

ADAPTATION OF PESTS FOR URBAN ENVIRONMENT - SPEED, POSSIBILITIES AND LIMITS

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Abstract The number of organisms living within urban biocenosis increases. Assimilation of urban biocenosis by pests is a process of microevolution. It has limits. Qualitative limits are determined by the Vavilov law. Study of close species adaptation, we may predict adaptive potencies of all families. e.g. existence of *Aedes* species in urban biocenosis suggests possibilities of existence by *Culex* and *Anopheles* species at the same niche. Quantitative variability may be predicted by mathematical models, which can predict possibility of pests to adapt in the urban environment. Under stress conditions, variability increase. Stress conditions may be produced by pesticides. Hence, struggle with pests may have negative effects.

Human activity produce new pests both in synanthropic and natural biocenosis. Resistance and homeostasis of every biological system is higher than disruptive possibilities of humankind. Local disasters lead to suffocation of many organisms. The global ecology, however, suggests that free places are filled. Even the most considerable ecological disasters are unable to significantly change the mass of the biosphere. A reduction of the mass in one place is always compensated by an increase in another place. An increase of anthropogenic pressure in Western Europe, has resulted in a significant decrease in the combined mass of animals and plants. At the same time, the opposite processes take place in European Russia. The number of organisms increases.

Appearance of a new pest is an example of natural resistance against anthropogenic pressure. We must keep in mind the following ecological principles: 1) There are no free ecological niches; 2) Every population, suffocated by man, would be exchanged by another one; A new biological object may be more useful or more dangerous than the old one. 3) The general stability of biosphere doesn't mean stability and prosperity of any concrete species including *Homo sapiens*.

Management of redomesticated vertebrate pests must be based on methods of three sciences: Ecology, Genetics and Ethology.

Use of pesticides and physical agents having toxic effect needs taking into account the following points:

1. Pesticides and physical agents of the same activity act not only for pests, but for all ecological systems including human organisms.
2. The agents act on the genetic system of pests and stimulates their adaptation.
3. Decrease of pest fertility in present generation may be compensated within future generations.
4. Decrease of pest population may be compensated by increase of other species population. This population may have harmful effects on humans too.
5. Effective struggle needs complex approach including chemical, physical, mechanical and biological methods.