

## Mitigating Leaf Burn

Peter Johnson

@WheatPete

Agronomist, Real Agriculture

28% has become the preferred nitrogen source on winter wheat in Ontario. Application is perfectly uniform, something that seems difficult to achieve with most urea applications. However, leaf burn is one of the main problems with 28% applications, particularly at later stages of growth. With more emphasis on split nitrogen applications, and renewed interest in late N applications on Hard Red wheat for protein, leaf burn is becoming problematic.

Different nozzles and the resulting burn injury are being evaluated, but all nozzles cause some burn under adverse conditions. Lower N applications, or diluting the 28% with water reduces burn significantly. However, this increases the volume applied and slows the application process. Application during a rainfall will negate burn, and sounds great in theory. Practically, however, this is not very feasible. In Europe, dissolved urea is often used for later N applications, to reduce or eliminate burn. This is another option that will be investigated.

**Reducing 28% Burn:** Best management practices for reducing burn are as follows:

1. Dilute as much as possible
2. Apply during periods of high humidity (evening, night, heavy dew, rain)
3. Keep application pressure low (<50psi). Even with streamer nozzles, high pressure will atomize some product and increase burn.
4. Avoid bright sunny days and windy conditions.
5. Low temperatures (<0C) or significant temperature fluctuations can increase burn.

**Making Dissolved Urea:** Dissolve 4.51 pounds of urea (46-0-0) per US gallon of water to obtain 21-0-0. It takes time and really good agitation to dissolve this much urea per gallon, especially a larger batch. Start with warmer water if possible, as it is a very endothermic reaction (needs heat). Dissolving urea in cold water is very slow. Leave the water in the tank for a few days, to allow the water to warm from the sun, rather than pulling cold water out of the ground. The easiest way to dissolve a larger batch is using a smaller tank (+/- 1000 gal) and ~5 hp 2" pump to agitate the material well. Slowly add the urea with an auger into moving water, the more circulation the better. Direct the flow of liquid down and around the bottom of the tank: once urea settles on the bottom it is hard to agitate it and dissolve it. (Adapted from: Phil Needham, Needham Ag Technologies, LLC.)

**CAUTION:** Urea high in **biuret** will actually cause more burn than 28%. A byproduct of urea manufacture, virtually all North American urea is low biuret: most is removed. However, off shore urea, and even some made here, may not be low biuret. Dissolved high biuret urea has caused severe burn and significant yield loss. If dissolving urea, be sure it is low biuret (<1%).

### Liquid Urea 21-0-0 Properties:

Weight per US Gallon 9.44 lbs

Specific Gravity 1.132

Pounds (N) per US Gallon 2.077

pH 6.0 - 7.2