

The common reed in the Chernobyl accident Exclusion Zone: morphometric, cytogenetic and parasitologic studies

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The main purposes of our research were to assess the abnormality rate of common reed's reproductive organs to reveal possible morphological changes, to evaluate the chromosome aberration rate in root meristems and to analyse the morbidity of plants by the ergot (*Claviceps purpurea*) and by gall-producing arthropods in water bodies with different levels of radioactive contamination within the Chernobyl accident Exclusion Zone. The main water bodies were Glubokoye Lake and Dalekoye-1 Lake, Azbuchin Lake and Yanovsky Crawl, cooling pond of the Chernobyl NPP as well as Pripyat River and Uzh River. Average absorbed dose rate was found from 0.022 to 0.120 Gy/year for the reed from littoral and sublittoral zone of investigated water bodies: Chernobyl NPP cooling pond (0.022); Yanovsky Crawl (0.037); Azbuchin Lake (0.046); Dalekoe-1 Lake (0.053) and Glubokoe Lake (0.120). The highest rate of the absorbed dose was found for the lakes of the left-bank dammed floodplain of the Pripyat River (Dalekoe and Glubokoye), which are the most radioactive contaminated territory within the Exclusion Zone. Performed studies indicate the existence of authentic morphometric and morphological abnormalities of reproductive organs of the common reed. The most typical abnormalities are decreasing of average reed panicle length and width, decreasing of the number of flowers of a low-level blossom cluster and also modification of the shape and colour of the seeds in comparison with standard parameters for the common reed of Europe's middle latitude. The highest chromosome aberrations rate in root meristems of the common reed (17.8-10.8 %) were registered in plants from lakes within the left-bank flood lands of the Pripyat River, the lowest one (4.5-2.2 %) - in plants from the Pripyat River and Uzh River. The high level of parasitic fungi (*Claviceps purpurea*) and gall-producing arthropods (*Steneotarsonemus phragmitidis* and *S. gibber*) lesion in the most contaminated water bodies within the Chernobyl NPP accident exclusion zone was registered. The damage events of common reed by larvae of gall fly of family Chloropidae, genus *Lipara* has been considered as well. Above mentioned phenomenon may testify upon the decreasing of the parasitological stability of the common reed under impact of long-term radiation exposure.