



Phytocenology of *Urtica Dioica* L. Species on Shirvan Territory (Azerbaijan)

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Abstract

Modern condition of population of *Urtica dioica* L. species distributed on oriental part of botanical-geographical district of Great Caucasus which regarding to Shirvan territory (Ismayilli, Shamakhi, Zardab, Gobustan, Aghsu districts) of Azerbaijan. Two populations were elected in the territories of each district which *U.dioica* spread, so, cenological situation of 10 populations were assessed and the ontogenesis described, development stages for individuals have been specified. Generally in g_1 , g_2 , g_3 (260-360) phases of the species have been shown that development of populations of *U.dioica* species continues and out of danger of lost within the near future. Considering the importance of food and medicine value of this plants estimated their resources.

Key words: Population structure, ontogenesis, useful plants, *Urtica dioica* L., biological stock

Introduction

It is known that information about present situation about the natural populations of the useful plants should be gathered for nature conservation at first, ontogenetic situation of the plants and inhabitant type and bioecological properties should be investigated [Vedernikova, 2013]. Population and ontogenetic approaches are widely used for valuing the resources of useful plant recently [Ibadullayeva and et al., 2011].

Investigations carried out by us in this area implemented in 2008-2011, had exact route and semi-stationary character. Cenological and ontogenetically state of populations spread in the Shirvan territory of different grass fodder plants such as *Urtica dioica* L. species have been learnt. Fresh leaves of needle increases fat content of milk, influence size of poultry positively [Mammadli, 2012]. The plant has been included into edible vegetable plants all over the world [Ipatev 1966].

Material and Methods

Research has been implemented pastures and hayfields, forest glade and meadow vegetation area of Ismailly, Shamakhy, Zardab, Gobustan, Aghsu districts of the Shirvan zone in 2011.

More than 10 populations built on small areas and installed transect systematically and randomly have been valued in different phytocenosis during investigation.

Development Stages of the plant individuals have been defined with help of discrete description conception of the ontogenesis.

Ontogenetically age properties of the plants learnt in researches have been divided into 4 periods.

Latent period - reflects forming of the seed after insemination and its morphological properties;

Virginal period -development and growth changeability's of plants connected with age: germination, juvenile, young and mature vegetative plants (until blossoming);

Reproductive period - it covers young, middle and mature periods it flowers but does not yield fruit, blossoms, but does not set qualities seed, blossoms and sets qualitative seed;

Senil period - reflects changes occurred in the last years of the life cycle of the plants;

The following population parameters were used in integral characterizing of demographical structure of plants, calculations were carried out by using general accepted evaluation measures of ontogenesis (table 1.), age [Uranov, 1975] and effectiveness [Zhivotovsy, 2001] indexes were calculated, hereby, development stages of plants were completely defined.

During geobotanical researches in populations of modern situation in some populations of species and evaluation of cenopopulations (spelling method of phytocenosis was based on B.A.Yurseva [1975] and nomenclature of phytocenological complex was based on Beydeman [1974]. Plant stocks have been specified [Krilova et al., 1971].

Route and sub-stationary investigations had been carried out exactly, population structure of the studied species, their importance in formation and associations, abundance and the number of individuals included all phase of the ontogenesis have been learnt.

Table 1: General accepted evaluation measure in the ontogenesis

Index of the Ontogenetical situation		Agemark
se	Seed	0.0025
p	Sproud	0.0067
j	Juvenil	0.0180
im	Immature	0.0474
v	Virginal	0.1192
g1	Younggenerativ	0.2700
g2	Maturegenerativ	0.5000
g3	Oldgenerativ	0.7310
ss	Subsenil	0.8808
s	Senil	0.9529

Experimental part

During Investigation, expedition and field treats were carried out in Shirvan territory, it was defined that Urticaceae Cuss. - one of the 3 species of the *Urtica* L. - Nettle genus that includes Urticaceae spread in the territory: *Urtica dioica* L. two housed nettle

Urtica dioica L. is a 130 cm shrub with 2 housed, covered with stinging hairs. Its leaves egg or heart shaped, edges is large toothed. Flower group being broomed has settled on receptacle of the flower. It blossoms and sets seed from may to semptember.

It grows near forests, ruins, in the gardens and shrumbs.

It is known as fodder crop for a long time. In form of silos is eaten by all kinds of poultry and domestic animals.

Moreover, a nettle is a fiber, herb and vitamin plant. It is gathered for its useful features, food and fodder importance. Therefore, it is aimed to learn bioecological properties of *U.dioica* specie spreading in Shirvan territory.

Investigations have been carried out in spring-fall seasons, in all phases. Role of U. Dioica species in the vegetation and phytocenological system learnt, it turned out that, the plant especially involves mesophyte ecological group and is one of meadow, flood-lands elements. It has been determined during Expeditions that it covers in local form among different grass and shrubs, blackberry shrubs, sandspurrys and barley in mountain dark gray-brown soils of the Shamakhy district of the Shirvan territory, in structure of different grass in shrumbs, forest, and meadow of the Ismailly district, inclined slopes of of Gobustan, in gray-meadow soils of Zardab district where cultivated Lucerne, durra, plantain, sandspurs etc., in meadow-gray soils of inclined lowland of Aghsu district with freckles plantain, liquorices, etc., alluvial meadow-forest of the Yevlakh district.

Ontogenesis of *U.dioica* has been described and development stages of plant individuals have been specified in 2011. Compare criteria of plants introduced by taking notes in periods of Immature (im) virginil (v), young generative (g_1) middle age period (g_2), mature (g_3), subsenil (ss) and senil (s).

In the result, senological state of 10 populations being 2 population from each district in Shirvan territory were assessed by methods systematically and randomly in different phytocenoses (table 2). Based on investigation method, structure of the their ontogenesis has been learnt by materials gathered from different phases of the ontogenesis (fig. 1).

Table 2:Structure of the ontogenesis of the Urticadioica species In Shirvan region 2011

Period	thenumberofcenopopulation										Total	
	1	2	3	4	5	6	7	8	9	10	Σ	%
1 j	13	16	10	12	19	10	14	15	11	17	147	10,02
2 im	3	11	7	27	21	0	0	11	43	21	144	9,81
3 v	6	17	8	16	17	18	13	11	7	29	142	9,67
4 g_1	11	23	11	12	45	32	23	37	32	34	260	17,72
5 g_2	14	32	16	23	54	15	28	46	59	45	333	22,69
6 g_3	17	19	13	19	39	36	25	39	56	46	309	21,06
7 ss, s	2	3	23	4	11	43	8	5	11	23	133	9,06
Σ	66	121	88	113	206	150	111	164	223	225	1467	100

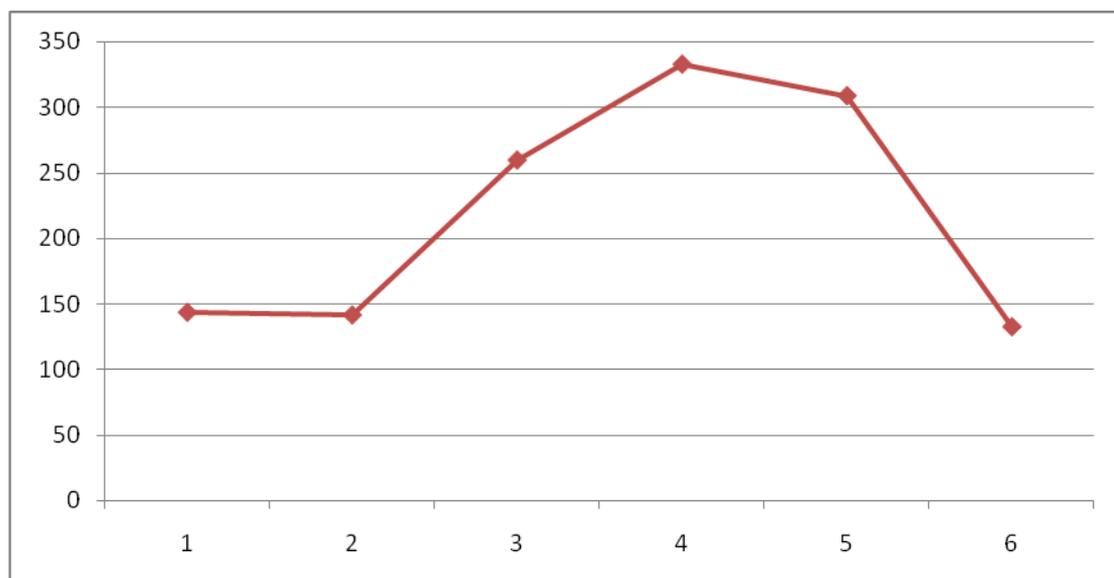


Figure.1 ontogenetic state in the population

Individuals in generativ development phase (g_1 - g_3 4sp. 5sp 6sp) of the ontogenesis is mostly characteristic for all populations as shown from table and diagram and at the same time the number of the individuals is 2-3 times more than other periods. in some populations for example in 3, 6 and 10th populations juvenile phase were not defined and even in the 3rd and 6th populations the number of subsinil and sinil individuals were more (23 at the 3rd and 43 at 6th). However, being more g_1 , g_2 , g_3 (260-333) shows that, development in *U.dioica* populations continues and cannot be at risk of extinction within near future. Population structure of this specie had been learnt in the other regions of Azerbaijan before us and results were similar [Ibadullayeva et. al 2013]. Although Urticadioica specie is used as food, fodder and medicinal plant by local communities, it is not at risk of diminishing.

Age and efficiency indexes of ontogenesis of *U. dioica* cenopopulations were calculated and illustrated in the table 3.

Table 3:Age structure of *Urticadioica* populations

SP	SP type	Growth phases of the ontogenesis, general %							Indexes	
		j	im	V	g ₁	g ₂	g ₃	ss, s	Δ	Y
1 2 8	Completely mature	8,4 4,5 6,2	12,3 20,9 10,4	9,8 19,1 16,7	27,2 21,27 16,7	26 33,1 18,8	33,3 17,6 31,8	7,7 5,6 25	0,58 0,53 0,44	0,42 0,61 0,54
3 9	Mature	0 0	6 20,9	6,7 12,1	12,7 22,3	13,6 11,6	19,0 6,2	18,2 11,4	0,43 0,28	0,22 0,21
4 5 10	Transition	50,2 63,8 14,1	20,5 13,7 10	11 6,9 26,2	8,6 4,2 19,0	6 7,8 11,7	2,2 3,6 12,1	1,5 2,3 6,9	0,28 0,29 0,27	0,22 0,21 0,46
6 7	Young	41,1 18,9	24,6 64,6	20,1 0,9	4,5 4,6	6 7, ,8	2,2 3,2	0 0	0,08 0,09	0,71 0,77

As it seen from the table, all groups of the ontogenesis of the populations are common, they are 6-7 young populations and have high effectiveness index ($\omega=0,71;0,77$). 3-9 cenopopulations are mature ($\Delta=0,28; 0,43$) efficiency is weak.

In transition cenopopulations (4, 5, 10) parameters (10-50.2 %) of j, im and v phases are more than generative phase (2,2-12,1 %), there are also individuals in senil phase (1.5, 9%). Therefore, effectiveness of the population is not high (0, 21-0,46). However, continuation and effectiveness of the population are visible in the future.

It is possible to get complete information about plant resources thanks to learning the economical importance of plant stock and cenopopulation. As rosette leaves of the investigated plant are used as food, budding and mature phases have comprehensively learnt (table 4).

Table 4:Productivity of the *Urticadioica* species in different phases of the ontogenesis (hec/kg, wetweight)

SP	Districts	Young period	Mature period
1	Ismaily	312,1 ± 40,9	421,1 ± 40,2
2	Ismaily	260,1 ± 28,9	340,00 ± 20,10
3	Shamakhy	165,00 ± 10,00	255,20 ± 23,30
4	Shamakhy	164,5 ± 21,5	196,45 ± 19,9
5	Zardab	164,12 ± 16,8	178,00 ± 14,67
6	Zardab	146,30 ± 8,44	268,30 ± 25,3
7	Gobustan	117,4 ± 11,33	190,00 ± 15,38
8	Gobustan	116,6 ± 11,33	124,6 ± 21,45
9	Aghsu	98,00 ± 10,18	154,00 ± 13,19
10	Aghsu	95,78 ± 10,60	110,40 ± 16,58
	Total	1475,75 ± 80,67	2238,05 ± 230,08

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