

CHANGE OF MICROBIAL FORMATIONS IN ORGANIC POULTRY WASTE MATERIALS DURING NATURAL DEGRADATION PROCESSES

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Abstract. The intensive production of food protein is an integral attribute of modern civilization. Poultry meat production is developing most dynamically all over the world and in Russia, in particular, because this industry is characterized by a short reproduction cycle and quick payback of invested funds. However, the growing rates and volumes of production also entail a progressive increase in waste masses. Litter and poultry litter are transported to landfills or directly to the fields, where over time they undergo natural degradation, accompanied by the emission of gases into the atmosphere and biogens into the soil and groundwater. The ingress of biogens and indigenous microflora of manure into the soil leads to changes in the composition of biocenosis components and the characteristics of their biotopes. The rate and efficiency of degradation depend on the enzymatic potential of the microflora present and the integral effect of endogenous and exogenous factors. Purpose of research: study of dynamics of species composition and environment-forming role of microflora of organic wastes of poultry farming in the processes of their natural destruction and consideration of factors determining the change of formations. In the process of work the following tasks were solved: study of indigenous microflora of poultry litter, study of composition of autochthonous, allochthonous and zymogenic microflora, study of microflora role in formation of substrate transformation vector (reaction and medium temperature), evaluation of microbial formation change regularities. The role of indigenous microflora of manure in the processes of ammonification as a starting stage of degradation of nitrogen-containing waste mass was established. From the process of ammonification starts the step-by-step degradation of manure-litter mixture. The shift of the pH range to the alkaline region caused by the activity of ammonifiers is a factor preventing the proliferation of fungal microflora and degradation of hard-to-degrade polymers. Exposure to high temperatures in the thermal phase of substrate composting is a selection factor sharply modifying the species composition and determining its deep reorganization. The determining role of autochthonous soil microflora at the final stages of organic waste degradation has been established. Species diversity of microorganisms in the masses of organic wastes naturally changes at different stages of degradation. The rates of microbial formations change decrease as the material decomposes, and the dynamic equilibrium of microflora composition is associated with the achievement of a stable balance of biogenic elements, mainly nitrogen and carbon.

Keywords: organic waste, organic matter destruction, compost microflora, soil microflora, microbial succession

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