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## Influence of zeolite and superphosphate as additives on antibiotic resistance genes and bacterial communities during factory-scale chicken manure composting

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### Abstract:

Factory-scale chicken manure composting added with zeolite (F), superphosphate (G), or zeolite and ferrous sulfate (FL) simultaneously, were evaluate for their effects on the behaviors of antibiotic resistance genes (ARGs) and bacterial communities. After composting, ARGs in manure decreased by 67.3% in the control, whereas the reductions were 86.5%, 68.6% and 72.2% in F, G and FL, respectively. ARGs encoding ribosomal protection proteins (*tetO*, *tetB(P)*, and *tetM*) were reduced to a greater extent than *tetG*, *tetL*, *sul1* and *sul2*. Bacteria pathogens were also effectively removed by composting. Network analysis showed that *Firmicutes* were the important potential host bacteria for ARGs. The bacterial communities and environmental factors, as well as the *intI* gene, contributed significantly to the variation of ARGs. The ARGs and integrons were reduced more when zeolite was added than when superphosphate was added; thus, it may be useful for reducing the risks of ARGs in chicken manure.

**Keywords:** Zeolite; Superphosphate; Ferrous sulfate; Chicken manure; Bacterial community

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