

【ノート】

Effect of *Agaricus* spent compost on the productivity and soil environment for low-input cultivation of forage rice

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[Abstract]

To evaluate the effects of *Agaricus* spent compost(ASC) on crop productivity and the soil environment, we cultivated “Momiroman”, a new high-yielding rice cultivar for feed use, in a rice paddy amended with 2 t/10 a ASC. The number of bacteria, actinomycetes, and filamentous fungi increased. In particular, the proportion of actinomycetes was markedly increased in the ASC-treated paddy soil. Soil hardness, humic content, and inorganic nitrogen were also significantly higher in ASC-treated rice paddy fields than those of the control soil. However, the cation exchange capacity and total exchangeable bases were not affected by ASC treatment. Plant height, culm length, ear length, number of ears per plant, grain weight, and total crop weight of rice plants grown in ASC-treated soil were higher than those of the untreated control group. Total crop weight was 1495 kg/10 a for the control group and 1716 kg/10 a for the ASC group, representing a 14.8% increase. With regard to internal quality, the branched-chain amino acids, isoleucine, leucine and valine were increased. These findings indicate the application of ASC to rice paddy field soil is effective to the productivity and quality of the rice crop.

Key words: *Agaricus* spent compost, Momiroman, Rice paddy field, Soil microbe

[摘要]

群馬県高崎市の低投入二毛作水田にヒメマツタケ廃菌床(ASC)を施用し飼料用水稲モミロマンを栽培し、ASCの効果を検討した。土壌細菌、放線菌、糸状菌すべてが増加したが、特に放線菌群数の増加が顕著であった。土壌硬度は有意に低下し、腐植、および、無機態窒素が増加したが、CEC、交換性塩基類については影響を及ぼさなかった。生産性については、草丈、稈長、穂長、穂数、一株あたり結実粒数、一株あたり子実重量、地上部全重が増加した。地上部全重は、ASCが14.8%増加した。内部品質については、分枝鎖アミノ酸である isoleucine, leucine, および valine の増加が見られた。ASCの水田への施用は、土壌微生物数の増加、土壌の膨軟化、窒素の補給などにより、飼料用水稲の生産性と品質を向上させることが示唆された。