



TECHNOLOGY FOR PREPARING LIQUID ORGANIC FERTILIZER FROM LICORICE ROOT WASTE

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The President of Turkmenistan is tirelessly concerned about ensuring the environmental well-being of the Motherland. Large-scale work in this field gives its positive results [1]. Ecological problems, protection of the environment from adverse technical effects has become one of the most important problems in the world today. It is impossible to imagine the development of any society without waste. Therefore, in recent years, several ecological problems related to waste have emerged [2].

As in all countries of the world, in Turkmenistan, various types of waste are thrown into the environment in various sectors of the economy. One of such enterprises is "Buyan" agro-industrial complex of Turkmenabad. A dry and dark liquid extract is obtained by re-cultivating the root in the complex. An average dry weight of 7,000 tons of root is collected annually in the group. On average, about 3 thousand tons of cut and crushed betel root are prepared, and 1 thousand 300 tons of thick and dry extract of the root are obtained from it [3]. Organic waste from the production process is stored on land. As a result of the processing of the generated organic waste, it will be possible to obtain valuable liquid organic fertilizer (biocompost), which is necessary for agricultural crops. The importance of processing the mentioned industrial waste in improving the ecological condition of Turkmenabat city is very great [4] (figure 1).



Figure 1. Wastes of "Buyan" agro-industrial complex of Turkmenabad

One of the activities carried out in the laboratory of the "Ecological Biotechnology" Scientific Production Center of the Oguz Han Engineering and Technology University of

Turkmenistan on the processing of various types of economic and industrial waste and the production of new products from them is the technology of preparing liquid organic fertilizer (biocompost) from the waste of the root [5].

Preparation of liquid organic fertilizer (biocompost) from the waste of the production waste and using it to increase the productivity of agricultural fields and the growth of crops is of great importance in solving one of the important problems of today [6, 7].

The world-wide technologies for the preparation of liquid organic fertilizers were studied, and as a raw material in Turkmenistan, the waste of the local industrial waste was used. If the transition stage of the production process is small, the technological process of the obtained product is economically favorable.

On the basis of the experiments, the composition of the preparation of bio-compost from the waste of the root was developed. To prepare liquid biocompost, 500 ml of 1% sodium hydroxide (NaOH) solution (1:10 ratio) was added to 50 g of sludge, heated at 150 °C for 3 hours, and 200 ml (used sodium hydroxide) was added to the resulting solution. (40% of a 1% solution of NaOH) is added to distilled water. Then the solution is heated at a temperature of 200 °C until the density of the solution reaches 1.12 g/l. As a result, liquid organic fertilizer (biocompost) is formed (figure 2).



Figure 2. Liquid organic fertilizer from root wastes

Liquid organic fertilizer contains 8-10% humic substances. The proposed technology is economically viable. Liquid organic manure (biocompost) can be widely used to increase the productivity of agricultural fields and the growth of crops.

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