

**Title:** Development of methods for determining the estrogen content of swine wastes: **NPB 04-204**

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**Date Received:** July 14, 2006

### **Abstract**

This project was designed to compare methods for measuring estrogen levels in swine waste from different types of production facilities and the effects of holding the waste on the concentrations of different forms of estrogen. We validated extraction methods for urine, feces and lagoon water and used the extracted material in radioimmunoassays (RIA), enzyme linked immunosorbent assays (ELISA) and gas chromatography-mass spectrometry (GC-MS) to measure the estrogen concentrations. All three methods can be used to measure estrogens but RIA and GC-MS were more repeatable in our study than the ELISA.

Comparison of different types of production facilities indicated that while the boar stud and the sow breeding and gestation units had the highest level of estrogens the finisher units also had significant levels of estrogens in waste material, which fits with what we know of hormone production by pigs. No significant seasonal differences were found but winter levels tended to be higher. Holding of the waste resulted in decreased levels of the more potent estrogens presumably due to their conversion to less potent forms by bacterial activity.