

## THE MACROMYCETES OF THE DOWNY OAK FORESTS FROM MOLDOVA

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**Abstract:** The article contains original data, accumulated over several years, about mushrooms from the forests of downy oak, inventoried during the growing seasons in 1976-2015. The paper includes a systematic list of all the species inventoried to date, with short eco-chorological descriptions. The rare and protected species are also listed.

**Keywords:** chorology, downy oak forests, macromycetes.

### Introduction

The downy oak associations are spread, mainly, throughout the southern part of Moldova, where they can be found in separate small areas. Insignificant areas of downy oak forests are also found in the southern part of “Codri”, alongside Dniester and Prut rivers, on southern slopes.

The first layer of stands consists, mainly, of downy oaks. The distribution of woody species is uneven; trees are arranged in groups, forming groves alternating with glades. Rarely, in the first layer, pedunculate oak, sessile oak, Tatarian maple, common pear and sweet cherry can be found [POSTOLACHE, 1995].

An important part in the distribution of mushrooms throughout the phytocoenoses of downy oaks is played by the placement of trees in groups. Based on that, the saprotrophic foliicolous fungi and the mycorrhizal fungi are met in groves, while in the glades, among groves, there are favourable conditions for the development of sporophores and species of the genera *Hygrocybe*, *Lepiota* and *Macrolepiota*, which prefer open areas [MANIC, 1980].

### Materials and methods

The research on macromycetes from downy oak forests was systematic, taxonomic, chorological and ecological in nature. Each of the studied issues was scientifically documented by examining a wide range of specialized literature: [EYSSARTIER & ROUX, 2011; GALLI, 1996; KIRK & al. 2008; MOSER, 1993; SĂLĂGEANU & SĂLĂGEANU, 1985; SINGER, 1986].

The field research started with the delimitation of the territory to be investigated and the establishment of the itineraries to be covered, according to methodological recommendations [CONSTANTINESCU, 1974; VASILIEVA, 1965].

The sampling of biological material was carried out during the years 1976-2015, according to the methodical recommendations [COURTECUISSÉ, 2000], in downy oak forests from southern Moldova and not too large, separate stands of downy oak which are

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also found in the southern part of “Codri” and the along Dniester and Prut rivers, on southern slopes.

Macromycetes were collected from the appearance of the first mushrooms until late autumn, in different biotopes from the territory of the Republic, in various stages of development and in all seasons. This was preceded by the macroscopic analysis, on the spot, of sporophores with the registration of all phenotypic characters as follows: size, shape, colour and area of the cap, type of hymenophore and spore print, type of universal and partial veil, shape and colour of the stipe (stem), presence or absence of the ring, flesh and its consistency, colour and changes caused by air, taste, smell, presence/absence of latex etc. [MOSER, 1993].

The macro-chemical reactions of various structural-functional components of sporophores, especially the cuticle and the external part of the stipe, the hymenophore, the spores and the latex were studied with particular attention. The changes that took place as a result of the action of chemicals, which are incontestable taxonomic characters, have also been studied: [COURTECUISE, 2000; MOSER, 1993].

The macroscopic analyses were supplemented by photonic-microscopic analyses that targeted the structure of the *hymenial layer*, with particular emphasis on the qualities of asci and ascospores as well as basidia and basidiospores, respectively, that have been focused on colour, size, ornamentation and amyloid reaction of spores, phenotypic characteristics of great taxonomic value. Special attention was paid to biometrics, which was very useful in determining various species.

The identification of taxa was accomplished by using the well-known methodology, that is, the study of specialised literature that contains keys to the determination and diagnosis of species [EYSSARTIER & ROUX, 2011; GALLI, 1996; KIRK & al. 2008; MOSER, 1993; SĂLĂGEANU & SĂLĂGEANU, 1985].

### Results and discussion

In the associations of downy oak, 240 species have been inventoried. The inventoried macromycobiota, in terms of systematics, belong to 95 genera, 43 families, 12 orders and 4 classes, included in 2 phyla of the kingdom *Fungi* (Tab. 1)

The phylum *Ascomycota* is represented by 16 species of macromycetes, which belong to 14 genera, included in 8 families, 4 orders and 3 classes. The most prevalent order of the phylum *Ascomycota* is *Pezizales* – with 11 species of 10 genera, belonging to 6 families.

The phylum *Basidiomycota* is represented by 224 species of 78 genera, 18 families and 9 orders of the class *Agaricomycetes*. The most prevalent order of the phylum *Basidiomycota* is *Agaricales* with 144 species, followed by the order *Russulales* with 40 species and *Polyporales* with 16 species. The most common families are *Russulaceae* with 36 species, *Agaricaceae* with 25, followed by *Tricholomataceae* with 21 and *Boletaceae* with 12 species, respectively. A high diversity, in this phylum, is characteristic of the genera: *Russula* with 22 taxa, *Lactarius* with 14 taxa, *Boletus* and *Mycena* with 10 taxa each (Tab. 1).

An annotated list of species from downy oak forests is presented below. The nomenclature and synonyms used in this list are in full compliance with the decisions taken at the 18<sup>th</sup> International Botanical Congress (Melbourne, Australia), in July 2011, when the new International Code of Nomenclature for algae, fungi and plants was adopted.

The scientific name, chorological data, the phenophase when *sporophores* formed and some information on gastronomic importance are given for each species from the annotated list.

**Tab. 1.** Taxonomic diversity of macromycetes from downy oak forests

Family	Genus	Species	Trophic group	Pheno-phase	Abundance
<i>Helotiaceae</i>	<i>Bisporella</i>	<i>B. citrina</i>	Lg	IX-XI	Rare
	<i>Chlorociboria</i>	<i>Ch. aeruginascens</i>	Lg	IX-XI	Rare
<i>Bulgariaceae</i>	<i>Bulgaria</i>	<i>B. inquinans</i>	Lg	IX-XI	Rare
<i>Helvellaceae</i>	<i>Helvella</i>	<i>H. acetabulum</i>	Hum	III-V	Rare
<i>Morchellaceae</i>	<i>Morchella</i>	<i>M. deliciosa</i>	Hum	III-V	Rare
	<i>Verpa</i>	<i>V. digitaliformis</i>	Hum	III-V	Rare
<i>Pezizaceae</i>	<i>Peziza</i>	<i>P. echinospora</i>	Hum	III-V	Rare
		<i>P. vesiculosa</i>	Hum	IX-XI	Rare
	<i>Terfezia</i>	<i>T. arenaria</i>	M	V-XI	Rare
<i>Pyronemataceae</i>	<i>Aleuria</i>	<i>A. aurantia</i>	Hum	IX-XI	Rare
	<i>Scutellinia</i>	<i>S. scutellata</i>	Lg	V-XI	Rare
	<i>Tarzetta</i>	<i>T. catinus</i>	Hum	V-XI	Rare
<i>Sarcoscyphaceae</i>	<i>Sarcoscypha</i>	<i>S. austriaca</i>	Lg	IX-III	Rare
<i>Tuberaceae</i>	<i>Tuber</i>	<i>T. aestivum</i>	M	IX-XI	Rare
<i>Xylariaceae</i>	<i>Xylaria</i>	<i>X. digitata</i>	Lg	IX-XI	Rare
		<i>X. polymorpha</i>	Lg	I-XII	Com.
<i>Agaricaceae</i>	<i>Agaricus</i>	<i>A. altipes</i>	Hum	IX-XI	Com.
		<i>A. arvensis</i>	Hum	IX-XI	Com.
		<i>A. campestris</i>	Hum	VI-XI	Com.
		<i>A. koelerionis</i>	Hum	IX-XI	Com.
		<i>A. langei</i>	Hum	VI-XI	Com.
		<i>A. phaeolepidotus</i>	Hum	VI-XI	Com.
		<i>A. pseudopratensis</i>	Hum	VI-XI	Com.
		<i>A. silvicola</i>	Hum	VI-XI	Com.
		<i>A. subperonatus</i>	Hum	III-XI	Com.
	<i>Bovista</i>	<i>B. tomentosa</i>	Hum	IX-XI	Com.
	<i>Calvatia</i>	<i>C. candida</i>	Hum	IX-XI	Freq.
	<i>Chlorophyllum</i>	<i>Ch. rachodes</i>	Hum	VI-XI	Freq.
	<i>Cyathus</i>	<i>C. striatus</i>	Lg	VI-XI	Freq.
	<i>Echinoderma</i>	<i>E. asperum</i>	Hum	IX-XI	Freq.
	<i>Lepiota</i>	<i>L. clypeolaria</i>	Hum	IX-XI	Com.
		<i>L. forquignonii</i>	Hum	IX-XI	Com.
		<i>L. helveola</i>	Hum	VI-XI	Com.
		<i>L. oreadiformis</i>	Hum	VI-XI	Com.
		<i>L. severiana</i>	Hum	VI-XI	Rare
	<i>Leucoagaricus</i>	<i>L. meleagris</i>	Hum	VI-XI	Rare
		<i>L. pilatianus</i>	Hum	VI-XI	Rare
	<i>Lycoperdon</i>	<i>L. pratense</i>	Hum	VI-XI	Freq.
	<i>Macrolepiota</i>	<i>M. excoriata</i>	Hum	IX-XI	Freq.
<i>M. konradii</i>		Hum	VI-XI	Freq.	
<i>M. procera</i>		Hum	IX-XI	Freq.	
<i>Amanitaceae</i>	<i>Amanita</i>	<i>A. battarrae</i>	M	VI-XI	Freq.

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		<i>A. crocea</i>	M	VI-XI	Freq.
		<i>A. excelsa</i>	M	VI-XI	Rare
		<i>A. fulva</i>	M	V-XI	Com.
		<i>A. phalloides</i>	M	VI-XI	Rare
		<i>A. rubescens</i>	M	VI-XI	Com.
		<i>A. solitaria</i>	M	VI-XI	Rare
		<i>A. vaginata</i>	M	VI-XI	Com.
<i>Bolbitiaceae</i>	<i>Conocybe</i>	<i>C. percincta</i>	Hum	VI-XI	Rare
	<i>Panaeolus</i>	<i>P. papilionaceus</i>	Hum	IX-XI	Rare
		<i>P. semiovatus.</i>	Hum	IX-XI	Com.
<i>Cortinariaceae</i>	<i>Cortinarius</i>	<i>C. boudieri</i>	M	IX-XI	Rare
		<i>C. collinitus</i>	M	IX-XI	Rare
		<i>C. elatior</i>	M	IX-XI	Rare
		<i>C. galeobdolon</i>	M	IX-XI	Rare
		<i>C. infractus</i>	M	IX-XI	Rare
		<i>C. meinhardii</i>	M	IX-XI	Rare
		<i>C. torvus</i>	M	IX-XI	Rare
<i>Entolomataceae</i>	<i>Entoloma</i>	<i>E. aprile</i>	M	III-IX	Com.
		<i>E. farinolens</i>	Hum	III-V	Com.
		<i>E. politum</i>	Hum	IX-XI	Rare
		<i>E. prunuloides</i>	M	III-XI	Com.
		<i>E. rhodopolium</i>	M	IX-XI	Com.
<i>Hygrophoraceae</i>	<i>Hygrocybe</i>	<i>H. acutoconica</i>	Hum	IX-XI	Com.
		<i>H. conica</i>	Hum	VI-XI	Com.
	<i>Cuphophyllus</i>	<i>C. pratensis</i>	Hum	VI-XI	Com.
	<i>Hygrophorus</i>	<i>H. chrysodon</i>	M	IX-XI	Com.
		<i>H. cossus</i>	M	IX-XI	Com.
		<i>H. eburneus</i>	M	IX-XI	Com.
		<i>H. penarius</i>	M	VI-XI	Com.
	<i>Lichenomphalia</i>	<i>L. umbellifera</i>	Fol	IX-XI	V. rar.
	<i>Inocybaceae</i>	<i>Crepidotus</i>	<i>C. mollis</i>	Lg	VI-XI
<i>Inocybe</i>		<i>I. asterospora</i>	Hum	VI-XI	Freq.
		<i>I. cookei.</i>	Hum	VI-XI	Freq.
		<i>I. geophylla</i>	Hum	IX-XI	Freq.
		<i>I. godeyi</i>	Hum	VI-XI	Freq.
		<i>I. margaritispora</i>	Hum	VI-XI	Freq.
		<i>I. rimosa</i>	Hum	VI-XI	Freq.
<i>Phaeomarasmius</i>		<i>Ph. rimulincola</i>	Lg	VI-XI	Rare
<i>Tubaria</i>		<i>T. furfuracea</i>	Lg	VI-XI	Com.
<i>Lyophyllaceae</i>	<i>Calocybe</i>	<i>C. gambosa</i>	M	III-V	Com.
	<i>Lyophyllum</i>	<i>L. rhopalopodium</i>	Gs Hum	IX-XI	Vul.
<i>Marasmiaceae</i>	<i>Marasmius</i>	<i>M. bulliardii</i>	Fol	IX-XI	Rare
		<i>M. cohaerens</i>	Fol	VI-XI	Rare
		<i>M. epiphyllus</i>	Fol	IX-XI	Com.
	<i>Megacollybia</i>	<i>M. rotula</i>	Fol	VI-XI	Com.
		<i>M. wynneae</i>	Fol	IX-XI	Rare
		<i>M. platyphylla</i>	Lg	VI-XI	Com.

Family	Genus	Species	Trophic group	Pheno-phase	Abundance
Mycenaceae	Mycena	<i>M. aetites</i>	Gs	III-V	Rare
		<i>M. corticola</i>	Lg	IX-XI	Rare
		<i>M. filopes</i>	Lg	IX-XI	Rare
		<i>M. galopus</i>	Fol	III-V	Rare
		<i>M. niveipes</i>	Lg	VI-XI	Com.
		<i>M. polygramma</i>	Lg	VI-XI	Com.
		<i>M. pura</i>	Gs	IX-XI	Com.
		<i>M. romagnesiana</i>	Lg	VI-XI	Com.
		<i>M. rosea</i>	Fol	IX-XI	Com.
		<i>M. vitilis</i>	Lg	VI-XI	V. rar.
Omphalotaceae	Gymnopus	<i>G. brassicolens</i>	Fol	IX-XI	Com.
		<i>G. dryophilus</i>	Fol	IX-XI	Com.
		<i>G. erythropus</i>	Fol	IX-XI	Com.
		<i>G. foetidus</i>	Fol	IX-XI	Com.
		<i>G. fusipes</i>	Fol	IX-XI	Com.
		<i>G. impudicus</i>	Fol	IX-XI	Com.
		<i>G. peronatus</i>	Fol	VI-XI	Com.
		<i>G. subpruinosis</i>	Fol	IX-XI	Com.
Physalacriaceae	<i>Armillaria</i>	<i>A. cepistipes</i>	Lg	IX-XI	Com.
		<i>A. mellea</i>	Lg	IX-XI	Com.
	<i>Hymenopellis</i>	<i>H. radicata</i>	Hum	VI-XI	Com.
	<i>Xerula</i>	<i>X. pudens</i>	Hum	VI-XI	Com.
Pleurotaceae	<i>Pleurotus</i>	<i>P. cornucopiae</i>	Lg	VI-XI	Freq.
Pluteaceae	<i>Pluteus</i>	<i>P. cervinus</i>	Lg	V-XI	Com.
		<i>P. leoninus</i>	Lg	V-XI	Rare
		<i>P. petasatus</i>	Lg	IX-XI	Freq.
	<i>Volvariella</i>	<i>V. caesiotincta</i>	Lg	V-XI	Rare
		<i>V. pusilla</i>	Lg	V-XI	Rare
Psathyrellaceae	<i>Coprinellus</i>	<i>C. micaceus</i>	Lg	III-XI	Com.
		<i>C. radians</i>	Cop	III-XI	Com.
	<i>Coprinopsis</i>	<i>C. laanii</i>	Cop	V-XI	Com.
	<i>Coprinus</i>	<i>C. alopecia</i>	Cop	IX-XI	Rare
	<i>Parasola</i>	<i>P. plicatilis</i>	Cop	IX-XI	Freq.
	<i>Psathyrella</i>	<i>P. candolleana</i>	Lg	III-V	Freq.
		<i>P. leucotephra</i>	Hum	VI-XI	Rare
		<i>P. melanthina</i>	Hum	IX-XI	Rare
		<i>P. piluliformis</i>	Hum	VI-XI	Freq.
		<i>P. spintrigera</i>	Hum	VI-XI	Rare
Schizophyllaceae	<i>Schizophyllum</i>	<i>S. commune</i>	Lg	I-XII	Com.
Strophariaceae	<i>Agrocybe</i>	<i>A. dura</i>	Hum	III-XI	Freq.
	<i>Hebeloma</i>	<i>H. crustuliniforme</i>	M	IX-XI	Rare
		<i>H. quercetorum</i>	M	IX-XI	Rare
	<i>Hypoloma</i>	<i>H. sinapizans</i>	M	IX-XI	Rare
		<i>H. fasciculare</i>	Lg	III-XI	Com.
		<i>H. lateritium</i>	Lg	VI-XI	Com.
	<i>Kuehneromyces</i>	<i>K. mutabilis</i>	Lg	VI-XI	Freq.
	<i>Pholiota</i>	<i>P. lenta</i>	Hum	VI-XI	Rare

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		<i>P. squarrosoides</i>	Lg	VI-XI	Freq.
Tricholomataceae	<i>Arrhenia</i>	<i>A. rustica</i>	Fol	V-XI	Rare
	<i>Clitocybe</i>	<i>C. gibba</i>	Gs	V-XI	Com.
		<i>C. houghtonii</i>	Fol	IX-XI	Com.
		<i>C. infundibuliformis</i>	Hum	VI-XI	Com.
		<i>C. metachroa</i>	Fol	IX-XI	Com.
		<i>C. odora</i>	Fol	IX-XI	Com.
		<i>C. phyllophila</i>	Fol	IX-XI	Com.
	<i>Delicatula</i>	<i>D. integrella</i>	Lg	VI-XI	Com.
	<i>Haasiella</i>	<i>H. splendidissima</i>	Lg	IX-XI	Com.
	<i>Infundibulicybe</i>	<i>I. geotropa</i>	Gs	IX-XI	Com.
	<i>Lepista</i>	<i>L. flaccida</i>	Fol	VI-XI	Rare
		<i>L. panaeolus</i>	Fol	IX-XI	Rare
		<i>L. sordida</i>	Hum	IX-XI	Rare
	<i>Melanoleuca</i>	<i>M. arcuata</i>	Fol	IX-XI	Rare
		<i>M. brevipes</i>	Hum	IX-XI	Rare
		<i>M. grammopodia</i>	Hum	IX-XI	Rare
		<i>M. stridula</i>	Fol	VI-XI	Rare
	<i>Resupinatus</i>	<i>R. applicatus</i>	Lg	VI-XI	Rare
	<i>Tricholoma</i>	<i>T. basirubens</i>	M	IX-XI	Rare
<i>T. gausapatum</i>		M	IX-XI	Rare	
<i>T. orirubens</i>		M	IX-XI	Rare	
<i>T. saponaceum</i>		M	IX-XI	Rare	
Typhulaceae	<i>Macrotiphula</i>	<i>M. fistulosa</i>	M	IX-XI	V. rar.
Boletaceae	<i>Boletus</i>	<i>B. aereus</i>	M	VI-XI	Freq.
		<i>B. badius</i>	M	VI-XI	Freq.
		<i>B. chrysenteron</i>	M	VI-XI	Freq.
		<i>B. edulis</i>	M	III-XI	Freq.
		<i>B. erythropus</i>	M	V-XI	Freq.
		<i>B. impolitus</i>	M	VI-XI	Freq.
		<i>B. luridus</i>	M	III-XI	Freq.
		<i>B. queletii</i>	M	III-XI	Freq.
		<i>B. reticulatus</i>	M	V-XI	Freq.
	<i>B. subtomentosus</i>	M	V-XI	Freq.	
	<i>Xerocomellus</i>	<i>X. armeniacus</i>	M	III-XI	Freq.
<i>X. pruinatus</i>		M	III-XI	Freq.	
Sclerodermataceae	<i>Scleroderma</i>	<i>S. citrinum</i>	Hum	IX-XI	Freq.
		<i>S. verrucosum</i>	Hum	IX-XI	Freq.
Corticaceae	<i>Vuilleminia</i>	<i>V. comedens</i>	Lg	I-XII	Rare
Geastraceae	<i>Geastrum</i>	<i>G. fimbriatum</i>	Hum	IX-XI	Freq.
		<i>G. melanocephalum</i>	Hum	IX-XI	Freq.
		<i>G. pectinatum</i>	Hum	IX-XI	Freq.
		<i>G. triplex</i>	Hum	IX-XI	Freq.
Gomphaceae	<i>Ramaria</i>	<i>R. stricta</i>	Lg	VI-XI	Rare
Hymenochaetaceae	<i>Inonotus</i>	<i>I. cuticularis</i>	Lg	IX-XI	Freq.
		<i>I. hispidus</i>	Lg	VI-XI	Freq.
		<i>I. obliquus</i>	Lg	I-XII	Freq.

Family	Genus	Species	Trophic group	Pheno-phase	Abundance
Schizoporaceae	<i>Basidioradulum</i>	<i>B. radula</i>	Lg	IX-XI	Freq.
Fomitopsidaceae	<i>Daedalea</i>	<i>D. quercina</i>	Lg	I-XII	Freq.
	<i>Phaeolus</i>	<i>Ph. schweinitzii</i>	Lg	VI-XI	Freq.
	<i>Postia</i>	<i>P. stiptica</i>	Lg	VI-XI	Freq.
Ganodermataceae	<i>Ganoderma</i>	<i>G. applanatum</i>	Lg	I-XII	Freq.
		<i>G. lucidum</i>	Lg	V-XI	Freq.
Meripilaceae	<i>Junghuhnia</i>	<i>J. nitida</i>	Lg	IX-XI	Freq.
Meruliaceae	<i>Abortiporus</i>	<i>A. biennis</i>	Lg	IX-XI	Freq.
	<i>Merulius</i>	<i>M. tremellosus</i>	Lg	Ix-XI	Freq.
Phanerochaetaceae	<i>Byssomerulius</i>	<i>B. corium</i>	Lg	IX-XI	Freq.
Polyporaceae	<i>Lenzites</i>	<i>L. betulina</i>	Lg	VI-XI	Freq.
		<i>P. arcularius</i>	Lg	III-V	Freq.
	<i>Polyporus</i>	<i>P. leptcephalus</i>	Lg	VI-XI	Freq.
		<i>P. squamosus</i>	Lg	VI-XI	Freq.
		<i>T. gibbosa</i>	Lg	VI-XI	Freq.
	<i>Trametes</i>	<i>T. suaveolens</i>	Lg	IX-XI	Freq.
		<i>T. versicolor</i>	Lg	I-XII	Freq.
Auriscalpiaceae	<i>Artomyces</i>	<i>A. pyxidatus</i>	Lg	IX-XI	Freq.
Russulaceae	<i>Lactarius</i>	<i>L. acerrimus</i>	M	IX-XI	Freq.
		<i>L. azonites</i>	M	IX-XI	Freq.
		<i>L. citriolens</i>	M	IX-XI	Freq.
		<i>L. decipiens</i>	M	VI-XI	Freq.
		<i>L. evosmus</i>	M	VI-XI	Freq.
		<i>L. flexuosus</i>	M	IX-XI	Freq.
		<i>L. illyricus</i>	M	V-XI	Freq.
		<i>L. mairei</i>	M	VI-XI	Freq.
		<i>L. pergamenus</i>	M	VI-XI	Freq.
		<i>L. piperatus</i>	M	VI-XI	Freq.
		<i>L. quietus</i>	M	VI-XI	Freq.
		<i>L. vellereus</i>	M	VI-XI	Freq.
	<i>L. volemus</i>	M	IX-XI	Freq.	
	<i>L. zonarius</i>	M	VI-XI	Freq.	
	<i>Russula</i>	<i>R. adusta</i>	M	VI-XI	V. rar.
		<i>R. amarissima</i>	M	V-XI	Freq.
		<i>R. atropurpurea</i>	M	VI-XI	Rare
		<i>R. cyanoxantha</i>	M	VI-XI	Com.
		<i>R. decipiens</i>	M	V-XI	Rare
		<i>R. delica</i>	M	VI-XI	Com.
	<i>R. farinipes</i>	M	VI-XI	Com.	
	<i>R. foetens</i>	M	VI-XI	Com.	
	<i>R. furcata</i>	M	VI-XI	Com.	
	<i>R. heterophylla</i>	M	V-XI	Com.	
	<i>R. integra</i>	M	V-XI	Rare	
	<i>R. luteotacta</i>	M	V- XI	Rare	
	<i>R. minutula</i>	M	V- XI	Rare	
	<i>R. nana</i>	M	V- XI	Rare	
	<i>R. nuragica</i>	M	V- XI	Rare	

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Family	Genus	Species	Trophic group	Phenophase	Abundance
		<i>R. pectinata</i>	M	V- XI	Rare
		<i>R. risigallina</i>	M	V- XI	Rare
		<i>R. subfoetens</i>	M	VI-XI	Rare
		<i>R. subterfurcata</i>	M	VI-XI	Com.
		<i>R. vinosa</i>	M	VI-XI	Rare
		<i>R. virescens</i>	M	VI-XI	Com.
		<i>R. zvarae</i>	M	V-XI	Freq.
<i>Stereaceae</i>	<i>Stereum</i>	<i>S. hirsutum</i>	Lg	I-XII	Freq.
<i>Sebacinaceae</i>	<i>Sebacina</i>	<i>S. incrustans</i>	Lg	VI-XI	Freq.
<i>Thelephoraceae</i>	<i>Thelephora</i>	<i>T. penicillata</i>	Hum	V-XI	Freq.

**Abbreviations:** M – mycorrhizal; Hum – humicolous; Lg – lignicolous; Fol – foliicolous; Cop – coprophilous; Com. – common; Freq. – frequent; Rare – rare; V. rar. – very rare; vul. – vulnerable.

The ecotrophic spectrum of macromycetes from associations of downy oak is dominated, as in the other associations that include plants of the genus *Quercus*, by mycorrhizal fungi with 79 (32.92%) species. The following categories of saprotrophic macromycetes have been identified: lignicolous – 68 (28.33%); humicolous – 65 (27.08%); foliicolous – 24 (10%) and coprophilous – 4 (1.67%) species (Fig. 1).

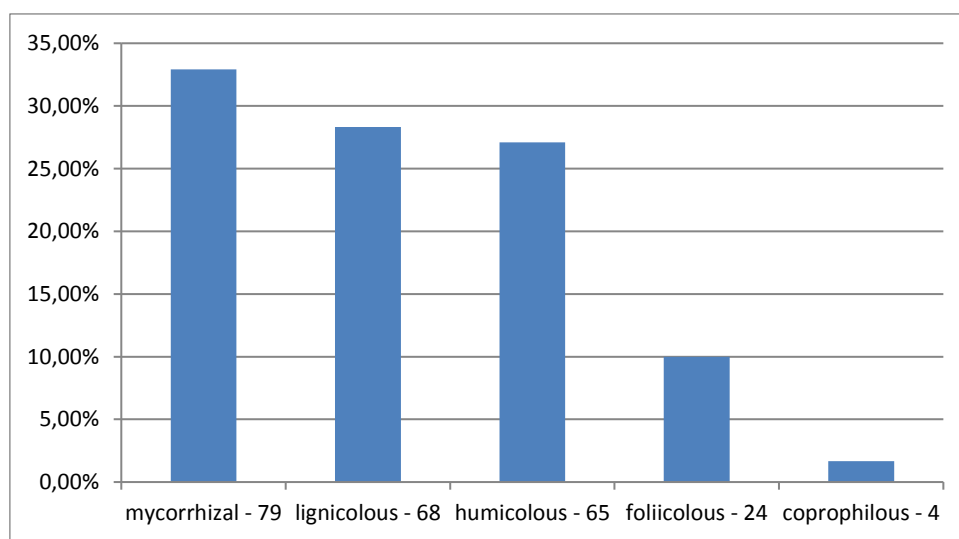


Fig. 1. Ecotrophic categories of macromycetes in downy oak forests

In the specific composition of macromycetes from downy oak stands, the species of the genera *Macrolepiota* and *Lepiota* play an important role. They form very often the so-called “fairy rings”. Among mycorrhizal fungi, *Calocybe gambosa*, *Entoloma aprile* and *Entoloma prunuloides* often form spore-producing structures. These species are found only during spring and summer and are usually associated with trees and shrubs of the family Rosaceae. Besides the mycorrhizal fungi associated with woody species of the family



Rosaceae, such species as *Amanita solitaria*, *Amanita vaginata* and *Xerocomellus chrysenteron* associated with downy oak are quite common.

The most common saprotrophic foliicolous fungi, in the years with high humidity, is *Clitocybe geotropa*, and from lignicolous fungi – the species of the genus *Polyporus*.

### Conclusions

The research on macromycetes was conducted in phytocoenoses of downy oak forest, and as a result, 240 species were identified.

Considering the specific habitats of phytocoenoses with downy oak, the spectrum of ecotrophic categories denotes a high diversity of mycorrhizal macromycetes.

Symbiotrophic macromycetes are important elements, characteristic of forest stands, where their spatial distribution is closely related to the composition of the stand, that's why the fungus-plant relationship is largely specific.

The saprotrophic species from glades and the mycorrhizal species that are associated with trees and shrubs of the family *Rosaceae* are characteristic of downy oak forests from the Republic of Moldova.

### References

- CONSTANTINESCU O. 1974. *Metode și tehnici în micologie*. București: Edit. Ceres, 215 p.
- POSTOLACHE G. 1995. *Vegetația Republicii Moldova*. Chișinău: Edit. Știința, 340 p.
- VASILIEVA L. N. Metodica izucenicia macromițetov v lesnih fitoțenozah. *V: cn.: Problemî izucenicia gribov i lișainicov*. Tartu: 5-13.
- MANIC S. I. 1980. C flore agaricovîh gribov Moldavii. *V: Izv. AN MSSR, Seria biol. i himic. nauc.* 1: 90-91.
- COURTECUISE R. 2000. *Champignons d'Europe. Paris: Delachaux et Niestlé Lausanne*, 465 p.
- EYSSARTIER G. & ROUX P. 2011. *Le guide des champignons de France et d'Europe*. Paris: Belin, 1119 pp.
- GALLI R. 1996. *Le Russule*. Milano: Edinatura, 490 pp.
- KIRK P. & al. 2008. *Dictionary of the fungi. 10 th Edition*. CABI Bioscience, UK: 784 pp.
- MOSER M. 1993. *Guida alla determinazione dei funghi. Polyporales, Boletales, Agaricales, Russulales*. 3, Trento: Saturnia: 565 pp.
- SĂLĂGEANU G. & SĂLĂGEANU A. 1985. *Determinator pentru recunoașterea ciupercilor comestibile, necomestibile și otrăvitoare din România*. București: Edit. Ceres, 330 pp.
- SINGER R. 1986. *The Agaricales in modern taxonomy*. Koenigstein: Koeltz Sci. Books, 981 pp.
- \*\*\* <http://www.indexfungorum.org/Index.htm>

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