

## TRENDS IN THE EVOLUTION OF HARVESTING OF NON-WOOD FOREST PRODUCTS IN ROMANIA

L. CIOACĂ<sup>1</sup>, C. M. ENESCU<sup>2,3</sup>

<sup>1</sup>*Faculty of Horticulture, University of Agronomic Sciences and Veterinary Medicine of Bucharest, Romania*

<sup>2</sup>*Department of Soil Sciences, Faculty of Agriculture, University of Agronomic Sciences and Veterinary Medicine of Bucharest, Romania*

<sup>3</sup>*Faculty of Silviculture and Forest Engineering, Transilvania University of Braşov, Romania*

Corresponding author: [mihaienescu@agro-bucuresti.ro](mailto:mihaienescu@agro-bucuresti.ro)

**Abstract:** *In Romania, the most common non-wood forest products (NWFPs) consist mainly in forest fruits, edible mushrooms, medicinal plants, forest seeds and fauna of hunting interests. According to a recent proposal of a ministerial order aimed at providing the instructions regarding the harvesting and marketing of the non-wood forest products, it is estimated that more than 170 herbaceous, shrub and tree species and approximately 120 species of edible mushrooms are the most common across the country. The aim of this study was to highlight the trends in the evolution of harvesting of the most common non-wood forest products in Romania. The data and information available within the annual reports provided by the National Forest Administration – ROMSILVA, the public authority responsible for forest management (i.e. Ministry of Waters and Forests) and the National Institute of Statistics in the timeframe 2012-2017 were taken into account. In general, the quantities harvested in the case of the forest fruits, edible mushrooms and forest seeds decreased in the considered timeframe, the trend being more pronounced in the case of the forest fruits and forest seeds, due to several reasons, climatic factors being among the ones with the highest impact.*

**Keywords:** *forest fruits, medicinal plants, mushrooms, non-wood forest products*

### INTRODUCTION

The national forest fund of Romania accounts for 6,565 thousand hectares, which represents 27.5% of the country's total area. According to the definition provided by the Forest Code (i.e. counties where the forested area represents less than 30% of their total area), 23 counties out of the total number of 41 from Romania are deficient in forest lands. By taking into consideration the uneven distribution of the forests at the country level, the potential of harvesting and marketing of the non-wood forest products (NWFPs), also known as non-timber forest products (NTFPs), varies greatly, being counties/districts with high potential, such as Prahova (ENESCU ET AL., 2018) and counties/districts with low potential, such as Ialomiţa (ENESCU, 2017), respectively.

According to Article 58, paragraph 3 of the Forest Code (Law 46/2008), the non-wood forest products specific to the national forest fund consist in fauna of hunting interest, fish from mountain waters, forest fruits, forest seeds, truffles and edible mushrooms, medicinal and aromatic plants, resin, tree sap, a.s.o. All of them belong to their owners with the exception of the game species and fish from mountain waters (paragraph 4 of the Article 58).

At the end of 2016, a proposal of a ministerial order aimed to provide instructions regarding the harvesting of the NWFPs from the national forest fund was published on the website of the Ministry of Environment, Waters and Forests, for public consultation. The proposal contained, among others, a list of 120 mushroom species and 171 herbaceous, shrub

and tree species that were considered of high interest in Romania (CIOACĂ AND ENESCU, 2018).

In the past, at national level, the importance given to the NWFPs was higher. For example, forty years ago, the marketing of the NWFPs represented over 40% of the total income of the forestry sector. At the counties level, the share of revenues from the activities of harvesting and marketing of the NWFPs oscillated between 22% and 73% (PETRESCU ET AL., 1984).

The export of NWFPs from Romania is usually made as raw material. For example, according to the information available on the website of Sibiu Forestry Directorate, Avrig Forest District exported in Germany seven years ago 410 kilograms of silver fir seeds (DIRECȚIA SILVICĂ SIBIU, 2018).

Recently, Maramureș Forestry Directorate estimated that in the autumn of 2015 the exports of forest fruits accounted for more than 100 tons (AGERPRESS, 2015). A similar situation was reported by Harghita Forestry Directorate, which delivered more than 80 tons of forest fruits in 2018 to several European countries (AGERPRESS, 2018).

The aim of this study was to highlight the trends regarding the harvested quantities of certain non-wood forest products in Romania in the timeframe 2012-2017.

#### **MATERIAL AND METHODS**

Data provided by the National Institute of Statistics (INS, 2018), reports regarding the status of the forests from Romania (MMAP, 2013-2016; MAP 2017-2018) and the annual reports made by the National Forest Administration – ROMSILVA (RNP 2013-2018) for the timeframe 2012-2017 were taken into account.

At national level, the data regarding the yearly harvested quantities and the turnover of the forestry units are centralized by using the SILV 2 questionnaire. Every forest district from Romania is fulfilling this questionnaire that is sent to the Forestry Guards, which are centralizing them and sending to the public authority responsible for forestry (*i.e.* Ministry of Waters and Forests) and to the National Institute of Statistics.

The SILV 2 questionnaire provides information regarding the quantities of timber sold, forest and ornamental saplings from the forestry nurseries, other wood products (ornamental trees and shrubs, Christmas trees), forest seeds, forest fruits, edible mushrooms from the spontaneous flora, other NWFPs (medicinal plants and juices, resin), hunting products (game meat, pheasants, horns, etc.), fishery products, other species of fish for consumption, seedlings, apiculture products (including honey) and others.

The turnover of the forestry units is determined on the basis of the quantities and values recorded in the fiscal invoices, tax receipts, sale notes, issued by the forestry structures, data that are recorded in the accounting records of the forestry units.

#### **RESULTS AND DISCUSSIONS**

The yearly harvested quantities of the forest fruits at the national level in the timeframe 2012-2017 are given in Figure 1. On average, the yearly harvested quantity in the considered timeframe was around 3,800 tons, while the highest quantity harvested was recorded in 2013 (5,397 tons), and the lowest one was reported in 2016 (2,442 tons), respectively.

As regards the yearly harvested quantities of edible mushrooms in Romania, the average value was around 560 tons, being almost seven times smaller in comparison with the yearly harvested quantities of forest fruits (Figure 2).

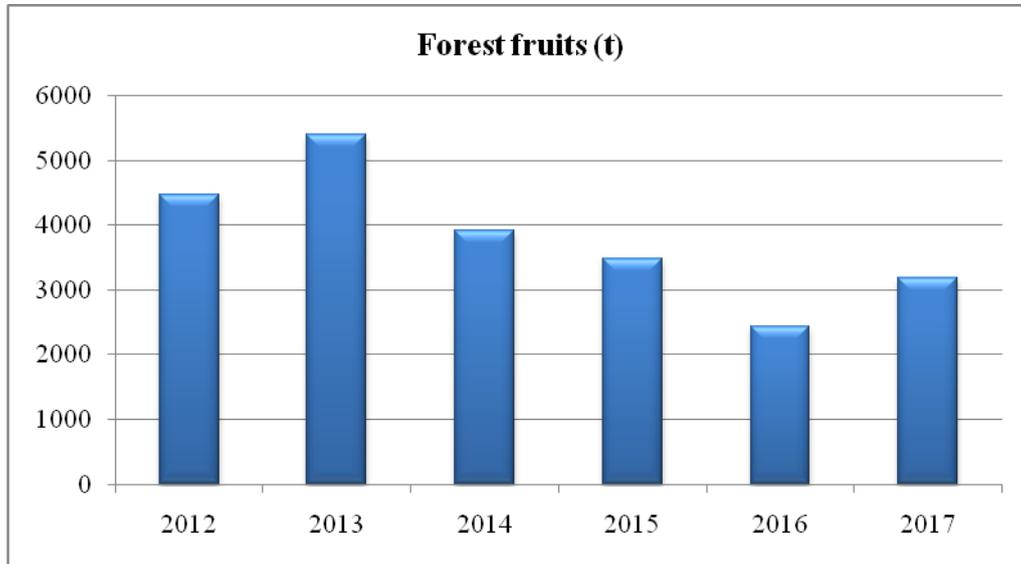


Figure 1. Yearly harvested quantities of forest fruits in Romania

Like in the case of the forest fruits, the smallest harvested quantity of edible mushrooms in the considered timeframe was recorded in 2016. With the exception of 2012, in rest, the yearly harvested quantities of edible mushrooms fluctuated around 500 tons.

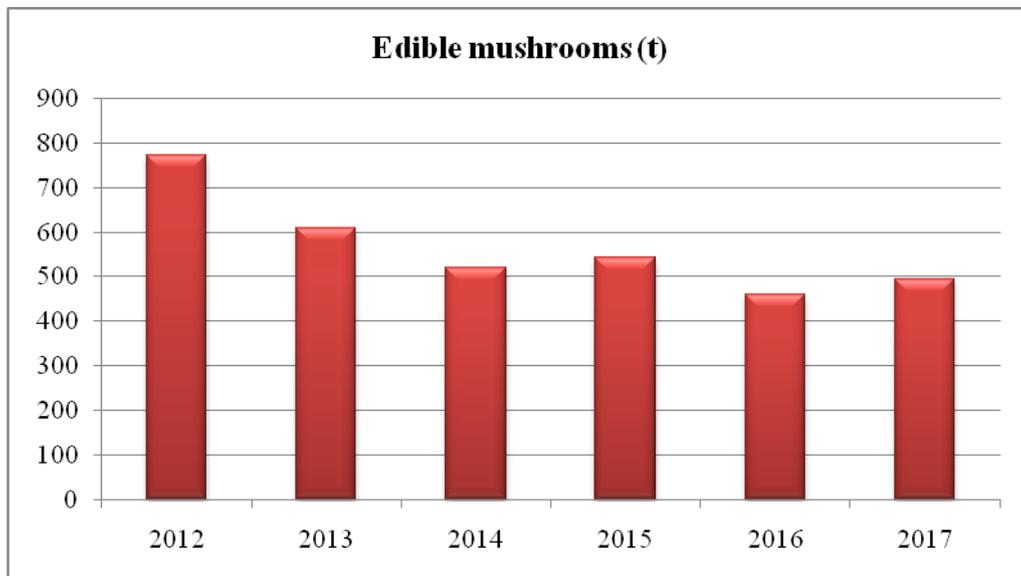


Figure 2. Yearly harvested quantities of edible mushrooms in Romania

The highest harvested quantities of edible mushrooms were recorded for honey fungus [*Armillaria mellea* (Vahl) P.Kumm], penny bun (*Boletus edulis* Bull.) and chanterelle (*Cantharellus cibarius* Fr.). In the case of the forest seeds (Figure 3), the lowest harvested

quantity was recorded in 2015 (i.e. 7.3 tons), while the highest one was reported in 2012 (i.e. 21.7 tons). At national level, the seeds of the Norway spruce [*Picea abies* (L.) H. Karst.], and the ones of the representatives of Genus *Quercus* L., mainly pedunculate oak (*Quercus robur* L.) and sessile oak [*Q. petraea* (Matt.) Liebl.] are of great interest.

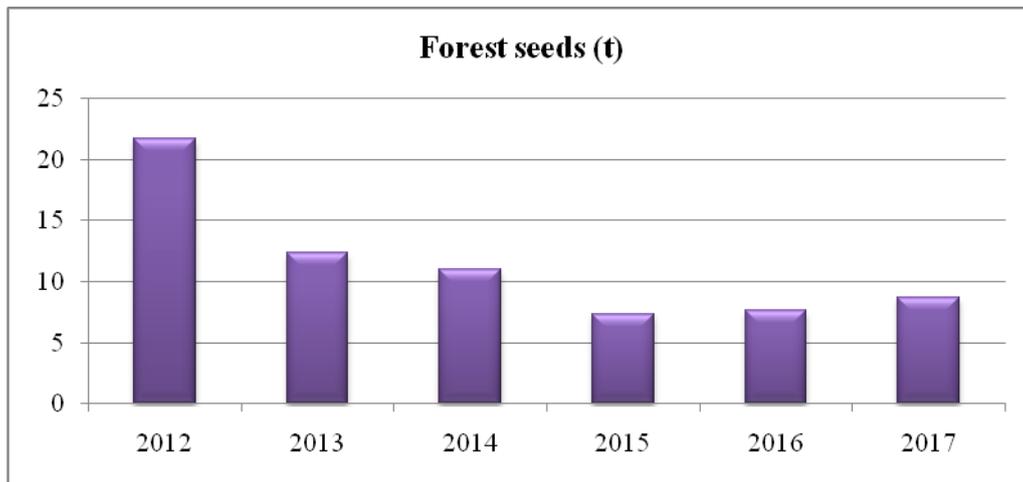


Figure 3. Yearly harvested quantities of forest seeds in Romania

On average, the yearly harvested quantities of medicinal plants by National Forest Administration-ROMSILVA accounted for 750 tons (Figure 4).

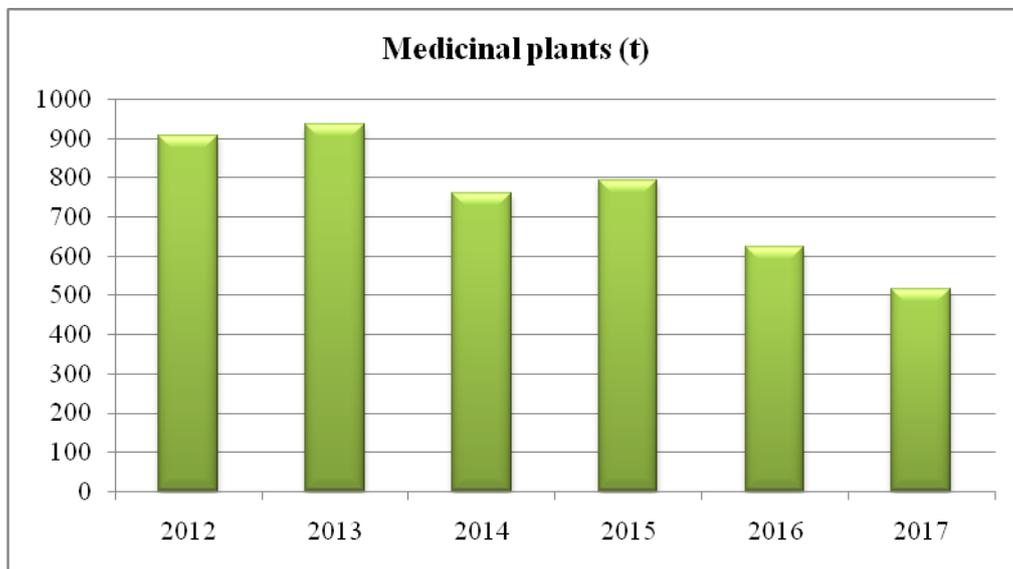


Figure 4. Yearly harvested quantities of medicinal plants by Romsilva

### CONCLUSIONS

The diversity of non-wood forest products in Romania is very high, but even so, in general, the quantities harvested for the forest fruits, edible mushrooms, forest seeds and medicinal plants decreased in the considered timeframe.

The decreasing harvested quantities may be determined by the climatic factors, but this trend could also show a lack of interest in these products and a very low degree of marketing.

By taking into account these low harvested quantities of the most common non-wood forest products and their contribution to the turnover of the forestry districts from Romania, we may conclude that the forest management in our country is mainly focused on timber production, little attention being given to other products and services provided by the forest stands.

### BIBLIOGRAPHY

- 1.AGERPRESS, 2015.Maramureș: Fructele de pădure din zonele montane, un produs exportat cu succes pe piața europeană. Available at: <https://www.agerpres.ro/social/2015/08/17/maramures-fructele-de-padure-din-zonele-montane-un-produs-exportat-cu-succes-pe-piata-europeana-16-54-37>.
- 2.AGERPRESS, 2018. Harghita: Direcția Silvică va livra 80 de tone de fructe de pădure, care vor ajunge în țări din UE. Available at: <https://www.agerpres.ro/social/2018/07/18/harghita-directia-silvica-va-livra-80-de-tone-de-fructe-de-padure-care-vor-ajunge-in-tari-din-ue--146918>.
- 3.CIOACĂ, L., ENESCU, C.M., 2018. What is the potential of Tulcea County as regards the non-wood forest products? Current Trends in Natural Sciences 7(13): 30-37.
- 4.DIRECȚIA SILVICĂ SIBIU, 2018. Prima pagină/Organizare/Ocoale silvice/OS Avrig. Available at: <http://www.dssibiu.ro/ocoale-silvice/os-avrig>.
- 5.ENESCU, C.M., 2017. Which are the most important non-wood forest products in the case of Ialomița County? AgroLife Scientific Journal 6(1): 98-103.
- 6.ENESCU, C.M., DINCĂ, L., CRIȘAN, V., 2018. The most important non-wood forest products from Prahova County. Revista Pădurilor 1: 45-51.
- 7.MINISTERUL APELOR ȘI PĂDURILOR (MAP), 2017-2018. Raport privind starea pădurilor României – anii 2016 și 2017. Available at: <http://apepaduri.gov.ro/paduri/>.
- 8.MINISTERUL MEDIULUI, APELOR ȘI PĂDURILOR (MMA), 2013-2016. Raport privind starea pădurilor României – anii 2012, 2013, 2014 și 2015. Available at: <http://www.mmediu.ro/categorie/starea-padurilor/209>.
- 9.INSTITUTUL NAȚIONAL DE STATISTICA (INS), 2018. AGR307A – Turnover of the forestry units. Available at: <http://statistici.INSSE.ro/shop>.
- 10.PETRESCU, M., IVAN, GH., SECELEANU, I., 1984. Cercetări privind determinarea și analiza eficienței economice a activității de produse accesorii. Silvicultură. În Studii și Cercetări. Silvicultură. Seria I, Vol.XXXVIII, București.
- 11.REGIA NAȚIONALĂ A PĂDURILOR – ROMSILVA (RNP), 2013-2018. RAPORT privind modul de îndeplinire a Programului de activitate al RNP-ROMSILVA pe anii 2012, 2013, 2014, 2015, 2016 și 2017. Available at: [http://www.rosilva.ro/rnp/comunicate\\_de\\_interes\\_public\\_p\\_72.htm](http://www.rosilva.ro/rnp/comunicate_de_interes_public_p_72.htm)