

Do Romanians prefer natural or artificial Christmas trees?

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Abstract

The Christmas tree holds a significant symbolic value during winter holidays, and Romania has a robust tradition of decorating these trees. This study aimed to highlight Romanians' preferences concerning Christmas trees, employing a questionnaire divided into three sections with a total of 20 items. A confidential online survey was created using Google Forms and disseminated on the Pădurile din România Facebook page, which boasts over 55,000 followers (in December 2023), as well as across various Facebook and WhatsApp groups from December 5 to December 23, 2023. A total of 1498 questionnaires were completed, with 50.3% of respondents being females and 49.7% males. The survey findings revealed distinctions between genders, age groups, and urban-rural residents. Notably, artificial trees are favored more by women than men, with most artificial tree purchasers (60%) falling within the age range of 35 to 54. Furthermore, 70% of those choosing artificial trees reside in urban areas.

Keywords: *Abies*, fir, *Picea*, potted tree, spruce, survey

Introduction

In recent decades, there has been a noticeable uptick in the cultivation of Christmas trees across Europe, marked by meticulous vegetation management in Christmas-tree plantations to ensure high-quality trees [21], [22]. The presence of weeds poses a challenge throughout the production of Christmas trees, especially during establishment [7]. Typically, growers employ mechanical mowing and herbicide applications as primary weed control methods in their fields [1], [18].

Recent research has delved into the adoption of integrated weed management strategies to enhance the success of Christmas tree production [8]. Therefore, promoting the cultivation of Christmas trees involves advocating for a reduction in herbicide usage when possible. It is also advisable to establish new plantations in landscapes characterized by uniformity and habitats of lesser importance for biodiversity [21]. In some cases, Christmas trees have been recognized for their pivotal role in agroforestry systems. One example is observed in Thüringen, Germany, where Christmas tree plantations are seamlessly integrated with the practice of allowing chickens to graze [20].

Considering its primary role during the Christmas holidays, the post-harvest retention of needles stands as a critical attribute for Christmas trees. In this regard, Norway spruce [*Picea abies* (L.) H.Karst.] demonstrates inferior post-harvesting needle retention in contrast to many fir (*Abies*) species [8]. This is the reason why, for example, Balsam fir (*Abies balsamea* (L.) Mill.) and Fraser fir [*Abies fraseri* (Pursh) Poir.] are preferred in North America, where they play a crucial role in Christmas tree industry [1], [3], [4], [11], [24]. If fir trees are the dominant Christmas tree species across North America, in Central America Douglas fir (*Pseudotsuga menziesii* var. *glauca*) is the most preferred species [12], [19].

In Europe, as indicated by recent reports, the predominant Christmas tree under cultivation is the Nordmann fir [(*Abies nordmanniana* (Steven) Spach)]. This preference is primarily attributed to its enchanting dark green color, long soft needles and commendable needle retention [9], [26], [27].

In Romania, according to the Forestry Law, Christmas trees are regarded as one of the main categories of non-wood forest products [2], [6], [10], [25]. In the Romanian Carpathians, silver fir (*Abies alba* Mill.) stands out as a characteristic species, together with Norway spruce [*Picea abies* (L.) Karst] and beech (*Fagus sylvatica* L.) [5]. As one of the primary tree species prevalent in Romania, the silver fir plays a

multifaceted role in various traditional activities. Nonetheless, its most noteworthy role is arguably as a Christmas tree [13], [14], [16].

The aim of this study was to highlight the Romanians' preferences concerning the Christmas tree.

Material and Method

A questionnaire segmented into three sections was used and section number 1 consisted of seven questions (Table 1).

Table 1. The first section of the questionnaire

Items	
1.1. Gender	female
	male
1.2. Age	18-24 years old
	25-34 years old
	35-44 years old
	45-54 years old
	55-64 years old
	65+ years old
1.3. Do you live in Romania or abroad?	Romania
	Abroad
1.4. Do you live in ... ?	urban area
	rural area
1.5. What is the last school you graduated from?	high school (ISCED level 3)
	college (ISCED level 6)
	master's (ISCED level 7)
	doctorate (ISCED level 8)
	other option
1.6. Do you decorate the Christmas tree every year?	Yes, I can't imagine Christmas without my decorated Tree
	Almost every year/occasionally
	No, but I enjoy the Tree decorated by the City Hall or others
1.7. Do you buy a Christmas tree which is ... ?	natural, cut
	natural, potted
	artificial/I reuse the artificial one annually

The second section of the questionnaire included two questions regarding the artificial Christmas tree. Question 2.1 gave the chance to respondents to provide diverse answers regarding their preferences and Question 2.2 focused on the budget allocated for a tree (Table 2).

Table 2. The second section of the questionnaire

Items	
2.1 Why do you opt for artificial Christmas tree?	needles don't fall out
	lower costs over time
	I want to save the forests
	I haven't found a potted tree to plant later
	it is not the case, because every year I buy natural Christmas tree
	other answer
2.2 How much budget do you allocate annually for an artificial Christmas tree?	up to 10 Euro
	between 10 and 20 Euro
	between 20 and 30 Euro
	between 30 and 40 Euro
	between 40 and 80 Euro
	more than 80 Euro

The third section of the questionnaire included eleven questions regarding the natural Christmas tree. Questions 3.2, 3.3, 3.4, 3.8 and 3.9 included predetermined options as well as opportunities for open-ended responses (Table 3).

Table 3. The third section of the questionnaire

Items	
3.1. The Christmas tree you are purchasing is ... ?	cut
	potted
3.2. Do you know what species is your Christmas tree?	Yes, it's a fir (<i>Abies</i> sp.)
	Yes, it's a spruce (<i>Picea</i> sp.)
	Yes, it's a Douglas fir (<i>Pseudotsuga</i> sp.)
	Yes, it's a pine (<i>Pinus</i> sp.)
	I don't know
	other answer
3.3. From where do you get your Christmas tree (cut or potted)?	hypermarket
	local market
	a relative/friend brings it to me
	from a state-owned forest district

	<p>from a private-owned forest district</p> <p>from a nursery</p> <p>other answer</p>
3.4. Who should ensure that there are specialized Christmas tree plantations?	<p>Ministry of Environment, Waters and Forests</p> <p>National Forest Administration Romsilva</p> <p>private-owned forest districts</p> <p>private-owned forestry nurseries</p> <p>private-owned horticultural nurseries</p> <p>local public authorities</p> <p>other answer</p>
3.5. Do you know any local producers in your region?	<p>Yes</p> <p>No</p> <p>I don't know if it exists in the area</p>
3.6. I am interested in buying a natural Christmas tree produced in ...?	<p>my county/district</p> <p>Romania</p> <p>imported</p> <p>I don't care about its origin</p>
3.7. Do you know the provenance of your Christmas tree?	<p>Yes, from the specialized plantations</p> <p>Yes, from the specialized nursery</p> <p>Yes, from the forest</p> <p>No</p>
3.8. Where do you keep the Christmas tree?	<p>inside, in one of the rooms</p> <p>on the balcony/terrace</p> <p>in the yard, because I have one</p> <p>other answer</p>
3.9. What do you do with the Christmas Tree after the holidays?	<p>I return it to a recycling center</p> <p>I want to return it to a recycling center, but there is none in the area</p> <p>I chop it up and compost it in my household</p> <p>I put it on fire</p> <p>I throw it in the trash</p> <p>I plant it because I purchase always a potted tree</p> <p>other answer</p>
3.10	<p>up to 10 Euro</p>

	between 10 and 20 Euro
	between 20 and 30 Euro
How much budget do you allocate annually for an artificial Christmas tree?	between 30 and 40 Euro
	between 40 and 80 Euro
	more than 80 Euro
	less than 4 years
3.11 How many years do you think it takes for a Christmas tree to reach 2 meters tall?	between 4 and 6 years
	between 6 and 8 years
	between 8 and 10 years
	more than 10 years

A confidential online survey was crafted using Google Forms. The survey was disseminated on the Pădurile din România Facebook page (more than 55,000 followers in December 2023) and across various Facebook and Whatsapp groups from December 5 to December 23, 2023.

Responses to the questionnaire were inputted into Microsoft Excel™ 2021 for Windows for analysis.

Results and Discussion

In total, 1498 questionnaires were filled out, and 50.3% of the respondents were females, and 49.7% were males, respectively. Over half of the participants were between the ages of 35 and 54 (Table 4). Ninety-five percent of the respondents reside in Romania, while the remaining 5% live abroad. Two thirds of all respondents have obtained a master's degree (ISCED level 7), one in ten holds a Ph.D. degree (ISCED level 8), and less than 3% have graduated only from professional schools.

Table 4. Participants' distribution by age and gender

Age Groups (years)	Females		Males		Total	
	n	%	n	%	n	%
18-24	104	64.6	57	35.4	161	10.7
25-34	124	42.5	168	57.5	292	19.5
35-44	223	45.2	270	54.8	493	32.9
45-54	190	53.2	167	46.8	357	23.8
55-64	89	59.3	61	40.7	150	10.0
65+	23	51.1	22	48.9	45	3.0
Total	753	50.3	745	49.7	1498	100

Regarding Question number 1.6 ("Do you decorate the Christmas tree every year?"), 75.9% of respondents answered "Yes, I can't imagine Christmas without my decorated tree", 17% responded with "Almost every year/occasionally", and only 7.1% indicated "No, but I enjoy the tree decorated by the City Hall or others".

Out of the total number of respondents, 830 (55.4%, 474 females and 356 males) indicated a preference for purchasing or annually reusing artificial trees. On the other hand, 532 (35.5%, 214 females and 318 males) respondents chose natural, cut trees, and only 136 (9.1%, 65 females and 71 males) opted for natural, potted trees, respectively (Figure 1).

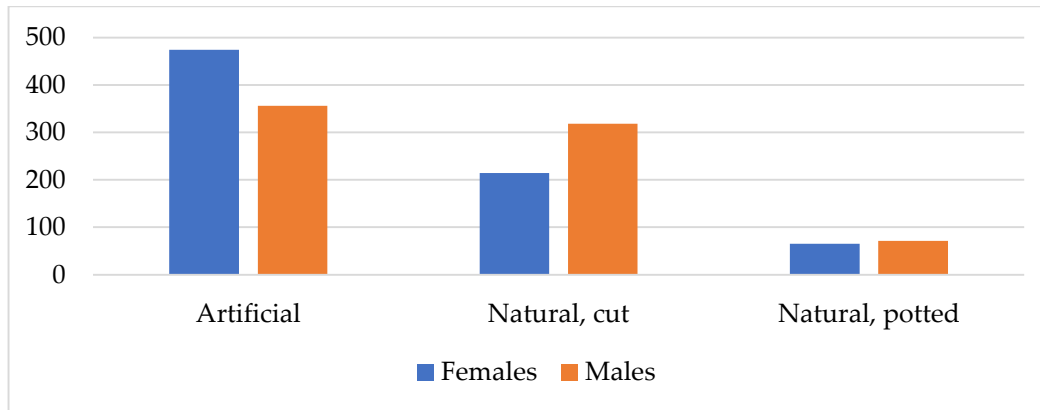


Figure 1. Respondents' preferences regarding artificial versus natural Christmas tree

Six out of ten individuals who selected an artificial tree fall within the age range of 35 to 54. Three out of ten are aged between 18 and 34, and one out of ten is over 55 years old. Slightly more than half of those who chose a natural, cut tree (53.5%) fell within the age range of 35 to 54, whereas just under half of those who preferred a natural, potted tree (46.3%) were in the same age categories.

Seven out of ten respondents who opted for artificial trees originated from urban area, while three out of ten originated from rural area, respectively. Out of the total of 532 individuals who chose a natural, cut tree, 332 originated from urban areas, and 200 originated from rural areas. Similarly, among respondents who selected a natural, potted tree, 66.2% were from urban areas, while 33.8% were from rural areas.

For the first question of the second section of the questionnaire, which allowed for multiple choices, 1169 responses were gathered. Slightly more than half of the participants (53.6%) expressed that they opt for an artificial tree to contribute to forest conservation. For 27.2% of respondents, the choice of an artificial tree is driven by the fact that its needles don't fall out, preventing mess in the house. Cost considerations played an important role for 28.3% of respondents, as artificial trees were perceived as more economical than natural ones. A minority (3.3%) mentioned that they didn't find a potted tree for later planting, so they chose an artificial one.

Other factors contributing to the choice of an artificial tree include its fuller and more consistent appearance, increased branch density, ease of assembly, time saving, and convenient storage. Some participants in the survey opted for an artificial tree because of its long lifespan. Others selected it with the intention of keeping it until late January or early February, while some favored it because they could maintain it indoors, where a natural tree might not endure for an extended period.

Concerning the budget allocated for an artificial tree, 1176 answers were received. 25% of the respondents plan to spend between 40 and 80 Euro. 19.3% of the respondents specified a budget range of 30 to 40 Euro, while 20.5% intend to pay between 20 and 30 Euro. Additionally, 16.3% budgeted between 10 and 20 Euro, 7.9% allocated up to 10 Euro, and 11% plan to spend more than 80 Euro. Six out of ten respondents who opted to spend between 40 and 80 Euro for an artificial tree fall within the age range of 35 to 54 years old.

Regarding natural Christmas trees (section three of the questionnaire), out of the total of 757 responses, the majority (74.9%) chose a cut tree, while only 25.1% opted for a potted one.

Concerning the preferred species, 776 responses were recorded. The majority of respondents (63.4%) selected a fir tree (*Abies* sp.), which could be either a silver fir (*Abies alba* Mill.) sourced from Romania or a Nordmann fir [*A. nordmanniana* (Steven) Spach] imported from northern European countries. Spruce (*Picea* sp.) secured the second position, accounting for 13.1% of the total responses, followed by Douglas fir (*Pseudotsuga* sp.) at 2.1%, and pine species (*Pinus* sp.) at 0.8%. On the other hand, 16.6% of the total number of respondents don't know what species their Christmas tree is. Conversely, 16.6% of the total respondents are unsure about the species of their Christmas tree. Others (constituting 4% of the respondents) offered varied responses, including blue spruce (*Picea pungens* Engelm.), star pine [*Araucaria heterophylla* (Salisb.) Franco], junipers (*Juniperus* sp.), or even expressing indifference about the species of their Christmas tree. The distribution of the 613 respondents who can identify tree species (fir, spruce, Douglas fir, or pine) based on gender, residence, and age classes is illustrated in Figure 2. Individuals, both male and female, residing in urban areas and belonging to the 35-44 age group demonstrated a higher level of knowledge regarding species identification.

The primary source of natural Christmas trees is the market, with 44% of the total number (768) of respondents selecting hypermarkets and 16.4% choosing local markets. The second source is represented by the forest districts, accounting for 13.4% in the case of state-owned ones and 2.3% in the case of private-owned ones. A total of 12.4% of respondents opted to purchase their Christmas tree directly from a nursery,

while 5.3% indicated that a relative or a friend serves as their source. The remaining respondents (8.2%) specified particular markets such as Dedeman, Leroy Merlin, Brico Dépot, Hornbach, Agroland, Jumbo, Silva Group, or mentioned relying on personal sources like their own gardens or directly obtaining it from the forest or harvesting site. Some also expressed satisfaction with only a branch from a fir tree.

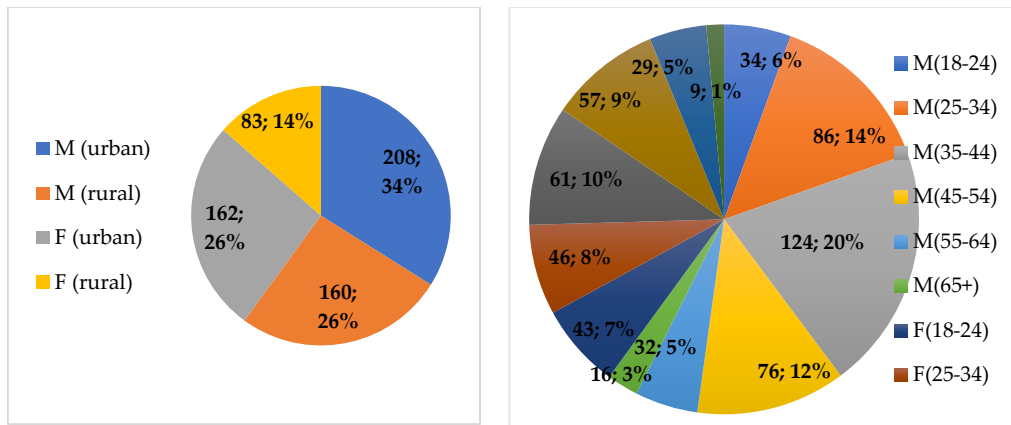


Figure 2. The distribution of the respondents on gender (M-males, F-females) and residence (left) and gender and age classes (right)

830 responses were collected for Question 3.4. Approximately 51.1% of the respondents believe that the National Forest Administration ROMSILVA should be the primary entity responsible for ensuring the presence of specialized Christmas tree plantations in Romania. This perception contradicts the reality. For instance, in November 2023, as a public entity and in accordance with the existing regulations [23], ROMSILVA announced that the available Christmas trees totaled only 24,796, with 17,569 trees being produced in nurseries and 7,227 trees originating from harvesting sites [17]. The second key source, according to 26.4% of respondents, should be the Ministry of Environment, Waters and Forests. Lower percentages were reported for private forest districts (2.2%), private forestry nurseries (6.7%), private horticultural nurseries (2.8%), and local public authorities (6.4%), respectively. The remaining respondents (4.4%) provided varied responses, including a combination of the above-specified stakeholders, specialized private companies, supermarkets, or all state authorities.

848 answers were received at Question 3.5. Over half of respondents (55%) indicated that they are unaware of any local producers of Christmas trees in their region. Only 29.2% declared that they are familiar with a local producer, while 15.8% stated that they do not know of one in their region.

The overwhelming majority of respondents (800 answers, in total) expressed an interest in purchasing a natural Christmas tree produced in Romania (44.6%) or their own county/district (30.4%). Only 2.7% prefer trees imported from other countries, while 22.3% of the respondents do not prioritize the origin of the Christmas trees.

Seventy percent of respondents (787) stated that they are aware of the origin of their Christmas trees, whether from specialized plantations (36.5%), specialized nurseries (21%), or directly from the forests (11.9%).

831 responses were received to Question 3.8. A significant majority of respondents (81.5%) keep their Christmas tree indoors, with 7.6% placing it on the balcony or terrace and only 9% in the yard, since they have one. Approximately 1.9% of respondents provided other answers, indicating that they keep the Christmas tree indoors on some days and outdoors on others.

Following the holidays, 17.9% of respondents (781) return their Christmas tree to a recycling center, while an additional 12.3% of respondents express the intention to do so but there is no such facility in their area. Eighteen percent of respondents choose to chop the tree and compost it at home, while another 20.6% opt to burn it. Some respondents (7.4%) dispose of it in the trash, and only 16.8% plant it since they purchased a potted tree. Additional diverse responses were recorded, highlighting new uses for the stem, such as serving as a tutor for vegetables or a spinning fork for wool.

Regarding the budget allocated for a natural tree, 756 responses were received. 34% of respondents plan to pay between 20 and 30 Euro, while 25.7% have budgeted between 10 and 20 Euro. Additionally, 20% of respondents specified a budget range of 30 to 40 Euro, and 11% plan to spend between 40 and 80 Euro. Furthermore, 7% allocated up to 10 Euro, while 2.3% plan to spend more than 80 Euro. In general, the allocated budgets for natural trees are higher than those for artificial trees for prices less than 30 Euro per tree, similar for prices between 30 and 40 Euro per tree, and lower for prices higher than 40 Euro (Figure 3).

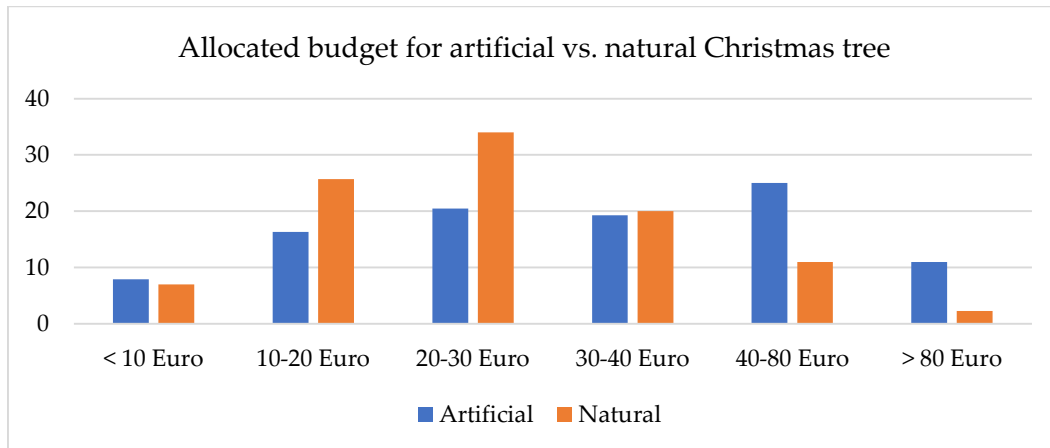


Figure 3. The allocated budget for artificial vs. natural Christmas tree

838 respondents shared their beliefs regarding the required age for a Christmas tree to reach up to 2 meters. Excluding the 5% of respondents who chose less than 4 years, the responses for the other four options were similar. Specifically, 20% of respondents indicated between 4 and 6 years, 26.7% between 6 and 8 years, 25.4% between 8 and 10 years, and 22.9% more than 10 years.

Conclusions

This study marks the initial endeavor to spotlight Romanians' preferences concerning Christmas trees, employing an online questionnaire shared across various Facebook and WhatsApp pages and groups.

The survey results revealed distinctions between women and men, individuals with the same gender but from different age groups, as well as disparities between urban and rural residents. Artificial trees are favored more by the women than the men. The majority of individuals purchasing artificial trees (60%) fall within the age range of 35 to 54. Additionally, 70% of those opting for artificial trees reside in urban areas.

Cut Christmas trees are more popular than potted ones, with fir (*Abies* sp.) being the preferred species. Many Romanians purchase Christmas trees from hypermarkets or local markets, and these trees are typically sourced from Romania.

The overwhelming majority of respondents were of the opinion that the National Forest Administration ROMSILVA and the Ministry of Environment, Waters and Forests should be the primary entities responsible for ensuring the presence of local specialized Christmas tree plantations.

Generally, the budgets allocated for higher-priced natural trees tend to be lower than those for artificial trees.

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