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THE ALLELOPATHY AND PROBLEMS OF PLANT COMMUNITIES CONSERVATION

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Abstract:

CHIRCA E., SORAN V., 1982, The allelopathy and problems of plant communities conservation. Not.bot.hort.agrobot., Cluj,XII, 45-47. Based mainly on Russian scientific literature ideas regarding the linkage of individuals in a "Life System" (community) realized by means of allelopathy are presented. The publication represents a preliminary note of a larger manuscript on the subject.

Index words: Allelopathy, "Life System" community conservation.

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The theoretical researches made by I.I.SCHMAL'GAUZEN (1946), in the field of insects ecology by L.R.CLARK, P.W.GAIER, R.D.HUGHES and R.F.MORRES (1967) and by V.TIMOFEEV RESOVSKII, A.V.YABLOKOV and N.V.GLOTOV (1973) lead to the conclusion that inside of ecosystem structure there is an elementary or ultimate unit which was called "Life System". The "Life System" involves the circulation of all substances (Biogeochemical Cycles) within the population of a single species. From this point of view the "Life System" may be understood as the complex made by the population and its environment. With other words the "Life System" is that part of an ecosystem which determines the existence, abundance and evolution of a particular population.

Within "Life System" the individuals show among them many relationships which can be characterized by particular effects. At the level of primary producers these relationships, or interactions, are

directed by "calins", i.e. by chemical substances performed in plant organisms. The relationships mediated by calins belong to the allelopathical process. What are the conditions which determine the allelopathy within "Life System"? First of all the distances between individuals, secondly the synchronization of phenophases and thirdly the synchronization of basal ecophysiological processes as transpiration, absorption of water and minerals and photosynthesis.

The existence of "Life System" at primary producers level is more obvious in the woods. The groups of trees made by individuals of similar age show better the existence of "Life System".

The linkage of plant individuals in a "Life System" is possible only by allelopathy. In this case allelopathy is the main process which links together many structural unit of the ecosystem.

The conservation of any system, as A.A. LYAPUNOV (1972) has shown, depends on conservation of their reactions and processes.

The allelopathical process is the main part of dynamic life of plant communities and it is subjected to the law of conservation of reactions and processes. Till now, it is almost unknown, the effect of fertilizers and herbicides (pesticides) on the conservation of allelopathy. Therefore it is necessary to use chemicals with highest caution within natural ecosystems and forbid them all within natural and scientific reserves.

The allelopathy must be therefore preserved if we want to have a natural ecosystem. The preservation of allelopathy depends on the size of preserved areas. It can not be used as a measure of determining the size of preserved areas, the diversity or the biogeochemical cycles, but the allelopathy is in many ways linked to the increase in diversity and normal turnover of biogeochemical cycles.

The allelopathical process is a biochemical and an ecophysiological process in its essence. Therefore, it is very sensitive to the changes in physical factors and also in chemicals spread abundantly throughout the plant communities.

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