
Plant associations of *Dauco–Melilotion* alliance in Lithuania

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The data on syntaxa of the *Dauco–Melilotion* alliance in Lithuania were summarized. The species abundance, syntaxonomic structure and dynamics of four syntaxa of this alliance are described. The *Echio–Melilotetum* and *Tanaceto–Artemisietum vulgaris* belong to the type of progressively spreading ruderal communities. They are concentrated in the cities, while the primary natural habitats of these communities are situated in the river valleys.

Key words: vegetation, allergenic plants, phytosociology, vacant plots, Lithuania

INTRODUCTION

Our aim was to carry out a classification of plant communities belonging to the *Dauco–Melilotion* alliance in Lithuania. The areas under plant communities of these sub- and thermophilic middle nitrophilic annual and perennial herbs increase in Baltic countries because of climate getting warmer [1]. Furthermore, the output of *Artemisia vulgaris* which is one of the most significant allergen plants reaches its peak in the plant communities of this alliance.

METHODS

The relevés were classified according to the Braun–Blanquet method [2–4]. The abbreviation ISG used in the paper designates the group of indicative species of syntaxon. The ISG includes characteristic (+), different (dif.) and constant dominating species [5]. The names of vascular plants are indicated according to [6].

RESULTS AND DISCUSSION

***Dauco–Melilotion* alliance.** ISG: (+) *Cichorium intybus*, *Daucus carota* (dif.), (+) *Melilotus albus*, (+) *M. officinalis*, (+) *Oenothera biennis*, (+) *O. rubricaulis*, *Pastinaca sativa* (dif.), *Rumex thyrsoiflorus* (dif.) plus diagnostic species of the associations belonging to alliance.

Crepis rhoadifolia, *Verbascum lychnitis* are diagnostic species of this alliance in Ukraine [7]. *Pastinaca sylvestris*, *Linaria vulgaris*, *Picris hieracioides* are the same in Bashkortostan [8]. The spreading cen-

tre of the alliance is Central Europe [9]. There is a number of characteristic species of the alliance that are not found or rare species in Lithuania (*Crepis rhoadifolia*, *Phalacrolooma strigosum*, *Erysimum hieraciifolium* auct. non L., *Tragopogon dubius*, *T. orientalis*, *Verbascum densiflorum*, etc.).

As. *Echio–Melilotetum* TX. 1947

Syn.: *Melilotetum albae–officinalis* SISSINGH 1950

ISG: *Achillea millefolium*, *Agrostis stolonifera*, *Artemisia absinthium* (dif.), *A. campestris* (dif.), *A. vulgaris*, *Daucus carota*, (+) *Echium vulgare*, *Medicago lupulina*, *Melilotus albus*, *M. officinalis* (Table).

Habitats. Vacant plots of land with mineral surface: open pits, building sites and other sites without a humus layer [10].

Species richness. The number of vascular plant species varies from 46 to 183 in the communities. The constant/accidental species ratio is 1 : 6 in the association.

Syntaxonomic structure. Species of eight syntaxonomic classes were found in the association. The species of *Molinio–Arrhenatheretea* TX. 1937 are abundant in the communities from Lithuania, while characteristic species of *Sedo–Scleranthetea* BR.–BL. 1955 em. MORAVEC 1967 and *Festuco–Brometea* BR.–BL. et TX. 1943 replace them in Central Europe.

Syntaxa lower than association rank. The *Echio–Melilotetum* (*E.–M.*) v. *typicum* prevails in largest cities and their landfills situated in sandy and gravelly plains. The *E.–M.* f. *Phalacrolooma annuum* occupies separate plots within the countours of the *E.–M.* v. *typicum*. The *E.–M.* f. *P. annuum* coincide with the

Table. Plant associations of Dauco-Melilotion alliance in Lithuania				
Synataxa	Echio-Melilotetum			<i>Tanaceto-Artemisietum vulgaris</i>
	v. <i>Carduus acanthoides</i>	v. <i>typicum</i>		subas. <i>typicum</i>
		f. <i>Phalacroloma annuum</i>		
Current number	1	2	3	4
Total number of relevés	7	5	27	65
Average number of species	15	13	17	25
Total number of species	52	46	183	90
Coverage %	80–90	80–90	60–80	70–100
1	2	3	4	5
ISG as., subas., v.				
<i>Melilotus albus</i>	III ¹	IV ¹	V ³⁻⁴	II
<i>M. officinalis</i>	V ¹⁻²	–	IV ¹	–
<i>Echium vulgare</i>	IV ⁺	–	III ⁺	–
<i>Artemisia vulgaris</i>	V ²⁻³	V ^{+ -1}	V ^{+ -3}	V ^{+ -4}
<i>A. absinthium</i>	II	III ⁺	III ⁺	II
<i>A. campestris</i>	V ^{+ -1}	II	IV ⁺	–
<i>Agrostis stolonifera</i>	III ¹	IV ¹	IV ¹	III ^{+ -3}
<i>Medicago lupulina</i>	V ¹	III ⁺	V ¹	–
<i>Achillea millefolium</i>	I	IV ^{+ -1}	V ^{+ -1}	III ^{+ -2}
<i>Berteroa incana</i>	IV ^{+ -1}	I	II	II
<i>Daucus carota</i>	–	–	III ¹	II
<i>Carduus acanthoides</i>	V ^{+ -1}	–	–	–
<i>Centaurea rhenana</i>	IV ^{1 -2}	I	I	–
<i>Cichorium intybus</i>	IV ^{1 -2}	–	II	I
<i>Oenothera biennis</i>	III ^{+ -1}	–	I	I
<i>Euphorbia esula</i>	III ^{+ -1}	–	–	–
<i>Phalacroloma annuum</i>	–	V ³⁻⁴	I	–
<i>Vicia tetrasperma</i>	–	IV ^{+ -1}	–	–
<i>Tanacetum vulgare</i>	–	I	I	IV ^{+ -3}
<i>Cirsium arvense</i>	III ¹	I	IV ^{1 -2}	III ^{+ -1}
<i>C. vulgare</i>	–	–	I	II
<i>Elytrigia repens</i>	V ¹⁻²	IV ¹	V ¹⁻²	IV ¹⁻³
<i>Dactylis glomerata</i>	–	I	IV ^{+ -2}	IV ^{+ -3}
Ch. All. <i>Dauco-Melilotion</i>				
<i>Oenothera rubricaulis</i>	I	IV ⁺	II	–
Ch. All. <i>Onopordion acanthii</i>				
<i>Anchusa officinalis</i>	II	–	I	–
<i>Onopordum acanthium</i>	I	–	–	–
Ch. Cl. <i>Artemisietea vulgaris</i>				
<i>Silene alba</i>	III ⁺	II	III ⁺	II
<i>Bunias orientalis</i>	II	–	–	–
<i>Linaria vulgaris</i>	–	–	–	II
Ch. D. <i>Chenopodio-Scleranthea</i>				
HADAČ 1967				
<i>Convolvulus arvensis</i>	III ^{+ -1}	I	I	II
<i>Veronica arvensis</i>	–	III ^{+ -1}	I	–
<i>Equisetum arvense</i>	II	II	III ^{+ -1}	–
<i>Poa annua</i>	–	I	II	II
<i>Chenopodium album</i>	–	–	–	II

Table (continued)				
1	2	3	4	5
<i>Fallopia convolvulus</i>	–	–	–	II
Ch. Cl. <i>Chenopodietea</i>				
<i>Tripleurospermum maritimum</i>	–	I	V ¹⁻²	II
<i>Conyza canadensis</i>	V ¹⁻²	IV ⁺	IV ⁺ - 1	II
<i>Geranium pusillum</i>	–	III ⁺	I	I
<i>Lactuca serriola</i>	III ⁺ - 1	–	I	II
<i>Galeopsis bifida</i>	–	–	–	II
<i>Echinochloa crus – galli</i>	III ⁺	–	–	–
<i>Descurainia sophia</i>	II	–	I	–
<i>Sisymbrium loeselii</i>	II	–	I	–
<i>Atriplex patula</i>	–	–	I	II
Ch. Cl. <i>Galio-Urticetea</i>				
PASSARGE ex KOPECKÝ 1969				
<i>Urtica dioica</i>	–	–	I	II
<i>Arctium tomentosum</i>	–	–	II	II
Ch. Cl. <i>Plantaginetea majoris</i>				
TX. et PRSG. in TÜXEN 1950				
<i>Rumex crispus</i>	–	–	II	II
<i>Plantago major</i>	I	–	IV ⁺	II
<i>Potentilla anserina</i>	–	I	III ⁺	II
<i>Lolium perenne</i>	–	II	II	–
ACCOMPANYING				
<i>Acer negundo</i>	III ⁺	–	I	–
<i>Alyssium alysoides</i>	II	–	–	–
<i>Acinos arvensis</i>	III ⁺	–	I	–
<i>Arenaria serpyllifolia</i>	I	I	II	–
<i>Calamagrostis epigejos</i>	–	–	IV ¹⁻²	–
<i>Cannabis ruderalis</i>	III ⁺ - 3	–	–	–
<i>Centaurea jacea</i>	–	–	II	I
<i>Cerastium holosteoides</i>	–	III ⁺	IV ⁺	–
<i>Consolida regalis</i>	II	–	I	–
<i>Deschampsia cespitosa</i>	–	–	II	I
<i>Festuca pratensis</i>	–	–	II	–
<i>F. rubra</i>	–	II	III ¹⁻³	–
<i>Galium mollugo</i>	–	–	IV ⁺ - 1	I
<i>G. boreale</i>	–	–	II	–
<i>Herniaria glabra</i>	–	II	I	–
<i>Hypericum perforatum</i>	I	I	II	–
<i>Knautia arvensis</i>	I	II	II	–
<i>Leontodon autumnalis</i>	–	–	II	I
<i>Leucanthemum vulgare</i>	–	–	II	–
<i>Lotus corniculatus</i>	–	–	II	I
<i>Medicago falcata</i>	I	–	II	–
<i>Ononis arvensis</i>	–	–	II	I
<i>Phleum pratense</i>	I	II	III	–
<i>Plantago lanceolata</i>	–	–	III	–
<i>Poa compressa</i>	–	–	II	I
<i>P. pratensis</i>	–	II	II	II
<i>P. trivialis</i>	–	–	–	II
<i>Potentilla argentea</i>	I	III ⁺ - 1	II	I

Table (continued)				
1	2	3	4	5
<i>Prunus cerasifera</i>	–	–	II	–
<i>Rumex acetosella</i>	–	II	I	–
<i>Solanum tuberosum</i>	III ⁺	–	–	I
<i>Solidago canadensis</i>	I	II	II	–
<i>Sonchus arvensis</i>	III ¹⁻²	I	II	II
<i>Stellaria graminea</i>	–	II	I	–
<i>Taraxacum officinale</i>	III ⁺ - 1	III ⁺ - 1	V ⁺ - 1	III ¹⁻³
<i>Thymus pulegioides</i>	–	II	II	–
<i>Trifolium pratense</i>	II	I	III ⁺	–
<i>T. repens</i>	IV ⁺ - 1	III ⁺ - 1	V ⁺ - 2	–
<i>Tussilago farfara</i>	III ⁺	II	V ¹⁻²	–
<i>Veronica chamaedrys</i>	–	II	II	–
<i>Vicia cracca</i>	–	I	II	III ⁺ - 1

Accidental species are not showed.

Erigeron annuus – community [11]. The *E.-M.* v. *Carduus acanthoides* are spreaded on the very steep slopes with southern exposure in the limits of Neris Valley erosive hills microraiion. The distinctive feature of this variant is the species of *Onopordetalia acanthii* BR.–BL. et. TX. em. 1943 GÖRS 1966.

Dynamics. In the process of succession the communities of *Molinio-Arrhenatheretea* replace the communities of *E.-M.* v. *typicum*, while the communities of *Festuca-Brometea* change *E.-M.* v. *Carduus acanthoides*.

As. *Tanaceto-Artemisietum vulgaris* BR.–BL. 1949

ISG: *Achillea millefolium*, (+) *Artemisia vulgaris*, *Cirsium arvense*, *Dactylis glomerata*, *Daucus carota*, *Elytrigia repens* (Table 1).

This heliophilic association is frequent in the whole Europe.

Habitats. 1. Loamy abandoned plots: landfills, ruins, railway junctions, open pits. 2. Alluvium soils in river valleys [12,13].

Species richness. The constant/accidental species ratio is 1 : 10 in the association. The ratio has been increased in comparison with the previous association. It could be a consequence of a more severe competition.

Syntaxonomic structure. Most significant classes in the association were: *Artemisietea vulgaris* LOHM., PRSG. et TX. in TX 1950 em. KOPECKÝ in HEJNÝ et al. 1979, *Chenopodietea* BR.–BL. in BR.–BL. et NEGRE 1952 em. LOHM. et J. TX., R. TX. ex MATUSZKIEWICZ 1962, *Molinio-Arrhenatheretea*. The association corresponds to the analogous association spread in Poland.

Dynamics. The association represents the second stage of succession in the vacant plots. The first

stage of succession was open groups of ruderal plants. Thermophilic communities of the *Molinio-Arrhenatheretea* class with participation of *Arrhenatherum elatius* will change this association in the process of succession.

Plant associations of *Dauco-Melilotion* from the territory of Lithuania are notable for the lack of thermoxerophilic species. Communities of *Echio-Melilotetum* are sufficiently open to the borrowed species that have settled in. On the contrary, the communities of *Tanaceto-Artemisietum* are closed because of a high productivity of the herb layer and *Artemisia vulgaris*, particularly in loamy soil habitats. Communities of *Dauco-Melilotion* are frequent in the whole territory and belong to the type of progressively spreading communities in Lithuania. *Arcetietum lappae* FELFÖLDY 1942 s. l. association of *Galio-Urticetea* PASSARGE ex KOPECKÝ 1969 class is contiguous with *Tanaceto-Artemisietum* and occupied more cold, wet and fertile soils habitats.

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SAJUNGOS *DAUCO-MELILOTION* AUGALŲ ASOCIACIJOS LIETUVOJE

S a n t r a u k a

Straipsnyje apibendrinami duomenys apie sąjungos *Dauco-Melilotion* sintaksonus Lietuvoje, aprašyti keturi šios sąjungos sintaksonai, įvertinti jų botaninės įvairovės, sintaksonominės struktūros, bendrijų dinamikos dėsningumai. As. *Echio-Melilotetum* bei as. *Tanaceto-Artemisietum vulgaris* priklauso progresyviai plintančioms ruderalinėms bendrijoms. Jos koncentruojasi miestuose, o pirminio pobūdžio buveinės yra susitelkusios didesnių upių slėniuose.