

## Organic fertilizer source and application method impact ammonia volatilization

### ABSTRACT

Ammonia (NH<sub>3</sub>) volatilization from fertilizer applications reduces efficiency and poses environmental hazards. This study used semi-open static chambers to measure NH<sub>3</sub> volatilization from organic fertilizers (feather meal, blood meal, fish emulsion, cyano-fertilizer) to evaluate the impacts of fertilizer source, application method, and rate on NH<sub>3</sub> volatilization. In 2014, two application rates (28 and 56 kg N ha<sup>-1</sup>) were applied to lettuce (*Lactuca sativa* L.). Solid fertilizers (feather meal, blood meal) were preplant applied in a subsurface band, whereas liquid fertilizers (fish emulsion, cyano-fertilizer) were applied weekly through drip irrigation beginning two weeks after transplanting. In 2015, a single application rate (28 kg N ha<sup>-1</sup>) was applied to cucumber (*Cucumis sativus* L.). Solid fertilizers were applied in either subsurface or surface bands. There was a significant difference in NH<sub>3</sub> volatilization among fertilizers, but there was little difference between application rates. Liquid fertilizers had lower NH<sub>3</sub> emissions than solid fertilizers due to their timing and placement. In 2014, blood meal at 56 kg N ha<sup>-1</sup> and feather meal at both rates had the highest NH<sub>3</sub> fluxes. In 2015, surface-banded blood and feather meal had the highest NH<sub>3</sub> fluxes. Fertilizer decisions for organic systems should consider NH<sub>3</sub> emission losses and practices for their reduction.

**Keyword:** Ammonia volatilization; Organic fertilizer; Application method