

# Case Study of Dong People's Rice-Fish-Duck Symbiotic System in China\*

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**Summary:** Congjiang County is located in the southeast of Qian Dongnan Miao and Dong Autonomous Prefecture of Guizhou Province, China. Dong people have created the "Rice - Fish - Duck Symbiotic System" for thousands of years in this county. In the system, the traditional varieties of glutinous rice seedlings saved by Dong people are used and the fish is also bred in the terrace fields. When the fish grow up to ten centimeter long, the ducklings are put into the terrace field to be raised. The glutinous rice of the system provides shade and organic food for the fish, ducks and other aquatic animals. The fish and ducks play an important role in weeding, cultivation, fertilization, oxygen supply and eating pests etc. This ecological cycle has achieved a very good economic, ecological, social and cultural benefit. "Rice - Fish - Duck Symbiotic System" of Dong People, as one part of China's traditional knowledge and agricultural culture, has become the protection pilot of FAO Globally Important Agricultural Heritage. This system has strong practical significance and promotional value for solving the problems of the world's agricultural ecological environmental deterioration, farmland and water pollution, agricultural products safety and so on.

**Keywords:** Rice-Fish-Duck Symbiotic System, Dong People, Case Study, China

**Themes:** Agricultural Fields

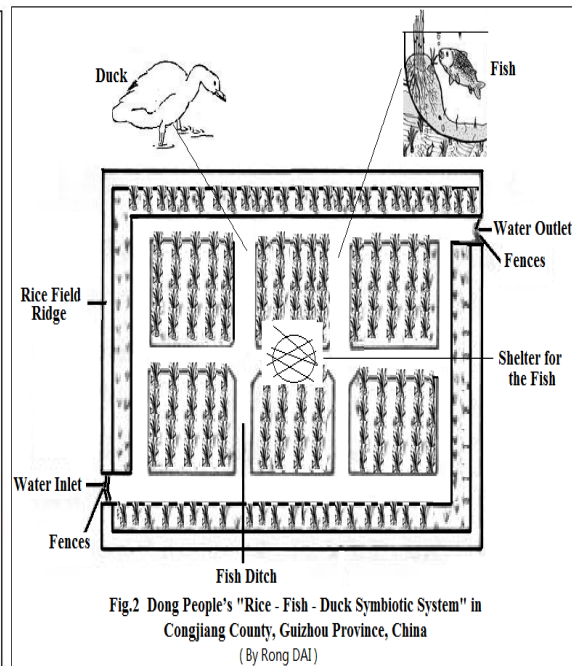
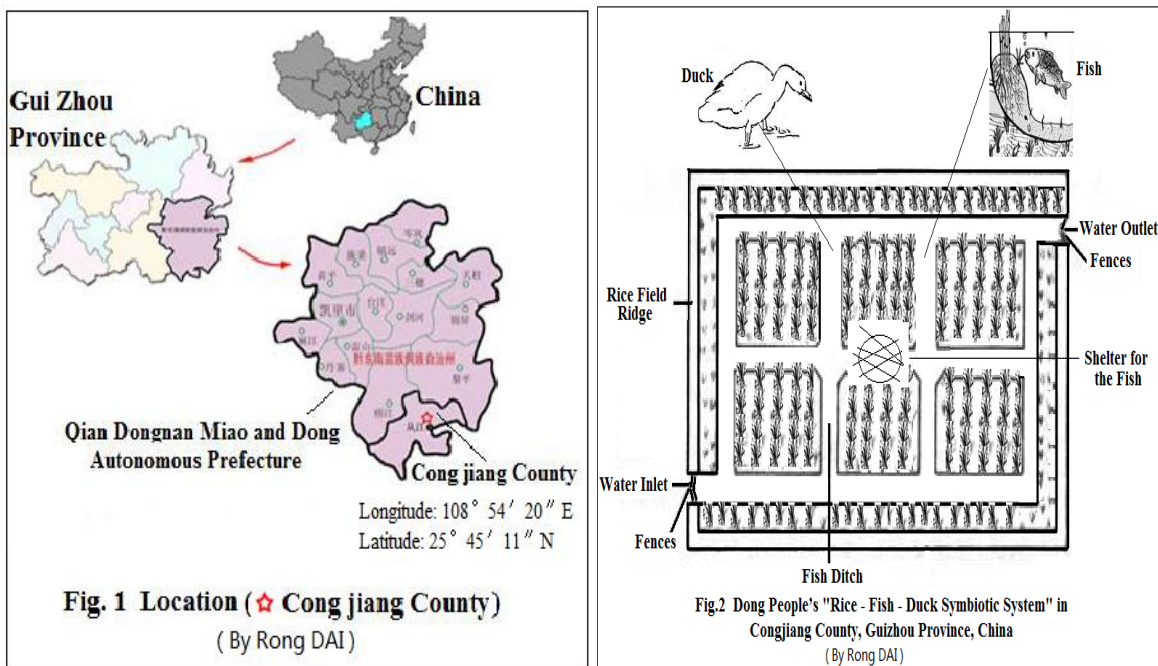
## 1. Background

China is a large agricultural country, with the rapid development of economy and science and technology, and thousands of years of traditional agricultural production methods will soon be replaced by modern agricultural methods. The development of modern science and technology greatly promoted the growth of agricultural products, the agricultural productivity level and agricultural economy, meanwhile large-scale use of chemical fertilizers and pesticides, and discharge of many pollutants in the agricultural produce process result in a series of major environmental issues such as the destruction of agricultural ecological environment, water and soil loss, land degradation, biodiversity loss etc. Shortage of agricultural natural resources, decline of the agricultural ecological environment quality, significant loss of traditional crops and poultry species resources, and food safety issues is becoming the focus of attention. Therefore, improving grain and food production levels under limited resources conditions, at the same time protecting and improving the rural ecological agriculture environment, maintaining ecological balance to coordinate regional economic development and ecological protection are the most serious challenges for the contemporary Chinese agriculture development.

## 2. Study Area

Congjiang County, located in southeastern Guizhou Province, China (Fig 1), is a typical traditional agricultural area with lack of arable land resources. It locates 108° 54' 20" east

longitude, and 25° 45' 11" north latitude. There are Miao, Dong and other 13 ethnic minorities. The ethnic minority population accounts for 94% of the total population of the county. Dong people have created the "Rice - Fish - Duck Symbiotic System" (Fig 2) for thousands of years in this county. The area of Raising Fish and Duck in Paddy Field is about 189,000 Mu, and Raising Fish and Duck in Paddy Field is the main source of high protein nutritious food required for mountain villagers in the traffic blocking areas. Food and Agriculture Organization (FAO) officials and experts made a special trip to inspect Congjiang County from 30<sup>th</sup> May to 6<sup>th</sup> June 2006, and Congjiang County sought to be made Qingtian County as tested collaborate region of agricultural heritage of rice-fish symbiosis.



### 3. Benefits Analysis

We conduct research there many times. In the system, the traditional varieties of glutinous rice seedlings saved by Dong people are used and the fish is also bred in the terrace fields. When the fish grow up to ten centimeter long, the ducklings are put into the terrace field to be raised. The glutinous rice of the system provides shade and organic food for the fish, ducks and other aquatic animals. The fish and ducks play an important role in weeding, cultivation, fertilization, oxygen supply and eating pests etc... This ecological cycle has achieved a very good economic, ecological, social and cultural benefit. "Rice - Fish - Duck Symbiotic System" of Dong People, as one part of China's traditional knowledge and agricultural culture, has become the protection pilot of FAO Globally Important Agricultural Heritage. This system has strong practical significance and promotional value for solving the problems of the world's agricultural ecological environmental deterioration, farmland and water pollution, agricultural products safety and so on. We discussed in detail the four benefits of this system as the following:



with local society, has been existed for a long time. Enlarging Fishing in Terrace Field and popularizing the technology in large scale can not only make agricultural natural resources to be developed intensively, but also improve life level of the local people.

#### **4. Opportunities and Challenges**

With the development of science and technology, high-yielding hybrid rice varieties are introduced into Dong area and cause crop monocultures, which making a number of traditional rice varieties with important genetic value loose. Because the hybrid rice is with short maturation period, high plant density, and using fertilizers and pesticides, it has greatly affect the insects, soil animals and plant, microorganisms, reduced the biodiversity of paddy field.

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