ROLE OF STUDENTS IN ECOLOGICAL SITUATION IMPROVEMENT IN BIG INDUSTRIAL CITY

Tatyana Yu. Lykholat

Junior Scientific Academy of Dniepropetrovsk National University, Naucovy Bystr., 13, Dniepropetrovsk, 49050, Ukraine e-mail: anders@ banknew.dp.ua

Abstract

Information about contemporary state and basic directions of vegetable populations changes on territory of industrial enterprises, empty lot, waste land in the housing zones of cities is necessary for prognostication of remainders development of zonal vegetation too. Knowledge of grass cover structure enables not only to improve upon ecological conditions, but to develop practical arrangements on wrestling with quarantine, allergic species, systematic use of other resistance species. It has been found out under industrial pollutants influence flora poverty and destruction of structure ascending phytocenosis had taken place. For necessity of prevention of biological contamination of the country by undesirable adventive plants task of practice consists in regulatory human activity directed to the maximum rescue to useful species and on annihilation of harmful plants, or creation for its of inauspicious conditions. One of most effective arrangements for this aim, and also for of ecological stabilization of the environment, economic and aesthetic expediency is creation of continuous sod from aborigine species. Plants assortment, steady in the environment conditions contaminated followed industrial activity, and also such, that declared oneself positively in the gardening of empty lot, waste land in housing zones and territories along big traffic route is offered.

Introduction

Antropogenic pressing action caused town building, human activity in industry, transport, forestry, agriculture and other on all of biosphere elements brings on significant changes into ecological systems including vegetable cover. In obedience to literary sources a vegetation on city territory was learned in some regions on the tree and bush vital forms (1). There are investigations on flora of the town territory and its suburb (2). Aim of presented work was identification of role of adventive plants for selected the plants resistanced in the contamined condition of the city for forming of decorative vegetable cover on techogenic territories. Objects of the research were grassy species grown into natural phytocenosis on urbanize territories. Geobotanic description of examined areas was realizabled on accepted methods (3).

Results

In result of carried out researches we have found out that under trow out of industrial enterprises and aggregate of other local factors on vegetation flora poverty and destruction of structure ascending phytocenosis had taken place.

In grass cover of investigated territories Asteraceae family (34% kinds, from which majority is ruderants forming grassy cenosis) is the most widespread. Asteraceae family representatives compose such row of fertility decreasing in these cenosis: Ambrosia artemisiifolia L., Erigeron canadensis L., Cichorium intybus L., Taraxacum officinale Webb ex Wigg., Picris hieracioides L., Crepis tectorum L. Majority of these plants are ruderants. Ambrosia artemisifolia and Erigeron canadensis are the most

spreading among them. North-American advent - Grindelia squarrosa (Pursh) Dun. belongs to this family. Now this plant is the zones close-fitting to the railroad. Update Artemisia tournefortiana Reichenb is spreading on inspected territories. This plant is relatively new for Ukraine flora.

Poaceae family (26% kinds) occupies the second place. Its various taxones take place in forming of steppe and meadow groupments. Among them Elitrigia repens (L.) Nevski, Poa angustifolia L., P. Compressa L., Agropyron cristatum L are the most widespread, which ordinary are phytocenosis eduficators. Considerable part of this family are ruderants, such as Setaria viridis (L.), Beauv., S. glauca (L.), Beauv, Ehinochlora crusgali (L.), Beauv. and others. In natural conditions of Ukraine Festuca rubra L is usual in the Polesya, the Carpathians, the Forest-steppe. In industrial zone of Dniepropetrovsk (big industrial city of Ukrainian South) this kind is met as separate individual and “patches " as “fugitive" from grass-lawns.

Fabaceae family occupies the third place, Caryophyllaceae – the fourth, Brassicaceae – the fifth, Chenopodiaceae – the sixth ones. Fabaceae family includes the cargo kinds of Coronilla, Desmodium, Lathyrus, Lotus, Medicago, Melilotus, Trifolium, Vicia; Caryophyllaceae - Arenaria, Gypsophilla, Saponaria, Silene, Stellaria; among Chenopodiaceae Atriplex, Chenopodium are met more frequent than others, Kochia presents something rare. Poligonaceae uniting Poligonum and Rumex cargos is on 7th place. Cargos of Amaranthaceae families, Apiaceae, Plantaginaceae, Rosaceae devoid the eighth place. Next on kinds amount are Boraginaceae appearances, Euphorbiaceae and Scrophullariaceae. The rest (Balsaminaceae, Convolvulaceae, Cucurbitaceae, Cuscutaceae, Cyperaceae, Dipsacaceae, Hypericaceae, Lamiaceae, Onagraceae, Resedaceae, Rubiaceae, Santalaceae, Solanaceae, Violaceae) are represented by one species (table).

The carried out supervisions showed a change of flora composition and structure of the grass cover in comparison with native vegetation in this region (4). Feather-grass disappeared quietly. In the first half of summer Poa angustifolia prevails among cereals. In second half of summer groupments with Polygonum aviculare L. are prevailing, P. convolvulus L., Astemisia absinthium L., and vulgaris L. form, which characterize by intensive growth and development. In grass cover Festuca valesiaca meets as the rest. It’s possibly that transformation of Festuca on industrial territories will continue into reinforcing and superiority’s of rubbish species. Hereafter is possible further quantity abbreviation other typical plants of steppe also, which still presence in here. The negative consequences of this phenomenon displayed in lowering of samples of majority of the species, in reproduction methods change and self-support, in transformation of cenopopulations age state spectrum. In the first, its viability and composition are caused by factors influencing on circulating seed and peculiarities of vegetative reproduction (1). However these aspects of populations functioning expose to the most deformation under antropogenic factors pressure.

On techogenic territories from phytocenosis peculiarities we must determine dominate role of steppe density sod and rubbish root cereals, part of which together from by majority of variety grasses is obligatory in this conditions. Thus, projective coverage and productivity grass cover considerably are determined by Elytrigia repens, which is more steady to antropogenic loading than other species.

Information about contemporary state and basic directions of populations changes on territory of industrial enterprises, empty lot, waste land in the housing zones of

Table

QUANTITATIVE INDEXES OF LEADING FAMILIES IN FLORA OF TECHNOGENIC TERRITORIES OF INDUSTRIAL ZONE

№	Family	Amount of family, %	Amount of family, % of family appearances %
1	Asteraceae	29	34
2	Poaceae	16	26
3	Fabaceae	8	10
4	Caryophyllaceae	5	8
5	Brassicaceae	7	7
6	Chenopodiaceae	3	5
7	Polygonaceae	2	4
8	Apiaceae	3	3
9	Rosaceae	3	3
10	Amaranthaceae	1	3
11	Plantaginaceae	1	3
12	Boraginaceae	2	2
13	Euphorbiaceae	1	2
14	Scrophullariaceae	2	2
15	Balsaminaceae	1	1
16	Convolvulaceae	1	1
17	Cucurbitaceae	1	1
18	Cuscutaceae	1	1
19	Cyperaceae	1	1
20	Dipsacaceae	1	1
21	Hypericaceae	1	1
22	Lamiaceae	1	1
23	Onagraceae	1	1
24	Resedaceae	1	1
25	Rubiaceae	1	1
26	Santalaceae	1	1
27	Solanaceae	1	1
28	Violaceae	1	1

cities is necessary for prognostication of remainders development of zonal vegetation too. Knowledge of grass cover structure enables not only to improve upon ecological conditions, but to develop practical arrangements on wrestling with quarantine, allergic kinds, systematic use of other resistance species. For example, there are sizably medical plants in ruderal flora composition, however in tie from by considerable accumulation by its of toxic substances its can be used only for further

reproduction in ecologically clean conditions. Ruderal vegetation cenosis are depository of many of fauna spokesmen that is importantly also for environment keeping.

Conclusion

For necessity of prevention of biological contamination of the country by undesirable adventive plants task of practice consists in regulatory human activity directed to the maximum rescue to useful species and on annihilation of harmful plants, or creation for its of inauspicious conditions. One of most effective arrangements for this aim, and also for of ecological stabilization of the environment, economic and aesthetic expediency is creation of continuous sod from aborigine species. Settling of grass lawn as the most decorative variant of greensward cover has important sense.

On base of carried out investigation we offer a plants assortment, steady in the environment conditions contaminated followed industrial activity, and also such, that declared oneself positively in the gardening of empty lot, waste land in housing zones and territories along big traffic route. The lawn composed from some species grasses are the most effective, for example,

a) Festuca rubra - 70%, Lolium perenne - 30%;
b) Festuca rubra - 40%, Lolium perenne - 30%, Elytrigia repens - 30%;
c) Festuca rubra - 30%, Lolium perenne - 30%, Poa angustifolia - 40%;
d) Festuca rubra - 50%, Poa angustifolia - 50%.

References

1. Stoyko S.M. Guard of flora world and ecological bases of protected business in Ukraine // Botanic J.- **Vol. 48**, № 36. - P.75-82. (1991).
2. Golubets M.A. Ecosystemology. - Lviv, Ukraine (2000). - 316 pp.
3. Lavrenko E.M. et al. Field botanic. – Science edit, Moscow, USSR (1964). - P. 140-144.
4. Burda P.I. Adventive north-American plants on South Ukraine // East Ecology and noospherology. - **2,** №3-4. P.105-112. (1996).