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**Nitrogen Fertilizer Management to Mitigate N2O Emissions in Alberta**

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**Abstract**

Fertilizer nitrogen has been identified as a significant source of N2O emissions in agriculture. The use of enhanced efficiency fertilizers (EEF) with a gradual release of ammonium from controlled release N fertilizers has been identified as a means to provide a slow stream of nitrogen for plant uptake, and minimizes N losses. The objective of this research is to evaluate N fertilizer management according to the 4R Nutrient Stewardship to mitigate N2O emissions.

This field research compared urea and coated-urea, 2 rates of application and fall vs spring application on N2O emissions over 5 years at three sites indicate. Results indicate that spring application of nitrogen fertilizer was the most effective means of reducing total emissions. Producers switching from fall applied nitrogen fertilizer to spring application could expect a 17% to 25% N2O emission reduction. Switching from fall applied urea to fall applied coated-urea resulted in 6% reduction. Changing from spring applied urea to spring applied coated urea would result in a 5% reduction. Regional influence of N fertilizer management changes on the N2O emissions corresponds to moisture conditions. In general, the coated-urea product resulted in lower emissions than uncoated urea.