Afforestation of agriculture land as a tool of rural forestry development in Lithuania

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ABSTRACT

Parallel to agriculture forestry is very important as component of rural development in Lithuania: income source for rural population, employment, nature and wild life habitat conservation as well as enrichment. The private forest sector today constitutes 239,900 private forest owners. Private forest owners control approximately 698,000 ha of forest, 33.4% of the total forest area. Small-scale private forestry is developing in Lithuania. The development production wood and non-wood products as well as providing services (forest berries, mushrooms and medicinal herbs, hunting, countryside tourism) are potential source of income for rural people.

In Lithuania about 600 thousand ha land is abandoned. Afforestation of abandoned agriculture land creates conditions for development of private forestry and rural areas. This process has positive impact to new workplaces creation and nature conservation. Rural Development Plan for 2004-2006 is one of the most important programs of EU financial support to Lithuania's rural areas. Lithuania's land owners can use the support provided by the Rural Development Plan measures, helping to modernize production of wood and non-wood products and improve the standard of living in rural areas. Some forestry activities are supported by Structural Funds of EU such as afforestation of abandoned agriculture land, pre-commercial thinning, forest infrastructure (roads and bridges construction, melioration etc.), and investments for new machinery.

The aim of research was to identify an intention of private forest owners, who own agriculture land, to change the land–use and indicate the most important reasons for afforestation as well as sustention the agriculture land for agriculture production. The investigation was conducted in all 10 Lithuanian counties using personal interviews. In total 670 respondents were randomly selected for the survey; a final usable sample of 601 forest owners was obtained. The survey information was analysed and determined an intention of private forest owners who own agriculture land to change the land–use, and indicated the most important reasons for agriculture land afforestation as well as sustention for agriculture production.

The results of the survey showed that 429 private forest owners (66% respondents) own agriculture land. They were asked about intentions to make afforestation and change the land-use. 30.8% respondents responded that they will make afforestation in the future. Respondents indicated the most important reasons for afforestation. The main reasons for it are: afforestation is the best way how to use the abandoned agriculture land; afforestation is one of the ways how to extend forest estate; possibility to get financing for afforestation from EU funds. 50.6% respondents will sustain the agriculture land for agriculture production. Respondents indicated the most important reasons of land sustaining for agriculture production. The main reasons are: agriculture land should be used only for agriculture production; agriculture land owners don't want to miss a possibility to use this land for agriculture production; agriculture land owners have other intentions how to use abandoned agriculture land in the future. 18.6% respondents did not make decision related to change the land–use in the future yet.

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INTRODUCTION

Agriculture, hunting, forestry and fisheries remain the key economic sector in rural areas and employs 51 percents of the total rural population (Kedaitiene and Martinaviciene 2005). In different counties the above-mentioned activities employs from 52 to 82% of the total rural population. Parallel to agriculture forestry is very important as component of rural development in Lithuania: income source for rural population, employment, nature and wild life habitat conservation as well as enrichment.

According to the Forest Act of the Lithuanian Republic, 1994, forest ownership is divided into state and private forests. The structure of forest ownership has changed due to a continuing land reform process, which commenced more than 10 years ago. Small-scale private forestry is developing in Lithuania. The private forest sector today constitutes 239,900 private forest owners. Private forest owners control approximately 698,000 ha of forest, 33.4% of the total forest area.

The development production wood and non-wood products as well as providing services (forest berries, mushrooms and medicinal herbs, hunting, countryside tourism) are potential source of income for rural people.

In Lithuania about 600 thousand ha agriculture land is abandoned. Afforestation of abandoned agriculture land creates conditions for development of private forestry and rural areas. Rural Development Plan for 2004-2006 is one of the most important programs of EU financial support to Lithuania's rural areas. Lithuania's land owners can use the support provided by the Rural Development Plan measures, helping to modernize production of wood and non-wood products and improve the standard of living in rural areas.

The research reported in this paper is related to the recent land restitution in Lithuania and rural forestry development. The aim of this research was to identify an intention of private forest owners who own agriculture land to change the land–use, to indicate the most important reasons for agriculture land afforestation as well as sustention it for agriculture production.

DEVELOPMENT OF SMALL-SCALE FORESTRY IN LITHUANIA

The private forest sector today constitutes 239,909 private forest owners, with 150,839 forest estates covering 698,063 ha of forest (Table 1). This is 33.4% of the total forest area, a proportion that is projected to increase to 40-45% in the future. The average size of a forest estate is 4.6 ha.

The felling volume of private forest was 2.7 mll/m^3 in 2005. This is more then 40% of the total round wood supply in Lithuania. The interest in wood fuel has risen quite recently. After the commencement of constructing boiler-houses heated by bio fuel, private forest owners gained a possibility to earn extra income. The development

Table 1. Private forestland area by owners and forest estates

Date	Area of forestland (ha)	Number of private forest owners	Numbers of private forest estates	Average private forest estate (ha)
1 Jan2002	518,277	162,088	153,391	3.4
1 Jan2003	586,036	183,365	130,412	4.5
1 Jan2004	641,900	208,881	141,426	4.5
1 Jan2005	684,451	231,878	148,926	4.6
1 July 2005	698,063	239,909	150,839	4.6

Source: Ministry of Environment (various years).

production non-wood products and providing services (forest berries, mushrooms and medicinal herbs, hunting, countryside tourism) are other potential source of income for rural people.

FORESTRY AS A PART OF RURAL DEVELOPMNENT

The rural development can be defined as the 'process of strengthening of the liveability in rural areas according to the quality of life, landscape identity, economic viability and quality of the bio-physical environment' (Elands and Wiersum 2000, Papageourgiou et al. 2000). The development also can be defined as an improvement and is directly related with the wellbeing of the area. In the context of rural development, the main components of wellbeing that are most clearly used are employment and income. Other components of wellbeing (social partnership, sense of belonging to the public and self-realisation) are less meaningful for such studies (Hyttinen et. al 2002).

EU policy on rural development 2007-2013 will be orientated in three directions: 1) improvement of competitive abilities of agriculture and forestry 2) protection of natural resources and environmental protection in rural areas 3) diversification of activities and improvement of life quality (Strategic 2006).

According to LR Law on Agriculture and Rural Development (2002), rural development is described as improvement of life quality for people in rural areas including income and employment possibilities as well nurturing the landscape and natural environment. Rural area is understood as village or town with less than 3000 inhabitants (Prunskiene 2005). The goals of rural development according to the definitions of EU structural funds are:

- Creation of working places for people changing from the primary production in agriculture;
- Increasing enterprising in rural areas;
- Improvement of life quality;
- Development of infrastructure in rural areas.

Since Lithuania has joined the EU in May 2004, population of rural areas starting to receive financial aid from the European budget. Programmes and finances, targeted directly to support the rural development, are considered in the so-called programming documents, prepared by the Government and approved by the EC. These are:

- Rural Development Plan for 2004-2006, including 7 measures of rural development;
- And Single Programming Document for 2004-2006 aiming to outline and prioritize the use of structural funds in Lithuania, including the agricultural and fisheries part which is laid down as the priority 4 comprising 10 measures.

These two documents are the most important programmes of EU financial support to Lithuania's rural areas. Some forestry activities are supported by EU Structural Funds such as afforestation of abandoned agriculture land, pre-commercial thinning, forest infrastructure (roads and bridges construction, melioration etc.), and investments for new machinery.

Lithuania's land owners can use the support provided by the Rural Development Plan measures, helping to modernize production of agricultural products and improve the standard of living in rural areas. The following measures are approved in the Rural Development Plan for 2004-2006:

- Support of Early Retirement from Agricultural Production Activities;
- Less Favoured Areas and Areas with Environmental Restrictions;
- Support to Semi-Subsistence Farms Undergoing Restructuring;
- Meeting the EU Standards;
- Agrarian environmental protection;
- Afforestation of agricultural land;
- Technical Assistance.

In Lithuania about 600 thousand ha land is abandoned. Afforestation of abandoned agriculture land is developing in rural areas. The measure "Afforestation of agriculture land" goal is to promote agriculture land's afforestation as an alternative land usage and initiate forestry sector development. For this measure 26.7 million LTL is allocated for 2004-2006. 198 applications were collected with the required financing 7.2 million LTL for this measure in 2004 (Kedainiene et. al 2005).

Single Programming Document's for 2004-2006 priority 4 includes measure 5 which is called

"Forestry". The goal of this measure is retain and develop economic, ecological and social functions of forests in rural areas. It is also sought to improve the infrastructure of private forest holdings, to increase their productivity, to enhance possibilities of rural residents' alternative activities and to improve environmental quality and biological and landscape diversity. This measure covers the following activities:

- Investment in forests aimed at significantly improving the economic, ecological or social value;
- Restoration of forest areas damaged by natural disasters and fire and introducing appropriate prevention instruments;
- Investment to improve and rationalise the harvesting and logging of round wood;
- Afforestation of non-agricultural land.

First of all, this Measure will be aimed at increasing the economic, ecological and social value of forests. Support is provided for the improvement of the infrastructure of private forest holdings, i.e. forest roads and their facilities, drain ditches and their facilities, information signs, recreational equipment and other infrastructure. Pre-commercial thinning is promoted.

The next important activity includes restoration of forests affected by natural disasters and fires and prevention measures. Support is provided in compliance with the Forest Fire Prevention Plan, which classifies forest areas according to the risk of fire. During period 2004-2006 over 23.9 millions LTL is allocated for the structural measure "Forestry". Only 24 applications were collected with the required financing 4.9 millions LTL for this measure in 2004. Collected applications covered 83% allocated financing for this measure for 2004 (Kedainiene et. al 2005).

METHODOLOGY AND DATA

The investigation was conducted in all 10 Lithuanian counties using personal interviews. The respondents were randomly selected from the database of the public company 'Registru Centras' which maintains data on all forest owners in Lithuania. A target sample size of about 600 was chosen, based on the chosen accuracy requirement and following the method outlined in Kardelis (1997).

Referring to the results of earlier interviews (reported by Mizaraite 2001) and previous experience, 11% more respondents were selected than defined in the original selection group for the survey. In total 670 respondents were randomly selected for the survey; a final usable sample of 601 forest owners was obtained. Twelve selected respondents refused to take part in the survey due to personal reasons and 10 questionnaires were rejected due to inadequate answering of questions. The questionnaire contained 26 questions, covering the following topics: characteristics of forest owner; characteristics of forest holding; management activities in the forest holding; management objectives; forest ownership problems; afforestation of abandoned agriculture land; and other topics related to forest holding management.

The survey information was analysed and determined the intention of private forest owners who own agriculture land to change the land–use. Respondents differ according to age, gender, education and other characteristics. Pearson chi-square (χ^2) was used to assess the tests of independence. Moreover, the most important reasons for agriculture land afforestation and sustention were indicated as well.

RESULTS

429 private forest owners (66% respondents) own agriculture land. They were asked about intensions to make afforestation of agriculture land and change the land-use. 30.8% respondents responded that they will make afforestation in the future; 50.6% respondents won't change the land-use and keep the agriculture land for agriculture production; and 18.6% respondents did not decide about changing the land-use yet. Respondents differ according to gender, education and other characteristics (Table 2).

Factors such as owner's gender, professional education level, place of residents and distance from estate to residents influence the owner's decision to change the land-use. The intention to change the land-use and make afforestation is more

Table 2. Respondent's characteristics by intention to change land-use.

Characteristic	Percentage of answers			
	Yes, I will make afforestation	No, I won't make afforestation	I didn't decide yet	p
Women (%)	25.5	57.7	16.8	0.021
Men (%)	35.2	44.6	20.2	
Professional education:				
University degree (%)	41.7	41.7	16.6	0.002
College level (%)	35.4	50.0	14.6	
Professional, comprehensive school and other education (%)	20.5	59.0	20.5	
Residents of respondent:				
Reside in city or town (%)	36.6	45.6	17.8	0.024
Reside in village (%)	24.5	57.5	18.0	
Mean distance from estate to residence (km)	54.6	25.6	42.9	0.001

typical for men than for women. Owners with an upper education frequently decide to make afforestation of abandoned agriculture land. Certainly the sustention of agriculture land for agriculture production is much more important for owners who reside in villages. In rural areas agriculture activity plays an important role for the rural population. This activity is one of the main income sources in rural areas. The distance from estate to residents is also very important influencing factor for owner's intention to change land-use and make afforestation of abandoned agriculture land.

Owners indicated the most important reasons for agriculture land afforestation and changing the land-use. All indicated reasons is presented in Tables 3.

50.6% owners responded that they sustain the agriculture land for agriculture production. All indicated reasons of sustention agriculture land are presented in Tables 4. 50.2% respondents willing to

Table 3. Reasons of agriculture land afforestation and changing of land-use

Question: Could you please indicate the most important reasons for agriculture land afforestation?	Percentage of answers		
	Respondents place of residence		total
	city or town	village	
Afforestation is the best way how to use the abandoned agriculture land	53.5	54.1	53.8
I wish to follow up the family tradition of forest ownership	8.5	6.6	7.6
I like forest, wild life and want to own forest land	21.1	13.1	17.4
Forestry is more profitable than agriculture	7.0	9.8	8.3
I wish to own bigger forest estate, afforestation of agriculture land is one of the ways how to extend forest estate	25.4	27.9	26.5
I suppose, forest land value is better than agriculture land	15.5	13.1	14.4
Possibility to get financing for afforestation of agriculture land from EU funds	26.8	39.3	32.6
Other	7.0	3.3	5.3

Table 4. Reasons of agriculture land sustention for agriculture production

Question: Could you please indicate the most important reasons for sustention of agriculture land?	Percentage of answers		
	Respondents place of residence		total
	city or town	village	
Agriculture land should be used only for agriculture production	48.2	53.8	50.2
Forest management is not attractive	2.9	0.0	1.8
Lack of forest management knowledge and experience	12.4	8.8	11.1
I have other intentions how could be used this agriculture land	16.1	15.0	15.7
I don't want to miss a possibility to use this land for agriculture production	20.4	25.0	22.1
Other	13.1	8.8	11.5

use the agriculture land for agriculture production, 22.1% respondents don't want to miss a possibility to use this land for agriculture production, and 15.7% respondents have other intentions how use this agriculture land.

CONCLUSIONS

30.8% respondents responded that they will make afforestation in the future; 50.6% respondents won't change the land-use and keep the agriculture land for agriculture production; and 18.6% respondents did not decide about changing the land-use yet.

The most important reasons for afforestation are: afforestation as the best way for using the abandoned agriculture land; possibility to get financing for afforestation of agriculture land from EU funds; afforestation as a way for expansion of forest estate; afforestation as a tool for wild life protection. The main reasons for sustention of agriculture land are: agriculture land should be used only for agriculture production; keeping possibility to use the agriculture land for agriculture production.

There is an urgent need to undertake a wide survey of land owners in Lithuania. A survey would not only help test the conclusions outlined above but also would reveal the main impeding and supporting factors and reasons for more successful afforestation of abandoned agriculture land. The results of survey could be used by politicians and authority for better understanding of the development processes in rural areas.

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