] (Zhao et al., 2020). While, farmers are more interested in obtaining higher economic benefits, mainly from the point of view of their livelihoods, which are often impoverished people, especially in the riparian zone where land is often considered «good land», and which benefits from a large amount of organic matter brought about by fluctuating water levels [4] (González, 2016).

The intense management and high input of fertilizers and pesticides generated by agriculture inevitably cause negative impacts on riparian zone habitats. Therefore, it is necessary to explore the interactions between agricultural production and riparian zone ecology, and how to make the riparian zone flora and fauna share the area harmoniously with agriculture production, and it is necessary to consider the sustainable model of riparian zone agricultural production.

The relationship between agricultural production and riparian zone is manifested in two main ways: 1. The impact of elevated water tables on the soil physicochemical properties, microorganisms, and microclimate of agricultural land, and thus how this affects agricultural production [10] (Qian et al., 2018); and 2. The negative effects on the riparian zone of pesticides and fertilizers such as nitrogen, phosphorus and potassium input to agricultural production practices [5] (Graf et al., 2020).

Therefore, how to evaluate the relationship between agricultural management practices and riparian zone habitats becomes a key point for achieving sustainable development of the riparian zone. These questions are mainly about where is the limit of mutual disturbance between agricultural production land and the riparian zone? What is the tolerance threshold of the riparian zone for agricultural production? How does the amount of pesticides and fertilizers input respond to environmental issues such as plant diversity and water quality in the riparian zone? Are there sustainable agricultural management model that can promote the ecological benefits of riparian zone?

These problems will continue to plague reservoir managers and agricultural producers in the long run, and how to effectively resolve this human-land conflict will be the mainline of management of riparian zones in the future. Although we have fully recognized the importance of riparian zone ecosystems, both in terms of vegetation succession and carbon and nitrogen sequestration, we cannot ignore the intrinsic drive of agricultural production itself.

An expanding population places higher demands on agricultural production and more land, and the stability of ecosystems is an important safeguard for the negative effects of agricultural production. Human beings and nature are on the same planet, how to share the land efficiently have always been a topic we cannot avoid. Exploring the interactions between agricultural production and riparian zone ecology may be the ultimate way to solve this problem. It is important not to deny the negative impact of agricultural production on riparian zone ecology, but at the same time to maximize the sustainable stability of the ecosystem and actively explore the model of sustainable management of agricultural production in riparian zone.

Finally, a quote from Nature's «Share the land between nature and people» article: Yet even though human societies have never been

more globally capable, interconnected, or interdependent, the social institutions, processes, and infrastructures that sustain people and the rest of life on land remain remarkably complex and heterogeneous [2] (Ellis, 2019).

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