EXHIBIT 3
DATE 3/24/09
SB 300

Mr. Chairman, members of the committee, for the record my name is Don Steinbeisser Jr . I am a farmer and rancher from Sidney and a member of the Fertilizer Advisory Committee.

I would like to speak in favor of Senate Bill 300. As a farmer in Montana, dealing with changing technology, research is more important now then ever before. New products and application methods can be cost prohibitive for growers to try on their own.

With Cap and Trade in our future we have to have reliable research that is pertinent to Montana conditions. As an example, the International Panel on Climate Change (IPCC) estimates emission losses of nitrous oxide gas which is a green house gas, at 1.25% of applied nitrogen. Montana research shows that fertilizer induced losses were only equivalent to .43%. This is considerably below the IPCC 1.25%. This is summarized in the Fertilizer Facts number 44, which I will summit with my written testimony.

I ask you to support Senate Bill 300. Thank you for the opportunity to testify before your committee.

Thank you Mr. Chairman.

Soil Nitrous Oxide Emissions from a Continuous Wheat Cropping System in Montana

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Fertilizer FACTS
Fertilizer ✔off
Feb 2007
Number 44
MONTANA STATE UNIVERSITY
Extension Service
Agricultural Experiment Station

Introduction

Nitrous oxide (N_2O) is a trace gas in the atmosphere that has come under increasing scrutiny because it contributes to global warming and destruction of the stratospheric ozone layer. Human alterations of the global N cycle, including the use of N fertilizer, are known to promote the release of N_2O from soils into the atmosphere. Nitrous oxide production in soils occurs as a result of two microbial processes: 1) nitrification of ammonium and ammonium-producing fertilizers (e.g. urea) under aerobic conditions and 2) denitrification of nitrate under anaerobic conditions (Fig.1). During the past 250 years there has been a 17% increase in the atmospheric N_2O concentration to its present level of 316 parts per billion. Agriculture is reported to account for 65-70% of global anthropogenic emissions, and fertilizer N use (commercial and manure) is considered the primary contributor by the International Panel on Climate Change (IPCC, 2001). Regional and global estimates of N_2O production from agriculture have frequently been adopted using IPCC methodology. Beginning in 1997, IPCC methodology assumed as a default that 1.25% of all N inputs, including fertilizer N, are lost directly as N_2O. This default value was developed from databases currently available at the time, most of which came from regions that were considerably more humid than Montana. Given that soil N_2O emissions are known to be affected by differences in cropping systems and climate, there is uncertainty as to the accuracy of the 1.25% default value to Montana agriculture. This study was undertaken to describe seasonal patterns of N_2O release from a continuous wheat cropping system and provide an estimate of the effect of N fertilization on N_2O emission losses.

Methods

Nitrous oxide gas samples were collected over two years (Apr. 14, 2004 to Apr. 15, 2006) at the Montana State University – Arthur Post Farm in Bozeman. The soil at the site is classified as an Amsterdam silt loam (fine-silty, mixed, superactive, frigid Typic Haplustolls) with pH 7.2, and organic matter content of 1.5% in the surface 8 in. The field study was part of a larger cropping system study, but only the results from the no-till winter wheat – spring wheat rotation are presented here. The wheat-wheat system was divided into subplots representing three target levels of available N, including a low-unfertilized regime, a moderate available N regime (90 lb N/ac), and a high available N regime (180 lb N/ac). The treatments were replicated four times. Available N pool was estimated from the sum of soil NO_3-N (0–24 in.) plus fertilizer N applied, with the fertilizer N application rates in the moderate and high regimes calculated by the difference between soil NO_3-N tests and the target N level. Fertilizer N applications (as urea) were equivalent to 156 and 218 lb N/ac over two years for the moderate and high N regimes, respectively. Gas sampling was conducted using static chamber techniques. Gas samples were collected from the headspace during the early to mid-afternoon (1 – 3 p.m.). The concentration of N_2O in the container was determined using a gas chromatograph.

Results

Nitrous oxide flux vs. time profiles (Fig. 2) from the continuous wheat rotation revealed that emissions were episodic and responsive to periods of high soil water-filled pore space and availability of N substrate (soil or fertilizer). Examination of the curves reveals that N fertilization was perhaps the single most important event that stimulated an increase in N_2O emissions. The elevation in emissions occurred within a week following fertilization, and peaked after approximately 2-4 weeks. The duration of elevated flux above background (>2.0 μg N_2O-N m^2/h) for spring applications in 2004 and 2005 was approximately 10 weeks, but extended somewhat longer for the fall application in 2005 (Sept. 30). The majority of N_2O losses during the 10-wk period following fertilization were probably a result of nitrification, except in the fall 2005, when denitrification may have been important as soil water contents were high and frequently exceeded >70% water-filled pore space. In addition to N fertilization, freeze-thaw cycles in the winter or early spring were also important in stimulating significant N_2O emission activity.

Emissions during these periods were likely a result of denitrification, as rises in air temperature triggered snowmelt and resulted in saturated conditions near the soil surface. Together, the 10 week post-N application and freeze-thaw cycle periods account for 84% of N_2O emissions over a two year period. When N_2O emissions were summed, the results showed that only modest levels of N_2O losses were observed (Table 1). Fertilizer induced emissions were equivalent to 0.43% of the applied N (mean of moderate and high). This is considerably below the IPCC 1.25% default value, and suggests emission of N_2O in semi-arid regions are more modest than suggested by IPCC default methodology.

Fertilizer Fact:
Nitrogen fertilization results in an elevation in N_2O emissions from a Montana soil, but the losses (0.43% of applied N) are considerably lower than the IPCC mean default value of 1.25%.

Reference:

Intergovernmental Panel on Climate Change. 2001. Climate change 2001: Synthesis report. Summary for Policy makers. IPCC Plenary XVII. Wembley, UK., Sept. 24–29.

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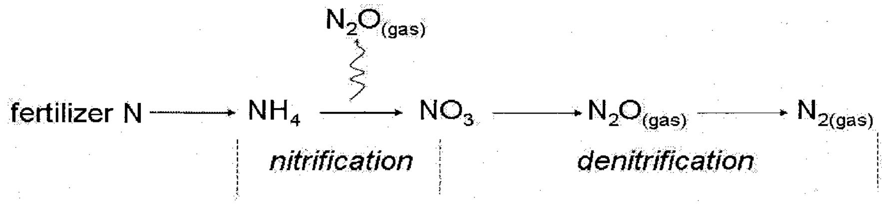

Figure 1. Nitrous oxide production from soils occurs during both nitrification and denitrification.

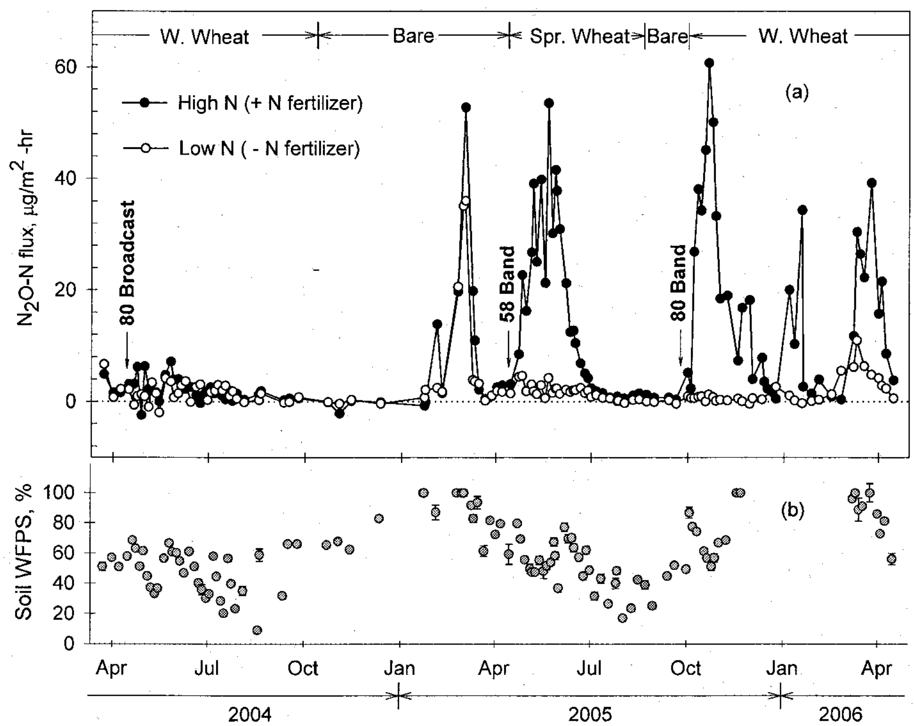

Figure 2. **a)** Nitrous oxide emissions over time for a continuous wheat system at two N management levels (moderate regime not shown for clarity). Arrows indicate date, amount of applied N (lb N/ac), and method of N placement. **b)** Percent of soil water-filled pore space (Soil WFPS) over time (mean of two N levels).

Table 1. Estimated cumulative emissions of N_2O, fertilizer induced emissions (FIE) and fraction of applied N fertilizer lost as N_2O over two years for a winter wheat – spring cropping system at 3 available N management regimes.

Available N regime	Total N applied over 2 years	Cumulative N_2O-N losses over 2 years	FIE* of N_2O-N over 2 years	Fraction of applied N loss as N_2O
	(lb N/ac)	(lb N/ac)	(lb N/ac)	(%)
Low	0	0.26	-	-
Moderate	156	0.96	0.70	0.45
High	218	1.17	0.91	0.42

* FIE = Fertilizer Induced Emission: Cumulative N_2O-N losses from fertilizer applications (moderate or high).

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"Growing Montana"

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HOUSE COMMITTEE ON AGRICULTURE
March 24, 2009 Hearing on Senate Bill 300
Testimony of Montana Agricultural Business Association

The Montana Agricultural Business Association supports House Bill 300 which provides an increase in the fertilizer check off to support more fertilizer research.

The association's board of directors voted to support this legislation on January 30, 2009 after providing the membership with the opportunity for input during our annual convention in Great Falls. We need science-based research information as we provide advice to growers using fertilizer.

This is a change in position for the Montana Agricultural Business Association whose members include fertilizer applicators, retailers, distributors and manufacturers as well as crop consultants. MABA opposed any increase in February 1992, when we outlined why in a letter to the industry members of the fertilizer advisory committee. Our concerns as expressed in that letter were:

1. "...we have yet to see a good program implemented to get the research information out to the dealers and growers. It is difficult to support an increase when few know what's happening with the current ton tax funds" and,
2. "...there are some concerns about the practical applicability of some research projects being done."

That year, Fertilizer Advisory Committee members recommended to MSU that the first change MABA suggested be made. Dr. Jeff Jacobsen developed "Fertilizer Facts" and since September 1992, these have been published by Montana State University College of Agriculture and the Extension Service to provide the research results to retailers and growers. Funding requests to enable research projects for someone to get tenure have since been rejected by the committee in favor of research that helps the Montana grower.

We applaud the Fertilizer Advisory Committee for its efforts to assure research meets the needs of Montana growers and urge you to allow the increase which will benefit Montana agriculture.

MABA's intent is to support fertilizer research funding in this legislation. Any amendments to alter any part of the increase to support further education dollars or regulation money would force the association's board to rethink its support.

We ask you to support Senate Bill 300.