Materials of Conferences

NUCLIDE STRUCTURE AND THEIR CONTENT IN FRUITS OF HIPPOPHAE RHAMNOIDESH L.

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Medicinal value and value for dietary food, was important to study content of chemicals in sea-buckthorn fruits. The abiotic stress is important selective force in evolution of cultural plants. Researches on identification of nuclide structure found in the quantities exceeding maximum concentration limit, microdoses shown in the form of traces, in the form of isotope and not isotope values in fruits of a sea-buckthorn of Southern Siberia are conducted. Open agrofitotsenoza and natural ecosystems which they cultivate a frost-resistant gigrofil in different conditions are characteristic of a sea-buckthorn. Fruits of *Hippophae rhamnoidesh L* are researched., sea-buckthorn fitotsenoza and the main products of agrobusiness of the growing Republic central Tuva Depression Tyva.

Content of pollyutant, in fruits of a sea-buckthorn determined by results of the toxicological analysis. The toxicological analysis allows to determine amount of toxic substances and a condition of loading (an indicator – toxic loading) coming to objects. Than less this indicator, especially is eco-friendly and we accept toxic substances [4, 5]. Pesticides, heavy metals, radionuclides belong to toxic substances. It represents the most obvious factor limiting distribution of plants and productivity of a harvest [3]. Open agrofitotsenoza and natural ecosystems which they cultivate a frost-resistant gigrofil in different conditions are characteristic of a sea-buckthorn. Chemicals provide development of plants, are intensively extracted from the soil and with dying off of plants arrive to the soil [1, 2] again. Organic substance of an edafon significantly influences its accumulator function who is created and form in slow-moving complex connections to inaccessible plants. Production of ecologically safe products is possible in an edafonny biotic complex with optimum content of the pollyutant who are not exceeding admissible levels. Value them can be understood, on chemical properties [9, 11]. Pollyutanta of different groups of toxicity are found in waters of the river Elegest and the light brown soil of Chedi-Holsky district where artificial fitotsenoza of a sea-buckthorn are located, in concentration maximum concentration limit is lower. The exception was constituted by cadmium, concentration which in water of the river Elegest I exceeded maximum concentration limit though it was in sea-buckthorn fruits below admissible level [8]. Nature of bushes in natural fitotsenoza of a sea-buckthorn with prevalence of plants of 5–15 years which are during mass and steady fructification [7] is established uneven-age (1–20 years). The most extensive areas of natural fitotsenoz of a sea-buckthorn in Siberia are revealed in Tyva, Buryatia, in Altai [10].

Materials and methods of research. *Hippophae rhamnoidesh L.* were objects of research., fruits of a sea-buckthorn krushinovidny sea-buckthorn fitotsenoza the mouth of small rivers Chyrgaky, Hemchik of Duzun-Hemchiksky district, the mouth of small rivers Torgalyk, Chats, Shagonar of Ulug-Hemsky district and the main products of agrobusiness the growing town of "Saryg-Alaak" of Chedi-Holsky district, the Republic of Central Tuva Depression Tyva. The purpose – determination of quantitative content of radioactive materials and quality of fruits of a sea-buckthorn, as food product. A task – studying of content of mobile forms of radioactive materials in fruits, studying of a condition of landings of a sea-buckthorn and identification of a main type of a pollutant with the exceeding residual quantity in sea-buckthorn sites in the conditions of Tuva. Methods of researches on identification of pollyutant are performed by standard methods in fruit and vegetable products.

Results of research and their discussion. On the basis of the toxicological analysis results are received and mobile forms of the radioactive materials containing in fruits of a sea-buckthorn are determined and their availability is revealed. Receipt them in a plant is expressed in the minimum quantity of a gross inventory of cumulative radionuclides that causes danger of pollution of products rural and forestry. Content and accumulating of nuclide contents happens through a soil and biotic complex on vascular system of plants, and sometimes on air flows, through a sheet surface. Organic substance of an edafon significantly influences its accumulator function who are created and form in the form of slow-moving complex connections with inaccessible substances for consumption by plants. The found indicators on areas, do not reach admissible level. High content of caesium-137 is revealed in the second option, in Ulug-Hemsky district in a phase of maturing of fruits in number of 2,4 Bq/kg that is 0,39 Bq/kg more, than the first option. The found quantity in fruits shows them about its movement on vascular system, in process of intensity of growth

of plants, at the same time process of absorption of substances plants increases. A condition of toxic loading in fruits of *Hippophae Rhamnoidesh L.* minimum. Thus, in case of regular environmental monitoring on content of pollyutant in fruits of a sea-buckthorn it is more reliable to prepare them for dietary food in natural sea-buckthorn (remoteness of fitotsenoz from urbanosisty, showing about low contact with different types of pollutants) and artificial fitotsenoza of a sea-buckthorn, in concentration are lower than maximum concentration limit. The exception was constituted by cadmium, concentration artificial fitotsenoza (observance of technology of cultivation of sortoobrazts, without violation of engineering procedures). The radiological analysis on content of isotope substances in fruits of a sea-buckthorn can draw the following conclusions that radionuclides:

1) are found in the minimum quantities;

2) do not exceed admissible level;

3) in fruits of a sea-buckthorn does not accumulate isotopes.

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ANALYSIS OF ENVIRONMENTAL STATUS OF THE KECHUT ARTIFICIAL RESERVOIR

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For evaluation of water contamination degree the comprehensive indicators are used which take possible to evaluate the contamination of water at the same time on a wide range of quality indicators. The study of ecological status of Republic Armenia Rivers is importance both for evaluation of water quality of that objects and for their further rational use. Development of water quality assessment methods using conventional indicators comprehensively taking into account various properties of surface water is an important issue. It must be noted that most developed complex characteristics of water object in one way or another connected with the existing maximum permissible concentration (MPC).

In the last years we suggest Entropic water guality index (EWQI) and Armenian water guality index (AWQI) for evaluation surface water quality [1].

The aim of presented paper is evaluation of Kechut Artificial Reservoir by Armenian Water Quality Index.

The following computational algorithm is used for determination EWQI and AWQI values:

1. Determines the number of cases of MPC excess of i-substance or indicator of water – *n.*

2. Estimates the total amount of cases the maximum permissible concentration (*N*) – $N = \sum n$.

3. Computes $\log_2 N$, $n\log_2 n$ and $\sum n \log_2 n$.

4. Determines geoecological syntropy (I) [1] and Shannon entropy (*H*):

$$H = \log_2 N - \sum n \log_2 n/N;$$

$$I = \sum n \log_2 n/N;$$

$$H = \log_2 N - I.$$

5. Then EWQI is determined: $G = H/I$.

6. Further, the total amount multiplicity MAC exceedances is estimated (*M*) –

7. Computes $\log_2 M$.

8. Armenian Water Quality Index was obtained:

$$AWQI = G + 0{,}1 \cdot \log_2 M.$$

Kechut Artificial Reservoir on the Arpa River, 3,5 km south of the resort town of Jermuk. Reservoir with an area of 145 hectares, the total amount – 23 million cubic meters, the average depth – 20 m, coastline length – 8,5 km [3]. Kechut Artificial Reservoir has one monitoring post: number 114. It was established that the Kechut Artificial Reservoir water of the regularly exceeded the value of contaminated by some metals. Thus, in the Reservoir water is regularly increased MPC of copper, vanadium, aluminum, chrom, manganese and selenium.