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Society Willingness on Maintaining Rice Irrigated Area in Sidoarjo Regency, East Java Province of Indonesia

[1*]Markus Patiung, [2]Ismanto Hadi Santoso, [3]Setyono Yudo Tyasmoro, and [4]Nuhfil Hanani

[1]Doctoral Program on Environmental Science and Technology Graduate Program, University of Brawijaya, Malang, East Java of Indonesia
[1]Faculty of Agriculture, University of Wijaya Kusuma, Surabaya, East Java of Indonesia
[2]Professor of Economic Science, University of Wijaya Kusuma, Surabaya, East Java of Indonesia
[3]Doctor of Agronomy, University of Brawijaya, Malang, East Java of Indonesia
[4]Professor of Agricultural Economic Social, University of Brawijaya, Malang, East Java of Indonesia

ABSTRACT

Rice irrigated area is as plantation media of farmer income source as well as having the other multi function which the benefit can be widely enjoyed by the society, even in some results of research indicated that the function of rice irrigated area as the producer of environmental service was bigger than as the plantation media due to the economical valuation. The problem is during the time, the conversion of irrigated to the non irrigated area (such as rediedence, industry area, tourism, etc) is to be continous. There is needed the knowledge or understanding of socisety about the multi function of rice irrigated area for decreasing the conversion rate of irrigated to the non irrigated rice area. This research intended to identify the knowledge or understanding of society about the muloti function of rice irrigated area and then to analyze the society willingness to pay and to accept the environmental service if the farmer maintains the rice irrigated area as the existence of attention to the life environment. The methodology consisted of contingent valuation method by using multiple regression. Results showed as follow: 1) the knowledge or understanding of society to the multi function of rice irrigated area in research location was low; 2) variables of education, age, researcher respondent, instructor respondent, and bureaucratic respondent were significantly influenced to the knowledge on multi function of irrigated rice area; but farmer respondent and respondent sex were not significantly influenced; 3) variables of income level, age, education level, the distance from residence to the river, the value of flood loss were significantlt influenced to the society willingness on paying environmental service of irrigated rice area; 4) variables of cultivation irrigated rice area, age, education level, income level, the number of family life were significantly influenced to the fa [2]rmer willingness for accepting the payment of irrigated rice area environment, but farmer variable that presented the the farming was profitable was not significantly influenced; and 5) the dimension of society willingness on paying (WTP) the environmental service of irrigated rice area was in average of Rp. 3,433.-/ha, but the society willingness on accepting (WTA) was Rp. 4,727.272/ha. The lower of WTP and WTA were caused by the lower society understanding to the multi function of rice irrigated area.

KEYWORDS: multi function, irrigated rice area, conversion, and knowledge.

INTRODUCTION

Agricultural sector has an important and strategic function on enonomic development in Indonesia. The strategic function of agricultural sector was due to the supported life of most population in Indonesia such as about 70% of Indonesia population worked as farmer and farmer labour which the area ownership was in average of 0.5 ha. In addition, the principal food of Indonesian is rice. Therefore, development in agricultural sector is nacessary to get priority scale for stimulating the increasing of food productivity especially rice and it will increase the farmer prosperity too. The increasing efforts on the production of rice, corn, soybean, etc are continuously made effort through country inside production for fullfiling society demand. Based on the effort of food defence increasing, the productivity of rice, corn, and soybean are really supported by country inside food productivity [1].

One of the basic problems which was faced in agricultural development in Indonesia especially in implementing food defence is the less productive rice irrigated area because there is function change into non irrigated rice area (such as industry area, residence, tourism, etc). Based on the statistical data from 2009 to 2011 [2], conversion rate of irrigated rice area to the non irrigated area was in average of 241.286 ha/year. In the other side, the farmers themselves also gave the contribution on the function change of irrigated rice area when they were faced to the life demand and there was no choice except selling their iirigated rice area as the only asset that belonged to them. It was as one of the factors which would increase the conversion of irrigated to the

***Corresponding Author:** Markus Patiung, Faculty of Agriculture, University of Wijaya Kusuma, East Java of Indonesia. Email: markus_uwk@yahoo.co.id

non irrigated rice area [3]. In addition, the conversion of irrigated to the non irrigated rice area was accelerated due to the government policy through regional space system which alocates fertile irrigated rice area for the need of non irrigated rice and there is mwrket failure. The approach on multi function of irrigated rice area is as one of some alternatives for minimizing the conversion of rice irrigated to the non irrigated rice area (such as residence, industry area, etc) because the approach on multi function of irrigated rice area does not only finacially evaluate the results valuation of irrigated rice area in a short term, but it also socially evaluate the environmental service and the valuation in long term [4].

The problem in this research was the conversion of irrigated to the non irrigated rice area (such as residence, industry area, tourism etc) continuously [5]. It could be caused by the less understanding to the multi function of irrigated rice area. This research intended to identify the knowledge or understanding of society about the multi function of irrigated rice area and to analyze the society willingness to pay and to accept the environmental service of irrigated rice area [6]. The methodology consisted of Contingent Valuation Method (CVM) by using multiple regression [7].

MATERIALS AND METHODS

This research was conducted in Sidoarjo Regency, East java Province of Indonesia. The selection of research location was based on the consideration as follow: 1) the conversion of irrigated rice area in the region was relatively high as the reason of city regional development (Sidoarjo Regency as the supporting of Surabaya city) mainly for residence and insudtry area; and 2) during the last 10 years, flood frequency was relatively happened and fell on the society in surrounded the region.

Sidoarjo Regency consisted of 18 districts. From the 18 districts, it was selected 2 districts as the research location such as Tulangan District, Jiken Village which respresented the farmer and Sidoarjo District, Sidokare Village which represented the society that was often fallen of flood. The research locations were purposively determined by considering that Jiken Village was as one of the villages in Sidoarjo Regency which still reflected agricultural village, but Sidokare Village was as one of the villages which was often fallen of flood during the last ten years. The farmer respondents were selected for 10% of farmers total such as 10 farmers of the total of 299 farmers in this village, but the society respondent non farmer that was oftem fallen of flood were selected as 30 persons from the total of available population. Determination of respondents for survey activity used simple random and purposive sampling and the valuation method used contingent valuation method by using multiple regression [8][9] and technique of analysis used SPSS program [10][11] .

Society knowledge about the multi function of rice irrigated area

$$Y = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \beta_1 D_1 + \beta_2 D_2 + \beta_3 D_3 + \beta_4 D_4 + \beta_5 D_5 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Note:

Y = knowledge score about the multi function of rice irrigated area ($0 < Y \leq 1$). The value of Y is calculated from the quantity of multi function aspects by certain respondent and it is divided by the most quantity of multi function aspects that are known from the whole respondents. Result of interview showed that there were 7 aspects on the multi function of rice irrigated area which was known by a respondent and number of 8 was as the divider for calculating the value of Y.

X_1 = education level of respondent (year)

X_2 = respondent age (year)

D_1 = dummy: 1 for researcher respondent, 0 for the other respondent

D_2 = dummy: 1 for instructor respondent, 0 for the other respondent

D_3 = dummy: 1 for bureaucratic respondent, 0 for the other respondent

D_4 = dummy: 1 for farmer respondent, 0 for the other respondent

D_5 = dummy: 1 for male respondent, 0 for female respondent

Society willingness to pay (WTP) the environmental service of rice irrigated area by using the anlysis of descriptive, correlation, and multiple regression as follow:

$$WTP = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \alpha_4 X_4 + \alpha_5 X_5 + \beta_1 P_1 + \beta_2 P_2 + \beta_3 P_3 + \beta_4 P_4 + \gamma_1 D_1 + \gamma_2 D_2 + \gamma_3 D_3 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Note:

WTP = respondent willingness to pay the environmental service if rice irrigated area (Rp)

X_i = quantitative variable that consisted of:

X_1 = income level (Rp/ year)

X_2 = respondent age (year)
X_3 = education level (year)
X_4 = the distance from resident to river (m)
X_5 = flood loss (Rp)

P_1 = variable of perception dummy that included:
P_1 = 1 if the respondent agrees and understands that rice irrigated area has multi function on controlling flood, 0 is on the contrary
P_2 = 1 if the respondent has the same idea about farmer payment on environmental service of rice irrigated area, 0 is on the contrary
P_3 = 1 respondent has the same idea that public society makes feel the benefit on environmental service of rice irrigated area and therefore they ought to be prepared to pay the environmental service for farmer society, 0 is on the contrary
P_4 = 1 if respondent has the same idea that the conversion of rice irrigated area in Sidoarjo Regency ought to be admitted or controlled and the available irrigated rice area is become as private one, 0 is on the contrary

D_k = dummy variable of respondent status:
D_1 = 1 for the respondent of civil state employer (PNS), 0 for the other respondent
D_2 = 1 for the respondent of public employer, 0 for the other respondent
D_3 = 1 for the respondent of public business man, 0 for the other respondent
(D_1 D_2 and D_3 =0) for informal respondent or being not work respondent

The willingness of rice irrigated farmer to accept (WTA) the patment on environmental service of rice irrigated area were calculated by using the analysis of descriptive, correlatin and multiple regression as follow:

$$WTA = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \alpha_4 X_4 + \alpha_5 X_5 + \beta_1 D_1 + \beta_2 D_2 \quad (3)$$

Note:
WTA = the willingness of respondent to accept the payment on environmental service of rice irrigated area (Rp)
X_i = quantitative variable
X_1 = area number of work (ha)
X_2 = respondent age (year)
X_3 = education level (year)
X_4 = the number of family member (person)
X_5 = income level (Rp/ year)
D_j = dummy variable:
D_1 = 1 for the respondent with other income source, 0 is on the contrary
D_2 = 1 for the respondent who expresses that plantation makes profit, 0 is on the contrary

RESULTS AND DISCUSSION

Knowledge or understanding of society about the multi function of rice irrigated area

Knowledge or understanding of society about the multi function of irrigated rice area in research location was still low. The highest knowledge on the function of rice irrigated area which was known by the society was eight and the lowest was one. Generally, research respondent more knew or understood about about the multi function of rice irrigated area such as 33.5%, the bureaucratic respondent of 30.5%, and instructor respondent of 27.4%, but the farmer respondent only of 8.6%. From 45 respondents which understood the eight multi function of rice irrigated area were 12 persons (8.5%) and 100% of respondents understood that one of the irrigated rice area multi function was for flood controlling.

Model of regression equation for society knowledge about the multi function of irrigated rice area

Estimated model analysis on knowledge or understanding of respondent about the multi function of rice irrigated area was as follow: the estimated model could explain the vaiety of aspect quantity on the multi function of rice irrigated area which was known by respondents auch as of 89.7% on the accuray level of 95% ((α = 0,05%) and there was 10.3% was explained by the other variable that was not included in this research. Result of variance analysis (anova) showed that F-calculated was 46.093 with the significant level ((α) of 0%, it meant that the model had significant influence to the multi function quantity of rice irrigated area that was known by respondents. Table 1 presented the analysis result on model regression of respondent knowledge about the multi function of rice irrigated area.

Table 1 Analysis result on model regression of respondent knowledge about the multi function of rice irrigated area in 2011

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.059	7	.437	46.093	.000[a]
	Residual	.351	37	.009		
	Total	3.410	44			

a. Predictors: (Constant), X1, X2, D1, D2, D3, D4, D5.

b. Dependent Variable: Y

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Co-linearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.108	.123		.883	.383		
	X1 (education)	.015	.006	.247	2.423	.020	.267	3.752
	X2 (age)	.003	.002	029	506	.016	.823	1.215
	D1 (R. research)	.477	.093	.545	5.105	.000	.244	4.095
	D2 (R. instructor)	.359	.090	.410	3.986	.000	.263	3.797
	D3 (R. bureaucreatic)	.435	.106	.497	4.092	.000	.189	5.299
	D4 (R. farmer)	.009	.084	.014	.104	.418	.144	6.951
	D5 (sex)	.001	.042	.001	.019	.485	.651	1.535

a. Dependent Variable: Y

Varibles of education level, age, research respondent, instructor respondent, and bureaucratic respondent had significant influence to the knowledge or understanding on the multi function of rice irrigated area. The higher education level of society would cause the higher knowledge or understanding of the society to the multi function of rice irrigated area. It meant that if the education level of society was one level higher, so the knowledge or understanding would increase. The higher respondent age would increase the knowledge or understanding to the multi function of rice irrigated area. There was estimated that it was related with the multi function of rice irrigated area which was relatively old but generally it has not been too understood and it has not been as one of the base decision making mainly on conversing rice irrigated to the non irrigated area. Respondent of research, instructor, and bureaucratic ought to understand about the multi function of rice irrigated area because it was demanded sue to the function and duty. Good understandong on the multi function of rice irrigated area among the researcher, instructor, and bureaucratic ought to be able as one of decision making on the policy of rice irrigated area multi function which was continuosly happened during the time. Farmer and sex variables were not significantly influenced to the understanding on multi function of rice irrigated area. Farmer variable was not significantly influenced. It meant that farmer respondent had less knowledge or underastanding to the multi function of rice irrigated area because the averageed education level of farmers were junior high school, even there was only elementary school. However, variable of sex respondent indicated that there was no difference between male and female in knowledge or understanding on the multi function of rice irrigated area.

Society willingness to pay (WTP) the environmental service of rice irrigated area

Study about the society willingness to pay the environmental service of rice irrigated area was invloving five aspects as follow: 1) respondent opinion about the reason of flood; 2) respondent perception about the multi function of rice irrigated area; 3) dimension of WTP; 4) regression equation model of WTP; and 5) mechanism and payment tool pf WTP

1. **Respondent opinion about the reason of flood and the manner of controlling**

   The understanding of respondent about the flood reason which went through their resident location was in variety enough. There were 96.67% of respondents presented that the main reason of flood was river shallowing; 80% of respondents expressed there was less water interception; 53.33% of respondents said there was river narrowing; 10% of respondents expressed there were river management and society behaviour to throw the dirt to river, and 76.67% of respondents presented there were more rice irrigated area were function changed to the non irrigated one. Respondent opinion about flood mitigation in resident areas were in variety. Many alternatives of flood mitigation which

were suggested were 93.33% of respondents suggested that the alternative of flood mitigation was river dredging; 33.33% of respondents suggested to had being carried out instruction to the society about flood mitigation; 53.33% of respondents suggested there had to be carried out going green; 40% of respondents suggested to normalize river, the most respondents of 96.67% suggested to fullfil the flood by building dam, and 46.67% of respondents suggested to stop the function change from rice irrigated to the non irrigated area.

2. Respondent perception about the multi function of rice irrigated area

From 4 questions to the respondents, the whole respondents had the same opinion that rice irrigated area had environmental function as flood mitigation, farmers had an authority to pay the environmental service of rice irrigated area if the farmers were going to maintain rice irrigated area for being not function changed to the non irrigated one. Respondents also had the same opinion that public society had feeling the benefit on the environmental service of rice irrigated area so that the public society needed to pay the environmental service, and the respondents also had the same opinion that the available rice irrigated area in Sidoarjo Regency ought to be not admitted for being function changed so that the available rice irrigated area became as private one

3. Dimension of WTP

Dimension of society willingness for paying (WTP) on environmental service if rice irrigated area was in variety of Rp. 3,000.- to Rp. 9,000.-. By the average of Rp. 3,433.-, it was very depended on the level of society opinion, respondent age, education level, the distance from resident to river, the loss value due to the flood. In addition, it was also influenced by respondent perception to the society willingness on paying the environmental service of rice irrigated area and respondent status.

4. Regression equation model of WTP

Estimated model analysis on the function of society willingness to pay (WTP) the environmental service of rice irrigated area as the second equation can explain the variety of society willingness to pay environmental service of rice irrigated area with determination coefficient (R^2) of 0.956. It indicated that the variation of variables included income level, age, education leel, the distance from resident to river, the loss value due to the flood and the respondents had the same opinion that farmer had an authority on the environmental service payment of rice irrigated area. The respondents also had the same opinion that public society felt the benefit on the environmental service of rice irrigated area and therefore public society ought to agree to pay the environmental service of rice irrigated area for farmer society. In addition, the respondents had the same opinion too to the expression that the conversion of rice irrigated area in research location ought to be forbidded or controlled and the available rice irrigated area was become as private one. It was simultaneously could be explained of 95.6% to the society willingness on paying the environmental service of rice irrigated area, but the rest of 4.4% was explained by the other variable that could not be entered in this research. From the analysis result, it was obtained that the value of $F_{\text{-calculated}}$ was 30.646 with the significant level (α) of 0%. Therefore, independent variables simultaneously had significant influenced to the society willingness on paying (Y). Table 2 presented the model regression analysis result of society willingness to pay (WTP) on environmental service of rice irrigated area in 2011.

Table 2 Model regression analysis result of society willingness to pay (WTP) on environmental service of rice irrigated area in 2011

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.542E8	12	1.285E7	30.646	.000[a]
	Residual	7129864.573	17	419403.798		
	Total	1.614E8	29			

a. Predictors: (Constant), D3, P3, X4, X2, D1, P1, D2, X1, X3, X5, P2, P4

b. Dependent Variable: Y

coefficients[a]

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.	Collinearity Statistics

	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	1065.653	1510.977		.705	.490		
X1 (income level)	6.398E-5	.000	.573	6.584	.000	.344	2.909
X2 (age)	37.353	14.594	-.189	-2.559	.020	.475	2.104
X3 (education level)	180.831	90.089	.179	2.227	.013	.326	3.071
X4 (the distance from resident to river)	.678	1.018	.058	.666	.014	.342	2.928
X5 (loss value of AB)	3.469E-5	.000	.013	.143	.088	.301	3.328
P1 (perseption-1)	2309.415	867.787	.338	2.661	.016	.161	6.225
P2 (perception-2)	450.439	484.873	.086	.929	.066	.304	3.289
P3 (perception-3)	2558.851	629.686	.467	4.064	.001	.197	5.074
P4 (perception-4)	2085.194	977.614	-.335	-2.133	.048	.105	9.495
D1 (dummy-1)	592.742	410.258	.095	1.445	.167	.598	1.672
D2 (dummy-2)	500.370	362.786	.107	1.379	.186	.433	2.312
D3 (dummy-3)	864.647	321.892	-.185	-2.686	.016	.549	1.820

a. Dependent Variable: Y

All of independent variables were influenced to the society willingness on paying the environmental service of rice irrigated area. Therefore, income level had positive and significant influence on paying the environmental service of rice irrigated area. It meant that when the society opinion was up, so the society willingness to pay environmental service of rice irrigated area would more increase. Variable of age had significant influence to society willingness on paying environmental service of rice irrigated area. It meant that if the age increased, it would increase society willingness on paying environmental service. Variable of respondent education level had positive and significant influence to the payment on environmental service of rice irrigated area. It meant if the education of society was higher or more incraesed, so it would increase the society willingnes to pay environmental service of rice irrigated area. Variabel of the distance from resident to river was influenced to the payment on environmental service of rice irrigated area. It meant that the nearer distance from resident to river would cause more society willingness on paying environmental service of rice irrigated area. Variable of loss value due to the flood had significant influence to the payment on environmental service of rice irrigated area. It meant that the more loss value which was felt by society due to the flood would cause the more society willingness on paying environmental service of rice irrigated area.

Society perception to the payment of environmental service od rice irrigated area was that the respondents agreed and understood that rice irrigated area had the function on controlling flood. Respondents had the sane opinion that farmers had an authority of the payment on environmental service of rice irrigated area. In addition, public societyfelt the benefit on environmental service of rice irrigated area and therefore public society ought to agree to pay environmental service of rice irrigated area for farmer society. Respondents also had the same opinion that conversion of rice irrigated area in research location ought to be forbidded or controlled and the available rice irrigated area was become as private one.

Variable of state employer had positive influence to the payment on environmental service of rice irrigated area. Respondent with public work had postive influence to the payment on environmental service of rice irrigated area. Respomdent of business man had negative and significant influence of payment on environmental service of rice irrigated area.

5. Mechanism and payment tool of WTP

Mechanism on paying of WTP which was generally selected by the respondents was through claim of earth and building tax, the rice price, and through the bill payment of electric (PLN) and drinking water (PAM). Payment on environmental service of rice irrigated area which was more selected by respondents was the payment on earth and builbing tax such as 76.7% and through the rice price of 13.3%, and there was 10% chose the mechanism on payment of electric and drinking water bills.

Payment through the earth and building tax was easier and not to be felt because it was carried out every year. However, the reason on the option by rice price mechanism was also assumed not to be felt and it could directly give insentive for the farmers. The optional on the payment of electric (PLN) and drinking water (PAM) was by the reason that the payment was carried out every month and it was not too felt by the society.

Farmer willingness for accepting the payment (WTA) on environmental service of rice irrigated area

Study about farmer willingness to accept the patment on environmental service of rice irrigated area included four aspects as follow: 1) perception of farmer respondents about the multi function of rice irrigated area; 2) dimension of WTA; 3) regression equation model of WTA; 4) form and mechanism of payment on environmental service of rice irrigated area which was hoped by the farmer.

1. Perception of respondents about the multi function of rice irrigated area

For knowing the farmer perception simultaneously to present the inflormation about environmental service of rice irrigated area to the farmers were apllying three questions as follow: 1) Did the farmers understand that rice irrigated area could be functioned as flood mitigation?; 2) By deing aailable environmental service of rice irrigated area as the impact from farmer to maintain the rice irrigated area, dis the farmers agree to accept the payment on environmental service of rice irrigated area?; 3) According to Mr/ Mrs, did the rice irrigated farming in the location was still profitable?

The first question was well responsed by the farmer respondents, all of them had the same opinion that rice irrigated area had the same function as flood mitigation. It meant the farmers understood that when there was no rice irrigated area, it could be occured flood. Therefore, farmers in research location did not agree to sell their rice irrigated area, but there were some expressions of the farmers that they maintained their rice irrigated area and it was not function changed due to the attention of government. The second question was asked to farmers that by being available enironmental service of rice irrigated area as the impact of farmer to maintain rice irrigated area, dis the farmer agree to accept thae payment on environmental service of rice irrigated area. The whole farmers agreed to accept the payment. Even the farmers expressed that they agree to maintain the rice irrigated area as the private one if there was a guarantee from government related with seed and manure. The third question that was asked to the farmers was did the rice irrigated farming in each location is still profitable or not. All of the farmers ecpressed that it was still profitable, it meant that rice irrigated farming was still enough to fullfil family demand. However, it was also supported by the analysis of rice irrigated farming in research location which gave the result of B/C was more than one. It meant that based on the financially analysis result, rice irrigated farming in research location was profitable.

2. Dimension of WTA value

Dimension of farmer willingness value to accept the payment on environmental service of rice irrigated area when the farmer was willing to maintain the private rice irrigated area as the form of attention to the environment was in the range of Rp. 500,000.- to Rp. 4,000,000.- with the average of Rp. 4,727,272.-/ ha. The dimension of farmer willingness value to accept the payment on environmental service of rice irrigated area was influenced by the area number on rice irrigated area of farmer cultivated, respondent farmer age, farmer education level, number of family sufferer, income level, respondents which had the other income except the rice irrigated farming, and respondents which expressed that rice irrigated farming was still profitable.

3. Regression equation model of WTA

Estimated model analysis of farmer willingness function to accept the payment (WTA) on enrironmental service of rice irrigated area due to the equation (3), the model could explain the variety of farmer willingness to accept the payment on enrironmental service of rice irrigated area with determination coefficient (R^2) of 0.96. It indicated that the variation of independent variables) (X_1, X_2, X_3, X_4, X_5, D_1, D_2,) simultaneously could explain the variation of dependent variables of 96%, but the rest of 4% was explained by the other variables which were not entered in this research.

From analysis result, it was obtained that the value of $F_{calculated}$ was 74.899 with the significant level (α) of 0%. Therefore, the independent variables simultaneously had significant influence to the independent variables. Table 3 presented analysis result on the model regression of farmer willingness to accept the payment (WTA) on environmental service of rice irrigated area in 2011.

Table 3 Analysis result on the model regression of farmer willingness to accept the payment (WTA) on environmental service of rice irrigated area in 2011

ANOVA[b]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2.259E13	7	3.227E12	74.899	.000[a]
	Residual	9.480E11	22	4.309E10		
	Total	2.354E13	29			

a. Predictors: (Constant), D2, X4, D1, X2, X5, X3, X1

b. Dependent Variable: Y

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Co-linearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	803257.630	453435.526		1.771	.090		
	X1 (area number)	2.279E6	553698.788	.521	4.116	.000	.114	8.757
	X2 (age)	-6431.231	4633.633	-.069	-1.388	.179	.743	1.346
	X3 (education)	139710.649	30213.819	.396	4.624	.000	.250	4.003
	X4 (∑ family member)	26139.271	35074.909	.041	.745	.064	.610	1.641
	X5 (income)	.042	.018	.184	2.300	.031	.286	3.502
	D1 (farming)	260521.925	87529.881	.142	2.976	.007	.807	1.239
	D2 (profit)	157827.074	193191.233	.075	.817	.423	.215	4.648

a. Dependent Variable: Y

All of independent variables were influenced to farmer willingness to accept the environmental service of rice irrigated area except the farming variable was profitable. Variable of cultivated rice irrigated area had positive and significant influence to farmer willingness for accepting the payment on environmental service of rice irrigated area. It meant that if area number of farmer cultivation increased of one hectare, so farmer willingness for acceting the payment on environmental service of rice irrigated area would increase too. Farmer age was significantly influence farmer willingness to accept the payment on environmental service of rice irrigated area. It meant that the increasing of age would increase farmer willingness to accept the payment on environmental service of rice irrigated area. Variable of farner education level had positive and significant influence to farmer willingness to accept the payment on environmental service of rice irrigated area. It meant that the higher farmer education level would increase farmer willingness to accept the payment on environmental service of rice irrigated area. Variable of family sufferer number was influenced farmer willingness to accept the payment on environmental service of rice irrigated area. It meant that if there was additional of 1 family member, it would increase the farmer willingness to accept the payment on environmental service of rice irrigated area. Variable of farmer income level was significantly influenced to farmer willingness to accept the payment on environmental service of rice irrigated area. It meant if farmer income increased, the farmer willingness to accept environmental service of rice irrigated area would increase.

Farmer who had the other income except from farming in rice irrigated area was influenced farmer willingness to accept the payment on environmental service of rice irrigated area. Farmers who expressed their farming were profitable was not influenced the farmer willingness to accept the payment on environmental service of rice irrigated area.

4. The form and mechanism on payment on environmental service of rice irrigated area which was hoped by farmers

The form of insentive which was hoped by the farmers in research location as the payment on environmental service of rice irrigated area were in variety. The most form that was willingly by the farmers were in the form of production facility supply such as seed as well as pesticide, manure, etc. At about 50% of farmers was interest to this mechanism and there was very hoped by farmers because whereas they had money for buying production facility but when it was needed, there was seldomly not available in market. The guarantee of unhuilled rice and the improvement if irrigation channel were as the second rank which was interested by farmer such as each of 16.7%. It was assumed by the farmer that when the price of unhuilled rice was suitable enough, it could really be felt by farmers when they sold the unhuilled rice. Agricultural instruction was also still interested by farmers but only 6.7% of them liked the form of instruction. However, special support such as agricultural machine tool was not too interesting for respondent beacuse the average of farmers had it but lossing form of earth and building tax (PBB) was not interested for the farmers because the farmers assumed that as good citizens, they had remained to oay the earth and building tax.

CONCLUSION

The knowledge or understanding of society to the multi function of rice irrigated area in research location was still low. Dimension of society willingness to pay the environmental service of rice irrigated area was in average of Rp. 3,433/ year, but dimension of farmer willingness to accept the environmental service of rice irrigated area was as Rp. 4,722.272/ ha. The lower value of WTP and WTA because of the lower knowledge or

understanding of society about the multi function of rice irrigated area or the lower knowledge or understanding to the environment.

Regression equation model of society knowledge or understanding about the multi function of rice irrigated area indicated that variables of education, age, research respondents, instructor respondents, and bureaucreatic respondents were significantly influenced the multi function knowledge of rice irrigated area, but farmer respondent and sex respondents was not significantly influenced.

Regression equation model of WTP indicated that variables of income level, age, education level, the distance from resident to river, loss value due to the flood were significantly influenced the society willingness to pay on the environmental service of rice irrigated area. The most general mechanism of payment on WTP was selected by respondents through the claim of earth and building tax.

Regression equation model of WTA indicated that variables of cultivation rice irrigated area number, age, education level, income level, number of family sufferer, farmer with the other income except farming were significantly influenced the farmer willingness to accept the payment on environmental service od rice irrigated area, but variable of farmer which expressed that the farming was profitable was not significantly influenced. Respondent of farmer was willing so that the payment mechanism of WTA could be carried out through the production facility supply.

SUGGESTION

Suggestion for the next researcher is to be able to carry out the study which is related with the society knowledge or understanding on the multi function of rice irrigated area by using the other variables and different method. Therefore, the knowledge or understanding on the multi function of rice irrigated area can be used as the base in design of agricultural development especially the function change from irrigated to the non irrigated area.

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