

PHYTOTOPONYMS IN ALBANIA

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The botanical oikonym Shkozë in Vlorë district, Albania.

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ABSTRACT: This paper deals with oikonyms in Albania, named after plants. It aims to identify the phytotoponyms, their geographical distribution and influencing factors. The review of geographical, linguistic, botanical and historical sources helped to highlight 175 phytotoponyms, derived from 39 phytonyms. They were analyzed in geospatial terms using qualitative and comparative methods. The phytotoponyms named after walnut, apple and pear have a high frequency, while those named after olive, plum, cypress are rarer. Most of phytotoponyms are located in the lowlands of western Albania, while in the mountainous territories in the south and north their number decreases significantly. This work could inspire toponymy research, inform policy, reveal dialects, and document phytonyms.

KEYWORDS: oikonym, phytotoponym, phytonym, territory, hypsometric level, Albania

Fitotoponimi v Albaniji

POVZETEK: Članek proučuje imena naselij v Albaniji, nastala iz poimenovanj rastlin (t. i. fitotoponime). Njegov namen je opredeliti fitotoponime ter njihovo geografsko razširjenost in dejavnike, ki so vplivali na njihovo poimenovanje. Na podlagi pregleda geografskih, jezikoslovnih, botaničnih in zgodovinskih virov je bilo določenih 175 fitotoponimov, nastalih iz 39 imen rastlin (fitonimov), ki so bili nato geoprostorsko analizirani s kvalitativnimi in primerjalnimi metodami. Naselja, poimenovana po orehu, jabolku in hruški, so zelo pogosta, medtem ko so tista, poimenovana po oljki, slivi in cipresi, redkejša. Fitotoponimi prevladujejo v nižinskem svetu zahodne Albanije, na gorskih območjih na jugu in severu pa je njihovo število precej manjše. Ugotovitve so potencialno koristne za nadaljnje raziskave toponimov, informiranje politike, preučevanje narečij in dokumentiranje fitonimov.

KLJUČNE BESEDE: ime naselja, fitotoponim, fitonim, ozemlje, hipsometrična raven, Albanija

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1 Introduction

Toponymy is the taxonomic study of place names. It divides them into two broad categories: habitation names (homestead, village, or town) and feature names (hydronyms, oronyms, and places of natural vegetation growth) (Britannica The Editors of Encyclopaedia 2017).

Toponyms generally receive a single typology tag; however, they may have more than one (Blair and Tent 2021). Such are oikononyms associated with the names of plants. This type of toponyms called botanical oikononyms (Beconytė et al. 2019) or phytotoponyms are interpreted as names of natural objects and names of manmade objects (Abdikhalikovna 2020).

Plants, as a universal toponymic source (Lim and Cacciafoco 2020), were among the primary elements that humans in ancient times noticed and were vitally dependent upon. Unlike animals, plants, serve as fixed points in a landscape, making them useful for immediate place identification (Pinna et al. 2017). Knowing how to read and understand the language of geographical names can provide deeper insights into original names, allowing a seemingly silent and mute landscape to reveal its broader significance in many aspects (Kladnik et al. 2020).

Trees provide humans with food, building materials, various raw resources, and medicines. Besides their material role, they hold symbolic significance, serving as a form of expression of folk customs, beliefs, and mythology (Cargonja et al. 2008). Throughout history, plant names, have penetrated toponymy and been used to name oikononyms.

»Phytonym« is the scientific or botanical name of a plant (Bil 2018). Phytonyms are nominative-onomastic units formed based on the plants connection to the world within their conceptual meaning (Pazlitdinova 2017).

Whereas a »phytotoponym« is a place name that refers to a plant or vegetation. Phytotoponyms (place names containing a plant element) can illuminate the relationship between humans and nature over a long time span through their historical context (Oxford University Press 2012).

Almost every country has toponyms derived from plant names, such as the United States, Croatia, Romania, South Africa, India, China, and Singapore (Lim and Cacciafoco 2020). In Great Britain, some phytotoponyms are related to plant names; oak, apple, ash (Smatova et al. 2020) and pear (see the <http://kepn.nottingham.ac.uk> provided by The Institute for Name-Studies).

The names of plants are widely used in all categories of toponyms in Albania, including oikononyms, oronyms, hydronyms, and drymonyms. Oikononyms of phytonymic origin are common in Albania. Examples are: comonyms *Mollas* from *mollë* (apple in Albanian), *Frashër* from *frashër* (ash tree in Albanian) (Lafe and Cikuli 2002), astionyms *Gramsh* from *gram* (Bermuda grass in Albanian) (Koçi 2021) and *Fier* from *fier* (fern in Albanian) (Gjika 2004).

This paper focuses on oikononyms related to plant names in Albania. It aims to identify phytotoponyms and analyse their vertical extent in comparison with plant species used as phytonyms.

Only standard Albanian plant names, as well as their vernacular variants used in naming phytotoponyms, were considered. These names are lexicographically Albanian, and we do not claim that they are of Albanian etymological origin. However, the scientific names of plants in Latin are not the focus of our study.

It is important to note that the Albanian language's inherited fund has been enriched over the time by both internal and external sources. Many additions have penetrated toponymy, leading to changes that can be explained by predictable patterns in the development of the phonetic system and morphological structure of the Albanian language (Demiraj 1998).

This work combines qualitative and quantitative methods to acquire a more profound understanding of each phytotoponym and analyze them in geospatial terms. The phytonym-phytotoponymy relationship was studied through descriptive scientific analysis interpreting data from multiple linguistic, historical, and botanical sources.

The theoretical and practical significance of phytotoponyms motivated us to undertake and realize this multidisciplinary research, where phytotoponyms are studied both semantically and geographically.

2 Study Area

Albania is a Mediterranean country located within coordinates 39°38'–42°39' N and 19°16'–21°04' E. Its geographical extent in direction from south to north (3°01' or 340 km) and east to west (1°48' or 148 km)

indicates that the horizontal extent has minimal impact on the surrounding environment. Although topography is the primary influencing factor in the vertical direction, an elevation range of -8 m to 2751 m (Qiriazhi 2019), dictates a significant diversity of natural conditions.

Albania is a highly mountainous country: 61.2% of the territory lies above 600 m, 25.5% in 300–599 m, and only 13.3% in 0–299 m altitude (Habili et al. 1997). The impact of vertical zoning is evident on the climate and consequently on the flora.

The presence of a primarily Mediterranean flora, comprising approximately 3250 species, is influenced by the various topographic, petrographic, and soil types as well as a Mediterranean climate. This flora includes 330 species and varieties of forest trees, of which 85% grow and develop naturally while the remaining 15% have been introduced for aesthetic and commercial purposes (Habili et al. 1997).

The horizontal distribution divides Albania's flora into two major groups: the Mediterranean vegetation, which includes the Adriatic and Greek vegetation and contains 35% of the country's plant species, and the Meso-European vegetation, which makes up roughly 65% of the country's flora, divided along the Koplík–Leskovik line (Qiriazhi 2018), which runs in a NW–SE direction.

According to the vertical distribution, there are four zones of vegetation (Qiriazhi 2018; Figure 1): Mediterranean shrubs and forests (up to 600–800 m), Oaks (*Quercetum*) (from 600–800 m to 1000–1200 m), Beech forests (*Fagetum*) and conifers (1000–1200 m to 1600–1800 m), Alpine pastures (above 1600–1800 m).

The zones of vegetation are 200 meters higher in the south of Albania due to the country's warmer climate than in the north. Their minimum borders are those of northern Albania. In this study, the following zonation was used:

- Mediterranean shrubs and forests, up to 600 m altitude (I),
- Oaks (*Quercetum*), 600–1000 m (II),
- Beech forests (*Fagetum*) and conifers, 1000–1600 m altitude (III),
- Alpine pastures, above 1600 m (IV).

In 2017, Albania had 1,051,871 hectares of wooded land, with 14% consisting of conifers, 50% of oak trees, and 36% of shrubs. The forest coverage is distributed as follows: 31% in the Northern Region, 19% in the Central Region, 31% in the South-East Region, and 19% in the South-West Region (Ministry of Tourism and Environment 2018). The distribution of forests across Albania's landscape is highly uneven, with some areas, particularly in the west and south, lacking significant forest cover (Shqahu 2007).

3 Study materials and methods

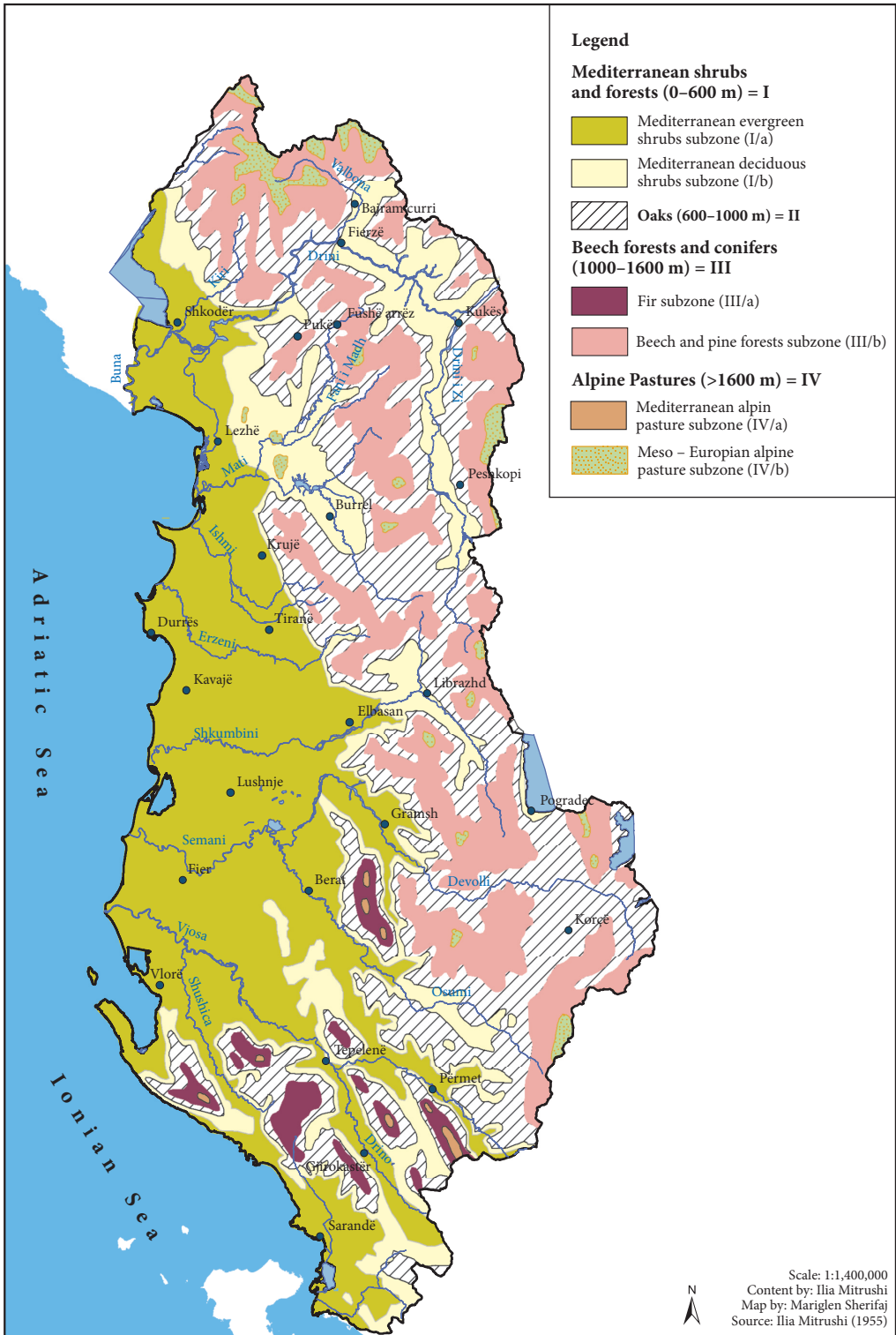
The purpose of this research entails the set of oikonyms in Albania related to plant names. It aims to identify and collect phytotoponyms, address their spatial distribution, and evaluate the relationship that exists between phytotoponyms and phytonyms based on altitude. Several steps were followed to conduct this study.

Firstly, a list of 3036 Albanian settlements (consisting of 2962 villages and 74 cities) (Ziu 2009) had been georeferenced. They were compared based on their semantic meaning to the name of plants growing in Albania and divided into three groups:

- a) Settlements whose names are the same as the phytonyms, with no change in structure.
- b) Settlements named after plants that have undergone phonetic and structural changes. This includes phytotoponyms accompanied by prefixes, and suffixes, noun phrases, compound or agglutinated words.
- c) Settlement names that have no relation to plant names (this group was not included in the analysis). This includes oikonyms for which we cannot provide a semantic explanation, are part of a foreign lexicon, or may be of plant origin, but we do not know the specific plant name.

After distinguishing phytotoponyms from phytonyms, we grouped phytotoponyms according to the plant names from which they originated.

The identification and comparison of plant names and phytotoponyms required a detailed examination of Albanian literature across several disciplines; linguistics, history, botany, and geography. In analogy, we reviewed researches conducted by international authors who have led similar studies related to this theme.



Another valuable source of information was interviews with elderly residents, representatives of local institutions, regional development agencies, researchers and others. The questions of *what, where, who, when, and why* (Blair and Tent 2021) were addressed through 34 direct interviews with semi-structured questions (Osmani 2015). These questions covered the meaning of the settlement's name: who named it, where it was named, when it was named, and why it was named after a plant, without delving into the specifics of history and linguistics.

Secondly, we aimed to clarify the meaning of oikonyms that were ambiguously derived from plant names. This stage involved examining phytonyms and phytotoponyms appearing in dialectal forms distinct from standard Albanian language. For example, phytotoponyms like *Gjoricë e Sipërme* and *Gjoricë e Poshtme* (Lafe and Cikuli 2002) as well as *Arn i Epërm* and *Arn i Poshtëm* are derived from the vernacular names *gjoricë* (European wild pear in Albanian) (Shkurtaj 2001) and *arn* (Balkan pine in Albanian) (Çabej 1982) and the antonyms that reveal a contradiction relation between *e Sipërme/i Epërm* and *e Poshtme* (upper/above and lower in Albanian), which differentiate settlements according to hypsometry (Clayer 2008).

Thirdly, a list (Table 1) was compiled containing information about plants used as phytonyms and their corresponding vegetation zones (0–600 m, 600–1000 m, 1000–1600 m, and >1600 m; see Chapter 2 for more details). Then we found the altitude of each phytotonym and compared it to the altitude band of homonymous plant growth where matching and mismatching cases were extracted (Table 3). The phytotoponyms' altitude was calculated using the ArcGIS software, superimposing the spatial layer of phytotoponyms on the vector file representing the altitude zones. These layers were provided by The State Authority for Geospatial Information (ASIG).

Finally, we investigated the influencing factors for the inconsistency cases between the altitude of phytotoponyms and the altitude band where plants with phytonymic use grow.

This study examines phytotoponyms at a micro level, employing both qualitative and quantitative methods, although the latter have yielded inconclusive results (Zhong et al. 2020). The quantitative data on phytotoponyms and their spatial distribution were valuable for macro-level analysis. To achieve the best results, it is important to analyse all toponyms in a country rather than studying individual ones (Shkurtaj 2001). This necessitates combining both intensive and extensive approaches (Tent 2015).

4 Results

Albania offers an interesting panorama of a sizable variety of phytonyms and phytotoponyms. Despite the country's rich flora, our analysis of settlement names revealed 39 distinct plant species employed as phytonyms (Table 1). Most phytonyms are found in the zones of Mediterranean shrubs and forests, and Oaks, while their number declines as one moves further into the zones of Beech forests and conifers, and Alpine pastures.

In Albania, there are approximately 175 phytotoponyms, accounting for 5.76% of the total 3036 settlements. These are associated with 39 different plant species, four appellations of vegetation, one name related to vegetation, *kashtë* (straw in Albanian), and *dushk* (oak in Albanian) that refers to the oak genus (*Quercus L.*) or is used as a substitute for specific plants within this genus.

Out of these phytotoponyms, 151 are phytotoponyms, 10 settlements of oak, 3 settlements consist of two plant names (walnut and apple, willow and tamarisk, pine and alder), while 11 settlements are not genuine phytotoponyms. The latter ones have been formed from appellations of vegetation, such as *vresht* (vineyard in Albanian), *livadh* (meadow in Albanian), *drith* (grain in Albanian), *bar* (grass in Albanian), and *kashtë* (straw in Albanian) (Table 2).

It should be noted that the names of the 151 phytotoponyms are not identical to those of the phytonyms, as they have undergone linguistic and semantic changes over the years, resulting in changes in form, spelling, pronunciation, and oral transmission (Shi et al. 2015; Imoh and Dansabo 2022).

Often phytotoponyms are presented in different linguistic forms such as:

- a) Phytotonym with prefix; *lë-, kë-, tej-*;
 - *Lamollë* (*lë-/la-* and *mollë*),
 - *Kalis* (*kë-/ka-* and *lis*),
 - *Tejmollë* (*tej-* and *mollë*), *tej-* shows a place which is found across (Xhuvani and Çabej 1980);

Table 1: Phytonyms in Albania.

Genus (English/Latin)*	Species (English/Latin)	Phytonym (Albanian)	Zone of vegetation**
Pine (<i>Pinus L.</i>)	Balkan pine (<i>Pinus peuce</i>)	Arnen	II–IV
	Pine (<i>Pinus sp.</i>)	Pishë	I–III
Juniper (<i>Juniperus L.</i>)	Juniper (<i>Juniperus sp.</i>)	Dëllinjë	I–II
Cypress (<i>Cupressus L.</i>)	Cypress (<i>Cupressus sempervirens</i>)	Selvi	I
Plane trees (<i>Platanus L.</i>)	Plane tree (<i>Platanus orientalis</i>)	Rrap	I–II
Pomegranate (<i>Punica L.</i>)	Pomegranate (<i>Punica sp.</i>)	Shegë	I–II
Buckthorn (<i>Paliurus Mill.</i>)	Buckthorn (<i>Paliurus aculeatus</i>)	Drizë	I–II
Grapevine (<i>Vitis L.</i>)	Grapevine (<i>Vitis sp.</i>)	Hardhi	I
Cornel (<i>Cornus L.</i>)	Cornel (<i>Cornus sp.</i>)	Thanë	I–III
Walnut (<i>Juglans L.</i>)	Walnut (<i>Juglans regia</i>)	Arrë	I–III
Hawthorn (<i>Crataegus L.</i>)	Hawthorn (<i>Crataegus sp.</i>)	Murriz	I–III
Pear (<i>Pyrus L.</i>)	European wild pear (<i>Pyrus amygdaliformis</i>)	Goricë	I
	Pear (<i>Pyrus sp.</i>)	Dardhë	I–II
Apple (<i>Malus L.</i>)	Apple (<i>Malus sp.</i>)	Mollë	I–III
Bramble (<i>Rubus L.</i>)	Bramble (<i>Rubus sp.</i>)	Ferrë	I–II
Plum tree (<i>Prunus L.</i>)	Blackthorn (<i>Prunus spinosa</i>)	Kulumbri	I–II
	Plum tree (<i>Prunus sp.</i>)	Kumbull	I–III
Cherry tree (<i>Cerasus Juss.</i>)	Cherry tree (<i>Cerasus sp.</i>)	Qersh	I–III
Hornbeam (<i>Carpinus L.</i>)	Hornbeam (<i>Carpinus sp.</i>)	Shkozë	I–III
Hazelnut (<i>Corylus L.</i>)	Hazelnut (<i>Corylus sp.</i>)	Lajthi	I–III
Alder (<i>Alnus L.</i>)	Alder (<i>Alnus sp.</i>)	Vërr	I–III
Chestnut (<i>Castanea Mill.</i>)	Chestnut (<i>Castanea sp.</i>)	Gështenjë	I–II
Oak (<i>Quercus L.</i>)	Turkey oak (<i>Quercus cerris</i>)	Qarr	I–III
	Downy oak (<i>Quercus pubescens</i>)	Lis	I–III
Ash tree (<i>Fraxinus L.</i>)	Ash tree (<i>Fraxinus sp.</i>)	Frashër	I–III
Olive (<i>Olea L.</i>)	Olive (<i>Olea sp.</i>)	Ulli	I
Tamarisk (<i>Tamarix L.</i>)	Tamarisk (<i>Tamarix sp.</i>)	Marinë	I
Fig (<i>Fikus L.</i>)	Fig (<i>Ficus sp.</i>)	Fik	I
Elm tree (<i>Ulmus L.</i>)	Elm (<i>Ulmus campestris</i>)	Vidh	I–III
Willow (<i>Salix L.</i>)	Willow, white willow (<i>Salix sp.</i>)	Shelg, sheq	I–IV
Populus (<i>Populus L.</i>)	Poplar (<i>Populus sp.</i>)	Plep	I–III
Arundo (<i>Arundo L.</i>)	Arundo (<i>Arundo donax</i>)	Kallëm, Kallm	I
Fern Pteridium (<i>Pteridium L.</i>)	Fern (<i>Pteridium aquilina</i>)	Fier	I–III
Bermuda grass (<i>Cynodon L.</i>)	Bermuda grass (<i>Cynodon dactylon</i>)	Gram	I
Rye (<i>Secale L.</i>)	Rye (<i>Secale cereale</i>)	Thekërr	I–III
Rice (<i>Oryza L.</i>)	Rice (<i>Oryza sativa</i>)	Oriz	I
Vetches (<i>Vicia L.</i>)	Vetches (<i>Vicia faba</i>)	Bath	I
Tea (<i>Sideritis L.</i>)	Tea (<i>Sideritis roesseri</i>)	Çaj	I–III
Tobacco (<i>Nicotiana L.</i>)	Tobacco (<i>Nicotiana tabacum</i>)	Duhan	I

*Sources: Mitrush

L. = Linnaeus, Mill. = Miller, Juss. = Jussieu, sp. = species.

**The zones of vegetation are shown with numbers: Mediterranean shrubs and forests (0–600 m) = I, Oaks (600–1000 m) = II, Beech forests and conifers (1000–1600 m) = III, Alpine pastures (>1600 m) = IV.

Table 2: Phytotoponyms in Albania and their distribution according to the zones of vegetation.

Composition of phytotoponyms		Zones of vegetation*			Total
		I	II	III and IV	
Phytonyms	1 Phytonym	105	30	16	151
	2 Phytonyms	2	1	0	3
Plant or zone of vegetation	Oak	10	0	0	10
Other	Grain	1	1	0	2
	Vineyard	2	2	0	4
	Hay meadow	1	1	0	2
	Grass	0	2	0	2
	Straw	1	0	0	1
	Total	122	37	16	175

*The zones of vegetation are shown with numbers: Mediterranean shrubs and forests (0–600 m) = I, Oaks (600–1000 m) = II, Beech forests and conifers (1000–1600 m) = III, Alpine pastures (>1600 m) = IV.

- b) Phytotonym with suffix: *-isht* (*-ishtë*) *-aj*, *-et*, *-ës*, *-ëz* (*-zë*), *-ore*, *-th* etc. (Shkurtaj 2001):
- *Qarrishtë* (*qarr* and *-ishtë*), *-ishtë* refers to a group of trees (Luka 2019), *Sheqishtë* (Çabej 1982),
 - *Lisaj* (*lis* and *-aj*), *-aj* is the same as the suffix *-ishte* (Agalliu et al. 2002),
 - *Shkozë* (*shkozë* and *-et*), *-et* indicates the place where there are many plants (Xhuvani and Çabej 1980),
 - *Arrëz* (*arrë* and *-ëz*), *-ëz* is a plural suffix, in this case, means walnut forest (Topalli 2017),
 - *Bathore* (*bath* and *-ore*), *-ore* indicates the place where a plant is planted (Agalliu et al. 2002),
 - *Arrth* (*arrë* and *-th*), *-th* is a diminutive suffix (Doçi 2006) etc.
- c) Antonymous phytotoponyms: *Kallm i Madh* and *Kallm i Vogël* have been formed from the phytonym *kallëm/kallm* (Arundo in Albanian), and adjectives *i madh* – *i vogël* (big–small in Albanian) which are in antonymic relationship with each other (Shkurtaj 2001).
- d) Phytotonym carrying geographical concept. The incorporation of toponymic determinants such as pass, field, hill, and shingle into settlement names contributes to their desemantization and subsequent reinterpretation as instruments for word formation. For instance, the phytotonym *Qafëdardhë* consists of two names: *Qafë* (pass in Albanian) and *Dardhë* (pear in Albanian) (Bidollari 1990). Similar phytotoponyms are *Zall-Dardhë* and *Fushë-Arrëz* (Luka 2019).
- e) Compound or agglutinated phytotoponyms. They consist of a noun phrase where one member is phytonym or a phytonym root (Shkurtaj 2001). Binomial oikonyms such as *Murriz-Kozar*, *Vadardhë* (*Va* and *dardhë*) (Luka 2019), and *Pishëporo* have been formed by the merger or the administrative merger of two or more settlements (Bidollari 1990).

What often stands out in phytotoponyms is that they are associated with well-defined species, although they can also refer to a genus (Spampinato et al. 2022). When it comes to the names of plant species, which consist of a noun and an adjective, only the name of the plant is used as phytonym (Cargonja et al. 2008). Furthermore, people tend to avoid using Latin plant names in phytotoponyms because they are difficult to remember and pronounce.

Phytotoponyms with high frequency in Albania, are those deriving from plant names such as walnut (16 cases), apple (10 cases), pear (9 cases), and willow (8 cases). While phytonyms used only once are plum, tea, rice (Figure 2).

Phytotoponyms in Albania are irregularly distributed according to horizontal and vertical zoning. A large number of phytotoponyms are located in central and western Albania, but their number decreases significantly in the south and north. We think that this phenomenon is not related to the large areas of these plants.

On the contrary, vegetation is considered a reference object and receives toponymic use when it occupies small areas and is dominated by one type of plant, or solitary plants and distinct from others. So what is scarce, rare, and different from the others is taken as a reference to label places and settlements.

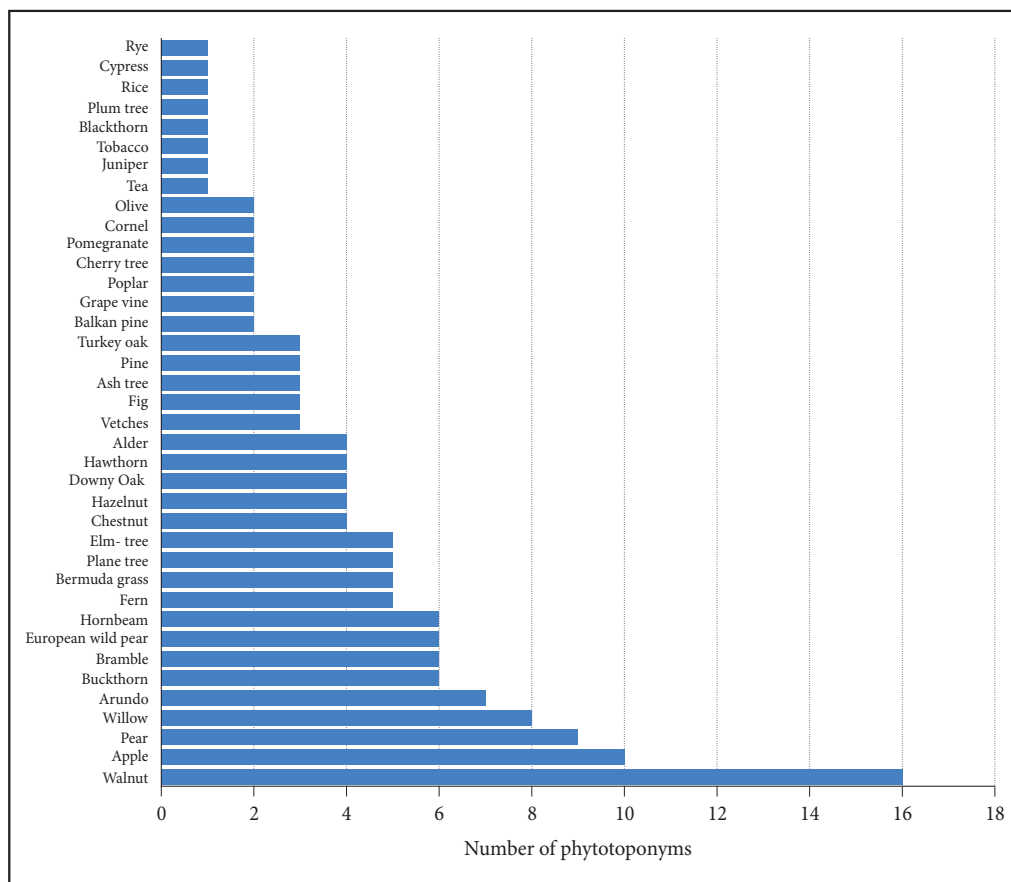


Figure 2: Phytotoponyms per taxon in Albania.

According to this argument, there are few phytotoponyms in mountainous districts with significant forested areas, such as Pukë, Tropojë, Malësi e Madhe, Dibër, Kukës, and Mat. In contrast, there are a lot more phytotoponyms in the lowland districts like Lushnjë, Fier, Kavajë, and Durrës that have tiny forested areas (Habili et al. 1997).

Depending on the types of terrain in Albania, the ratio of phytotoponyms to non-phytotoponyms (settlements not based on plant names) is as follows: there are 86 phytotoponyms and 930 non-phytotoponyms in the lowlands between 0 and 200 m; 73 phytotoponyms and 1666 non-phytotoponyms in the hilly terrain between 200 and 1000 m; and 16 phytotoponyms and 265 non-phytotoponyms in the mountainous terrain above 1000 m. Non-phytotoponyms are located up to 1700 meters in altitude, while phytotoponyms demonstrate a limited extent from 10 to 1340 meters.

According to the zones of vegetation, we find that most of the phytotoponyms belong to the zone of Mediterranean shrubs and forests from 0–600 m altitude with 122 phytotoponyms, decreasing to the Oaks with 37 phytotoponyms and Beech forests and conifers with 16 phytotoponyms. While at the zone of the Alpine pastures, there are no phytotoponyms (Table 3).

We have identified two types of matching based on the phytonymic-phytotoponymic relationship according to altitude: 1) complete and 2) partial matching.

Firstly, complete matching occurs when the altitude of the phytotoponyms exactly corresponds to the altitude band where the plants, which have received phytonymic use, grow. As shown in Table 3, out of the

151 pure phytotoponyms, only 140 match the altitude of the phytonyms, whereas 11 do not. Specifically, 140 phytotoponyms are names derived from 38 phytonyms (Tamarix was not included in Table 3 since it forms a compound phytotoponym together with Willow). This high degree of matching between phytotoponyms and phytonyms according to vertical distribution is not surprising, because phytotoponyms reflect vegetative peculiarities of the area and »give a hint« as to which useful plants can grow in the specific region (Atasoy and Yeginbayeva 2017).

Secondly, partial matching occurs when there is not a complete alignment between the phytotoponyms' altitude and the altitude band where the plants, which have received phytonymic use, grow. As can be seen in Table 3, 11 phytotoponyms named after the pear (*dardhë*), European wild pear (*goricë*), arundo (*kallëmb*), chestnut (*gështenjë*), ash tree (*frashër*) do not match the altitude of phytonyms. On the other hand, 17 other phytotoponyms labeled with the aforementioned phytonyms are found in the altitude where these plants grow (Table 3).

A case of matching is the phytotoponym *Gështenjas* (in the Pogradec district) located at an altitude of 750 m, adjacent to a chestnut plantation (Qiriazzi 2018). It is worth noting that this plant typically grows within altitudes ranging from 400 to 800 m (Shqahu 2007).

Conversely, the phytotoponym *Dardhë* (in the Korçë district), situated at 1340 m, may have been named after the European wild pear tree, which thrives at altitudes exceeding 1000 m (Qiriazzi 2018), whereas the common pear tree, can be found below 800 m.

In conclusion, out of the pure 151 phytotoponyms, altitudes of 11 phytotoponyms derived from 5 phytonyms do not match with growth altitudes of phytonyms, while 123 phytotoponyms derived from 33 plants completely match with corresponding phytonym. Growth altitudes of 33 phytonyms match with altitudes of all the corresponding phytotoponyms and 5 phytonyms exhibit partial matching. So there are cases of matching and partial matching, while there are no cases of complete non-matching.

It is important to note that the remaining 24 settlements are categorized as follows: 11 phytotoponyms originated from terms such as grass, hay meadow, vineyard, and grain; 10 phytotoponyms named after oak were not examined as they do not represent phytonyms. Additionally, 3 phytotoponyms, whose names comprise two phytonyms each, cannot be defined because the plants they are named after grow at different altitudes.

5 Discussion

This work offers a geographical perspective on phytotoponyms. We faced many challenges such as the subject not being thoroughly studied in Albania, incomplete information on phytotoponyms, and lack of data to conduct thorough analyses of the relationship between phytotoponym and phytonym.

Another issue is the categorization of toponyms that satisfy multiple criteria (so they are oikonyms and phytotoponyms) as currently there is no unique worldwide classification (Abbasov and Valiyeva 2023).

The impact of topography, history, culture, population shifts, vegetation, and other factors on settlement nomenclature will encourage researchers to conduct in-depth studies and sensitize the people about the fact that the names of settlements are not coincidental but rather the product of local heritage, developed over many years. Thus, toponyms act as a lens or filter through which people, individuals, groups, and societies, view and engage with biodiversity (Shackleton 2018; Zhong et al. 2020). A good example is the phytotoponym *Kalis*, located nearby several old oaks at 1200 m, designated as natural monuments (Qiriazzi 2018).

A limited number of natural or cultivated plants, 39 in total, have been used to name phytotoponyms in Albania. They are typical of the Mediterranean climate, as are the phytonyms; bamboo, papaya (Shi et al. 2015), jackfruit, coffee tree (Setyo et al. 2022), mango, tamarind, in tropical countries (Lim and Cacciafoco 2020).

Compared to Croatia, which has the highest number of phytotoponyms in continental and lowland areas and the fewest in the Mediterranean phytogeographic region (Cargonja et al. 2008), Albania exhibits a different pattern. In the coastal plain, there are many phytotoponyms, while in the high coastal line, their number is comparatively lower. However, in the interior of Albania, there is not a clear evidence in the distribution of phytotoponyms, as there are territories in the north and south where phytotoponyms are almost absent.

Table 3: Phytonyms and phytotoponyms in Albania according to altitude.

Phytonym	Phytoclimatic region*	Phytotoponyms		Phytotoponyms according to the zone of vegetation**			Phytonym-phytotoponym hypsometric relationship		
	Elevation (m)	No	Elevation (m)	I	II	III	Match	No match	Result
Walnut	0–1200	16	40–1150	8	4	4	16	0	Complete
Apple	0–1800	10	90–980	5	5	0	10	0	Complete
Pear	0–800	9	40–1340	4	3	2	5	4	Partial
Willow	0–1800	8	20–740	7	1	0	8	0	Complete
Arundo	0–400	7	25–1010	6	0	1	6	1	Partial
Buckthorn	0–700	6	60–210	6	0	0	6	0	Complete
Bramble	0–1000	6	10–210	6	0	0	6	0	Complete
European wild pear	0–500	6	340–950	4	2	0	3	3	Partial
Hornbeam	0–1500	6	30–1050	4	1	1	6	0	Complete
Fern	0–1200	5	40–80	5	0	0	5	0	Complete
Bermuda grass	0–800	5	15–230	5	0	0	5	0	Complete
Plane tree	0–900	5	20–800	3	2	0	5	0	Complete
Elm tree	0–1300	5	40–720	4	1	0	5	0	Complete
Downy Oak	0–1400	5	170–600	5	0	0	5	0	Complete
Hazelnut	0–1600	4	660–1220	2	2	0	4	0	Complete
Hawthorn	0–1600	4	30–870	3	1	0	4	0	Complete
Alder	0–1600	4	30–720	3	1	0	4	0	Complete
Chestnut	400–800	3	670–1180	0	2	1	2	1	Partial
Vetches	0–400	3	70–210	3	0	0	3	0	Complete
Fig	0–400	3	90–230	3	0	0	3	0	Complete
Ash tree	100–1700	3	40–1020	2	0	1	1	2	Partial
Pine	0–1600	3	10–870	2	1	0	3	0	Complete
Turkey oak	0–1400	3	10–1020	2	0	1	3	0	Complete
Balkan pine	600–2200	2	600–680	0	1	1	2	0	Complete
Grapevine	0–400	2	30–130	2	0	0	2	0	Complete
Poplar	0–1700	2	30–580	2	0	0	2	0	Complete
Cherry tree	400–1450	2	1140–1160	0	0	2	2	0	Complete
Pomegranate	0–700	2	80–170	2	0	0	2	0	Complete
Cornel	0–1300	2	30–70	2	0	0	2	0	Complete
Olive	0–700	2	130–140	2	0	0	2	0	Complete
Tea	0–1700	1	1320	0	0	1	1	0	Complete
Juniper	0–1100	1	10	1	0	0	1	0	Complete
Tobacco	0–400	1	140	1	0	0	1	0	Complete
Blackthorn	0–800	1	600	1	0	0	1	0	Complete
Plum tree	0–1400	1	1040	0	0	1	1	0	Complete
Cypress	0–400	1	120	1	0	0	1	0	Complete
Rye	400–1600	1	960	0	1	0	1	0	Complete
Rice	0–600	1	50	1	0	0	1	0	Complete
Total		151		107	28	16	140	11	

*Sources: Mitrushi 1955; Nano 1987; Miçi 1988; Papanisto 1988; Vangjeli et al. 1995; Shqahu 2007; Akademia e Shkencave e Shqipërisë 2008; Kashta et al. 2010; Qiriazzi 2018.

**The zones of vegetation are shown with numbers: Mediterranean shrubs and forests (0–600 m) = I, Oaks (600–1000 m) = II, Beech forests and conifers (1000–1600 m) = III, Alpine pastures (>1600 m) = IV.

A distinct case from Albania is the province of Western Hubei, China, where phytotonym frequency is low in lowlands and hilly terrain and the majority of them are found at significantly higher altitudes (Shi et al. 2015).

Analyzing the relationship between phytotoponyms and phytonyms, according to a vertical distribution, we notice a high degree of matching (123 of 151), while partial matching occurs in 28 phytotoponyms. These oddities have been conditioned by weak relationship between the phytotonym and the plant name, as well as the areal of the plant used as phytonym is close, but not exactly at the same location as the phytotonym.

There are some factors which have influenced the naming of phytotoponyms.

a) Migration

In Albania, it is common to come across settlements with identical names (Sherifaj and Duri 2023). A few settlements that sprang from population migration are still known by their original names. These types of toponyms, known as migration names, are carried from one location to another through population migration (Mahmudovna and Gulomovich 2023).

One such case is the phytotonym *Darzezë* (Gramsh), originally called *Dardas* in the 15th century (Inalxhik 1954). The construction of a hydroelectric dam on the Devoll's river led to the displacement of the village's inhabitants, who then relocated to a new settlement in Fier. The new settlement, *Darzezë*, retains the original botanical oikonym but is defined by its connection to the previous name rather than the pear plant (Bidollari 1991).

b) Historical factors

The nomenclature of settlements after plant names in Albania may be an early practice. Further research is required to determine whether phytotoponyms have retained their original names throughout history. There are cases where newer settlement names have gradually replaced older ones. As a result, the current name of the settlement is not a true reflection of its age (Laansalu 2015).

A prime example is the phytotonym *Frashër* (in the Përmet district) which dates back to the 2nd century BC (Qiriazhi 2018). Although *Frashëri* appears under the name *Firaçil* (Bayir 2005) in the Ottoman register of 1519, we believe this to be the phytonym *frashër* (ash tree).

It appears that the phytonym *dardhë* (pear in Albanian) is an old Illyrian-Balkan term that denotes Kingdom of Dardania (Kocillari 2019). Toponyms containing the root »pear« or noun phrases containing this word are common wherever pears are cultivated, particularly in the northeast of Albania (Shkurtaj 2001).

In ancient times, oak was thought to be the center of the Pelasgian cradle. The Celtic term »wood« is said to signify »oak« and »wise« (Hysi 2010), also supposed to be a symbol of fortitude, age, and resistance.

Oak gave rise to several of the phytotoponyms that are still in use today, albeit some have changed structurally.

Previous names of the city of Lezha respectively *Lissus* and *Akrolis* in the 4th century BC (Prendi and Zheku 1972), and *Elis* in the 9th and 10th century (Prendi and Zheku 1983) resemble to be of fitonymic origin. We think that they derive from the word *lis* (Downy oak in Albanian), but the linguists disagree with this opinion. According to them, the name of this settlement has undergone this path of transformation: in ancient times, to the Greeks with the name *Lissos* (*λίσσός*) meaning »flat, bare, high,« then to the Romans as *Lissus*. From the Middle Ages to the 18th century, it was known as *Alesio* and *Leshë*, and currently as *Lezhë* (Demiraj 2015). This matter requires exhaustive research.

c) Incorrect use of plant names by inhabitants

The term »dushk« (oak in Albanian) may have derived from the root; *du- dru- drushk* (Topalli 2017; Çabej 1982). It has a broad use in the Albanian language:

- As the name of a genus of plants which is referred to the oak genus (*Quercus L.*). In Albania, the term *dushk* (oak in Albanian) is also employed as a synonym or substitute for the plant names belonging to the oak genus, such as Downy oak (*Quercus pubescens*), Valonia oak (*Quercus aegilops*) (Mitrushi 1955) and Kermes oak (*Quercus coccifera*) (Demiri 1979), functioning both as a hyperonym and a hyponym. This usage is also observed in Croatia (Cargonja et al. 2008).

- As the name of a vegetation zone known as Oaks which ranges from 600 to 1000 m.
- As the label of oikonyms. The location of all ten phytotoponyms, at altitudes ranging from 35 to 210 meters (in the Mediterranean shrubs and forests, rather than the Oaks zone), indicates a misperception among the inhabitants regarding the meaning of the word oak.

d) The economic importance of phytonyms

In Albania, fruit farming has practiced since the Neolithic period. Due to the significance of this sector, which produces apples, grapes, figs, and olives, among other fruits, people in the farming villages named the settlements after them like *Mollas*, *Vreshtas* (a collective noun related to the vineyard) and *Fikas* (Shqahu 2007).

Moreover, due to their economic value, even agricultural plants like tobacco, grain, and rice have received phytonymic use (Figure 3). Once these agricultural toponyms are named, they continue to carry the name of the plant, regardless of whether it is still being cultivated or not in that territory. One such case is the phytotonym *Orizaj* (Berat district) related to the cultivation of rice since the 17th century, and no longer cultivated nowadays (Kashta et al. 2010).

e) Government decisions

Another aspect of naming toponyms is decision-making. Individually and collectively, people are not and have never been, in equal positions to name locations (Kladnik et al. 2020). Some settlements have had previous names, changed arbitrarily by the governmental decision without taking into consideration their importance and reasons for labelling.

An example is Shkoza, one of Fier City's quarters, which is today known as 1 Maji. When Kahraman Pashë Vrioni founded the city of Fier in 1864, Shkoza was originally a village named after the nearby hornbeam woodland (Gjika 2004). It was included as a quarter of Fier with the same name in the 1927 census (Selenica 1928). The nearby Shkoza Hill is also noted (Gjika 2004).

6 Conclusion

The study of the oikonyms derived from the phytonyms is an important aspect of the toponymy of Albania as it offers a basic viewpoint for the relationship between the names of the settlements with the natural environment, economy, history, and culture of the country. The varied plant-related place names in Albania reflect a rich and ancient history, shaped by decisions, invasions, migration, and other pivotal occurrences.

Understanding why certain plant names are used for naming settlements, requires a scientific analysis of historical, geographical, and linguistic sources. The geographical component is crucial to identify and argue the relationship between phytotoponyms and phytonyms. Complete results need an in-depth analysis of vegetation, topography, proximity to the sea, and the conditions under which settlements are created.

Our study showed that there is an uneven distribution of phytotoponyms along the horizontal and vertical distribution. Most of them are found in the lowlands in the west of Albania, whereas they reduce significantly in the country's north and south, where mountains predominate.

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