UDC 631.861

BASIC METHODS OF PREPARATION OF ORGANIC FERTILIZER FROM QUAIL MANURE

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In recent years, gardeners and gardeners have chosen the direction of switching to organic farming and abandoning the use of mineral fertilizers [1]. A complete rejection of the use of fertilizers is impossible, since in the process of growth and development, plants actively remove nutrients from the soil, which ultimately leads to depletion of the soil. The introduction of mineral fertilizers allows you to quickly replenish the loss of nutrients, but there are also negative aspects. For example, excessive use of mineral salts will inevitably lead to soil salinity. Also, nitrogen fertilizer mixtures in the form of nitrates and nitrites can accumulate in the vegetative mass and fruits of plants, which can lead to poisoning of humans and farm animals. Every year the keeping and breeding of quails is gaining more and more popularity [2] demonstrating a constant growth in the volume of poultry breeding. Today in Ukraine there are more than 5 million quail livestock. There are large farms in the country with 150-200 thousand heads per farm. Based on this, we propose to feed agricultural crops with the use of processed quail droppings. The work of P. Borshchevsky, A. Waldman, V. M. Dimidenk, M. Sakhatsky, T. Sakhatskaya, E. P. Smirnov, F. A. Yaroshenko and others are devoted to the study of litter processing processes [3]. In the works of scientists, a number of hypotheses have been considered and many ideas have been investigated for the processing of poultry waste. However, the use of processed quail manure as an organic fertilizer in modern trends in the cultivation and consumption of environmentally friendly products in Ukraine is relevant.

The quail's organism is characterized by active growth, as a result of which, with the consumption of 1 kg of feed, we have the same amount of droppings at the exit [4]. So, on poultry farms for the cultivation of these birds, a huge amount of droppings is accumulating, which can be purchased at an affordable price. The value of manure as an organic fertilizer is determined primarily by the content of such substances as nitrogen - 1.3-1.7%, phosphorus - 0.6-0.9%, potassium - 0.5-0.8%. One of the main advantages of quail manure is a high concentration of macro- and microelements in an easily digestible form. Many litter materials are readily degraded by exposure to light, ambient air, moisture, enzymes, and

microorganisms. An excellent medium for the reproduction and vital activity of soil microorganisms that contribute to an increase in soil fertility is composted quail droppings. The disadvantages of quail droppings include a high concentration of uric acid, has a toxic effect on the growth and development of plants. It is well known that it is unacceptable to use fresh manure of any poultry, therefore land owners and tenants use several basic methods of preparing organic fertilizers from manure for use [3].

Composting quail manure is the most common method of preparing organic waste for use [5]. Composting is usually carried out in plastic, wooden or metal containers, and in the presence of a large amount of organic matter, in embankments or pits. Composting using the technology provides for layer-by-layer stacking of quail droppings and other organic matter (peat, sawdust, leaves, plant residues). Fresh droppings and plant waste are laid in layers of 20-30 cm, moistening if necessary. Their decomposition occurs within 30-40 days. The composting process involves repeated mechanical stirring to obtain a more homogeneous mixture. Properly prepared compost should not emit foreign odors (ammonia, rotten grass, etc.).

The greatest efficiency is achieved when composting in the fall, 1-1.5 months before the intended fertilization. Ripe compost is scattered over the site, which requires replenishment, after which the soil must be dug up.

Cultures of effective microorganisms can be used for composting. According to the instructions for use, the product is diluted and added to the container when composting. Preparations of effective microorganisms not only speed up the process of fermentation of the mixture, but also sufficiently increase its quality and efficiency.

There is a technology for producing vermicompost based on poultry droppings – vermicomposting, which consists in processing the dung with the help of earthworms of a special red Californian breed. Over the decades of breeding, the breed is characterized by greater fertility, adaptability to breeding conditions, productivity in the processing of organic matter. In the process of vital activity, the worm absorbs huge amounts of soil and returns it in the form of excrement, enriched with humic acids, enzymes and beneficial microorganisms. Such land can be used for growing seedlings, application during planting, preparation of liquid root and foliar dressings.

Vermicomposting is carried out in special workshops equipped with technological equipment ensuring optimal parameters of the microclimate of the environment (temperature 20 ± 2.5 ° C, moisture content of the compost mass – no more than 70%, pH – 7.0 ± 0.5) vermiculture, which is introduced into the compost in the amount of 30-50 copies per 1 kg of substrate. Vermicompost is ready for use in 2-3 months after laying the Californian worm culture in the substrates.

Vermicompost is considered one of the most effective organic fertilizers, however, when compared with obtaining compost, its preparation requires a lot of effort: 1. Feeding fresh droppings to worms is unacceptable

(compost must be prepared first) 2. Growing a colony of dung worms requires preparing a hole with a depth of 1 to 1.5 meters and a width of 1.5 meters (arbitrary length). Such a pit from the middle is sheathed with boards, filled with compost and a culture of worms is introduced. In the process of processing, it is necessary to monitor the moisture content of the compost, as well as periodically introduce food for the worms.

Quail manure can be used as a liquid plant food [6]. Preparing such a top dressing is quite simple: fresh droppings are placed in a container, where water is added in a 50/50 ratio; the resulting mixture is thoroughly mixed and the container is tightly closed with a lid; after 7-10 days the feeding will ferment and become usable. Fermented manure contains a high concentration of active substances, before use, such a liquid must be diluted: for feeding under the root, 0.5-1 liters of the mixture are taken on a bucket of water, and for foliar treatments, 0.2-0.25 liters of the mixture are taken for 10 liters of water. Liquid top dressing is applied at the rate of 0.3-0.8 kg per 1 m^2. High temperature dried and powdered organic manure-based fertilizers known commercially as «powdered droppings». It is difficult and energy-consuming to prepare «powdered droppings» at home, as this requires special equipment and significant fuel consumption. «Powdered droppings» does not contain pathogenic microorganisms and weed seeds, and is also devoid of toxic substances. Dried quail droppings, in order to increase efficiency, are recommended to be diluted with water (in a proportion of 0.05 kg per 1 m^2). Adding «powdered droppings» for digging is costly, but also effective (in the proportion of 0.25 kg per 1 m^2).

Recently, granules from quail droppings have become widespread [7, 8]. This organic fertilizer has a number of advantages over competitors:

1) contains a full set of minerals and trace elements;

2) there are no nitrates, weed seeds, pathogenic bacteria;

3) contribute to the restoration of the humus structure of the soil layer;

4) the possibility of introduction by a mechanized method;

5) long shelf life, loses a minimum of nutrients in an open package;

6) it is much easier to prepare an infusion for fertilizing irrigation from granular manure than from loose manure, and less water is required for this.

7) there is no unpleasant smell.

Granulated quail manure can be used for dry fertilization or in the form of an aqueous infusion for fertilizing irrigation. Dry is used for fertilization for a long period; the infusion is used as a fast-acting fertilizer. "Dry" application technique is used for filling the soil; infusion - for planned feeding during the growing season.

Dry granules of chicken manure are applied to the soil:

– Immediately before the autumn digging (plowing) of the soil - 100-300 g per 1 sq. m, depending on soil fertility in the past season;

– In the planting holes of trees and bushes – 1.5-2.5 kg per hole, depending on the size of the seedling. The granules are covered with peat

and sprinkled with soil by 0.05-0.1 m and planting is carried out (watering is required during planting);

– In the spring after the snow melts – in the tree trunks and under bushes in a row. Consumption rate: 0.5 kg per 1 m^2 of a circle under an adult tree; 200 g per 1 m^2 of a young tree circle or a strip under the bushes. The scattered granules are covered with mulch or sprinkled with earth and watering is carried out;

– A week or two before planting seedlings – in aisles of 50 g per 1 running meter of the ridge. The scattered granules are wrapped in earth and moderately irrigated by sprinkling;

By processing quail manure into organic fertilizer and using it in the soil, users and tenants of the land naturally restore humus, which in any case will bring profit in the form of an increase in yield.

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