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WATER STREAM HYDROPONICS AS A RADIOECOLOGICALLY PROFITABLE BIOTECHNOLOGICAL METHOD FOR PRODUCTION OF PLANTING MATERIAL

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Artificial radionuclides (ARN, ^{90}Sr - $T_{1/2}=28.6$ years, ^{137}Cs - $T_{1/2}=30.1$ years) dangerous for health are released to ecosystems because of human influence in the field of nuclear energetics. ARN can penetrate into human organism and cause different diseases. At the institute (30km radius zone of the Armenian NPP) a modern system-water stream hydroponics (cylindrical, gully, continuous) with polymeric film usage was worked out for plants soilless production which is cheaper for 5-6 times and is radioecologically more profitable as compared with the existing classical hydroponicums with reinforced concrete plots.

The results of experiments have shown that cylindrical hydroponics in comparison with others modules promoted productivity increase of Sweet Basil (*Ocimum basilicum* L.) 1.3-2.9 times, at the same time increasing the output of essential oils (1.2-3.6 times), extractive substances (1.5-2.6 times), flavonoids (1.4-2.7 times) and tannins (1.3-1.9 times) in the planting material. Activation of most important physiological processes of plant (total content of water (2-10%), content of free water (7-35%) and chlorophyll a+b (11-33%) in leaves) has been clearly noticed in cylindrical system, which along with other factors provides high productivity of Sweet Basil. The results of radiochemical researches have shown that the planting material of Sweet Basil obtained by water stream hydroponics is smaller than the planting material obtained by classical hydroponics with β -sum activity (1.1-1.2 times) and content of ARN (^{90}Sr 1.2-1.3 times and ^{137}Cs 1.3-1.4 times). Probably it happened due to providing the best air-water-heat nutrient regime for cultivation of plants and reducing radioecological tension (reduction of nutrient solution expense, stream method of push, covering of substrates with films, prevention of ARN penetration in substrates and overground parts of plants from the atmosphere). The use of nutrient solution irretrievable push principle and closed ecological system, allows to exclude environmental pollution and minimizes the danger of diseases, spread of pests and weeds. It is important to note that ARN content doesn't exceed the MACL in planting material obtained by classical and water stream hydroponics method. We think these researches will create the prerequisites for including practically unused areas in production sphere and obtain ecologically clear and qualitative raw material which will somewhat solve the environmental and biodiversity problem

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