Some ways of plants wastes utilization in bioregenerative life support systems

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In works on experimental modeling of bioregenerative life support systems (BLSS) carried out at Institute of Biophysics Russian Academy of Science, Siberian Branch (SB RAS) the possibility of increase of a system closure degree under the condition of inedible plant biomass return into the organic matter turnover was demonstrated. At the same time when radish inedible biomass was subjected to biological oxidation in soil-like substrate (SLS) after its drying then wheat straw was subjected to stepwise processing including mushrooms growing stage. Mushrooms cultivation facilitated to lignin destruction and quicker straw decomposition. On the other hand mushrooms growing required additional technological procedures leading to complication of a technological chain of straw processing. The purpose of this work is to study the possibility of exclusion of mushrooms growing stage under straw pretreatment for its further use as an equivalent of radish edible biomass grown on SLS. To solve the problem put by the radish cenosis in a conveyer regime was grown. The conveyer included radish four ages with the conveyer step equal to 7 days. The experiment consisted of two successive stages. On the first stage radish was grown without straw addition into SLS (control). To return mineral elements into SLS the biomass grown was restored in SLS. On the second stage inedible radish biomass and wheat straw were returned into SLS in the quantity equivalent to edible biomass. The possibility of the method described was estimated according to plant productivity, microbiological cenosis state in irrigational water and macroelements content in SLS and irrigational water.