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覆盖处理对猪粪秸秆堆肥中氮素转化和堆肥质量的影响

Effect of covering on nitrogen transformation and the quality of pig manure-straw compost

关键词: [猪粪堆肥](#) [覆盖处理](#) [氮素转化](#) [堆肥质量](#)

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摘要: 为了探讨覆盖措施对堆肥中氮素转化与堆肥质量的影响,在自制的强制通风静态堆肥箱中,模拟研究了覆盖腐熟堆肥后,下层猪粪秸秆堆肥及覆盖层中氮素形态和其他腐熟度指标的变化.结果表明:覆盖处理降低了下层堆肥中的含水率、种子发芽指数(GI值)、升温期和高温期的pH值,增大了降温期后的堆肥电导率EC值,而对堆温影响不大.覆盖处理未改变堆制初期下层堆肥中氨气的释放总量,只延缓了氨气的释放时间,但明显增加了降温期后堆肥中硝态氮和有机氮的含量.在堆制期间,覆盖处理的下层堆肥中硝态氮、有机氮、总氮和总磷含量的增幅分别比对照高66.7%、33.8%、32.7%和 138.6%;而有机碳降解率、铵态氮和腐殖质含量的降幅则分别比对照低1.1%、8.0%和3.7%.覆盖层中pH值、铵态氮和硝态氮含量的变化说明腐熟堆肥能够吸收下层堆肥释放的氨气并进行硝化作用;覆盖层的腐熟堆肥总体上进行了矿化作用,从而影响了下层堆肥的氮素转化过程及质量.

Abstract: The aerated static pile method was used to investigate the effect of covering on nitrogen transformation and the quality of a pig manure-straw compost during the composting process. Nitrogen forms and other indexes were determined in the different layers, i.e., the bottom layer and top layer, in the composts covered with and without matured compost. The results showed that: the covered composts had lower moisture, germination index (GI) of the end of composting, and pH value in heating and thermophilic phases; however, it increased EC value of the composts in cooling phase. The temperature in the composts had no significant difference. The covering delayed ammonia emission in the bottom layer at the beginning of composting period, while the percentage of accumulated ammonia in total nitrogen did not change. During composting, the increase rates of NO_3^- -N, organic-N, total nitrogen and total phosphorus in the bottom of the covered compost were 66.7%, 33.8%, 32.7% and 138.6% higher than the corresponding control, respectively. However, the degradation rate of organic carbon and contents of NH_4^+ -N and humus decreased by 1.1%, 8.0% and 3.7%, respectively. The changes of pH, NH_4^+ -N and NO_3^- -N contents in top layer of the covered composts indicated that the released ammonia in the bottom layer can be absorbed and nitrified. The top layer of compost was mineralized, and influenced the process of nitrogen transformation and quality of composts in the bottom layer.

Key words: [pig manure-straw compost](#) [cover](#) [nitrogen transform](#) [compost quality](#)

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