# Onion Nutrition for High Quality Production

Achieving maximum yields for onions requires a balanced nutrient program. Research has shown that two of the most overlooked nutrients required for high quality onion production are calcium and chloride. TETRA's Hi-Cal™ calcium chloride nutrient fertilizer supplement applied at the right time will supply this necessary calcium and chloride to your onion crop.

A productive and cost effective fertility program begins with a good soil test. Care should be taken to ensure that the soil test includes both calcium and chloride levels in your soil. Recent university research has proven that the best marketable onion production is achieved when calcium levels in soil are above 1,500 pounds per acre and chloride levels are above 30 pounds per acre.

Need for calcium is more critical during mid to late season periods, but chloride is needed as early as two weeks after setting. Three or more applications of 4-5 gallons of Hi-Cal per acre starting at two weeks after setting and repeated at 14- to 21-day intervals is recommended to meet the crop's chloride needs. When excessive rain is received, more chloride is needed, because chlorides are very mobile in the soil and are easily leached from the root zone. Therefore, chloride levels in the soil need to be monitored closely.

Early applications for chloride plus the application of 20 gallons of Hi-Cal per acre 30 days prior to harvest will meet the calcium needs of onions. If no early season Hi-Cal is applied, 30 gallons is needed 30 days prior to harvest to meet the calcium needs to increase yield and improve bulb shelf life.

## Calcium:

- According to the University of Florida, 6,000 ppm calcium in the bulb is considered adequate; lesser amounts are deficient.
- Calcium reduces high sulfur content in the bulb, thus reducing pungency.
- Calcium strengthens cell walls, increasing bulb firmness and shelf life.
- Calcium reduces standing water in the field by increasing soil percolation. Standing water harbors many soil born diseases.
- Calcium reduces premature bulb development that leads to increased flowering.

## Chloride:

- Chloride is one of the 16 essential nutrients required for plant growth.
- At least 30 pounds per acre of chloride is needed to grow onions.
- Chloride increases disease resistance in onions.
- Chloride is important in the opening and closing of stomata. Onions do not produce soluble polysaccharides, which are essential to chemically balance the potassium ion ($K^+$) concentration that increases in the guard cells during the opening and closing of stomata. In onions, chloride ions ($Cl^-$) are imported into the guard cells to perform this function.

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