

Seasonal Ammonia Emissions from Crops in the San Joaquin Valley, California. (S11-goorahoo072338-Poster)

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Abstract:

Ammonia, the dominant gaseous base in the atmosphere and a principal neutralizing agent, remains one of the most poorly characterized atmospheric trace compounds. Among the factors influencing ammonia emissions are the capacity of soils, organic matter, and vegetation to act as both sources and sinks for atmospheric ammonia, and the variability in nitrogen fertilizer management practices. The objective of this study was to determine atmospheric ammonia emissions in the Central Valley of California related to various crops and nitrogen fertilizer application practices. An active sampling technique was used with denuders and anemometers co-located at four heights. Nineteen sites were sampled. Generally, an increase in atmospheric NH_3 was measured compared to the levels sampled both before and after fertilizer application. The NH_3 emissions ranged from 0.1 to 0.7 g N- NH_3 m⁻². The estimated emission factor values range from 0.1% to 6.6% with the average at about 3.2%. It appears the sites with low emission factors were those where fertilizer was applied in a manner that placed the fertilizer material several cm below the soil surface. Soil pH below about 7.4 was also correlated with low emission percentages.

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