



NORTHEAST AGRICULTURE RESEARCH FOUNDATION

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Some Useful Information About Copper (Cu) and Copper Fertilizers

1. Copper Deficiencies

- *Copper deficiencies are not widespread in Saskatchewan, but can drastically reduce yield where they occur.*
- *Deficiencies are most common on organic (peat) soils and coarse textured (sandy) soils.*
- *The sensitivity of crops to Cu deficiency is usually in the order of (wheat, flax, canary seed) > (barley, alfalfa) > (timothy seed, oat, corn) > (peas, clovers) > (canola, rye, forage grasses).*
- *Symptoms of Cu deficiency include yellowing and curling of young leaves, pigtailing of leaf tips, delayed heading, aborted heads or spikelets, stem and head bending and stem melanosis.*
- *High amounts of other nutrients like phosphorus, nitrogen or zinc in soil or fertilizer can aggravate Cu deficiencies.*
- *Deficiencies of Cu can increase incidence or severity of some diseases.*

2. Correcting Copper Deficiencies

- *Broadcast incorporated granular Cu fertilizer in advance of seeding is effective at 2.7 to 5.06 lb Cu/acre.*
- *At rates below 2.7 lb Cu/acre, repeat applications over several years may be required to correct Cu deficiencies.*
- *Surface broadcast Cu fertilizer is not highly effective nor is seed-row applied Cu fertilizer.*
- *High rates of Cu fertilizers can have residual benefits in subsequent years.*
- *Liquid formulations applied and incorporated into soil are effective.*
- *Foliar application at low rates between tillering and the flag leaf stage can correct Cu deficiencies.*
- *Not all forms of Cu fertilizers are equally effective.*



The above photos illustrate copper deficient wheat on the left and wheat treated with foliar copper fertilizer at Kelvington, SK in 2005.

For additional information on Cu refer to the article 'Feasibility of copper fertilization for optimum crop yield in the Canadian Prairies' on this website, or contact S. S. Malhi at smalhi@neag.ca , Rigas Karamanos at rigas.karamanos@viterra.com or Stewart Brandt at sbrandt@neag.ca