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## **Assessment of Greenhouse Gas Emissions of the Production and Utilization of Acidulocompost from Fish Meal**

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It is necessary to recycle waste in fish processing and to evaluate its environmental impact in order to improve the sustainable marine product industry. Thus, we evaluated greenhouse gas (GHG) emissions, which is one of the important environmental impacts of recycling waste in fish processing from composting to the end-use steps. We evaluated the process of conventional composting: production of fish-meal fertilizer, disposal and acidulocomposting that is a novel eco-friendly composting system. In our evaluation, it was determined that acidulocomposting process needs a larger amount of energy for heating fermentation system than normal composting. The amount of energy required in acidulocomposting is almost same as that required in the manufacture of fish-meal fertilizer. The ammonia volatilization and CO<sub>2</sub> emissions in acidulocomposting process are much lower than those in the conventional composting process. The proportion of GHG emissions from transportation and spraying in the recycling processes was low in all cases. Acidulocompost has a much higher nitrogen content than the conventional compost because of low ammonia volatilization. Therefore, it can be used in much areas than conventional compost produced from equivalent amount of waste in fish processing. In addition, GHG emission in disposal is the largest of all steps. In conclusion, acidulocomposting needs a large amount of energy for heating fermentation system but has low GHG emissions from composting. Moreover, acidulocompost has a large nitrogen content. Acidulocomposting may be suitable for recycling waste from the sustainable marine product industry.