

УДК 502(477)=111

THE ABILITY OF PLANTS AND ANIMALS TO ADAPT TO RADIATION IN THE TERRITORY OF THE CHERNOBYL ZONE

Zavolokin D., III сAI

Kuleshov S.A., language advisor

Tavria State Agrotechnological University

e-mail: d_zavolokin@mail.ru

e-mail: sergius.kul7@gmail.com

The Chernobyl disaster was a catastrophic nuclear accident. It occurred on 25–26 April 1986 in the No.4 light water graphite moderated reactor at the Chernobyl Nuclear Power Plant near the now-abandoned town of Prip'yat, Ukraine. The article provides information about the ability of plants and animals to adapt to radiation in the territory of the Chernobyl zone.

Чорнобильська катастрофа була жахливою ядерною аварією. Це відбулося 25-26 квітня 1986 року у реакторному енергоблоці №4 на Чорнобильській АЕС поблизу нині закинутого міста Прип'ять, Україна. У статті представлена інформація про здатність рослин та тварин адаптуватися до радіації на території Чорнобильської зони.

Scientists have discovered mechanisms that allow plants to cope with radioactive contamination in a closed area around the Chernobyl nuclear power plant.

The research team, which published the results of its work in the Environmental Science and Technology journal, studied the behavior of soybeans and flax.

In 2007, scientists sowed these plants in an extremely polluted area near Prip'yat - a town of workers of the Chernobyl nuclear power plant, which had become empty after the accident. At the same time, the researchers put soy and flax seeds in the ground, cleaned of radioactive contamination. It turned out that in a short period of time plants managed to adapt to the conditions of high radiation, there were almost no differences from normal ones – except a 5% difference in protein level. The scientists believed that it probably protects against radiation. And they still doubt that the Chernobyl plants are eatable. Working in Chernobyl, the scientists found out that the secret of vulnerability of various species from radiation contamination is depends on their DNA. "It's incredible how quickly this ecosystem managed to adapt," Martin Hajduh, the member of the research group, told BBC.

After the accident at the Chernobyl nuclear power plant in 1986, many experts assumed that the contaminated zone around the station would remain "scorched earth" for many years, on which neither animals nor plants survive.

Experts suggest that plants were fairly easy to "get used" to the new radioactive conditions, since millions of years ago life on Earth was already forced to fight high doses of radiation. And the events at the Chernobyl nuclear power station could bring to life these ancient mechanisms.

"Probably there are already some algorithms in the plants, on Earth there was always radiation – from the first stages of the formation of our planet," Hajdukh said. "At that time, the level of radiation on the earth's surface was much higher than now. It allowed to develop the present resistance mechanism."

However, in the 30-kilometer exclusion zone, including the cities of Prip'yat and Chernobyl, not only plants began to develop rapidly, but there was also a lot of wild animals. For 32 years, most of the zone remains deserted, except for the Chernobyl nuclear power plant and Chernobyl, where the liquidators work mainly. Therefore, wild inhabitants of forests and meadows are not afraid of man and in those rare cases when they encounter him, they willingly go to contact. Przewalski's horses, released in the zone shortly after the accident, multiplied, and now they can be seen next to the domestic horses of the Chernobyl part of the Emergency State Service of Ukraine that are also grazing in the zone. In the rivers contaminated zone - a large number of fish of different

species. One of the largest populations has a chub. Shoals of fish can be seen by simple throwing a piece of bread into the water.

The subdivision, which deals with the zone of alienation and protects it from fires, has a zoo - rescuers transfer animals in need of help.

Those who suffered from fire, were injured, or left without parents' cubs.

Now you can see both domestic and wild representatives of the fauna: horses, pheasants and other birds that live in Ukrainian Polissya. Therefore zoo corner is popular among visitors of the zone. Biologist Sergey Gashchak from the Chernobyl Center for Nuclear Safety installed the photo-traps in the area. For three decades, the species diversity of the zone has changed dramatically. Even the gray stork, brown bear and other species returned here, which were considered rare visitors in these parts, biologists admit. Large mammals include wild boar, deer, roe deer, moose, wolf, fox, hare and others. Radioactivity, which in the zone is still a serious threat to humans, has little effect on the development of populations of animals and plants. Therefore, in the zone "the life of nature is rapidly reviving," except for certain areas with high levels of radiation, says Yaroslav Movchan, chairman of the board of the National Ecological Center of Ukraine. One of the most dangerous territories is the so-called Red Forest: the area near the route to Pripyat, which got a lot of radionuclides in the first days of the accident, destroyed all vegetation. But even here, young pine trees grow, planted by a man. However, visiting this zone is still dangerous for a human. Here, the level of radiation was the highest one, which is a hundred times higher than the average radiation level in Kiev.

One of the most important tasks of the state is to preserve the natural wealth of the exclusion zone and in parallel to take care of the gradual reduction of the radiation level. Igor Gudkov reports that the anthropogenic pressure on the nature of the exclusion zone has diminished. On vegetable diversity this affects little, and such changes are more difficult to investigate, while the number of almost all animals has increased. The number of foxes, beavers, badgers increases iteratively. For thirty years the number of wild boars has tripled. Now there are reports that bears and bison come from Belarus to the zone. In this situation, the territory of the Chernobyl zone should have only a natural-reserved status.

As a result of the Chernobyl disaster, the nature of the zone is "protected by radiation." And this is a good chance for the restoration of nature in significant areas. In addition, the Pripyat River is a reserve source of water, and the Ministry of Ecology and Natural Resources has already developed a draft of the Chernobyl Biosphere Reserve, which will include most of the natural areas of the exclusion zone, except for the Chernobyl nuclear power plant and enterprises operating in the zone.

References

1. Abbott P. *Chernobyl: Living With Risk and Uncertainty* / P. Abbott // *Health, Risk & Society*. – 2006. – #8.2. – pp.105–121.
2. Yablokov A. *Chernobyl: Consequences of the Catastrophe for People and the Environment* / A. Yablokov, V. Nesterenko, A. Nesterenko // *Annals of the New York Academy of Sciences*. – Wiley-Blackwell, 2009. – 400p.
3. Karpan N.V. *Chernobyl. Vengeance of peaceful atom* / N.V. Karpan – Dnepropetrovsk: IKK "Balance Club", 2006. – 566p.