ISFOR 2017 International Symposium on New Horizons in Forestry
18-20 October 2017 | Isparta - Turkey
Oral presentation

Perceptions and expectations of different interest groups towards poplar production: Samsun case study

Aşkın Bozkurt[1], İsmet Daşdemir[2,*], Selda Karakaya[1], Hüsni Ali Şahin[1]

[1] Poplar and Fast Growing Forest Trees Research Institute, Kocaeli, Turkey
[2] Bartın University Faculty of Forestry, Bartın, Turkey
[*] Corresponding author: isdasdemir@hotmail.com

Abstract: If the different society groups have knowledge general view about poplar culture, its importance and contribution to the country economy, it will create a social consciousness on poplar culture, help development and spreading of poplar culture, thus it will contribute to close supply deficit of wood raw materials. Therefore, it is important to determine the opinions and thoughts of different society groups in this regard and to direct the poplar production accordingly. In this study which was carried out with this point of view, in the Samsun province (Çarşamba, Terme), the knowledge level, opinions and experiences about poplar production of different society groups (interest groups) interacting with poplar producers and having interest and knowledge poplar production, were investigated. In this respect, the level of knowledge, opinions and experiences about poplar production of public institutions, non-governmental organizations and private sector representatives representing interest groups were analyzed and compared, and the differences were checked. The data used in the study was obtained from questionnaires applied to interest groups representatives, the previous studies and the record of the related institutions. The questionnaire form consisting of 36 questions with mostly 5 Likert scale in three parts were applied by face-to-face interview method in 2015. In the study, a total of 58 interest group representatives (28 public institutions, 10 non-governmental organizations and 20 private sector organization representatives) were interviewed using the full-field conscious sampling method. The obtained data were explained and evaluated by descriptive statistics and charts. The control of differences of knowledge levels and opinions of interest groups was tested with the Kruskal-Wallis H-Test. It was understood that interest groups interacting with poplar producers generally had intermediate level of knowledge about irrigation, struggle with tree pests and monoculture tree cultivation in poplar plantation, that they did not have more detailed and technical knowledge about poplar culture and that this situation did not differ according to the interest groups. The reasons of poplar production were determined by all interest groups as getting mass money in the future, no need for intensive care of poplar, and not leaving the land empty. Also, the satisfaction level from poplar sapling planting and production were not different according to the interest groups, and the satisfaction level of all groups was positive. Likewise, the level of knowledge about the hybrid poplars was not different according to the interest groups. It was also determined that the interest groups had similar knowledge sources about poplar sapling and production, and all society and especially interest groups should be made aware and educated. According to the findings, some suggestions were developed for development and dissemination of poplar culture, and increasing its contribution to the country economy.
Keywords: Poplar culture, Interest group**,** Perception and expectation, Samsun, Turkey

1. Introduction

The supply deficit of wood raw materials also increases due to the increase of world population and industrialization. This situation puts pressure on natural forests. As a result of this situation, it's foreseen that global wood raw material demand will reach to 5.5 billion m^3 per year in 2020s. However, in the world, total wood production capacity of natural forest is approximately 3.5 billion m^3 per year. So, since natural forest are inadequate to meet the needs of wood raw material production of the global demand, it's the most rational way to meet the meet the needs by producing fast growing species with industrial afforestation (Birler, 2010).

Parallel to the progresses in the world, the supply deficit of wood raw materials in Turkey increases. For this reason planting with poplar and fast growing species is of great importance in order to close the supply deficit of wood raw materials. In Turkey, annual industrial wood consumption is met by government treats with the General Directorate of Forestry (16.6 million m^3), private sectors (3-3.5 million m^3) and imports (1-2 million m^3) (OGM, 2016). It's not possible to meet the wood raw material demand by producing wood production from natural forests. In Turkey, more than 90% of industrial wood production which is not done by government forests consists of poplar trees production (OGM, 2012). For this reason, it seems as a solution way to produce fast growing species especially poplar trees with industrial afforestation for meeting the wood raw material demand. This kind of plantations contributes to the protection of natural forests and the prevention of their destruction.

The fact that different parts of the society are knowledgeable about poplar culture and its contributions to the country's economy will contribute to a social consciousness about poplar culture, to the development and spreading of poplar culture, thus closing the supply of wood raw materials. Therefore, it is important to identify the opinions and thoughts of different parts of the society in this subject and to orient the poplar production accordingly. Although poplar culture is very important for Turkey's forestry and wood industry, it cannot be said that enough levels of consciousness have been formed in different

parts of the society about poplar culture. The fact that the society is knowledgeable in this regard and the formation of a certain level of consciousness will contribute to the growth of poplar culture, to the increase of wood production, to the reduction of the pressure on natural forests and to the sustainable management of forests.

Poplar culture is an alternative production activity that generally is made by small and medium-sized landowners in private land to meet the demands of wood raw materials. For this reason, in a sense, poplar producing is private afforestation and it is usually done as family business administration. Although there are some studies on poplar production (Gökçe, 1978; Ayberk et al., 1996; Akay et al., 1998; Uzunöz and Çiçek, 1998; Karakaya, 2010; Kareemulla et al., 2005; Kılıçaslan et al., 2005; Dwivedi et al., 2007; Bozorgmehr et al., 2014; Wani and Malik, 2014; Karakaya et al., 2107), there is no research on the identification of the views and ideas of different parts of the society and the direction of poplar production accordingly.

In Turkey, poplar production is done in waterable and fertile lands by traditional methods, and the Samsun province in the Black Sea Region comes at the beginning as a province in which poplar production is done intensively. In this study which was carried out with this point of view, in the Samsun province, the knowledge level, opinions and experiences about poplar production of different society groups (interest groups) interacting with poplar producers and having interest and knowledge poplar production, were investigated. In this respect, the level of knowledge, opinions and experiences about poplar production of public institutions, non-governmental organizations and private sector representatives representing interest groups were analyzed and compared, and the differences were checked. So, it's intended to contribute for improvement of poplar production policy for target group and do successful poplar production, direction of the poplar studies in the region, and to close the supply deficit of wood raw materials.

2. Material and method

2.1. Study area

The Samsun province, where intensive poplar activities were conducted, was chosen as the study area. The Samsun province is located in the middle part of the Black Sea coastline and between the Yeşilırmak and Kızılırmak deltas (Figure 1). There are 17 districts, 40 towns and 946 villages in the Samsun province with a mild climate. The population is 1,279,884 and 32% of which live in rural areas. The area of the province is 9,083 km^2 and the population density is 141 people. The Bafra and Çarşamba plains, having the highest agricultural potential, are located in the Samsun province. As poplar culture was intensively carried out in the Terme and Çarşamba districts in the coastal, the study was carried out in these districts (Figure 1). The total population in the Çarşamba and Terme districts is 208,685 (TUİK, 2016). 6.2% of the agricultural land of the Çarşamba district and 12.3% of the Terme district are poplar land. There are 90 thousand decares (da) of poplar land in the province of Samsun (SİGHM, 2016), 12,236 da of which are in the Terme and Çarşamba districts (SİGHM, 2015).

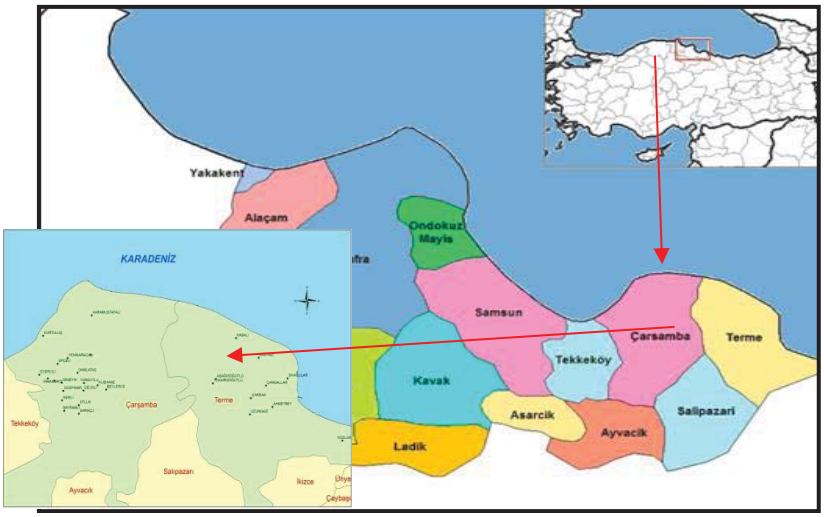

Figure 1. Study area.

2.2. Data and evaluation

The data used in the study was obtained from questionnaires applied to interest groups representatives, the previous studies and the record of the related institutions. The questionnaire form consisting of 36 questions with mostly 5 Likert scale in three parts were applied by face-to-face interview method in 2015. In the study, a total of 58 interest group representatives (28 public institutions, 10 non-governmental organizations (NGOs) and 20 private sector organization representatives) in the Çarşamba and Terme districts of Samsun were interviewed using the full-field conscious sampling method (Table 1).

Table 1. Distribution of interest groups interviewed.

Representatives of Public Institutions	Number
Directorate of Agriculture	3
Forest Enterprise Directorate	2
Forest Management Chieftaincy	5
Forest Nursery Directorate	3
Governorship	2
Municipality	2
State Hydraulic Works (DSI)	2
National Education Directorate	1
Public Hospital	1
Commander of the Gendarmerie	1
Agricultural Research Institute	2
Faculty of Agriculture	4
Total	28

Non-Governmental Organizations	Number
Chamber of Commerce and Industry	2
Chamber of Agriculture	3
Chamber of Tradesmen	1
Agricultural Credit Cooperative	2
Reeves Association	1
TEMA	1
Total	10
Members of Private Sector Organizations	**Sayı**
Poplar Wood Fields and Processors	13
Poplar Nursery Producers	2
Private Nurseries	2
Neighboring Landowners	3
Total	20

General Total: 58

The obtained data were explained and evaluated by descriptive statistics and tables. Also, the control of differences of knowledge levels and opinions of interest groups was tested with the Kruskal-Wallis H-Test (Kalıpsız, 1981; Özdamar, 2002; Daşdemir, 2016). Excel-2010 and SPSS (22.0 version) programs were used for data analysis.

3. Results

3.1. Knowledge levels of interest groups on poplar production

Knowledge levels of poplar producing members of interest groups (public institution, NGOs and private sector) interacting with poplar producers were measured by a 5-point Likert scale of "1-Never", "2-Little", "3-Medium", "4-Much", "5-Very Much". The answers given by the 58 interest group representatives to the first 9 questions about the level of knowledge about poplar production in the first part of the questionnaire are given in Table 2 as number and percentage values by interest groups.

Table 2. Knowledge levels of interest groups on poplar production.

Expressions for poplar production*		Groups	n	Never		Little		Medium		Much		Very Much		$\bar{X}$	S
				n	%	n	%	n	%	n	%	n	%		
1	Non-natural tree production	Public	28	5	17.9	4	14.3	6	21.4	3	10.7	10	35.7	3.32	1.54
		NGO	9	2	22.2	4	44.4	3	33.3	0	0.0	0	0.0	2.11	0.78
		Private	18	4	22.2	2	11.1	0	0.0	6	33.3	6	33.3	3.44	1.61
		Total	55	11	20.0	10	18.2	9	16.4	9	16.4	16	29.1	3.16	1.52
2	Wood agriculture on agricultural land	Public	27	8	29.6	3	11.1	5	18.5	5	18.5	6	22.2	2.92	1.56
		NGO	10	3	30.0	3	30.0	2	20.0	2	20.0	0	0.0	2.30	1.15
		Private	16	6	37.5	3	18.8	0	0.0	4	25.0	3	18.8	2.68	1.66
		Total	53	17	32.1	9	17.0	7	13.2	11	20.8	9	17.0	2.73	1.52
3	Hybrid tree production	Public	25	4	16.0	7	28.0	8	32.0	1	4.0	5	20.0	2.84	1.34
		NGO	10	4	40.0	2	20.0	2	20.0	1	10.0	1	10.0	2.30	1.41
		Private	15	3	20.0	1	6.7	3	20.0	2	13.3	6	40.0	3.46	1.59
		Total	50	11	22.0	10	20.0	13	26.0	4	8.0	12	24.0	2.92	1.46
4	The need to irrigate the poplar plantation areas	Public	28	5	17.9	3	10.7	4	14.3	5	17.9	11	39.3	3.50	1.55
		NGO	10	0	0.0	1	10.0	4	40.0	3	30.0	2	20.0	3.60	0.96
		Private	20	0	0.0	0	0.0	3	15.0	3	15.0	14	70.0	4.55	0.75
		Total	58	5	8.6	4	6.9	11	19.0	11	19.0	27	46.6	3.87	1.31
5	Afforestation competing with natural forest trees	Public	28	9	32.1	7	25.0	5	17.9	5	17.9	2	7.1	2.42	1.31
		NGO	10	2	20.0	2	20.0	3	30.0	3	30.0	0	0.0	2.70	1.15
		Private	20	5	25.0	2	10.0	2	10.0	5	25.0	6	30.0	3.25	1.61
		Total	58	16	27.6	11	19.0	10	17.2	13	22.4	8	13.8	2.75	1.40
6	Manufacture of genetically modified organisms (GMOs)	Public	25	13	52.0	2	8.0	6	24.0	2	8.0	2	8.0	2.12	1.36
		NGO	9	5	55.6	3	33.3	0	0.0	1	11.1	0	0.0	1.66	1.00
		Private	12	8	66.7	1	8.3	1	8.3	0	0.0	2	16.7	1.91	1.56
		Total	46	26	56.5	6	13.0	7	15.2	3	6.5	4	8.7	1.97	1.34
7	Monoculture (single species) tree production	Public	27	4	14.8	5	18.5	8	29.6	6	22.2	4	14.8	3.03	1.28
		NGO	8	1	12.5	2	25.0	3	37.5	1	12.5	1	12.5	2.87	1.24
		Private	16	2	12.5	2	12.5	2	12.5	3	18.8	7	43.8	3.68	1.49
		Total	51	7	13.7	9	17.6	13	25.5	10	19.6	12	23.5	3.21	1.36
8	Combating tree pests	Public	26	7	26.9	5	19.2	7	26.9	3	11.5	4	15.4	2.69	1.40
		NGO	10	1	10.0	2	20.0	3	30.0	1	10.0	3	30.0	3.30	1.41
		Private	19	3	15.8	1	5.3	1	5.3	3	15.8	11	57.9	3.94	1.54
		Total	55	11	20.0	8	14.5	11	20.0	7	12.7	18	32.7	3.23	1.53
9	Increasing the quality of wildlife habitat	Public	28	10	35.7	6	21.4	5	17.9	4	14.3	3	10.7	2.42	1.39
		NGO	9	2	22.2	1	11.1	2	22.2	0	0.0	4	44.4	3.33	1.73
		Private	18	5	27.8	3	16.7	2	11.1	2	11.1	6	33.3	3.05	1.69
		Total	55	17	30.9	10	18.2	9	16.4	6	10.9	13	23.6	2.78	1.57
General Average														2.95	1.45

*Cronbach Alpha Value of Scale Reliability is 0.722

As can be understood from Table 2, the first three statements with the highest knowledge level of interest groups are as follows;

1. The need to irrigate the poplar plantation areas ($\overline{X}$ =3.87),
2. Combating tree pests ($\overline{X}$ =3.23),
3. Monoculture (single species) tree production ($\overline{X}$ =3.21).

The issues that the knowledge level of interest groups is weakest are;

1. Manufacture of genetically modified organisms (GMOs) ($\overline{X}$ =1.97),
2. Wood agriculture on agricultural land ($\overline{X}$ =2.73),
3. Afforestation competing with natural forest trees ($\overline{X}$ =2.75).

As a result of Kruskal-Wallis H-test applied to check H_0 hypothesis established as “the level of knowledge about poplar culture does not differ according to interest groups”, χ^2=1.36 and p=0.51 (p>0.05) were found. In other words, the knowledge level about polar culture did not differ according to public institutions, NGOs and private representatives, and all interest groups thought the same. According to the general average (2.95) in Table 2, it can be said that interest groups have "medium knowledge of poplar production".

3.2. Knowledge levels of interest groups about hybrid poplars

In order to measure the knowledge level of the members of the interest group about the hybrid poplars, 14 proposals with 3 scaled as "1-True", "2-False" and "3-Unknown" were presented to them. According to the received answers, the most correctly answered information question answered by the participants is "Hybrid poplars contribute to the country's economy" (52 participants; 89.7%) and the least accurately answered question is "Canadian poplar is Italian hybrid poplar clone" (15 respondents; 25.9%) (Table 3). According to the answers given by the interest group members to the 14 information questions about the hybrid poplars, their sequence, from the most correct answered answer to the least correct answered answer, was as follows;

1. Hybrid poplars contribute to the country's economy (%89.7),
2. Hybrid poplars are important for the wood industry (%70.7),
3. Hybrid poplars are not harmful to human health (%63.8),
4. Hybrid poplars are tree species that have been imported from other countries or crossed in Turkey (%62.1),
5. Hybrid poplars are non-natural tree species (%58.6),
6. Hybrid poplars substitute imports (%56.9),
7. Hybrid poplars are used in city landscapes, parks and gardens (%55.2),
8. Hybrid poplar fields should be increased (%53.4),
9. R&D study is done on hybrid poplars (%51.7),
10. Thrushes bearing seeds of hybrid poplars cause environmental pollution (%44.8),
11. The female poplar clones of the hybrid poplars give the cotton cane (%44.8),
12. Hybrid poplars are obtained using biotechnology (%36.2),
13. Hybrid poplars are a relatively new species for the Samsun region (%29.3),
14. Canadian poplar is Italian hybrid poplar clone (%25.9).

On the other hand, as a result of the Kruskal-Wallis H-Test applied to check whether the level of knowledge about the hybrid poplars differs according to the interest groups, χ^2=2.96 and p=0.23 were found (p> 0.05). According to this, the knowledge level about hybrid poplars was not different according to public institutions, NGOs and private sector representatives, and all interest groups thought similar.

Table 3. Knowledge levels of interest groups about hybrid poplars.

Information*		Groups	n	1.True		2.False		3.Unknown	
				n	%	N	%	n	%
1	Hybrid poplars are a relatively new species for the Samsun region (False)	Public	28	10	35,7	12	42,9	6	21,4
		NGO	10	5	50,0	1	10,0	4	40,0
		Private	20	11	55,0	4	20,0	5	25,0
		Total	58	26	44,8	17	29,3	15	25,9
2	Hybrid poplars are non-natural tree species (True)	Public	28	19	67,9	6	21,4	3	10,7
		NGO	10	3	30,0	5	50,0	2	20,0
		Private	20	12	60,0	3	15,0	5	25,0
		Total	58	34	58,6	14	24,1	10	17,2
3	Hybrid poplars are not harmful to human health (True)	Public	28	20	71,4	1	3,6	7	25,0
		NGO	10	5	50,0	2	20,0	3	30,0
		Private	20	12	60,0	1	5,0	7	35,0
		Total	58	37	63,8	4	6,9	17	29,3
4	Hybrid poplars are important for the wood industry (True)	Public	28	22	78,6	3	10,7	3	10,7
		NGO	10	6	60,0	3	30,0	1	10,0
		Private	20	13	65,0	3	15,0	4	20,0
		Total	58	41	70,7	9	15,5	8	13,8
5	Hybrid poplars are used in city landscapes, parks and gardens (False)	Public	28	6	21,4	18	64,3	4	14,3
		NGO	10	3	30,0	3	30,0	4	40,0
		Private	20	6	30,0	11	55,0	3	15,0
		Total	58	15	25,9	32	55,2	11	19,0
6	Hybrid poplars are obtained using biotechnology (True)	Public	28	12	42,9	5	17,9	11	39,3
		NGO	10	4	40,0	0	0,0	6	60,0
		Private	20	5	25,0	6	30,0	9	45,0
		Total	58	21	36,2	11	19,0	26	44,8
7	Hybrid poplars contribute to the country's economy (True)	Public	28	27	96,4	1	3,6	0	0,0
		NGO	10	8	80,0	1	10,0	1	10,0
		Private	20	17	85,0	0	0,0	3	15,0
		Total	58	52	89,7	2	3,4	4	6,9
8	Hybrid poplars substitute imports (True)	Public	28	12	42,9	6	21,4	10	35,7
		NGO	10	5	50,0	1	10,0	4	40,0
		Private	20	16	80,0	1	5,0	3	15,0
		Total	58	33	56,9	8	13,8	17	29,3
9	Thrushes bearing seeds of hybrid poplars cause environmental pollution (True)	Public	28	15	53,6	9	32,1	4	14,3
		NGO	10	2	20,0	4	40,0	4	40,0
		Private	20	9	45,0	7	35,0	4	20,0
		Total	58	26	44,8	20	34,5	12	20,7
10	The female poplar clones of the hybrid poplars give the cotton cane (True)	Public	28	13	46,4	1	3,6	14	50,0
		NGO	10	3	30,0	0	0,0	7	70,0
		Private	20	10	50,0	2	10,0	8	40,0
		Total	58	26	44,8	3	5,2	29	50,0
11	R&D study is done on hybrid poplars (True)	Public	28	16	57,1	0	0,0	12	42,9
		NGO	10	6	60,0	0	0,0	4	40,0
		Private	20	8	40,0	4	20,0	8	40,0
		Total	58	30	51,7	4	6,9	24	41,4
12	Hybrid poplar fields should be increased (True)	Public	28	16	57,1	5	17,9	7	25,0
		NGO	10	3	30,0	2	20,0	5	50,0
		Private	20	12	60,0	4	20,0	4	20,0
		Total	58	31	53,4	11	19,0	16	27,6
13	Hybrid poplars are tree species that have been imported from other countries or crossed in Turkey (True)	Public	28	15	53,6	1	3,6	12	42,9
		NGO	10	5	50,0	1	10,0	4	40,0
		Private	20	16	80,0	1	5,0	3	15,0
		Total	58	36	62,1	3	5,2	19	32,8
14	Canadian poplar is Italian hybrid poplar clone (True)	Public	28	7	25,0	2	7,1	19	67,9
		NGO	10	1	10,0	1	10,0	8	80,0
		Private	20	7	35,0	3	15,0	10	50,0
		Total	58	15	25,9	6	10,3	37	63,8

*Cronbach Alpha Value of Scale Reliability is 0.798

3.3. Opinions of interest groups on poplar production

We asked form members of interest groups to give their opinions about poplar production as “1-Definitely Participate", "2-Participate", "3-Undecided", "4-Disagree", "5-Definitely Disagree". According to the answers given to 9 questions, the highest average score (2.78) is "poplar production is a good choice for the landowners", and the lowest average score (2.01) is "the poplar damages by shading the border agricultural land" (Table 4).

Table 4. Opinions of interest groups on poplar production.

	Opinions on Poplar Production*	Groups	n	1		2		3		4		5		$\overline{X}$	S
				n	%	n	%	n	%	N	%	n	%		
1	Poplar production is a good choice for the landowners	Public	26	2	7,7	5	19,2	12	46,2	3	11,5	4	15,4	3,07	1,12
		NGO	10	1	10,0	5	50,0	1	10,0	3	30,0	0	0,0	2,60	1,07
		Private	20	8	40,0	4	20,0	2	10,0	2	10,0	4	20,0	2,50	1,60
		Total	56	11	19,6	14	25,0	15	26,8	8	14,3	8	14,3	2,78	1,31
2	Poplar plantations are a kind of agricultural forestry	Public	28	8	28,6	11	39,3	4	14,3	3	10,7	2	7,1	2,28	1,21
		NGO	10	3	30,0	5	50,0	0	0,0	2	20,0	0	0,0	2,10	1,10
		Private	20	11	55,0	6	30,0	0	0,0	1	5,0	2	10,0	1,85	1,30
		Total	58	22	37,9	22	37,9	4	6,9	6	10,3	4	6,9	2,10	1,22
3	Landowners should rent their land to any person or institution for the production of poplar	Public	24	5	20,8	6	25,0	4	16,7	6	25,0	3	12,5	2,83	1,37
		NGO	10	0	0,0	6	60,0	1	10,0	3	30,0	0	0,0	2,70	0,94
		Private	19	11	57,9	5	26,3	1	5,3	0	0,0	2	10,5	1,78	1,27
		Total	53	16	30,2	17	32,1	6	11,3	9	17,0	5	9,4	2,43	1,33
4	Making poplar culture in agricultural areas is a wrong decision	Public	26	12	46,2	5	19,2	6	23,1	3	11,5	0	0,0	2,00	1,09
		NGO	9	7	77,8	1	11,1	0	0,0	1	11,1	0	0,0	1,44	1,01
		Private	20	8	40,0	4	20,0	0	0,0	3	15,0	5	25,0	2,65	1,72
		Total	55	27	49,1	10	18,2	6	10,9	7	12,7	5	9,1	2,14	1,39
5	Poplar production is a good land use for generally "marginal" areas	Public	25	5	20,0	12	48,0	4	16,0	2	8,0	2	8,0	2,36	1,15
		NGO	9	3	33,3	5	55,6	0	0,0	0	0,0	1	11,1	2,00	1,22
		Private	20	11	55,0	4	20,0	2	10,0	1	5,0	2	10,0	1,95	1,35
		Total	54	19	35,2	21	38,9	6	11,1	3	5,6	5	9,3	2,14	1,23
6	Poplars threaten agricultural land because they take water and nutrients from the field	Public	25	8	32,0	3	12,0	7	28,0	6	24,0	1	4,0	2,56	1,29
		NGO	10	2	20,0	4	40,0	3	30,0	0	0,0	1	10,0	2,40	1,17
		Private	19	11	57,9	2	10,5	0	0,0	3	15,8	3	15,8	2,21	1,65
		Total	54	21	38,9	9	16,7	10	18,5	9	16,7	5	9,3	2,40	1,39
7	The poplar damages by shading the border agricultural land	Public	28	13	46,4	4	14,3	4	14,3	5	17,9	2	7,1	2,25	1,40
		NGO	9	5	55,6	2	22,2	1	11,1	0	0,0	1	11,1	1,88	1,36
		Private	19	12	63,2	3	15,8	2	10,5	1	5,3	1	5,3	1,73	1,19
		Total	56	30	53,6	9	16,1	7	12,5	6	10,7	4	7,1	2,01	1,32
8	Poplar production is a profitable investment	Public	26	0	0,0	9	34,6	12	46,2	3	11,5	2	7,7	2,92	0,89
		NGO	10	2	20,0	3	30,0	3	30,0	1	10,0	1	10,0	2,60	1,26
		Private	20	7	35,0	5	25,0	2	10,0	2	10,0	4	20,0	2,55	1,57
		Total	56	9	16,1	17	30,4	17	30,4	6	10,7	7	12,5	2,73	1,22
9	Poplar production helps to conserve natural forests	Public	28	6	21,4	9	32,1	6	21,4	4	14,3	3	10,7	2,60	1,28
		NGO	10	3	30,0	5	50,0	1	10,0	0	0,0	1	10,0	2,10	1,19
		Private	20	13	65,0	3	15,0	0	0,0	1	5,0	3	15,0	1,90	1,51
		Total	58	22	37,9	17	29,3	7	12,1	5	8,6	7	12,1	2,27	1,37
		General Average												2,33	1,31

*1-Definitely Participate, 2-Participate, 3-Undecided, 4-Disagree, 5-Definitely Disagree
Cronbach Alpha Value of Scale Reliability is 0.640

Sorting of the answers given by the participants for opinion on poplar production, from the most accepted answer to the least accepted answer, was as follows;

1. The poplar damages by shading the border agricultural land ($\overline{X}$ =2.01),
2. Poplar plantations are a kind of agricultural forestry ($\overline{X}$ =2.10),
3. Making poplar culture in agricultural areas is a wrong decision ($\overline{X}$ =2.14),
4. Poplar production is a good land use for generally "marginal" areas ($\overline{X}$ =2.14),
5. Poplar production helps to conserve natural forests ($\overline{X}$ =2.27),
6. Poplars threaten agricultural land because they take water and nutrients from the field ($\overline{X}$ =2.40),
7. Landowners should rent their land to any person or institution for the production of poplar ($\overline{X}$ =2.43),
8. Poplar production is a profitable investment ($\overline{X}$ =2.73),
9. Poplar production is a good choice for the landowners ($\overline{X}$ =2.78).

In addition, χ^2 = 4.74 and p = 0.09 (p> 0.05) were found as a result of the Kruskal-Wallis H-Test used to check the difference of opinion about poplar production of public institutions, NGOs and private sector representatives. Accordingly, the views on poplar production were not different from those of public institutions, NGOs and private sector representatives, all the groups' opinions were the same as ranked above. Likewise, according to the general average in Table 4 (2.33), it can be said that interest groups responded to the proposals as "participate".

3.4. The best land type according to people and organizations making poplar production

The members of the interest group interviewed were asked about the type of the most suitable land according to the persons and institutions producing the poplar, and the answers were given in Table 5.

Table 5. The most suitable land type for persons and institutions making poplar production.

Person or institution to plant and grow poplar	Place for poplar planting and growing*							
	Their own private lands		Rented private lands		State treasury lands		Most preferred opinions	
	Number	%	Number	%	Number	%	Number	%
Forest Organization	35	14,7	1	0,6	22	17,5	22	
Agriculture Organization	21	8,8	5	3,4	30	23,8	30	
State Hydraulic Works (DSİ) Organization	29	12,2	1	0,6	25	19,8	25	36
Municipality	34	14,3	1	0,6	21	16,7	21	
Local People	44	18,5	6	4,1	7	5,6	44	16
Non-Local Person	22	9,3	31	21,2	4	3,2	31	
Domestic Company	16	6,7	37	25,2	4	3,2	37	48
Foreign Company	12	5,0	42	28,6	3	2,4	42	
Nursery Industry	25	10,5	23	15,7	10	7,8	23	
Total	238	100,0	147	100,0	126	100,0	275	100

*More than one answer received form participants

According to this, 48% of the participants have the opinion that poplar saplings should be planted and cultivated by the non-local person, domestic or foreign company and the nursery industry in the rented private lands, 36% have the opinion that the poplar saplings should be planted and cultivated by Forest, Agriculture, DSİ and Municipal organizations in the state treasury lands, and 16% have the opinion that poplar saplings should be planted and cultivated by the local people in their own private lands.

3.5. Reasons for landowners making poplar production by interest groups

The list, which is with 8 items and can be marked more than one item, was presented for the members of interest groups about the reasons for the landowners to produce poplar. According to the answers given, the reasons for the landowners to produce poplar were determined as follows;

1. The purpose of collecting mass money in the future (%17.3),
2. Poplar culture is a type of business that does not require intensive care (%16.5),
3. For not leaving land empty (%14.9) (Table 6).

Table 6. Reasons of landowners for making poplar production.

Reasons for preference*	Number	%	Rank
The purpose of collecting mass money in the future	43	17,3	1
Poplar culture is a type of business that does not require intensive care	41	16,5	2
For not leaving land empty	37	14,9	3
The economic gains that neighboring landowners have earned from poplar farming	31	12,4	4
The goal of additional income	31	12,4	4
The land is suitable for poplar plantation	29	11,7	5
Thinking that it is a profitable investment	20	8,0	6
Observation of successes of neighboring landowners planting poplar saplings	17	6,8	7
Total	249	100	

*More than one answer received form participants

3.6. Information sources of interest groups on poplar planting and producing

The list showing the sources of information of interest groups about poplar planting and production, which is with 11 items and can be marked more than one item, was presented to them. The first information source with 20% of participants about poplar planting and production were neighbors/friends. This was followed by conversations and meetings made with forest organization employees with 17.8% and internet web pages with 12.2% (Table 7).

Table 7. Information sources on poplar planting and producing.

	Information Sources*	1.Yes		2.No	
		Number	%	Number	%
1	Conversations and meetings with forest organization employees	32	17.8	26	5.7
2	Conversations with other government officials	13	7.2	45	9.8
3	Conversations with the employees of the Poplar and Fast Growing Forest Research Institute and its publications	15	8.3	43	9.4
4	Internet web pages	22	12.2	36	8.0
5	Books	16	8.9	42	9.2
6	Newspapers	7	3.9	51	11.1
7	Journals	12	6.7	46	10.0
8	TV and Radio Programs	12	6.7	46	10.0
9	Information Brochures	8	4.4	50	10.9
10	Neighbors/friends	36	20.0	22	4.8
11	Poplar producers	7	3.9	51	11.1
	Total	180	100	458	100

*More than one answer received form participants

3.7. Satisfaction level of interest groups on poplar planting and producing

In the questionnaire study, interest groups were asked to indicate their level of satisfaction from poplar planting and production. The answers are; definitely positive (37.9%), slightly positive (22.4%), neutral (17.3%), strictly negative (12.1%) and slightly negative (10.3%) respectively (Table 8).

Table 8. Satisfaction level on poplar planting and producing.

Satisfaction Level	Number	%	Rank
Definitely positive	22	37.9	1
Slightly positive	13	22.4	2
Neutral	10	17.3	3
Slightly negative	6	10.3	5
Strictly negative	7	12.1	4
Total	58	100	

Kruskal-Wallis H-Test was applied to check whether the level of satisfaction from poplar planting and production differs according to public institutions, NGOs and private sector representatives. At the end of the test, it was understood that the satisfaction level from poplar planting and production was not different according to the interest groups and the satisfaction levels of all groups were generally "positive" because of χ^2=2.77 and p=0.25 (p> 0.05) were found.

4. Discussion and conclusions

It was understood that the knowledge, opinions and thoughts of interest groups about poplar culture were not different at this study conducted in the province of Samsun (Çarşamba, Terme districts) where poplar is intense in order to determine the knowledge, opinions and thoughts on poplar culture according to the different parts (interest groups) of the society interacting with poplar culture and to direct poplar production accordingly. At the end of study, it was determined that all interest groups (public institutions, NGOs and private sector) had moderate knowledge about irrigation, struggle with tree pests and monoculture tree cultivation in poplar plantation, but they had no knowledge in more detailed and technical matters, many of poplar growers sold by traditional methods their poplar seedlings and they regarded as official regulations for sales, they determined demand estimates for poplar seedlings according to the previous year's wholesale and retail sales numbers.

The interest groups accepted most "poplars damages by shading the border agricultural land" and at least "poplar production is a good choice for landowners" from the proposals for poplar production. It was understood that the answers given were not different according to the interest groups and all interest groups support to the proposals as "participate". In this issue, a study was conducted in Tokat-Niksar (Fidan et al., 2014); It was stated that the most important problem of the effect of the shadow over the neighboring agricultural areas, the poplar for the landowners is the most profitable, easy and indispensable agricultural activity. All Interest groups were in the same mind as poplar producers about the causes of poplar production, which were listed as collective mass money in the future, no need for intensive care of poplar, and not leaving the land empty.

Most of the participants think that poplar saplings should be planted and cultivated in private places or treasury land by persons, companies, nursery industry and Forestry, Agriculture, DSİ and Municipal organizations. However, none of the poplar producers provided saplings from state nurseries and they usually obtained saplings from the producers growing poplar saplings. Similarly, Karakaya (2010) stated that saplings should be procured from state nurseries or producers who produce in quality of state nursery in order to increase success of poplar studies to be made in the Sakarya region. Also, it was proposed to fill in the information gaps in this area firstly, to carry out integrated project studies and to put them into practice under the coordination of General Directorate of Forestry in order to improve and develop the growth of poplar saplings in Turkey.

It was also understood that the satisfaction level of poplar planting and production was not different according to the interest groups and the satisfaction level of all interest groups was "positive". On the other hand, the National Poplar Commission of Turkey decided that society awareness should be raised in order to overcome the negative perceptions as harmful effects of poplar trees on environment and human health (TMKK, 2014). For this reason, to raise awareness interest groups having negative perceptions about poplar is especially important in terms of continuity of poplar.

The information sources of interest groups about poplar planting and production were "neighbors/friends, conversations and meetings made with forest organization's employees, and internet web pages". However, these information sources are insufficient, and it was suggested to develop the available web pages of the Poplar and Fast Growing Forest Trees Research Institute and to present it interest groups to access. Interest groups should have knowledge about poplar culture and its contributions to the country's economy in general, which will cause the formation of a social consciousness about poplar culture, and its spreading and development. For this, all parts of the society need to be made aware and educated.

Acknowledgment

This study was produced within the scope of the research project titled "Socioeconomic Structure of Poplar Producers in the Samsun Regions, Issues, Expectations and Solution Ways" and numbered "İZT-394 (5313)/2015-2016", which was funded and supported by the General Directorate of Forestry.

References

Akay, M., Sayılı, M., Uzunöz, M. 1998. Tokat ili Niksar Ovasında Kavak Yetiştiriciliğinin Ekonomik Açıdan İrdelenmesi. Gaziosmanpaşa Üniversitesi, Ziraat Fakültesi Dergisi, 1998 (1).

Ayberk, S., Angeli, A., Çolak, İ. 1996. Melez (1-214) ve Karakavak (Gazi) Ağaçlandırmalarında Karma Ormancılık Tekniklerinin Uygulanması Üzerine Araştırmalar. Kavak ve Hızlı Gelişen Orman Ağaçları Araştırma Enstitüsü Müdürlüğü, Teknik Bülten No:175, İzmit.

Birler, A. 2010. Türkiye'de Kavak Yetiştirme (Fidanlık-Ağaçlandırma-Koruma-Hasılat-Ekonomi-Odun Özellikleri). Kavak ve Hızlı Gelişen Orman Ağaçları Araştırma Müdürlüğü, Çeşitli Yayınlar Serisi No: 22, s.1-15, İzmit.

Bozorgmehr, A., Nemati, A., Zakeri, E. 2014. Characterizing the socioeconomic factors influencing poplar plantation in North Khorasan Province. Iranian Journal of Forest and Poplar Research. http://www.sid.ir/fa/VEWSSID/J_pdf/71913930413.pdf/04.12.2015.

Daşdemir, İ. 2016. Bilimsel Araştırma Yöntemleri. Nobel Akademik Yayıncılık ve Danışmanlık Tic. Ltd. Şti., Yayın No: 1536, ISBN 978-605-320-442-8, 210 s., Ankara.

Dwivedi, R. P., Kareemulla, K., Singh, R., Rızvı, R. H., Chauhan, J. 2007. Socioeconomic Analysis of Agroforestry Systems in Western Uttar Pradesh. http://seea.org.in/irjee/upload/v07306.pdf/24.06.2016.

Fidan, C., Şahin, H. A., Demirsu, N. 2014. Kavak ve Hızlı Gelişen Orman Ağaçları Araştırma Müdürlüğü Raporu. Tarih: 17.09.2014, 4 s., İzmit.

Gökçe, O. 1978. Küçük Menderes Ovasında Kavak Yetiştiriciliğinin Ekonomik Yönü ve Sorunları Üzerine Bir Araştırma. Ege Üniversitesi, Ziraat Fakültesi, Doktora Tezi, İzmir.

Kalıpsız, A. 1981. İstatistik Yöntemler. İstanbul Üniversitesi, Orman Fakültesi Yayın No: 2837/294, 558 s., İstanbul.

Karakaya, S. 2010. Sakarya İli Kavak Üreticilerinin Sosyo-Ekonomik Yapısı ve Başarı Düzeylerini Etkileyen Faktörler. Kavak ve Hızlı Gelişen Orman Ağaçları Araştırma Müdürlüğü, Teknik Bülten No:209, İzmit.

Karakaya, S., Daşdemir, İ., Ercan, M. 2017. Socioeconomic structure and analysis of the demand for wood raw material in the poplar wood-processing companies of the Sakarya and Kocaeli provinces in Turkey. Journal of Sustainable Forestry, DOI:10.1080/10549811.2017.1333912.

Kareemulla, K., Rızvı, R. H., Kumar, K., Dwivedi, R. P., Singh, R. 2005. Poplar agroforestry systems of Western Uttar Pradesh in Northern India: a socioeconomic analysis, forests, trees and livelihoods. 15:4, 375-381, DOI: 10.1080/14728028.2005.97525.

Kılıçaslan, H., Uludağ, S., Karabulut, S. 2005. İzmit ve Samsun Yöresinde Tesis Edilen Samsun (I–77/51) Klonu Ağaçlandırmalarında Fidan ve Sırık Çeliği Kullanılma Koşul ve Olanakları. Kavak ve Hızlı Gelişen Orman Ağaçları Araştırma Enstitüsü, Teknik Bülten No: 202, İzmit.

OGM, 2012. Orman Genel Müdürlüğü, Stratejik Plan (2013-2017). 82 s., Ankara.

OGM, 2016. Orman Genel Müdürlüğü, İşletme ve Pazarlama Dairesi Başkanlığı, Oduna Dayalı Orman Ürünlerinin Üretim ve Pazarlama Faaliyetleri. 80 s., Ankara.

Özdamar, K. 2002. Paket Programlar İle İstatistiksel Veri Analizleri (4. Baskı). ISBN 975-6786-00-7, Kaan Kitabevi, 686 s., Eskişehir.

SİGHM, 2015. Samsun İl Gıda Tarım ve Hayvancılık Müdürlüğü Kayıtları

SİGHM, 2016. Samsun İl Gıda Tarım ve Hayvancılık Müdürlüğü Kayıtları.

TMKK, 2014. Türkiye Milli Kavak Koordinatörlüğü VIII. Genel Kurul Kararları. 13-14 Kasım 2014, 4 s., Kocaeli.

TUİK, 2016. Türkiye İstatistik Kurumu. https://biruni.tuik.gov.tr/medas/17.05.2016.

Uzunöz, M., Çiçek, A. 1998. Niksar Ovasında Melez Kavak Yetiştiriciliğinin Önemi ve Alternatif Tarla Ürünlerine Göre Karlılığı Üzerine Bir Araştırma. Gaziosmanpaşa Üniversitesi, Ziraat Fakültesi Dergisi, Yayın No: 1998/1, Cilt No: 15, s.85-106, Tokat.

Wani, N. R., Malik, T. H. 2014. Role of Poplars in Agroforestry System in India.http://www.sciencepub.net/newyork/ny0702/006_22978ny070214_50_56.pdf/25.05.2016.