

**МЕЖДУНАРОДНАЯ И РОССИЙСКАЯ РАБОЧИЕ ГРУППЫ
ПО ПРОЕКТУ ЮНЕСКО „ВИД И ЕГО ПРОДУКТИВНОСТЬ В АРЕАЛЕ”**

ЗООЛОГИЧЕСКИЙ ИНСТИТУТ РАН

**БИОЛОГИЧЕСКИЙ НАУЧНО-ИССЛЕДОВАТЕЛЬСКИЙ ИНСТИТУТ
САНКТ-ПЕТЕРБУРГСКОГО ГОСУДАРСТВЕННОГО УНИВЕРСИТЕТА**

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**POPULATION STRUCTURE OF WHITE CLOVER (TRIFOLIUM REPENS L.)
IN NORTH-WESTERN RUSSIA AND WESTERN SIBERIA**

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To compare population variability of white clover according to V-leaf markings in two regions of the range of species is the purpose of our studies. These regions differ in history of population coming into being which is caused by the local peculiarities of anthropogenic influences on the corresponding area.

Suburbs of St. Petersburg (the North-West of Russia) represent vast park zones which suffer a lot from various industrial and agrarian influences which gradually increased from the beginning of the XVII century. The Middle Ob River (Western Siberia) on the contrary was practically free from any anthropogenic influences until the beginning of exploitation of rich oil resources in the middle of the 60-ies of the

XXth century; so, we can say that invasion of *Homo sapiens* and cardinal change of the landscape began 30 years ago.

The leaves of white clover are characteristically marked with white or light grey V-shaped bands which are confined to the upper surface of the leaflets. The pattern of markings is determined by series of V-locus alleles (Brewbaker, 1955; Carnahan et al., 1955). It is, however, necessary to note that the results were obtained while crossing distinctly different forms with clear markings or while crossing those with plants without any markings. Apparently selection of modifiers which influence penetrance and expressivity of markings takes place in natural populations. Extremely contrasting forms are very seldom in nature. In reality we observe continuous variability, so errors of genotype identification which are made by different investigators reach tens of percentage. Moreover, penetrance and expressivity of markings depends on the age of leaves, humidity and temperature during their growth, etc. That is why even diagnostics of presence or absence of markings demand methodical accuracy.

Young, completely developed leaves were gathered during clover flowering in the early summer and late autumn of 1989. Taking into consideration the possibility of white clover vegetative propagating minimum distance of 4—6 metres was set between the sample plants. Each sample was represented by 3—6 independent subsamples. As a rule, one and the same leaves were examined by several investigators.

The following results were obtained. St. Petersburg suburbs: the village of Tamengont — the number of sample plants is 333 and frequency of plants without markings is 9,3 %; the railway station Bronka — 318 and 6,0 %; Biol. Res. Inst. — 597 and 9,9 %; the village of Petrovskoe — 299 and 7,4 %; the village of Gostilitsy — 339 and 6,8 %; the village of Belogorka — 149 and 14,1 %; Pavlovsk — 324 and 4,0 %; the railway station Luban — 300 and 6,7 %; the railway station Peri — 330 and 8,0 %, respectively. The Middle Ob River: the village of Old Surgut — 212 and 13,6 %; the Ob River crossing at Surgut — 201 and 16,4 %; the village of Cheuskino — 243 and 20,3 %; the village Vysoky Mys — 243 and 3,7 %; a new settlement of Poikovskiy — 340 and 11,8 %; the village of Lempino — 265 and 1,5 %; the village of Sytomino — 223 and 5,8 %; the village of Zenkovo — 218 and 6,4 %; the town of Khanty-Mansyisk — 272 and 12,5 %; the village Semeyka — 617 and 7,1 %; the town of Gornopravdinsk — 234 and 6,8 %, respectively.

We can see that the average frequency of plants without leaf markings in the both regions is almost the same: 8,0 % in the North-Western part of Russia and 9,3 % in Western Siberia. In both cases populations are homogeneous: frequency differences between subsamples from the same population statistically are not significant. However, variability structures appear to be completely

different: in the North-Western part of Russia interpopulation differences are not available; as to Western Siberia they are highly significant, and intraclass correlation exceeds 0,5.

We suppose that availability of interpopulation differences in Western Siberia and their absence in North-Western part of Russia may be explained by the history of coming into being these two population groups. In Western Siberia the majority of the populations are relatively young, they appeared in the recent decades due to exploring oil region. White clover grows there in conditions which are not native for that region: in new ecological niches, generally on raised, artificial lands. Since white clover spreads through vast territories by people and domestic animals, we suppose that few seeds were brought there and gave birth to a corresponding population. Historically determined transfer of seed led to increasing of a few genotypes in each case. Those genotypes became „founders” of new populations. As to North-Western part of Russia we can speak about old, settled for decades populations which were exchanged not once by seeds with the help of people and animals. This process is supposed to equalize gene pool of various populations.

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