

The effects of radioactive substances on plants: how to reduce negative impact on health

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Анотація: В статті розглянуто шкідливі впливи радіоактивних речовин на рослини, запропоновані можливі шляхи зниження негативного впливу на здоров'я людини.

Ключові слова: радіоактивні речовини, радіоактивне забруднення, розсіювання, осадження, спосіб життя, хімічні властивості.

Abstract: The article considers the harmful affects of radioactive substances on plants. The possible ways of reducing negative impact are suggested

Keywords: radioactive substances, radioactive contamination, dispersion, deposition, life-style, chemical properties.

Introduction

Radioactive substances enter plants in two main ways: contamination of plants with radioactive substances that settle directly on plants from the atmosphere and assimilation of radionuclides from the soil by plants. A significant role is played by the dispersion of radioactive substances: the larger the particles, the less they are retained on plants.

Basics

The levels of radioactive contamination of plants depend on the concentration of radionuclides in the atmosphere and the intensity of their deposition. The degree of fixation of radionuclides by plants is affected by chemical properties. The most mobile radionuclides, primarily iodine and caesium, enter plants. The retention of radioactive substances by plants increases with the growth and development of vegetative mass, with the horizontal arrangement of leaves and stems and the presence of resinous deposits. When plants are affected by radioactive substances in spring and summer at the time of their active growth, the content of radionuclides is highest in vegetative organs — leaves and stems of plants. Grain is polluted less and differently in different crops and varieties: more in ears due to direct exposure to radioactive substances, less in legumes and corn. Radiation damage in plants is manifested in inhibition and delay of growth, a decrease in yield, a decrease in the reproductive properties of seeds, tubers and root crops. The nutritional qualities of the crop are decreasing. Severe damage leads to a complete cessation of growth and death of plants a few days or weeks after exposure.

Table 1. Lethal doses of plants radiation in the growing season

Plants	Irradiation dose, rad	Plants	Irradiation dose, rad
Onions	1500	Sugar beets	13400
Oats	3300	Rice	19600

Corn	4200	Linen	20700
Rye	4350	Bean	36000
Barley	4350	Thousands	800
Wheat	4500	Peas	4600
Cabbage	12300	Birch tree	8000
Tomatoes	12400	Red oak	8000
Potato	12600	Red maple	10000

Radiation has become one of the most urgent problems because it may cause changes in human genes and make unpredictable impact on the life of human beings. To reduce the impact of radiation it is suggested to change our eating pattern and consider the following recommendations of adding healthy food to our diet.

1) Protein. It is proved that the composition of proteins includes essential amino acids that accelerate the elimination of radionuclides from the body.

2) Vegetable oil. Lack of vitamin E affects the body's resistance to ionizing radiation, therefore, it is important to include various types of vegetable oil in your diet.

3) Green tea. It is rich in antioxidants that neutralize the activity of radionuclides.

4) Especially useful are berries, fruits and vegetables of yellow and red color.

5) To reduce negative impact of radionuclides on health the daily consumption of fresh juice from fruits and vegetables is suggested.

Conclusion

Nothing on the earth is more important to our survival than the air we breathe, the food we eat, the water we drink. That's why we need to take measures to change the environmental situation. We should check on plant pollution and reduce it by improving technology and imposing strict controls over what is produced in our economy and how. Many obstacles stand in the way of eliminating abuse. We must alter our life-style by directing our consumption patterns into ecologically friendly pathways.

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