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CHLORIDE IS IMPORTANT FOR BALANCED NUTRITION OF WHEAT

Chloride is an essential plant nutrient. In some regions chloride levels in the soil have become low enough that wheat cannot realize its full yield potential. In coastal areas, chloride is supplied in rain water. In areas farther inland, chloride is usually supplied by use of potash fertilizer. However, in areas such as the Great Plains, little potash is applied to soils, but crops continue to take potassium and chloride out of the soil. If these nutrients are never replenished, their levels in the soil drop. Chloride soil test levels drop faster than potassium soil test levels because chloride is mobile in soils, just like nitrate. As rain percolates through the soil, it takes chloride with it, moving it deeper in the soil, where plant roots have a hard time getting to it.

Soil testing can be helpful. If samples taken to a 2-foot depth test below 30 pounds of chloride per acre, there is a good chance that wheat will respond to chloride fertilization. However, there are many factors that enter into wheat response. Research has shown that some varieties respond better to chloride fertilization than others. The levels of other nutrients, such as nitrogen, phosphorus, and potassium must also be in good supply before you can expect to notice a response to chloride. For instance, if phosphorus soil test levels are low, phosphorus, rather than chloride, is more likely to be the factor limiting crop yields. The yield responses to chloride fertilization are not as large as for these other nutrients. Data from South Dakota indicates an average spring wheat yield response of 4 bu/A to chloride fertilization when soil tests taken down to 2 feet are at or below 30 pounds of chloride per acre.

Tissue testing is a great way to see how your crop is doing. Tissue testing is the best indicator of the chloride nutrition of wheat. The sample should be a collection of whole shoots in the boot to flowering stage. If the plant concentration is less than 0.12 percent, there is an 80 percent chance that the crop will respond to chloride fertilization. At concentrations of 0.13 to 0.40 percent, there is about a 50 percent chance of response. Above 0.40 percent, little chance of response exists. If soil samples are taken too late in the season to practically apply chloride, plant tissue data still provides information upon which future fertilization plans can be made.

Proper chloride fertilization can provide many benefits beyond yield. Research on wheat has shown that chloride can increase plant resistance to several diseases as well as enable the plant to better withstand disease pressures. Photosynthetic activity in diseased leaves, most importantly the flag leaf is reduced. This results in poor grain fill, lighter kernel weights, and lower yields. Diseased roots and stems cannot adequately provide nutrients and water to developing heads. Chloride has been shown to increase the resistance of wheat to the foliar diseases tanspot, stripe rust, leaf rust, and septoria and to the root diseases take-all root rot and common root rot.

There is great flexibility in fertilizer chloride placement. Broadcast, banded, and top-dress applications are all equally effective. In higher rainfall areas, where chloride has a greater chance of leaching, spring topdress applications may be the most efficient. Placement with the seed can result in salt injury to seedlings if rates are too high.

Balanced nutrition is the key to getting the most yield and profit out of a wheat crop. Nitrogen alone will not produce the highest wheat yields. Phosphorus alone will not do it either. All essential nutrients must be in good supply to boost yields and profitability to high levels. Chloride fertilization is an important part of a balanced fertility program. The best way to know whether it will work for you is to try it on a test area and see what happens. You may find that chloride will be important for getting the most out of your wheat crop.

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