Research paper

Landlord Awareness of and Willingness to Participate in a Green Forestation Plan: The Case of Tainan County

Wan-Yu Liu,[1)] Jiunn-Cheng Lin[2,3)]

【Summary】

A green forestation plan (GFP) is expected to promote the reforestation of plains totaling 60,000 ha within the first 8 yr in Taiwan. Annual subsidies for landlords, is NT$120,000 (US$ 4,000) per hectare, and NT$2.4 million for 20 yr. In this paper, we surveyed landlords' opinions towards the GFP in an attempt to understand their incentives to participate in the GFP and their levels of concern and agreement towards the policy design. According to the results of this paper, there was still a relatively high proportion of respondents who were not aware of the GFP; more than 50% of landlords were neutral or willing to participate given high reforestation subsidies; approximately 30% of landlords were unwilling to participate. In terms of the period of this policy, 52.7% of respondents indicated that it should be shortened to ≦ 15 yr. In terms of the amount of the subsidy, 41.7% of respondents said that it should be raised to approximately NT$250,000/ha. Some policy suggestions are provided as follows: (1) many landlords are still unaware of the GFP so the government should enhance the promotion of the policy; (2) many landlords are unwilling to participate in GFP mainly because they do not own enough land to be eligible, hence the government should consider adjusting its requirements for the minimum agricultural land area; (3) for subsequent promotions of the GFP, the government may consider targeting landlords with high incomes and high levels of education; and (4) because the subsidy of this policy alone provides limited help to landlords, the government should help landlords explore other revenue possibilities from afforestation in addition to the existing subsidies and raise the participation incentives.

Key words: green forestation plan (GFP), landlord, willingness to participate.

Liu WY, Lin JC. 2011. Landlord awareness of and willingness to participate in a green forestation plan: the case of Tainan County. Taiwan J For Sci 26(2):113-24.

[1)] Department of Applied Natural Resources, Aletheia University, 70-11 Beishiliao, Beishi Village, Madou Township, Tainan 72147, Taiwan. 真理大學自然資源應用學系，72147台南縣麻豆鎮北勢里北勢寮70-11號。

[2)] Taimalee Research Center, Taiwan Forestry Research Institute, 6 Qiaotou, Dawang Village, Taimali Township, Taitung 96431, Taiwan. 林業試驗所太麻里研究中心，96431台東縣太麻里鄉大王村橋頭6號。

[3)] Corresponding author, e-mail:ljc@tfri.gov.tw 通訊作者。

Received August 2010, Accepted January 2011. 2010年8月送審 2011年1月通過。

研究報告

地主對綠色造林計畫之參與意願與政策認知 -以台南縣為例

柳婉郁[1)] 林俊成[2,3)]

摘 要

台灣在2009年開始實施的綠色造林計畫，預計在前8年推動平地造林6萬公頃，每公頃每年補助12萬元，20年合計240萬元。本研究針對地主對於綠色造林計畫之看法進行問卷統計分析，以探討地主對於綠色造林計畫之參與誘因、對政策設計之重視與同意程度及相關看法，期能建議相關配套措施提昇綠色造林計畫之政策實施效益。本研究結果顯示：農地地主不知道政府實施綠色造林計畫之比例偏高；在高造林獎勵金的政策下，有五成以上的農地地主之參與意願為普通，約莫三成則不願意參與。在參與造林期間方面，受訪者中有52.7%認為最合理規劃之參與造林期間應下降至15年以下。在補助金額方面，受訪者中有41.7%認為最合理規劃之補助金額應提高為每年每公頃25萬元左右。本研究結果提出政策建議如下：(1)尚有許多農民仍然不知道有綠色造林計畫，故政府在政策推廣方面，仍需多方面加強。(2)許多人不參加綠色造林計畫主因為沒有足夠的農地面積，故政府對於農地面積之限制可酌量調整。(3)未來在推廣綠色造林計畫方面，政府可鎖定高收入、高學歷者加強政策推廣。(4)未來政府規劃其餘造林之營收效益，使造林政策除了有獎勵金，另有其他經濟效益以便提高參與造林之誘因，獎勵金之提供對於農地地主幫助有限。

關鍵詞：綠色造林計畫、地主、參與意願。

柳婉郁、林俊成。2011。地主對綠色造林計畫之參與意願與政策認知-以台南縣為例。台灣林業科學 26(2):113-24。

INTRODUCTION

Taiwan's entry into the World Trade Organization (WTO) in 2002 caused domestic agricultural products to lose their competitive advantages due to the higher costs required in production, and as a consequence, the topography of farmland use began to change on a large scale. In response to the decrease in agricultural production, which freed up a sizeable volume of farmlands, the government launched many environmental payment projects to encourage afforestation. Such projects aimed to facilitate effective use of fallow lands, more importantly, lay out a structure for Taiwan's economic development, and upgrade the quality of the environment. As for past afforestation projects, several incentive rewards were set up, including the 2002 Afforestation Program in Plains Area (APA), 2008 Green-Sea Afforestation Program (GSA), and 2009 Green Forestation Plan (GFP). Now the government continues to offer higher amounts of economic incentives, with the aim to increase the willingness of landlords to participate in the GFP, in turn, slow down the destruction of the landscape brought about by economic development, and bring new opportunities to landlords and farming villages. The GFP is expected to promote 60,000 ha of forestation

in the plains area in the first 8 yr, and each hectare is slated to receive an annual subsidy of NT$120,000 (US$ 4,000) over 20 yr. In addition, the government expects to set up three 1000-ha forest recreation parks in the project. Through the project, the government expects to effectively increase the forest coverage, create high-quality recreational parks, facilitate active development of the recreational industries in the plains area, and increase the dimensions of the green spaces for public use (Forest Bureau, Council of Agriculture 2008, Council for Economic Planning and Development 2008).

As for landlords' participation in past afforestation programs, much literature dealt with this subject, including Tseng (1993), Huang (1992, 2001), Yen et al. (2002), Hendrickson (2003), Hsu (2003), KC Lin (2003, 2008a), Liu and Lin (2009), Lin and Wang (2004), Liu (2004, 2008), and YC Lin (2008b). The GFP has only been implemented for slightly over 1 yr. For this reason, relevant research literature has not become available at the current stage; therefore, to improve the effectiveness of policy implementation, the government or policy makers may be concerned about 2 questions: what factors will affect private landlords' participation incentives?; and will landlords agree or be satisfied with the policy design of the GFP? This paper mainly answer these 2 questions by exploring the incentives for landlords' participation in the GFP and their opinions on the policy design through a questionnaire survey and analysis, with the goal of providing policy suggestions to enhance the effectiveness of the GFP.

MATERIALS AND METHODS

Scope of the survey and method of sampling

This paper chose Tainan County for the following 2 reasons: 1. Tainan County is one of the vicinities that has the largest area of farmlands; considerations are also given to inconvenient transportation and limited budgets; and 2. Tainan County has the largest area of fallow farmlands in Taiwan, and the second largest area of forestation in western Taiwan for the APA implemented from 2002 to 2007 (Lin 2008).

Due to the massive number of landowners and their extensive scattered areas, there was a certain level of difficulty conducting a full-scale census. Therefore, in consideration of the convenience of surveying, this paper chose a convenience sampling. Convenience sampling is also known as optional sampling; it is a non-random sampling method, used for the benefit of convenience. With this sampling method, samples are selected with consideration to proximity and convenience of measurement. For the questionnaire survey, this paper delivered 400 copies of questionnaire from June 22 to July 22, 2009, and received 300 effective copies in return.

Questionnaire design

This paper adopts a quantitative survey research method for the questionnaire survey, which was designed based on the research objectives, attributes, framework, and a literature review. The questionnaire is divided into 2 major sections: the first section consists of survey questions for personal data, and the second section asks the respondents' opinions about and cognition of the GFP. The initial draft of the questionnaire survey was reviewed by scholars, who evaluated the applicability, necessity, and scope of coverage of each of the questions and made relevant suggestions for amendments.

The questionnaire is divided into 2 major sections as follows: (1) personal data measure

dimensions, such as the demographic data of landlords, the area of farmlands owned, annual rental for the farmland, the lowest price to sell, and the current usage of the farmlands; and (2) opinions on the following dimensions of the GFP survey including the respondents' knowledge of forestation policy, the respondents' willingness to participate, the respondents' focuses and agreement with the policy design, the most suitable time period for the GFP, the most reasonable amount for the subsidies, the most reasonable farmland area requirement deemed by the respondents, the main reason(s) for not participating, etc. We informed them about the details of the GFP contents regardless of whether they understood them in advance. After they understood the GFP contents considerably, then we asked for their opinions on the GFP design, including "landlord concerns and agreements" and "landlord opinions and adjustment".

This paper adopted the Likert 5-point scale for the survey on respondents' participation incentives on "willingness" (very willing, willing, neutral, unwilling, and very unwilling); respondents answered these questions based on this scale and gave a score from 5 to 1 for each question; a higher score represents a higher willingness to participate in the forestation program. For the opinion and cognition section, a 6-point scale wss used (completely agree, highly agree, agree, disagree, highly disagree, and completely disagree); respondents gave scores on a scale from 6 to 1 with a higher score representing higher agreement on the survey issues. Based on the research hypotheses and statistical verification methods, this paper used SPSS for Windows software (SPSS, Chicago, IL, USA) to conduct the statistical analysis including descriptive statistic analysis, *t*-test, analysis of variance (ANOVA), reliability analysis, and Pearson correlation analysis.

RESULTS

Reliability analysis of the questionnaire

This paper conducted a reliability test for the 2 major sections of the questionnaire survey, and Cronbach' α value scale published by Wu (1985) was used to determine the reliability. The reliability of the personal data section was 0.738, and that of the opinion section was 0.866; both values fall between 0.7 and 0.9, indicating that the questionnaire designed for this paper has an acceptable level of reliability.

Descriptive analysis of the demographics

For the variable of gender, males accounted for 67.3% and females 32.7%. These data indicate that male landlords significantly outnumbered female landlords by approximately 2:1. For the variable of age, the majority of the respondents were 46~55 (40.7%) and 56~65 (35.3%) yr old, and the smallest group consisted of respondents under 35 yr of age (5.7%). For the aspect of education, 39.3% of respondents had a primary school education or less, which formed the majority; 22% had a junior high school education or less. The results showed that, on average, respondents had relatively lower levels of education compared to all of Taiwan. For the variable of occupation and income source, the majority of landlords worked in the agriculture, forestry, fishery, and animal husbandry industries (34.3%); the second largest group held industrial occupations (17.7%), and the unemployed formed the smallest group (1.3%). For the variable of family annual income, the majority of respondents surveyed had family annual incomes of NT$400,001~600,000 (46.3%), the second largest group earned NT$200,001~400,000 (26.0%), and the smallest group had an annual income of > NT$1.5 million (1.0%).

Among the surveyed landlords, 52.0% had ≦ 0.20 ha, which formed the majority group; 38.7% had 0.21~0.50 ha, which formed the second largest group, and the smallest group consisted of 9.33% who had ≧ 0.51 ha. The results show that the majority of landlords owned < 0.5 ha.

From the questionnaire survey, the majority of respondents (53.4%) received NT$10,001~30,000 in rental for their farmlands, the second largest group (30.3%) received < NT$10,000, and the smallest group (3.4%) received over NT$90,000. The majority of respondents (46.0%) indicated that they were willing to sell their farmlands for prices of NT$3~6 million, the second largest group (43.3%) indicated < NT$3 million, and the smallest group (10.7%) indicated > NT$6 million. Among landlords, the majority (45.0%) planted crops on their farmlands, 27.3% participated in the fallow scheme, 27.0% left their farmlands in an idle state, and 0.7% had commenced forestation on their lands (see Table 1).

Landlord awareness of and willingness to participate in the GFP

In total, 161 (53.7%) of surveyed landlords answered "unaware" and 139 (46.3%) answered aware (see Table 2). Landlord willingness to participate in the GFP is shown in Table 2. From Table 2, the majority of landowners (51.0%) expressed a neutral stance towards the question of their willingness to participate, and the second largest group (31.0%) expressed on unwillingness. It seems that the landlords tended not to participate in the GFP at the current stage.

Landlord concerns about and agreements with the GFP design

This section surveyed landlord opinions towards the level of concern with the GFP. Table 3 shows the 6-point scale used to measure the respondents' opinions on a given question. Since the opinions were measured on a 6-point scale, quantitative data, including the mean and standard error could be derived. From Table 3, we can see that on questions relating to the GFP design, respondents were most concerned about the amount of the subsidy (the highest mean value of 4.15) and least concerned about the farmland area requirement (the lowest mean value of 3.84).

Table 3 shows the 6-point scale used to measure the respondents' agreements with the GFP design. From Table 3, respondents' agreement on the contract period of GFP had the highest mean value (4.02), and the farmland area requirement received the lowest mean value (3.74).

Landlord opinions about the GFP design

Among the surveyed landlords, the majority of respondents (96.3%) thought a period of < 20 yr for the GFP was better; this shows that most landlords preferred a shorter length of participation in the GFP. Second, the majority of respondents (44.4%) thought that a subsidy of NT$200,001~300,000/ha/yr was a better amount. Moreover, the majority of respondents (77.0%) thought that < 0.25 ha was a better minimum land area requirement for the GFP (see Table 4).

Landlord opinions on adjustments to the GFP design

The majority of respondents (39%) thought that giving higher subsidies would be the most effective in increasing the participating incentives; some respondents (25.7%) thought that reinforced promotion of the policy would be most efficient in increasing the participating incentives; and the smallest group (11.3%) thought that shortening the contracted time would be most effective (see

Table 1. Demographics of the respondents

Variable	Number	Percent (%)
Gender		
Male	202	67.3
Female	98	32.7
Age (yr)		
< 35	17	5.7
36~45	29	9.7
46~55	122	40.7
56~65	106	35.3
> 65	26	8.7
Educational level		
Illiterate	29	9.7
Self-taught	32	10.7
Primary	118	39.3
Junior high school	66	22.0
High/Technical school	28	9.3
College and higher	27	9.0
Occupation and income source		
Agriculture, forestry, fishery, and animal husbandry	103	34.3
Industrial production	53	17.7
Commercial	20	6.7
Services	27	9.0
Military, public service, and education	9	3.0
Freelance	36	12.0
Housekeeper	33	11.0
Retired	15	5.0
Unemployed	4	1.3
Annual family income (NT$)[1)]		
< NT$200,000	36	12.0
200,001~400,000	78	26.0
400,001~600,000	139	46.3
600,001~800,000	30	10.0
800,001~1.5 million	14	4.7
> 1.5 million	3	1.0
Area of farmland (ha)		
< 0.20	156	52.0
0.21~0.50	116	38.7
0.51~0.80	7	2.3
> 0.80	21	7.0
Annual rental per hectare (NT$)[1)]		
< 10,000	89	30.3
10,001~30,000	157	53.4
30,001~90,000	38	12.9

con't

Variable	Number	Percent (%)
> 90,000	10	3.4
The lowest price owner is willing to sell (NT$)[1)]		
< 3 million	130	43.3
3~6 million	138	46.0
> 6 million	32	10.7
Current usage		
Planting crops	135	45.0
Participation in fallow schemes	82	27.3
Left idled	81	27.0
Forestation	2	0.7

[1)] In 2010, the average exchange rate was US$1.00 ≒ NT$ 30.00.

Table 2. Landlord awareness and willingness to participate in the green forestation plan

Item	Number	Percent (%)
Awareness		
Aware	139	46.3
Unaware	161	53.7
Willingness to participate		
Very willing or willing	54	18.0
Neutral	153	51.0
Unwilling or very unwilling	93	31.0

Table 5).

Main reasons for landlords' unwillingness to participate in the GFP

The GFP has a minimum land area requirement of 0.5 ha because the government hopes to achieve afforestation on a large area so as to obtain complete landscape benefits, and reduce crop damage under the shade of trees. Among the surveyed landlords, the majority of respondents (60.2%) thought the minimum land area requirement of 0.5 ha was the main reason that they were not participating in the GFP; some respondents (20.4%) also thought that currently planting crops can bring higher incomes than the subsidies from the GFP; and the smallest group (11.8%) have idle lands but still think the subsidies are insufficient (see Table 6).

Demographic factors affecting the willingness to participate and opinions about the GFP

This paper conducted *t*-test and ANOVA to determine if demographic factors affected the willingness to participate and opinions about the GFP. First from Table 7, one can see that only 1 demographic factor, family income, was correlated with the willingness to participate; the higher the family income, the more willing a landowner was to participate in the GFP. From Table 8, it can be seen that respondents with a postgraduate and higher education had a higher willingness to participate in the GFP and also expressed a desire for a longer period of participation in the GFP. From Table 8, one finds that respondents with higher incomes had a higher willingness to participate in the GFP. Moreover from Table 8, respondents whose farmlands are currently participating in the fallow scheme expressed higher concern for the requirement

Table 3. Landlord concerns about and agreement with the green forestation plan (GFP) design

Item	Concern		Agreement	
	Mean	SE	Mean	SE
The incentive reward for the GFP is NT$2.4 million/ha[1)] over 20 yr	4.15	0.755	3.96	0.749
40 species of trees to choose from in the GFP	4.10	0.793	4.01	0.779
Participation in the GFP extends over 20 yr	4.07	0.705	4.02	0.672
Participants in the GFP must be the owner of the farmland	3.90	1.159	3.74	1.037
Minimum farmland area requirement for the GFP is 0.5 ha	3.84	0.831	3.81	0.773

[1)] In 2010, the average exchange rate was US$1.00 ≒ NT$ 30.00.

Table 4. Landlord opinions on the green forestation plan (GFP) design

Item	Number	Percent (%)
The period for the GFP (yr)		
< 15	158	52.7
16~20	131	43.6
> 21	11	3.7
Subsidies for the GFP (NT$)[1)]		
< 200,000	70	23.3
200,001~300,000	133	44.4
> 300,001	97	32.3
Land area requirement for the GFP (ha)		
< 0.25	231	77.0
0.26~0.50	65	21.7
> 0.51	4	1.3

[1)] In 2010, the average exchange rate was US$1.00 ≒ NT$ 30.00.

Table 5. Landlord opinions about adjustments in the green forestation plan design

Item	Number	Percent (%)
Increase the amount of the subsidies	117	39.0
Shorten the contract period	34	11.3
Lower the land area requirement	72	24.0
Enhance promotion and environmental education	77	25.7

Table 6. The main reasons that landlord were unwilling to participate in the green forestation plan (GFP)

Item	Number	Percent (%)
Currently planting crops and earning an income higher than the subsidies from the GFP	19	20.4
Currently not planting any crops but think that the subsidies are insufficient	11	11.8
Do not have sufficient farmlands to participate (requirement of a minimum 0.5 ha of farmland)	56	60.2
The required contract period of 20 yr is too long	7	7.5
Total	93	100.0

Table 7. Correlation between landlord willingness to participate in the green forestation plan and other variables

Item	Pearson correlation	*p* value
Age	-0.022	0.701
Annual family income	0.162	0.005**
Farmland area	0.006	0.912
Annual rental per hectare	0.024	0.678
The lowest selling price per hectare	-0.062	0.287

** $p < 0.01$.

Table 8. Analysis of the variances in the factors of education, annual family income, and current usage of the farmland

Variable	Education		Annual family income		Current usage of the farmland	
	F value	*p* value	*F* value	*p* value	*F* value	*p* value
Willingness to participate in the green forestation plan	6.796	0.000***	4.477	0.000***	1.717	0.164
Opinion on the contract period	6.234	0.000***	2.535	0.011*	1.078	0.359
Opinion on the amount of subsidies	2.927	0.006**	1.947	0.053	3.940	0.009**
Opinion on the land area requirement	1.792	0.089	1.227	0.283	1.280	0.281
Post-hoc test	Postgraduate and more > all		Over NT$1.5 million > all		Participate in fallow schemes > Forestation	

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

of land ownership than respondents who had never participated in forestation programs before. In addition, respondents whose farmlands are currently in the fallow scheme expressed a higher level of agreement with the requirement for land ownership than respondents who had never participated in the GFP before.

DISCUSSION AND CONCLUSIONS

Taiwan's entry into the WTO opened the market of agricultural products to the world and expanded the scale of imports, which caused domestic agricultural products to lose their competitive edge due to the higher costs required in production, and as a consequence, the topography of land use began to change on a large scale. In responding to the decrease in agricultural production, which freed up a sizeable volume of farmlands, the government launched projects to encourage the replanting of crops of high economic value and forestation. Such projects aimed to facilitate effective use of fallow lands, even more importantly, lay out a structure for Taiwan's economic development, and upgrade the quality of the environment. As part of the action plans, several incentive reward programs were set up, including the 2002 APA, 2008 GSA, and 2009 GFP. The government continues to offer incentive rewards in higher amounts, with the aim of increasing the willingness of landlords to participate in the forestation programs, in turn, retard the destruction of the landscape brought about by economic development, and bring new opportunities to landlords and farming villages. This paper aims to explore the landowners' understanding and willingness to participate

in the GFP, as well as their awareness of and agreement with the current policy design.

The results of this paper indicate that a higher percentage (53.7%) of surveyed landlords were not aware of the GFP. This percentage shows that over half of the respondents were not aware of the GFP; this phenomenon indicates that policy promotion, marketing, and advertising are not sufficient. Under high incentives of subsidy payments, the majority of those surveyed (51.0%) expressed a neutral stance on issues of willingness; this indicates that over 50% of the respondents were neutral in terms of a willingness to participate in the GFP, and approximately 30% were unwilling, despite the high incentive rewards. However from the perspective of policy design, over 50% of the landlords thought that the GFP is important. As to landlord opinions towards the level of agreement on the GFP, over 50% of the respondents agreed with the policy designs.

This paper indicates that for the participation period, over 90% of landlords thought the length of participation period should be shortened; this paper also shows that landlords were leaning towards an increase to NT$120,000/ha/yr. Among the respondents 60.2% of landowners thought that the minimum land area requirement of 0.5 ha was the main reason that they were not participating in the GFP; 7.5% thought that the required participation period was too long; and 11.8% have idle lands but thought the subsidies were insufficient.

This paper concluded with the following policy recommendations.

1. A large percentage of landlords are still unaware of the GFP; therefore, the government should reinforce their policy promotion.

   At the current stage, the promotion of the GFP is mainly conducted by county (city) offices, including seminars and activities; however, this paper found that over 50% of the respondents were still not aware of the GFP. This shows that landlords do not pay particular attention to seminar activities conducted by county (city) offices; therefore, this paper recommends that future promotion be focused on the township office level or conducted via radio, TV, or printed news media to supplement the insufficiency.
2. Many people were not participating in the GFP because they do not have sufficient land area; therefore, we recommend the government readjust the land area requirement. From the results of the research, we found that over 60% of the landlords were not participating in the GFP because they did not have sufficient land to meet the requirement; this shows that adequate adjustment in the requirement will allow the willing landlords who do not have sufficient land to participate in the GFP.
3. It is recommended that the government focus on high-income and more highly educated landlords to reinforce promotion of the GFP.

   From the research, we found that people with higher annual family incomes were more willing to participate in the GFP, and the respondents with postgraduate and higher education expressed a higher willingness to participate in the GFP than others. Therefore, it is recommended that the government focus on high-income and more highly educated landlords to reinforce promotion of the GFP.
4. The government can also study other benefits that may come with forestation. That is, other than the incentive rewards, there is also income from other sources to supplement the insufficiency of the subsidies; thus, a higher income will increase the will-

ingness to participate in the GFP.

From the results of the questionnaire survey, we found that over 40% of landlords thought that increasing the amount of the subsidies would increase the willingness to participate in the GFP. However, the authors think that continued increases in subsidies are not a way for sustainable development. The rewards were initially targeted as an economic incentive and designed to increase the willingness to participate in the GFP; continuing to increase the amount of the subsidies will, in a reverse effect, worsen the nation's financial burden, as well as provide an opportunity for some owners to "wait for more". Therefore, if participation in the GFP will bring substantial revenues and, at the same time, achieve reduction in carbon dioxide emissions, more landlords will participate in the GFP as an investment and have interest in engaging in implementation of relevant policies. Therefore, it is recommended that the government set up a well-structured production-to-marketing system to help landlords create maximum profits and, in turn, utilize the full benefits of the forestation policies.

ACKNOWLEDGEMENTS

The authors thank Cheng-Hao Chen, Po-Hung Wu, and Wei-Han Wang (Department of Applied Natural Resources, Aletheia University) for help with collection of the questionnaire data and analysis of the relevant statistics.

LITERATURE CITED

Hendrickson O. 2003. Influences of global change on carbon sequestration by agricultural and forest soils. Environ Rev 11(3):161-92.

Hsu HY. 2003. Studies on reforestation plan of plain scenic [master's thesis]. Taipei, Taiwan: Graduate Institute of Forestry, National Chung Hsing Univ. p. 80-8. [in Chinese with English summary].

Huang YH. 1992. Deliberating the problems of afforestation on farmland. Mod Silvicult 12(1):9-14. [in Chinese].

Huang YH. 2001. Greening and afforestation in the plain and coast areas. J Taiwan For 27(2):3-6. [in Chinese].

Lin KC. 2003. The analysis of the afforestation policy in the plain area. Taiwan Agric Econ Rev 8(2):111-40. [in Chinese with English summary].

Lin KC. 2008a. A study on the adjustment of management policy of forestry resources under the trend of GHG reduction (III). Taipei, Taiwan: Forestry Bureau, Council of Agriculture, Executive Yuan. Report no. 97-7.2.1-e1 (2). p 72-80. [in Chinese with English summary].

Lin KC, Wang YN. 2004. Evaluation and analysis of growing forest for plain landscape afforestation policy. Taipei, Taiwan: Forestry Bureau and its affiliations, Council of Agriculture, Executive Yuan. Report no. 93-00-5-09. Graduate Institute of Agricultural Economics, National Taiwan Univ. p 51-4. [in Chinese with English summary].

Lin YC. 2008b. An analysis of decision making behavior of landlords' participation in the afforestation subsidy program [master's thesis]. Taipei, Taiwan: Graduate Institute of Agricultural Economics, National Taiwan Univ. p 5-12. [in Chinese with English summary].

Liu WY. 2004. A study on the optimal subsidy of afforestation [master's thesis]. Taipei, Taiwan: Graduate Institute of Agricultural Economics, National Taiwan Univ. p 31-43. [in Chinese with English summary].

Liu WY. 2008. The economic analysis of landowners' participation in carbon sequestration programs and mechanisms [PhD dissertation]. Taipei, Taiwan: Graduate Institute of Agricultural Economics, National Taiwan Univ. p

46-59. [in Chinese with English summary].
Liu WY, Lin KC. 2009. An economic analysis of price of certified emission reductions under Kyoto mechanism in Taiwan. Agric Econ 42:1-38. [in Chinese with English summary].
Tseng YH. 1993. A policy and economic benefit analysis of afforestation on agriculture land [master's thesis]. Taipei, Taiwan: Graduate Institute of Forestry, National Taiwan Univ. p 32-40. [in Chinese with English summary].
Wu TH. 1985. Reliability and validity of attitude and behavior research: theory, application, and introspection. Public Opinion Acad J 2:29-53.
Yen TM, Lee JS, Yang JY. 2002. Some problems about the policy of afforestation award. Q J For Res 24(2):1-12. [in Chinese with English summary].