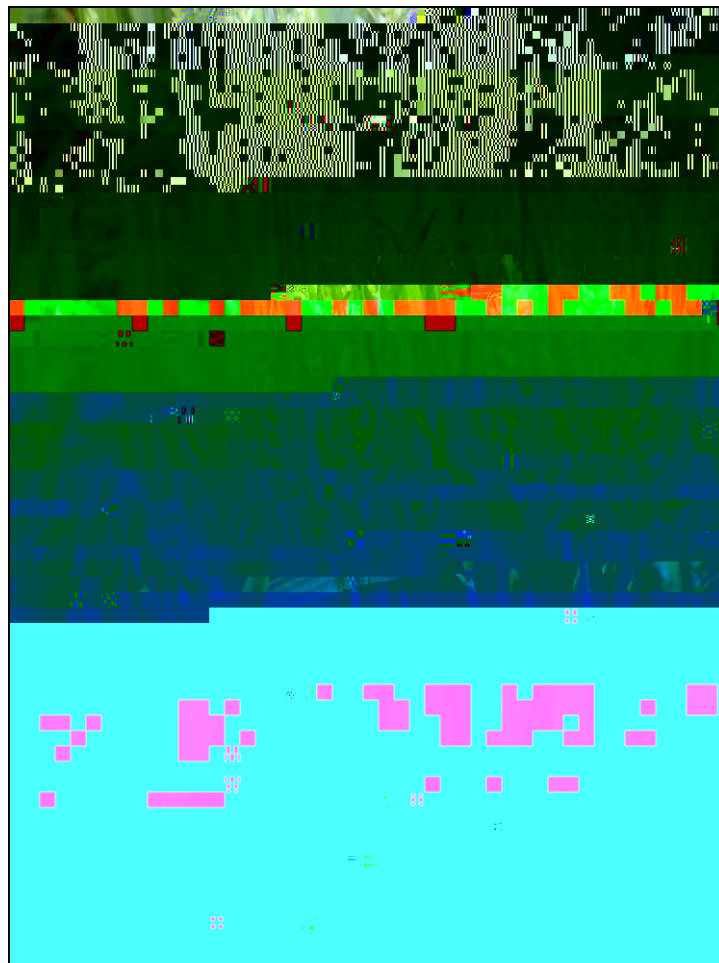




**2010**

# **The Effects of Topdressing Organic Nitrogen Hard Red Winter Wheat**



**Dr. Heather Darby**

Erica Cummings, Rosalie Madden, Amanda Gervais, Phillip Halteman, and Susan Monahan

802-524-6501



# 2010 VERMONT ORGANIC NITROGEN TOPDRESSING OF WINTER WHEAT

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## **CULTURAL PRACTICES**

### **Gleason Grains – Bridport, VT:**

The seedbed at the Bridport location was prepared by conventional tillage methods. All plots were managed with practices

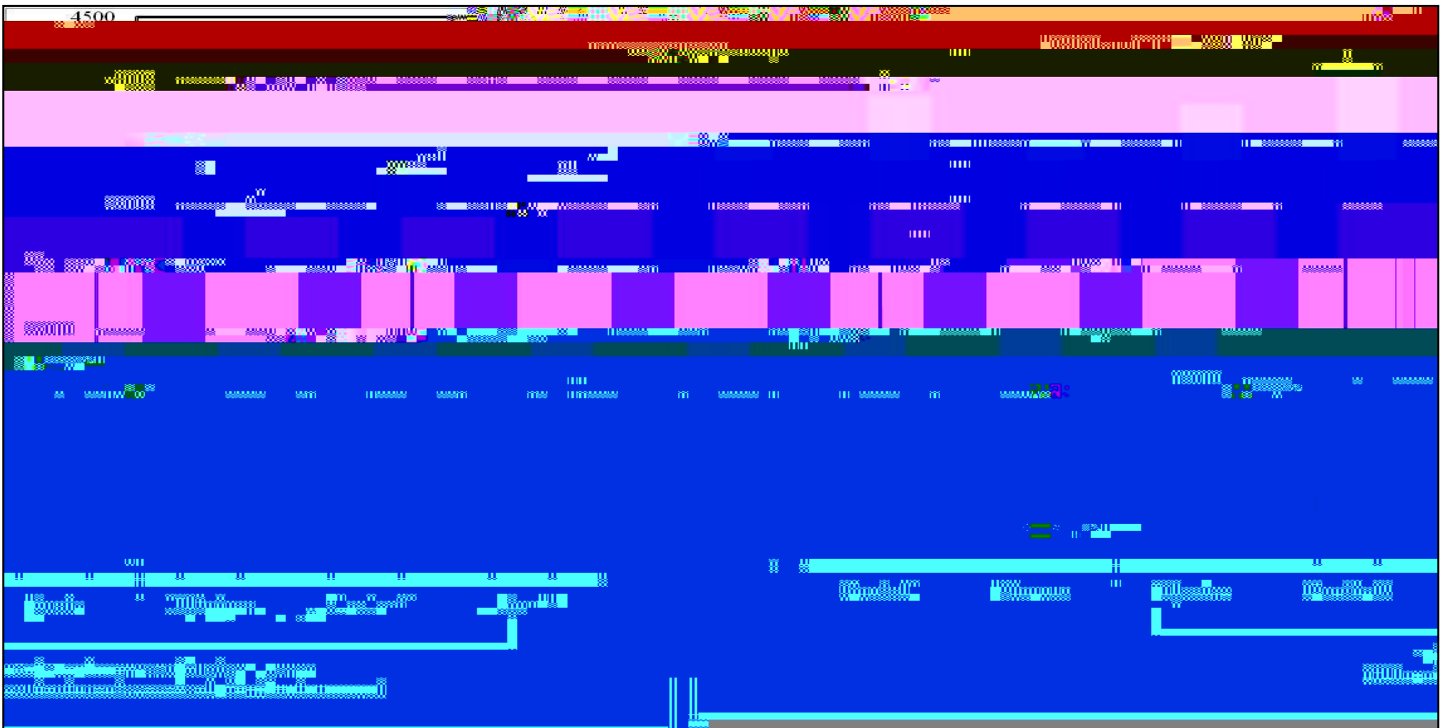
**Borderview Farm – Alburgh, VT:**



## RESULTS

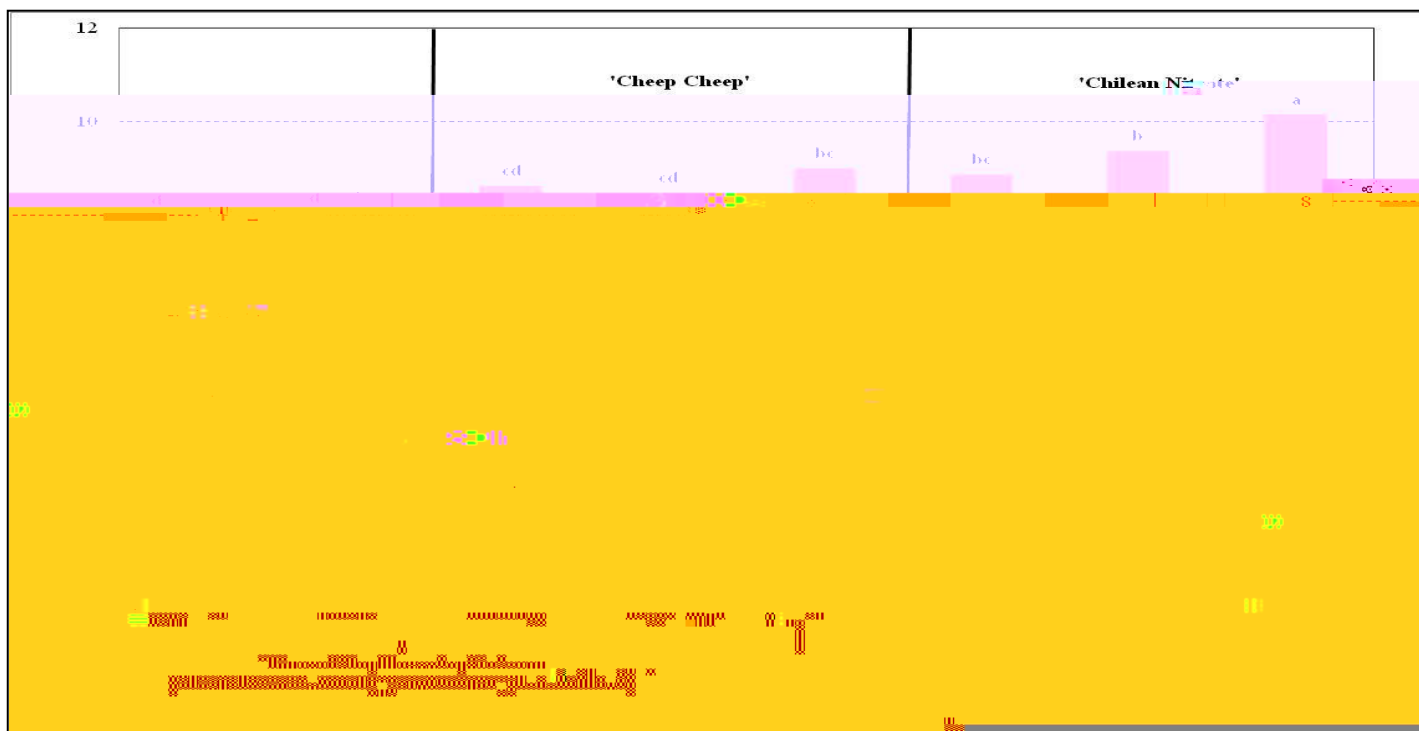
### Borderview Farm, Alburgh, VT:

The treatments differed significantly in winter wheat yield (Table 5 and Figure 1). When 'Cheep Cheep' was applied at either flag leaf or boot stage, it resulted in yields significantly higher than the unamended Control plots. However, 'Cheep Cheep' applied at the tillering stage did not result in a yield increase over the control. 'Chilean Nitrate' applied at all of the different application times; tillering, flag leaf, and boot growth stages, yielded significantly higher than the unamende



The treatments also differed in winter wheat CP concentration (Table 5; Figure 2). 'Chilean Nitrate' applied at all of the different application times; tillering, flag leaf, and boot growth stages, had significantly higher protein levels than the fall applied Manure and unamended Control plots. In addition, 'Cheep Cheep' applied at the boot stage had significantly higher protein levels in comparison to the Manure and Control plots, but was not significantly different when applied at the tillering and flag leaf growth stages. This is presumably due to the slow release nature of the amendment. The boot applied 'Chilean Nitrate' had the highest protein level at 10.2%; the lowest was the control with a protein content of 8.0%. Overall, the application of organic N sources at the boot stage resulted in the best chance to improve both wheat protein levels and yields. The other grain quality tests measured were; test weight, falling number and DON levels. None of these additional tests differed significantly among treatments.

The first year of data suggests th



## RESULTS

### Gleason Grains, Bridport, VT:

A fertility source x application time interaction was observed for yield (Figure 3). This suggests that the organic N fertility sources will vary across the range of application times. For example, 'Cheep Cheep' and 'ProBooster' applied at tillering had a significant increase in yields over the 'Chilean Nitrate' or the Control. This presumably has to do with the slow release nature of this amendment potentially supplying N to the plant over a longer period of time. This would be compared to the 'Chilean Nitrate' being more rapidly available. Interestingly when 'Chilean Nitrate' was applied at the flag leaf stage it resulted in significantly higher yields than the other fertility treatments. Interestingly at these stages, the 'Cheep Cheep' and 'ProBooster' performed similarly to the Control. Again the slow release nature of the N from these products may have limited the amount of plant available N during this period of rapid uptake. When the applications were split there were no significant differences between treatments.



**Figure 3. The interaction of application timing and amendment on winter wheat yield, Bridport, VT.**

\*Varieties with the same letter did not differ significantly in yield

A fertility source x application time interaction was observed for CP concentration (Figure 4). This suggests that the organic N fertility sources will vary across the range of application times. Application of N sources at tillering did not result in protein increases as compared to the control. However, applications of N fertility sources at the flag leaf stages did result in a significant increase in CP as compared to the control. The 'ProBooster' application at the flag leaf stage resulted in the highest crude protein concentrations. When the N application was split, increases in CP concentrations were only significantly higher than the control in the 'ProBooster' treatments. Overall, the application of organic N sources at the flag leaf stage resulted in the best chance to improve wheat protein levels.





**Figure 5. The impact of organic fertility treatments on winter wheat yield and CP concentrations, Bridport, VT.**

\*Varieties with the same letter did not differ significantly in yield.

The timing of the organic N fertilizer application had a significant impact on yield and crude protein concentrations of winter wheat (Table 7 and Figure 6). A split application of organic N fertilizer at the tillering and flag leaf stage resulted in the highest yields of 1545 lbs ac<sup>-1</sup>. The highest crude protein concentration was observed when organic N sources were applied at the flag leaf stage. Application of organic N sources at the tillering stage resulted in the lowest crude protein concentration. Grain moisture, falling number and DON levels were not significantly different between the timing applications of the organic amendments (Table 7).

**Figure 6. Impact of organic N fertility application time on winter wheat yield and CP concentration, Bridport, VT.**

\*Varieties with the same letter did not differ significantly in yield.