



## Dual Using Irrigation Water in Rice Fields for Fish Farming

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**ABSTRACT:** This study used the dual purpose of irrigation water used for fish farming in paddy fields in the Guilan province took place. This study was a descriptive survey questionnaire was used to doing it. The study population included 85 experts from the Bureau of Fisheries and Agriculture through random sampling, data collection was attempted. Face validity of the questionnaire was to determine the views of experts. To analyze the data in the study of statistical indicators of frequency, mean, standard deviation, coefficient of variation and Kendall's W was used which was made using SPSS<sub>16</sub> software. The results showed that the experts of Agriculture and Fisheries Department The applicability of the dual use of water resources for irrigation of rice and fish culture systems coupled totally agree province (Mean = 4.39). And problems of water scarcity and poor water quality in crops of rice and fish combined were raised in moderate to high (Mean = 3.65). Since w Kendall coefficient for the benefit of the limited water resources in the compilation of fish and rice cultivation was equal to 0.262 ( $p < 0.01$ ), is indicative of the degree of agreement among experts.

**Keywords:** Mixed Cropping of Rice - Fish, Use Dual Water Coefficient, and Kendall's W, Farmer, and Guilan Province.

### INTRODUCTION

Given the potential of integrated farming of rice and fish in rice field an easy and low cost activity and if done in principle and technical a substantial amount of fish in rice fields produced positive effects will be useful. Fish farming in rice fields from the water resources planning aspects such as stability, relative stability in land use, Improving the efficiency of production, the balance in the structure of employment, and especially women, to increase productive employment, increase farmers' income, Increased production in general and protein production In particular, is very important (Noorhosseini and Bagherzadeh, 2012). So far, studies and extensive research in developed countries, on the benefits of this type of farming has been Such as the International Development Research Centre, Canada, Sweden, America and Denmark noted Approximately 2 million dollars for research on rice and fish in Bangladesh, India, Indonesia, Thailand, Vietnam, Malaysia, the Philippines and China have investment (Momennia, 2002). Since the aquaculture requires resources such as land, water and other factors, poor farmers cannot afford their after-meals. As an aim to understand the needs and access to shared water resources in rice fields are provided, Integrated of rice and fish farming In recent times, is the most appropriate technology (Saikia and Das, 2008). Integrated of rice and fish farming can make optimal use of resources through the use supplements of land and irrigation water (Feri and

Becker, 2005). However, the most restrictive in the water, Can be water shortages, inappropriate water temperature and water contamination through the upstream farms by use of chemical pesticides noted (Noorhosseini and Allahyari, 2012). Oxygen deficiency in the water the rice fields Also another problem is the Fish farming in rice fields. In this regard, the use of modified duck Can be further oxygenation Integrated farms of rice and fish. In some cases, perforated pipes that are simple and they come out of the water spray, is very practical (Noorhosseini and Allahyari, 2012).

The present study with the aim to dual use of water resources for irrigation The Integrated rice and fish Cultivation system as well as the problems of water scarcity and Inappropriate water quality the rice fields for Fish farming in the province of Guilan took place.

### MATERIALS AND METHODS

The present study is a descriptive survey method was conducted in the province of Guilan The population of the Bureau of Fisheries and Agricultural Jihad experts were that Through random sampling, Was to gather information. Based on the minimum specimen volume table Bartlett *et al.*, (2001). 85 people were sample of this study. Data collection tool was a questionnaire. Face validity of the questionnaire was determined using the opinions of experts and specialists. To test the reliability of the questionnaire of a study guide was organized outside of the main study.

Based on the results study guide, the questionnaire was revised that the experts agree on the benefits and limitations of water resources on the Integrated fish and rice Cultivation systems in the form of spectrum (1-Fully disagree to 5-fully agree) Likert was expressed. To analyse the data in this study of Abundance Statistical indicators, Average, standard deviation, relative changes Kendall's W coefficient was used. This was done using SPSS16 software.

Kendall's correlation coefficient is a measure for determine the degree of coordination and agreement among several groups of rank N object or person. In fact, the use of this scale can be rank correlation between K set out to find. Such a measure, particularly in studies of the "validity of the reviewers' is helpful. Kendall correlation coefficient indicates that individuals several issues have been sorted according to their importance, Is basically the Similar metrics to judgment about importance of each category have used and in terms of Agree with each other.

$$W = \frac{S}{\frac{1}{12}K^2(N^3 - N)}$$

In which:

Sum of squared deviations of  $R_j$  from the mean of  $R_j$

$$S = \sum (R_j - \frac{R_j}{N})^2$$

$R_j$  = The total Rating provided by a factor

$K$  = The number of ranks sets (number of periods)

$N$  = The number of ranked

$\frac{1}{12}K^2(N^3 - N)$  = The maximum sum of squared deviations from the mean  $R_j$

**RESULTS AND DISCUSSION**

Frequency Table results indicate that over 80% of experts With applicability of the dual use of water resources for irrigation Integrated of rice and fish farming systems At rice fields of Guilan province Are agree and fully agree (Table 1). However, the problems of water scarcity and inadequate quality Water rice fields for aquaculture In the high level was raised which 5/56 of experts In spite of these problems were agreed (Table 2).

**Table 1: The frequency distribution the experts agree In applicability of the dual use of water resources for irrigation.**

Degree of agreement	Abundance	Percent	The cumulative percentage
Fully disagree	0	0.0	0.0
Disagree	0	0.0	0.0
Between	13	15.3	15.3
Agree	26	30.6	45.9
Fully agree	46	54.1	100
Sum	85	100	-

**Table 2: The frequency distribution the experts agreed With the problems of water scarcity and Inappropriate Water quality for fish farmers.**

Degree of agreement	Abundance	Percent	The cumulative percentage
Fully disagree	0	0.0	0.0
Disagree	12	14.1	14.1
Between	25	29.4	43.5
Agree	29	34.1	77.6
Fully Agree	19	22.4	100
Sum	85	100	-

The results of the mean ratings Suggests that Experts Agriculture and Fisheries Department With applicability of the dual use of water resources for irrigation Integrated of rice and fish Cultivation system Guilan province Are fully agree (mean 4.39). Problems of water scarcity and Inappropriate Water quality In

Integrated crops of rice and fish was considered moderate to high (mean 4.65). Since the coefficient w Kendal For the advantages and limitations of water resources in the system of rice-fish culture mixed farming was equal to 0.262 ( $p < 0.01$ ), Represents is the degree of agreement among experts (Table 3).

**Table 3: The mean and standard deviation of the advantages and limitations of water resources in the system of rice-fish culture mixed farming.**

Items	number	mean*	Standard deviation
Dual use of water resources for irrigation	85	4.39	0.74
Problems of water scarcity and Inappropriate Water quality	85	3.56	0.98
Kendall coefficient W	0.262**		

\* Likert spectrum (1-fully agree to 2-fully disagree)

\*\* Significant With 99% confidence

Experience shows that local knowledge With new knowledge is not only inconsistent and contradictory But also is an appropriate supplement to new knowledge In Background natural resources, soil and water resources to because history the use of this time savings achieved more scientific That if identifying and taking advantage of it and Combining with New knowledge can be Economic development and increasing income to be followed. The plan Hudson in 1982 as the causes of success and failure of soil and water conservation projects identified Simplicity of operation and that they comply with local knowledge essential are in construction, operation and maintenance of water and soil structure. In this study, In addition to the traditional identification methods Use of water and soil resources, performance, advantages and disadvantages of these methods are investigate and Will be evaluated. But to be able to take advantage of this old knowledge In order to enhance the modern methods of soil and water conservation measures taken. In recent years the indiscriminate use of vegetal toxins and Chemical fertilizers, Increases entry industrial centres wastewater into surface waters and Paddy farms have a negative impact on the environment especially on rivers and the destruction of vital communities Rivers (Lu and Li, 2006). Rice-fish integrated farming culturally and economically privileged role For the rural households. Integrated farming system, the efficiency local and Enhancing economic and also the use of nutrition in common (Fish and rice) and common management, conserve soil and water resources, and optimal operation (Bakhshzad-Mahmoudi, 1997).

The meaning of water pollution, are Chemical pollution, Microbial and pollution with waste water from lakes, Rivers, The oceans and groundwater. When pollution directly or indirectly, without treatment of synthetic material harmful water pollution on plants and organisms lively in these waters affect. In almost all cases, this effects of the addition of individual and collective species, it also destroys the natural biological groups.

### CONCLUSIONS AND SUGGESTIONS

The overall results showed that the average ratings That experts Jihad Agriculture and Fisheries Department of With applicability of the dual use of water resources of irrigation in integrated rice-fish farming system fully

agree, and they also problems of water scarcity and inappropriate Water quality in integrated rice-fish farming system in average level and raised upward.

Based on these results, it is suggested that fish farming in along farming is one of the efficient use of water resources. Which also job opportunities and Farm Household-Economics aid and will increasing agricultural and horticultural products and also reduces the quality of irrigation water.

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