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Phytosociology with Other Characteristic Biologically and Ecologically of Plant in Palestine

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Abstract

Idna, Hebron area, Palestine was subject to phytosociological study through the period from March to May 2013; this area has a characteristic dry, arid, semi-arid and very little of sub-humid and locates between Mediterranean, Negev and Sinai regions. We took 237 samples of different species plants from Idna village; the absence of phytosociological studies on the area led us to run a statistical treatment on the 237 woody plant inventories. Moreover, the inventories were made following Braun-Blanquet 1979; we transformed the Braun-Blanquet species abundance-dominance values into those of Van der Maarel 1979. In the statistical treatment we obtained two large groups in the cluster: group (A), representing forests, copses and high shrublands influenced by climate (climatophilous); and group (B), representing *Tamarix* copses which are influenced by edaphohygrophilic. Working a great interest for Palestine. Due to the lack of phytosociological studies in this country. For the first time gets to sample and characterize the phytosociological methodology woody plant communities. The objective of this study is to obtain bioclimatic indicators to trigger sustainable agricultural development. We propose eight association plant communities such as ASL1 = association of woody plants (association one)—*Pistacio palaestinae-Quercetum lokii*; ASL2—*Capparido sinaicae-Ceratonietum siliquae*; ASL3—*Cerasus microcarpae-Quercetum ithaburensis*; ASL4—*Pyro siriacae-Abietetum cilicicae*; ASL5—*Abio ciliciae-Ceratonietum siliquae*; ASL6—*Periploco aphylli-Pinetum halepensis*; ASL7—*Cytisopsis pseudocytiso-Tamaricetum tetragynae*; ASL8—*Crataego sinaicae-Tamaricetum jordanii.*

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Keywords

Palestine, Ecology, Biology, Phytosociology, Plant

1. Introduction

Palestine has a wide range of agro-ecological concerns and hosts a large variety of plants. Palestine's particular geographic location, in conjunction with a series of environmental and bioclimatic factors, makes this a very fertile land [1]. Climate and bioclimate factors played an important role in influence on plant communities and biological resources [2]. The flora of Palestine includes 149 endemic species (6% of the total flora), of which 43% are found to be common; 27.5% are rare and 25.6% are very rare. Leguminaceae family for instance with its 268 species contains 21 endemics, while among 23 species of Iridaceae, eight are endemic [3], while today more than 155 endemic species. However, it is the meeting ground for plant species originating from wide-flung world regions, as far apart as Western Europe, Central Asia and Eastern Africa. It is characterized by a large variety of wildlife resources and represents a rich base of flora and fauna where the natural biota is composed by an estimated 2483 species of plants that inhabit Palestine [4]. Palestine, located in the Mediterranean basin, is considered as one of the world's biodiversity "hotspot" that should be subjected to conservation [5] [6]. Flora of Palestine is rich with economical important plants including vegetables, cereals and fruit trees, providing the local market with essential agricultural crops. Furthermore, more than 2750 species of plants including 138 families were estimated for Palestinian flora [7] [8].

The main aims of the present study are to contribute to the knowledge of the mean plant, and to phytosociological with others characteristics biologicals and ecologically of plant in Palestine.

2. Materials and Methods

Due to the lack of substantial volumes of meteorological data, we selected a sampling area in the region of Hebron, in which inventories were taken of 237 woody plants in the location of Idna. Forests and shrub lands were sampled in order to obtain biological indicators for thermicity and ombrotype; 237 samples of woody plant communities were selected as statistically significant number; although 237 inventories of herbaceous plants were also taken simultaneously in the same locations for subsequent studies. The inventories were made following Braun-Blanquet [9], and the Flora of Syria, Palestine and Sinai were used for the floristic study. The absence of phytosociological studies on the area led us to run a statistical treatment on the 237 woody plant inventories. One cluster analysis, Ward's method is applied, and the principal component analysis PCA is used to establish the different groups of plant communities, which has been used CAP3 software = Community Analysis Package III. Moreover, we transformed the Braun-Blanquet species abundance-dominance values into those of Van der Maarel [10]. We found only a few phytosociological works on areas in Egypt which have no relation with our communities [11] and others of an ecological nature [12] [13]. The vegetation was interpreted according to several methodological works [14]-[17].

2.1. Study Area

Idna (Idhna) is Palestinian town located to the north-west of the city of Hebron (13 kilometers west of Hebron) and in the southern West Bank, one of the territories occupied in 1967 and is located on the Green Line (**Figure 1**), an area now estimated at 17,000 hectares after it was 37,000 hectares in 1948, rises 500 m above sea level and between longitudes 34˚06' east and latitudes 31˚33' north.

Idna is physically divided into southern and northern parts by the Wadi Al-Feranj, and Wadi Risha and Beit Elban; western, Wadi Al-Balota and Al-Naqieh and primary source of income is agriculture and the town's total land area is 21,526 dunams (215 km^2), of which 2809 dunams (28 km^2) are built up area. Furthermore, the geographic location of Idna plays a major role in affecting the features of its climate and the biodiversity. They contain a biodiversity of plants such as trees, crops, vegetables & various wild plants.

In the location and physical characteristics, Idna is located on low altitude hills ranging from 400 m to 500 m above sea level with mean annual rainfall in Idna between 410 and 440, average annual temperature of 19˚C and

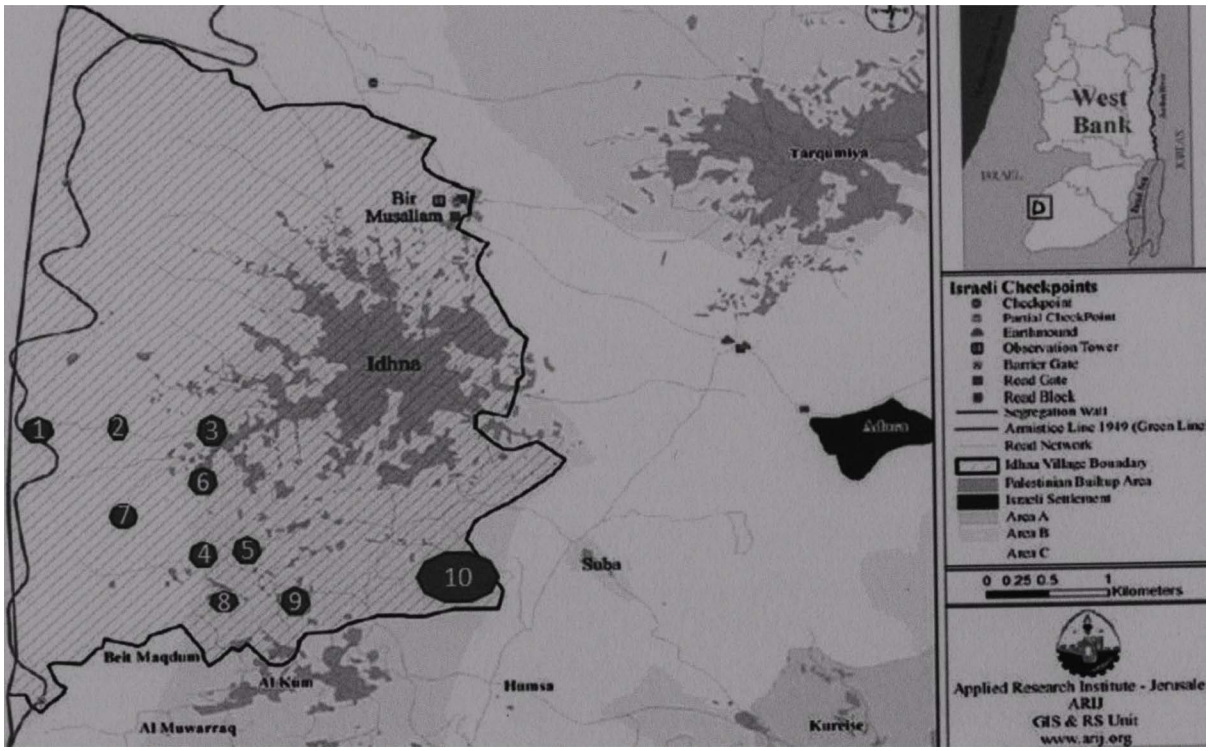


Figure 1. Map of Idna area showing different investigate locations and numbers represents a sampling place on the map.

the average annual humidity is about 60% [18].

2.2. Targeting and Collection of Plant Materials

We took 237 samples of different species plants from Idna village and selected samples study from Idna area such as (Wadi Al-Shumer & Almrabeih, Khalit Al-Thora, Khalit Al-Khamga, Khalit Al-Karami, Shieb Ghazal, Alras, Wadi Al-Nagieh, Wadi Reshi, Ganan Jeash, Suba, and etc.) (**Table 1**).

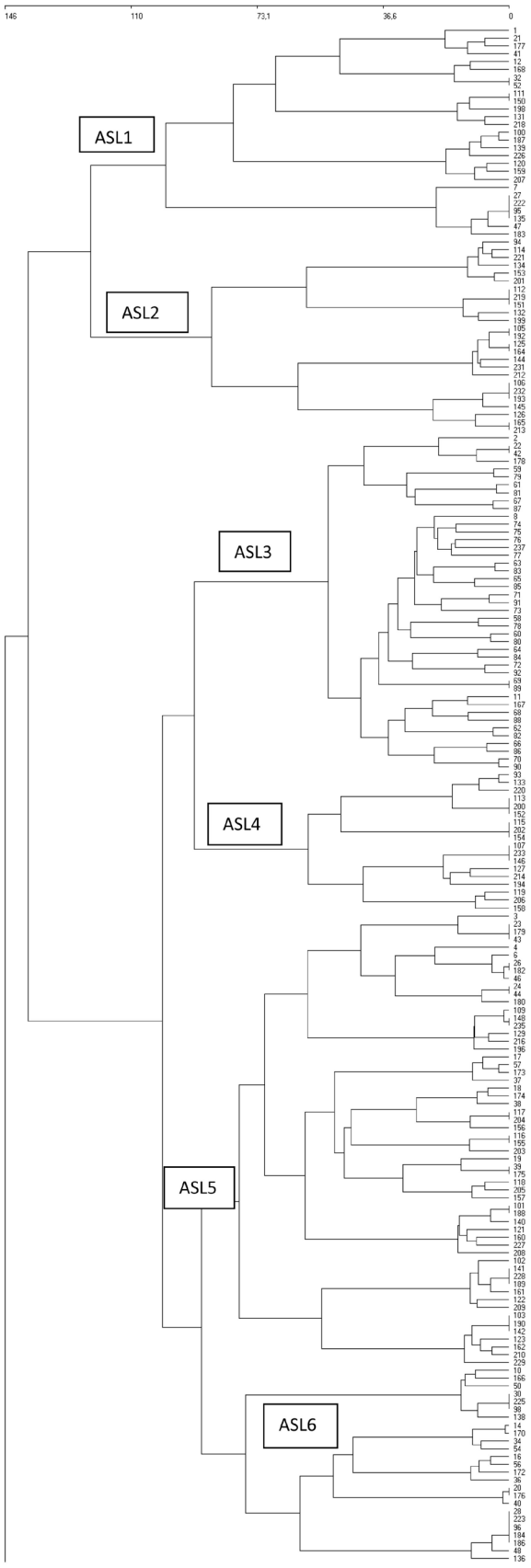
3. Results and Discussion

Vegetation Analysis

Generally, today Palestine has nineteen principal plant communities such as savanna Mediterranean, Mediterranean, and sand, Maquis, Oak Woodlands and others [19]. In the statistical treatment we obtained two large groups in the cluster (**Figure 2**); group (A), representing forests, copses and high shrub lands influenced by climate (climatophilous); and group (B), representing *Tamarix* copses, which are thus edaphohygrophilic. For the aspect that concerns us here, there are six important plant communities in group A.

A1) Community association one (ASL1) comprises the inventories in cluster 1 - 183, and represents the forests of *Quercus look* with *Pistacia palaestina*, *Ceratonia siliqua*, *Capparis decidua*, *Rhamnus punctata*, *Arbutus andrachne*: forests growing in thermomediterranean dry-subhumid environments on carbonated substrates (terra rossaas brown rendizinas) with neutral pH, which is demonstrated by the presence of *Arbutus andrachne*. This leads us to propose, for the Asiatic areas of the eastern Mediterranean, the association *Pistacio palaestinae-Quercetum lokii* (**Table 2**: ASL1_1-183).

A2) Community of *Ceratonia siliqua*, *Capparis sinaica* and the *Asclepiadaceae* of Sudanese origin *Calotropis procera* found growing in the stoniest and most thermophilous areas of the semiarid-dry inframediterranean. This is a high scrubland with a deserted semi-steppe character located to the east the region of Hebron, near the steppes of the Negev where the ombrotype is arid-semiarid, and the soil types are lithosoils and loess. The presence of *Ceratonia siliqua* and *Pistacia palaestina* in these communities is due to the presence of rock beds that retain humidity. For these thermophilous and semiarid areas we propose the association *Capparido sinaicae-*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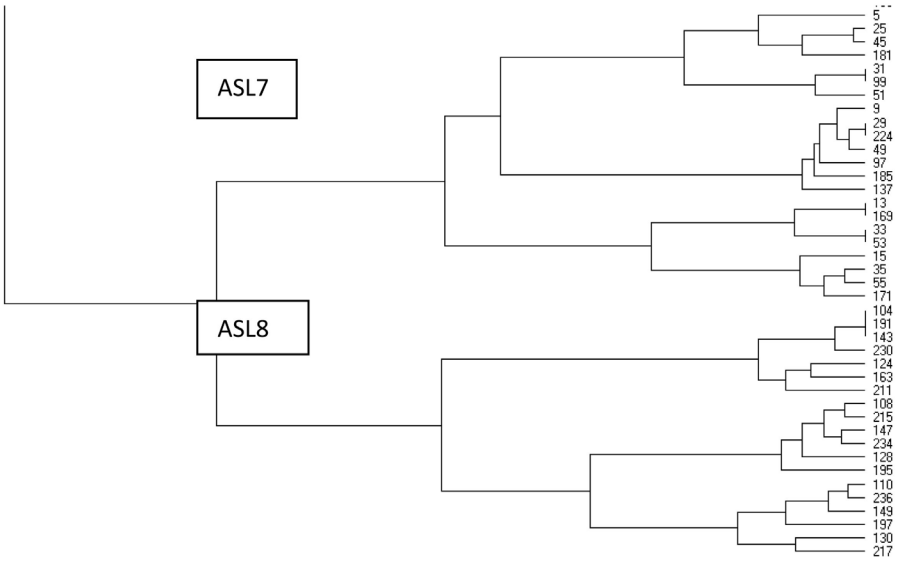

Figure 2. Cluster analysis of woody vegetation of Palestine.

Table 1. Details of the tenth stands chosen for vegetation analysis.

Number	Location
1	Wadi Al-Shumer & Almrabeih
2	Khalit Al-Thora
3	Khalit Al-Khamga
4	Khalit Al-Karami
5	Shieb Ghazal
6	Alras
7	Wadi Al-Nagieh
8	Wadi Reshi
9	Ganan Jeash
10	Suba

Ceratonietum siliquae (**Table 3**: ASL2_94-213).

A3) A marcescent forest of *Quercus ithaburensis*, *Cerasus macrocarpa*, *Rhus penthylla* and *Pyrus siriaca* found growing in the region of Hebron on calcareous of carbonated substrates in sub-humid-humid mountain environments in the thermo-mesomediterranean; its area of distribution is most likely the whole of the Palestinian mountains. For this we propose the association *Cerasus microcarpae-Quercetum ithaburensis* (**Table 4**: ASL3_2-90).

A4) An almost pure forest of *Abies cilicica* and *Pyrus siriaca*, together with other species such as *Rhus pentaphylla*, *Rhus tripartite* and *Cerasus prostrate* growing in the highest, rainiest and coldest areas of the mountains of (Hebron) on calcareous substrates in the humid mesomediterranean. This type of forest is accompanied in specific areas by the Lebanese cedar, and occasionally by deciduous elements such as *Fagus crenata* etc. We propose the association *Pyro siriacae-Abietetum cilicicae* (**Table 5**: ASL4_93-158).

A5) A mixed forest of *Abies cilicica* and *Ceratonia siliqua*, with introgression of more xeric elements such as *Capparis decidua*, *Capparis sinaica*, *Peryploca aphylla* and *Pistacia lentiscos* found in subhumid-humid and thermophilous areas in the thermomediterranean thermotype and rocky environments. We propose the association *Abio ciliciae-Ceratonietum siliquae* (**Table 6**: ASL5_3-229).

A6) Pine forest of *Pinus halepensis*, *Periploca aphylla*, *Pistacia lentiscos*, *Rhamnus lycioides*, *Quercus calliprinos*, a climatophilic community with an average degree of coverage, in semiarid-dry areas enriched with less xerophilous plants, growing in steppe environments with a semiarid-dry ombroclimate and an inframediterranean thermotype. We propose the association *Periploco aphylli-Pinetum halepensis* (**Table 7**: ASL6_10-136).

Table 2. ASL1 from (1 - 183 of the cluster). *Pistacio palestinae-Quercetum lokii* Ighbareyeh, Cano-Ortiz & Cano nova.

Number of cluster	1	7	12	21	27	32	41	47	52	95	100	111	120	131	135	139	150	159	168	177	183	187	198	207	218	222	226
Altitude in m 10 = 10	460	421	457	400	427	470	501	435	461	573	539	601	610	628	600	463	454	513	418	490	490	468	416	515	470	433	450
Surface in m^2	80	90	100	60	100	100	80	100	80	100	100	100	100	100	100	300	250	250	280	300	300	300	250	300	300	300	250
Cover rate %	80	90	95	95	90	75	75	90	60	80	75	70	80	80	80	65	60	60	65	60	60	60	65	65	70	80	70
Avarage height of veg. (m)	3	3	3	3	3	3	3	3	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3	4	5	5	5	4	4	5	4	5	5	4
Slope %	20	10	5	10	5	5	5	10	10	5	5	15	15	10	5	5	15	10	5	10	5	10	15	20	10	5	15
Orientation	E	N	W	W	N	W	N	E	N	W	W	N	S	S	E	w	N	N	W	N	W	W	W	S	E	E	W
Characteristic of the association and upper units																											
Pistacia palaestina Boiss.	4	4	3	3	3	3	3	3	3	3	2	2	1	1	3	2	3	2	3	3	3	2	3	2	2	4	2
Quercus look Kotschy	3	3	3	3	4	2	3	4	3	4	3	3	3	3	4	3	3	3	2	3	3	2	3	3	3	4	2
Pinus halepensis Mill.	2	.	2	2	.	2	2	.	2	.	2	2	2	2	.	2	2	2	2	2	.	2	2	2	.	.	2
Ceratonia siliqua L.	.	1	.	.	2	.	.	2	.	2	3	.	3	.	2	3	.	3	.	.	2	3	.	3	.	2	3
Capparis decidua (Forssk.) Edgew.	.	.	2	.	.	2	.	.	2	.	2	2	2	2	.	2	2	2	2	.	.	2	2	2	2	.	2
Bryonia dioica Jacq.	.	.	2	.	.	2	.	.	2	.	1	2	1	2	.	1	2	1	.	.	.	1	2	1	2	.	1
Rhamnus punctata Boiss.	4	.	2	.	.	2	3	.	2	.	3	.	3	.	.	3	.	3	2	.	.	3	.	3	.	.	3
Rhus pentaphylla (Jacq.) Desf.	.	.	.	.	.	.	.	.	.	.	3	3	3	3	.	3	3	2	.	.	.	4	.	4	3	.	4
Arbutus andrachne L.	.	.	2	.	.	2	.	.	2	.	.	2	.	2	.	.	2	.	2	.	3	.	2	.	2	.	.
Periploca aphylla Tourn ex. L.	2	.	2	2	.	2	2	.	2	.	.	2	.	2	.	.	2	.	2	2	.	.	2	.	2	.	.
Rhus tripartita L.	3	3	.	.	.	.	.	.	.	.	.	2	.	2	.	.	2	.	.	.	.	.	2	.	2	.	.
Pistacia saportae Burnat	2	2	5	.	2	.	2	2	.	2	.	.	.	.	2	.	.	.	.	.	2	.	.	.	.	2	.
Pistacia atlantica Desf.	.	.	2	.	.	2	.	.	2	.	.	2	.	2	.	.	2	.	2	.	.	.	2	.	2	.	.
Cercis siliquastrum L.	.	.	2	.	.	2	.	.	2	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.
Dalbergia sissoo Roxb.	.	.	.	.	.	.	.	.	.	.	.	2	.	2	.	.	2	.	.	.	.	.	2	.	2	.	.
Bryonia syriaca Boiss.	1	.	2	1	.	2	1	.	2	.	2	.	2	.	.	.	.	.	.	1	.	2	.	2	.	.	.
Cerasus prostrata Labill.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	+	.	.	.	.	.	+	.	.	.	.
Cerasus microcarpa (C. A. Mey.) Boiss.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.
Rhamnus lycioides Brot.	2	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Pistacia lentiscus L.	.	.	.	.	.	.	.	.	.	.	.	2	.	2	.	.	2	.	.	.	.	.	2	.	.	.	.
Quercus libani G. Olivier	2	.	.	2	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.
Rhus coriaria L.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	3	.	.	.	.	.	3	.	.	.
Celtis australi L.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Crataegus sinaicus Boiss.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.

Finally in the cluster (B) group we differentiate two types of *Tamarix* copses; first those located in the western areas of the territory (B1) in gorges with intermittent saline or non-saline water in the inframediterranean-thermo-mediterranean thermotype where the dominant species are *Tamarix tetragyna*, *Tamarix passerioides*, and *Tamarix palaestina*. In this case the *Tamarix* copse includes the species *Cytisopsis pseudocytisus.* We propose the association *Cytisopsis pseudocytiso-Tamaricetum tetragynae* (**Table 8**: ASL7_5-171). The tamarisk grove in the more eastern areas of the territory, in the semiarid-dry infra-Mediterranean thermotype in highly saline gorges is dominated by *Tamarix jordanis*, *Tamarix passerinoides* and *Tamarix palaestina* accompanied by *Capparis decidua*, *Capparis sinaica* and *Crataegus sinaicus*. We propose the association *Crataego sinaicae-Tamaricetum jordanii* (**Table 9**: ASL8_104-217).

However, both associations of *Tamarix* should be included in the Mediterranean and Saharan-Arabian class *Nerio-Tamaricetea* [20]; and in *Tamaricetalia* [21] [22] (Braun-Blanquet J. (1952a, b)) the only order described to date, the absence of *Tamarix gallica* and *Tamarix africana*, and the presence in Asiatic territories of *Tamarix tetragyna*, *T. tetrandra*, *T. jordanis* etc., provisionally allows us to create the new alliance *Tamaricion tetragynae.*

Table 3. ASL2 from (94 - 213 of the cluster). *Capparido sinaicae-Ceratonietum siliquae* Ighbareyeh, Cano-Ortiz & Cano nova.

Number of cluster	94	105	106	112	114	125	126	132	134	144	145	151	153	164	165	192	193	199	201	212	213	219	221	231	232
Altitude in m 1 = 10	570	537	612	609	620	640	633	617	500	392	403	463	435	475	449	453	426	449	454	455	465	418	434	480	520
Surface in m^2	100	100	100	100	100	100	100	100	100	280	300	300	300	250	300	300	300	280	250	300	300	280	300	300	300
Cover rate %	75	90	95	50	75	75	80	50	80	80	50	40	60	80	60	60	55	60	25	35	25	35	40	30	35
Avarage height of veg. (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4	3	5	5	4	4	4	3	5	4	4	5	5	5	3	5
Slope %	15	5	15	5	5	5	5	5	5	10	15	10	5	10	5	18	20	8	15	15	5	5	15	5	15
Orientation	S	N	W	S	W	W	N	E	S	N	W	S	E	E	S	W	N	N	N	E	S	W	N	S	N
Characteristic of the association and upper units																									
Ceratonia siliqua L.	3	4	4	2	2	3	4	2	4	4	2	2	2	4	3	4	2	3	2	4	3	3	3	4	1
Calotropis procera (Aiton) W. T. Aiton	3	2	2	.	3	2	2	.	3	2	2	1	3	2	2	2	2	1	3	2	2	1	3	2	2
Capparis sinaica Denne	1	2	.	2	.	2	.	2	2	2	.	2	1	.	.	1	.	2	+	.	.	2	2	.	.
Pistacia palaestina Boiss.	2	.	2	.	2	.	2	.	2	.	2	.	2	.	2	.	2	.	2	.	2	.	2	.	2
Abies cilicica (Antoine & Koschy) Carriere	2	.	1	.	+	.	2	.	2	.	1	.	+	.	2	.	1	.	+	.	2	.	2	.	1
Rhus pentaphylla (Jacq.) Desf.	2	.	.	2	2	.	.	2	2	.	.	2	2	.	.	.	.	.	.	.	.	2	2	.	.
Capparis decidua (Forssk.) Edgew.	.	.	3	.	.	.	3	.	.	.	3	.	.	.	3	.	3	.	.	.	3	.	.	.	3
Rhamnus lycioides Brot.	.	.	.	2	.	.	.	2	.	.	.	2	.	.	.	.	.	2	.	.	.	2	.	.	.
Cerasus prostrata Labill	.	.	+	.	.	.	.	.	4	.	+	.	.	.	.	.	+	.	.	.	.	.	.	.	+
Cerasus microcarpa (C. A. Mey.) Boiss.	.	.	.	.	.	.	4	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Quercus ithaburensi Kotschy	.	.	.	.	.	.	.	.	.	.	3	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Bryonia dioica Jacq.	.	+	.	.	.	.	.	.	.	+	.	.	.	.	.	+	.	.	.	.	.	.	.	+	.

Table 4. ASL3 from (2 - 90 of the cluster). *Cerasus microcarpae-Quercetum ithaburensis* Ighbareyeh, Cano-Ortiz & Cano nova.

Number of cluster	2	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	167	178	237
Altitude in m 1 = 10	485	483	494	487	457	462	467	512	511	539	525	514	522	535	531	537	420	480	479
Surface in m^2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	300	300	300
Cover rate %	70	90	80	95	95	90	60	65	60	75	75	80	85	60	65	65	45	35	35
Avarage height of veg. (m)	4	4	5	3.5	3.5	3.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	3.5	3.5	5	4	5
Slope %	10	20	10	10	5	5	5	5	5	5	5	15	5	5	5	5	10	5	15
Orientation	N	W	E	W	E	E	E	E	N	N	E	S	S	S	N	N	E	W	N
Characteristic of the association and upper units																			
Quercus ithaburensi Kotschy	3	2	3	3	3	2	2	3	3	3	3	2	4	3	2	2	2	2	2
Cerasus microcarpa (C. A. Mey.) Boiss.	2	2	3	.	2	.	2	1	3	1	2	3	2	+	2	2	+	+	+
Cerasus prostrata Labill.	2	3	4	3	2	2	3	2	3	2	2	.	.	.	2	2	.	2	+
Rhus pentaphylla (Jacq.) Desf.	.	.	3	3	2	4	3	.	2	.	2	2	2	.	2	.	.	.	1
Pyrus syriaca Boiss.	2	.	.	.	.	2	.	2	.	.	.	2	.	.	.	.	.	.	.
Crataegus sinaicus Boiss.	2	.	.	.	.	2	.	.	.	.	.	2	.	.	.	.	.	.	.
Rhamnus lycioides Brot.	2	1	1	1	.	1	.	.	.	.	2	.	.	2	.	2	.	.	.
Arbutus andrachne L.	.	2	.	.	.	.	.	3	.	.	.	.	3	.	2	3	.	.	.
Pistacia lentiscus L.	.	.	.	.	.	2	.	.	2	.	.	.	2	.	2	.	.	.	2
Quercus libani G. Olivier	.	3	.	5	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.
Rhamnus punctata Boiss.	.	4	2	.	.	.	.	2	.	.	.	.	.	.	.	2	.	.	.

Continued

Quercus calliprinos Webb.	2	.	.	.	.	.	.	2	3	.	.	.	.	.	2	2	.	.	.
Ceratonia siliqua L.	.	.	4	.	4	.	.	3	.	.	.	.	.	.	.	.	.	.	.
Fagus crenata Blume	1	.	2	2	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.
Pinus halepensis Mill.	.	.	.	.	.	.	.	.	.	3	.	.	2	.	.	.	.	2	2
Periploca aphylla Tourn ex. L.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	2	.	.	.	2
Pistacia saportae Burnat	2	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.
Rhus coriaria L.	2	.	2	.	.	2	.	.	.	.	.	2	.	.	.	3	.	.	.
Celtis australi L.	2	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.
Calotropis procera (Aiton) W. T. Aiton	.	.	.	.	.	2	2	.	.	2	.	2	.	3	.	2	.	.	2
Bryonia dioica Jacq.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Capparis sinaica Denne	.	1	1	.	1	.	1	.	1	.	1	.	.	.	.	.	.	.	.
Capparis decidua (Forssk.) Edgew.	.	.	.	.	4	.	.	2	.	.	.	.	.	.	.	2	.	.	.
Rhus tripartita L.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.
Bryonia syriaca Boiss.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.
Quercus look Kotschy	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.
Abies cilicica (Antoine & Koschy) Carriere	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	1	.
Pistacia palaestina Boiss.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Rhus tripartita L.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Cercis siliquastrum L.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Pistacia atlantica Desf.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

Table 5. ASL4 from (93 - 158 of the cluster). *Pyro siriacae-Abietetum cilicicae* Ighbareyeh, Cano-Ortiz & Cano nova.

Number of cluster	**93**	**107**	**113**	**115**	**119**	**127**	**133**	**146**	**152**	**154**	**158**	**194**	**200**	**202**	**206**	**214**	**220**	**233**
Altitude in m	535	570	618	602	580	620	574	385	406	466	505	466	444	534	499	452	431	500
Surface in m^2	100	100	100	100	100	100	100	300	300	300	300	300	300	300	250	260	300	300
Cover rate %	60	60	60	60	50	80	70	60	40	45	60	40	30	65	60	60	40	65
Avarage height of veg. (m)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	4	4	5	4	5	5	5	5	4	4	5
Slope %	5	2.5	5	5	2.5	2.5	5	10	16	5	10	5	10	10	5	10	10	10
Orientation	N	N	N	N	S	W	W	N	E	S	S	N	N	S	E	W	W	N
Characteristic of the association and upper units																		
Abies cilicica (Antoine & Koschy) Carriere	2	3	3	3	2	4	3	3	2	2	3	3	2	2	3	3	2	3
Ceratonia siliqua L.	2	3	+	1	.	3	2	3	+	1	.	3	+	1	.	3	2	3
Rhus pentaphylla (Jacq.) Desf.	2	2	2	3	2	2	2	2	2	3	2	2	2	3	2	2	2	2
Rhus tripartita Lobadium Raf.	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Pyrus syriaca Boiss.	1	.	.	.	2	.	.	1	.	.	2	.	1	.	2	.	.	.
Rhamnus lycioides Brot.	.	.	.	+	2	3	.	.	.	+	2	.	.	+	2	.	.	.
Cerasus prostrata Labill.	.	1	.	.	2	3	.	1	.	.	2	1	.	.	2	.	.	1
Capparis decidua (Forssk.) Edgew	2	.	2	.	.	.	2	.	2	.	.	.	2	.	.	.	.	.
Quercus look Kotschy	2	.	2	.	.	.	2	.	2	.	.	.	2	.	.	.	.	.
Quercus libani G. Olivier	2	.	2	.	.	.	2	.	2	.	.	.	2	.	.	.	.	.
Pinus halepensis Mill.	.	.	.	2	.	.	.	.	.	2	.	.	.	2	.	.	.	.
Cupressus sempervirens L.	.	.	.	2	.	.	.	.	.	2	.	.	.	2	.	.	.	.
Cerasus microcarpa (C. A. Mey.) Boiss.	.	.	.	.	2	.	.	.	.	.	2	.	.	.	2	.	.	.
Rhus coriaria L.	.	+	.	.	.	.	.	+	.	.	.	+	.	.	.	.	.	+
Bryonia dioica Jacq.	.	.	.	.	2	.	.	.	.	.	2	.	.	.	2	.	.	.
Quercus ithaburensi Kotschy	.	.	.	.	.	4	.	.	.	.	.	.	.	.	.	.	.	.
Ficus carica L. Sp.	.	2	.	.	.	2	.	2	.	.	.	2	.	.	.	2	.	2
Pistacia atlantica Desf.	.	.	.	2	.	.	.	.	.	2	3	.	.	2	.	.	.	.
Morus nigra L.	.	.	.	2	.	.	.	.	.	2	.	3	.	2	.	.	.	.
Rubus fruticosus L.	.	.	.	2	.	.	.	.	.	2	.	.	.	2	.	.	.	.
Rubus idaeus L.	.	.	.	.	.	.	1	.	.	.	3	.	.	.	.	.	.	.

Table 6. ASL5 from (3 - 229 of the cluster). *Abio cilicicae-Ceratonietum siliquae* Ighbareyeh, Cano-Ortiz & Cano nova (table with a number of part inventories cluster).

Number of cluster	3	4	6	17	18	19	23	24	26	37	38	39	43	44	46	57	101	102	103	109	117	118	121	122	129	140	141	148
Altitude in m	450	439	429	462	469	445	417	420	408	493	475	500	479	485	434	421	580	570	600	596	599	588	577	559	597	466	453	430
Surface in m²	80	100	80	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	300	300	280
Cover rate %	90	75	80	85	80	90	50	90	60	80	50	75	75	80	65	65	80	60	80	50	60	75	80	70	75	80	65	50
Avarage height of veg. (m)	4	4	4	4	4	4	4	5	5	4.5	4.5	5	3.4	3.5	4	4	4	4	4.5	4.5	5	5	5	4	4	4	4	5
Slope %	10	30	5	20	10	5	5	5	5	10	15	5	10	15	5	5	15	5	5	15	15	5	5	15	5	10	18	8
Orientation	N	N	E	E	E	E	W	W	N	N	E	N	W	N	W	W	N	S	N	S	N	W	S	E	E	N	w	N
Characteristic of the association and upper units																												
Ceratonia siliqua L.	3	3	3	4	3	3	2	3	3	4	2	3	3	3	3	3	4	3	4	2	2	3	4	3	2	4	3	2
Capparis sinaica Denne	2	1	2	1	2	.	1	.	1	1	.	.	.	.	.	.	1	1	.	2	2	3	1	1	2	1	1	2
Abies cilicica (Antoine & Koschy) Carriere	1	.	.	.	2	2	1	.	.	.	2	3	1	.	.	.	.	.	.	.	2	3	.	.	.	.	.	.
Ficus carica L.	1	2	1	.	.	.	1	2	1	.	.	.	3	2	3	.	.	.	.	.	1	.	.	.	.	.	.	.
Periploca aphylla Tourn ex. L.	.	2	.	.	.	.	.	2	.	+	+	.	.	2	.	.	2	.	.	.	.	.	2	.	.	2	.	.
Capparis decidua (Forssk.) Edgew.	1	.	.	.	.	.	1	.	.	.	.	.	1	.	.	.	.	2	.	.	.	.	.	2	.	.	2	.
Rhamnus punctata Boiss	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.
Bryonia syriaca Boiss.	+	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	1	2	.	2
Rhamnus lycioides Brot.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	4	.	.	.	.	.
Quercus calliprinos Webb.	.	.	.	.	2	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Cerasus prostrata Labill	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	3	.	.	1
Bryonia dioica Jacq.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	+	.	.	.	.	.	.	+	+	.
Rhus pentaphylla (Jacq.) Desf.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.
Prunus dulcis (Mill.) D. A. Webb.	.	.	.	2	2	.	.	.	.	2	2	.	.	.	.	2	.	.	.	1	.	.	.	.	.	.	.	1
Pistacia palaestina Boiss.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.
Pistacia saportae Burnat	.	3	.	.	.	.	.	4	.	.	.	.	.	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Pistacia atlantica Desf.	.	3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Rhus tripartita L.	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3	.	.	.	.	3	.	.	3
Arbutus andrachne L.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	1	.	.	1	.
Quercus look Kotschy	2	.	.	3	.	.	2	.	.	3	.	.	2	.	.	3	.	.	.	.	.	.	.	.	.	.	.	.
Quercus libani G. Olivier	.	.	.	2	.	.	.	.	.	2	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.
Pistacia lentiscus L.	4	.	.	.	.	3	.	.	.	+	+	3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Pinus halepensis Mill.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.
Cupressus sempervirens L.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.
Pyrus syriaca Boiss.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.
Rhus coriaria L.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.
Celtis australi L.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Calotropis procera (Aiton) W. T. Aiton	2	.	.	.	.	.	2	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

Furthermore, the six associations of copses and high shrub lands that represent sclerophyllous and marcescent vegetation in environments from the semiarid to the humid and from the thermo-suprameditерranean are included in the class *Quercetea ilicis* [23]-[25]. However, the uncertainty as to the presence of *Quercus ilex* and *Quercus coccifera*, which is not manifested in the Flora of Palestine—although these species are found in the Flora of Palestine, Syria, Lebanon, Jordan, the Sinai—and the presence in these Asiatic territories of *Quercus calliprinos*, *Quercus ithaburensis*, *Quercus libani* and *Quercus look* obliges us to re-examine at least the alliance

Table 7. ASL6 from (10 - 136 of the cluster). *Periploco aphilli-Pinetum halepensi* Ighbareyeh, Cano-Ortiz & Cano nova.

Number of cluster	10	14	16	20	28	30	34	36	40	48	50	54	56	96	98	136	138	166	170	172	176	184	186	223	225
Altitude in m 1 = 10	471	430	466	392	435	445	480	492	495	429	420	442	404	596	560	469	427	510	434	459	495	475	476	459	440
Surface in m^2	100	75	80	70	70	100	100	70	100	100	100	100	100	100	100	300	200	300	300	290	300	300	300	290	250
Cover rate %	80	85	80	95	75	80	70	95	85	80	85	85	85	60	80	35	80	80	60	80	70	60	60	60	60
Avarage height of veg. (m)	1.5	1.5	1	1	1	1.5	1	1	1.5	1.5	1.5	1	1.5	1.5	1.5	4	4	5	5	5	4	4	5	5	5
Slope %	15	15	30	5	5	15	10	5	5	5	15	5	5	15	5	10	10	10	15	10	5	15	15	10	10
Orientation	E	W	N	W	N	W	W	W	W	E	E	W	E	S	N	W	W	S	N	N	E	W	N	N	N
Characteristic of the association and upper units																									
Pinus halepensis Mill.	4	3	2	2	3	4	3	3	2	3	4	3	3	2	4	3	4	4	3	2	2	2	2	2	4
Pistacia lentiscus L.	3	2	2	3	2	.	2	+	3	.	1	2	2	1	.	1	.	1	2	2	3	.	.	.	.
Periploca aphylla Tourn ex. L.	1	.	2	.	1	.	.	1	.	.	.	.	2	.	.	1	.	1	.	2	.	.	1	1	.
Rhus tripartita L.	2	2	2	.	.	2	2	2	.	.	2	2	2	.	2	.	2	2	2	2	.	.	.	.	2
Cupressus sempervirens L.	.	.	4	.	.	.	.	+	.	.	.	.	4	.	.	.	.	.	.	4	.	.	.	.	.
Rhamnus punctata Boiss	.	.	3	.	.	.	.	3	.	.	.	.	3	.	.	.	.	.	.	3	.	.	.	.	.
Rhamnus lycioides Brot.	.	.	.	2	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.
Quercus calliprinos Webb.	.	.	+	2	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	+	2	.	.	.	.

Table 8. ASL7 from (5 - 171 of the cluster). *Cytisopsis pseudocytiso-Tamaricetum tetragynae* Ighbareyeh, Cano-Ortiz & Cano nova.

Numero of cluster	5	9	13	15	25	29	31	33	35	45	51	53	55	97	99	137	169	171	181	185	224
Altitude in m 1 = 10	392	466	429	435	411	430	460	489	476	443	439	452	420	620	540	488	431	469	488	470	422
Surface in m^2	80	100	60	80	100	100	100	100	100	100	100	100	100	100	100	250	300	300	300	300	300
Cover rate %	60	65	70	70	70	75	70	65	70	80	75	65	60	70	75	60	65	60	75	65	65
Avarage height of veg. (m)	2	2	2	2.5	2.5	3	3	3	3	3	3	3	3	3.5	3.5	4	4	5	5	3	4
Slope %	5	5	10	10	5	10	10	5	5	5	10	5	10	15	15	15	10	5	15	5	5
Orientation	S	E	E	E	N	E	E	N	S	E	W	W	N	N	W	w	W	E	N	S	W
Characteristic of the association and upper units																					
Tamarix tetragyna Ehrenb.	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Tamarix passerinoides Delile ex Desv.	2	2	3	2	2	2	2	3	2	2	2	3	2	2	2	2	3	2	2	2	2
Cytisopsis pseudocytisus (Boiss.) Fertig	3	3	2	3	3	3	2	2	3	3	2	2	3	3	2	3	2	3	3	3	3
Tamarix jordanis L.	2	.	.	.	2	.	2	.	.	2	2	.	.	.	2	1	.	.	2	.	.
Tamarix palaestina Bertol	3	+	.	.	3	.	3	.	.	3	3	.	.	.	3	.	.	.	3	.	.
Tamarix parviflora DC.	2	.	.	.	2	.	.	.	.	2	.	.	.	.	.	.	.	.	2	.	.

in which this type of communities should be included, which is currently under study. Also, distribution Atlas or plants the flora Palestinian area [7] comprises updated nomenclature, distribution and habit data for the species in the area covered by flora Palestinian [26]-[31]. However, the high frequency of *Ceratonia siliqua*, *Pistacia lentiscus*, *Pinus halepensis*, *Olea sylvestris* and *Rhamnus lycioides* allows us provisionally to include the communities in the most xeric environments in the order *Pistacio-Rhamnetalia alaterni* [32], and in the alliance *Oleo-Ceratonión siliquae* Br.-Bl. ex Guinochet & Drouineau 1944, while we include the forests growing in dry, sub-humid environments in the order *Quercetalia ilicis* Br.-Bl. ex Molinier [33]-[35]. It is probably necessary to create a new alliance to include all these sclerophyllous and marcesent forests. Some differences between the different associations proposed can be seen in the synthetic table (**Table 10**: ASL9). However, we noted that the plants in Palestine are considered an important part of the plant to the Region Mediterranean basin, which is similar to many studies such as [19] [36]. Nevertheless, there coexistence between plants groups due to the bio-diversity and the topography, the nature of the climate and climatic factors and various other factors, while it's not found in some plant communities (**Figure 3**).

4. Conclusions

Palestine's geographical position has been both its blessing and its curse, located at the meeting point between

Table 9. ASL8 from (104 - 217 of the cluster). *Crateago sinaico-Tamaricetum jordanii* Ighbareyeh, Cano-Ortiz & Cano nova.

Number of cluster	104	108	110	124	128	130	143	147	149	163	191	195	197	211	215	217	230	234	236
Altitude in m	620	573	630	611	578	580	433	416	428	496	466	563	412	459	475	510	475	490	470
Surface in m^2	100	100	100	100	100	100	300	250	300	260	300	280	300	250	250	300	300	300	300
Cover rate %	75	75	75	75	75	60	60	75	75	75	75	75	75	75	75	75	80	65	60
Avarage height of veg. (m)	3.5	3.3	2.5	2.5	2.5	2.5	5	5	5	4	4	4	4	4	4	5	4	4	3
Slope %	5	5	15	5	10	15	5	15	10	10	10	10	10	8	10	10	15	5	5
Orientation	W	W	S	N	S	S	N	W	N	W	N	N	N	S	E	S	W	W	S
Characteristic of the association and upper units																			
Tamarix jordanis L.	3	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3
Capparis decidua (Forssk.) Edgew.	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Tamarix passerinoides Delile ex Desv.	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Salsola soda L.	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Tamarix tetragyna Ehrenb.	3	3	.	3	3	2	3	3	.	3	3	3	.	3	3	2	3	3	.
Tamarix parviflora DC.	2	2	.	2	2	2	2	2	.	2	2	2	.	2	2	2	4	2	.
Tamarix palaestina Bertol	2	.	.	2	.	.	2	.	.	2	2	.	.	2	.	.	4	.	.
Capparis sinaica Denne	1	.	.	1	.	.	1	.	.	1	1	.	.	1	.	.	1	.	.
Crataegus sinaicus Boiss.	.	.	.	.	2	.	.	.	.	.	.	.	3	3	.	.	.	.	.
Cercis siliquastrum L.	.	2	.	.	2	.	.	2	.	.	.	2	.	.	2	.	.	2	.

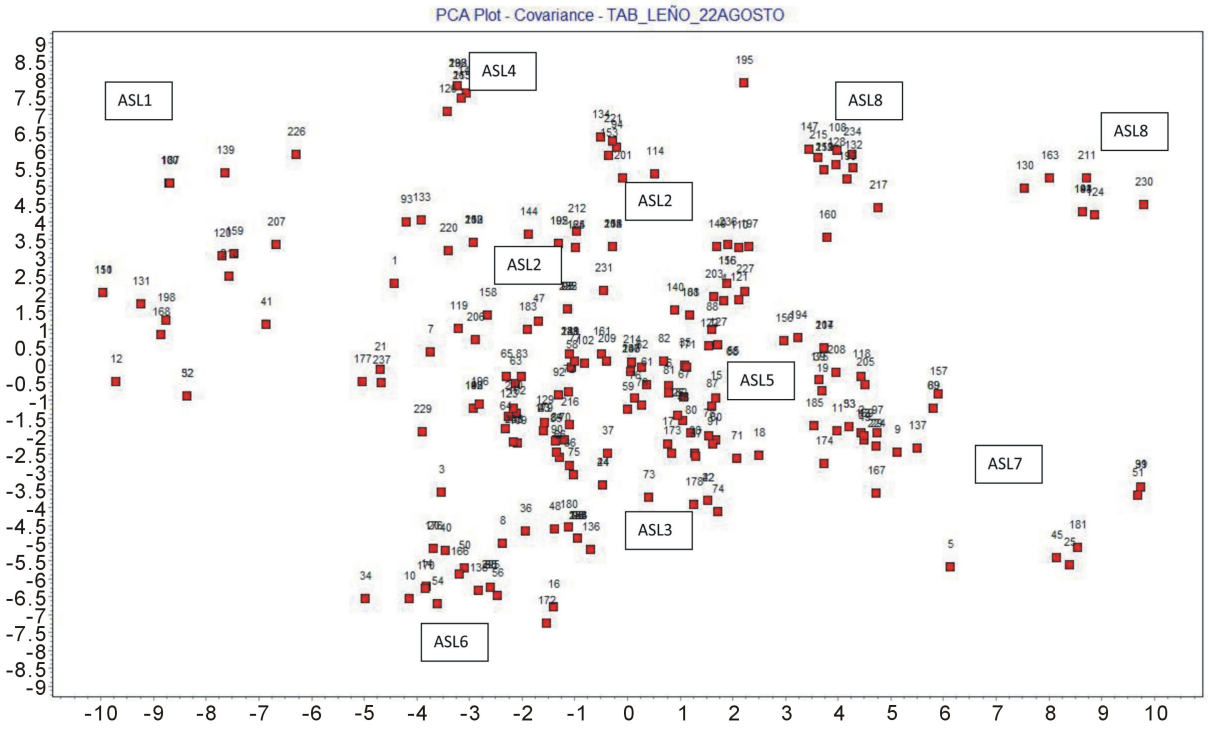

Figure 3. Principal component analyses.

Eurasia and Africa. Especially in the eastern southern corner of the Mediterranean Sea, creates unique geography and ecosystems which encountered endemic plants that do not exist in other places in the world and makes the introduced plants coexist strongly. Plants of three continents have interacted and spread throughout history. Consequently, this contribution to the rich diversity of Palestine flora has long captured the interest of ecologist and scientist alike.

Nevertheless, in Palestine, there are many challenges and abuses faced by the environment, biodiversity

Table 10. Synthetic representation.

Synthetic representation	ASL1	ASL2	ASL3	ASL4	ASL5	ASL6	ASL7	ASL8	
Opuntia ficus-indica (L.) Mill	II	I	I	I	II	I	I	I	N
Fagus crenata Blume			I		II	I	II	I	N
Capparis sinaica Denne	I		I		IV			II	N
Abies cilicica (Antoine & Kotschy) Carriere	I	II	I	V	I	I	III		N
Ceratonia siliqua L.	III	IV	I	V	I	III	I	IV	N
Ficus carica L. Sp.	I		II	II	I	IV	II		N
Rhamnus punctata Boiss.	II		I		I	I			N
Galium incanum Sm.	I	IV	I	V	I			III	N
Rhamnus lycioides Brot.	I	I	I	I	I	I			N
Quercus calliprinos Webb.			I			I	I	I	N
Cerasus prostrata Labill	I	I	III	I		I		II	N
Cerasus microcarpa (C. A. Mey.) Boiss.	I	I	III	I	I	I	I		N
Quercus ithaburensi Kotschy.		I	III	I	I	I		I	N
Rhus pentaphylla (Jacq.) Desf.	II	II	III	V			I	I	N
Prunus dulcis (Mill.) D. A. Webb.	I		I		I	IV	II		N
Pteris vittata L.	IV	V	II	II	I				N
Pistacia palaestina Boiss.	IV	V	I			I	I		E
Pistacia saportae Burnat	I		I				I	I	N
Rhus tripartita Lobadium Raf.	I		I	V	I			II	N
Cercis siliquastrum L.	I		I		I	IV	I	I	N
Pistacia atlantica Desf.	I		I	I	I		II	I	N
Calligonum comosum L.	I		I	I	I	I	I		N
Rhus tripartita L.	I		I		I	III			N
Arbutus andrachne L.	II		I		I	I			E
*Capparis decidua (*Forssk.) Edgew.	III	I	I		I			V	E
Quercus look Kotschy	IV		I	I	I	I	III		N
Quercus libani G. Olivier	I		I	I	I	I			N
Salix acmophylla Boiss				III	I	I			N
Pistacia lentiscus L.	I		I		I	I	I		N
Populus euphratica L.	II	I	I	II	I	I		III	N
Pinus halepensis Mill.	IV		I	I	I	V	I		N
Periploca aphylla Tourn ex. L.	II		I		I	I		I	N
Physalis peruviana L.	I	IV	I	I	I		I	IV	N
Cupressus sempervirens L.	I	I	I	I	I	I	V	III	E
Morus nigra L.	I		II	I	I	I	II	II	N
Rubus fruticosus L.			I	I	I	I	II	I	N
Rubus idaeus L.	I		I	I	I	I	I	II	N
Tamarix jordanis L.	I	I	I	I	I	I	II	IV	E
Tamarix palaestina Bertol			II		I	I	II	II	E
Tamarix parviflora DC.	I	III	II		I		I	IV	N
Tamarix passerinoides Delile ex Desv.		II	I		I		V	V	E
Tamarix tetragyna Ehrenb.	I	II	I	I	I		V	IV	E
Cytisopsis pseudocytisus (Boiss.) Fertig			II		I		V		E
Pyrus syriaca Boiss.			I	I	I			I	E
Rhus coriaria L.	I	I	I	I	I	I		I	N
Celtis australis L.	I	I	I			I	I	I	N
Sorbus torminalis (L.) Crantz	I	I	I		I	I	I		N

Continued

Crataegus sinaicus Boiss.	I		I		I			I	E
Solanum incanum L.		I	I	I	I	I	I	I	E
Solanum villosum Miller.			I		I		I		N
Calotropis procera (Aiton) W. T. Aiton	I	IV	I		I				E
Salsola orientalis S. G. Gmel	II	II	I		I		II		E
Salsola soda L.	II		I		I			I	N
Salsola stocksii Boiss.			I		I		III		E
Dalbergia sissoo Roxb.	I		I	II	I				N
Bryonia dioica Jacq.	III	I	I	I	I	I			N
Bryonia syriaca Boiss.	I		I			I		I	N
Phoenix dactylifera L.						I			N

Percentage of plant species presence in the samples and communities: V = 100%, IV = 60.1% - 80%, III = 40.1% - 60%, II = 20.1% - 40% and I = 0.1% - 20%. N: Native and E: Endemic. Association (ASL), ASL1—*Pistacio palaestinae-Quercetum lokii.* ASL2—*Capparido sinaicae-Ceratonietum siliquae.* ASL3—*Cerasus microcarpae-Quercetum ithaburensis.* ASL4—*Pyro siriacae-Abietetum cilicicae.* ASL5—*Abio ciliciae-Ceratonietum siliquae*. ASL6—*Periploco aphylli-Pinetum halepensis.* ASL7—*Cytisopsis pseudocytiso-Tamaricetum tetragynae*. ASL8—*Crataego sinaicae-Tamaricetum jordanii*.

and diversity, the economy and human life and many factors of result of the conflict with the Israeli occupation. Certainly the situation is far from optimistic. However, work is already underway to reverse the negative trend of the last 20 - 30 years.

As a result of the phytosociological research conducted in the village of Idna, located in the region of Hebron, we describe eight new plant associations, of which two have a dry-sub-humid ombrotype (*Pistacio palaestinae-Quercetum lokii*; *Cerasus microcarpae-Quercetum ithaburensis*). The places where both associations are located are optimal for the cultivation of olive. We propose that both plant communities should be considered as indicators for olive cultivation. The area occupied by the meso-Mediterranean and humid association *Pyro siriacae-Abietetum cilicicae* is also suitable for olive cultivation, but using more disease-resistant varieties. Conversely, associations located in arid, semi-arid and lower dry environments cannot be considered useful for olive cultivation, although less dry areas may be used for growing grapevines. We propose a change of crop for the arid and semi-arid areas; we propose the cultivation of *Argania spinosa* (Sapotaceae), and of aromatic species with a commercial value.

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Associations described as new:
Pistacio palaestinae-Quercetum lokii[*]
Capparido sinaicae-Ceratonietum siliquae
Cerasus microcarpae-Quercetum ithaburensis[*]
Pyro siriacae-Abietetum cilicicae[*]
Abio ciliciae-Ceratonietum siliquae
Periploco aphylli-Pinetum halepensis
Cytisopsis pseudocytiso-Tamaricetum tetragynae
Crataego sinaicae-Tamaricetum jordanii
[*]Associations in which olive cultivation is possible.

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