

Liquid Fertilizer

USES ON POTATOES

0-0-0-10S-6Ca



Calcium is essential for plants to create strong cell walls.

In potatoes, calcium is key for strong tubers that resist pathogens and internal structural issues that cause storage losses. Fertilizing with calcium can be very beneficial, but the timing of the calcium application is critical due to simple plant physiology: calcium can only travel upwards in the plant from where it enters. Even in soils with adequate calcium, potatoes may not be able to uptake enough during the brief window in which the tuber is accumulating calcium for itself. This window, which lasts for approximately three weeks (depending on variety), begins when stolon and tuber roots are present. In order to affect storability and tuber cell wall strength, this is the time to flood the soil with plant-available calcium. CaTs is a soluble calcium fertilizer that also contains thiosulfate and has a fertilizer analysis of (0-0-0-10S-6Ca). Applying a soluble source of calcium increases the amount of calcium available to the plant and allows for greater plant uptake. CaTs has been proven to reduce storage losses by providing essential calcium for potatoes to increase cell wall strength.

CaTs provides several agronomic benefits to your farm:

1. Fertilizer – Soluble calcium and sulfur
2. Soil Amendment – Reduces sodium in the soil
3. Nitrogen Protection- Nitrogen stabilizer (AAPFCO Approved)
4. Water Treatment – Improves water infiltration

Thiosulfate Advantages

Along with calcium, sulfur nutrition is important in potato production as well. Sulfur plays a key role in the formation of amino acids and proteins. It also helps the plant utilize nitrogen

more efficiently. Like calcium, CaTs gives growers the ability to apply sulfur in season. Thiosulfates can improve the availability of micronutrients like iron and manganese. They act as a nitrogen stabilizer and can reduce ammonia loss and slow nitrification when blended with nitrogen solutions, getting you the most out of your nitrogen applications. When choosing a calcium source for your farm, be sure to choose a source that provides you with the most added benefits.

APPLICATION RECOMMENDATIONS

Fertigation/Center Pivot:

- 5-10 GPA total volume of CaTs per application.
- Critical to first apply right when tuber roots are developing and continue with 1-2 more applications 7-10 days apart.
- Can be applied with a ground rig by using sufficient water.

Blending:

- CaTs readily blends with UAN and other nitrogen fertilizers.
- CaTs does not mix with Thio-Sul. Do not mix with a 28-0-0-5S blend for pivot application. A separate pivot tank for CaTs alone is recommended.
- CaTs blends with calcium nitrate in any ratio to add calcium and essential sulfur to the blend.
- Do not blend CaTs with any phosphorus source.

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ADDITIONAL DATA AND TRIAL COMPARISONS

Solubility of Calcium Sources:

Calcium Source	Product Dissolved: grams/liter	Calcium in Solution grams of Ca/liter	Relative Calcium in Saturated Solution to Gypsum
Lime	0.013	0.005	0.01
Gypsum	2.60	0.60	1.0
CaTs	502	132	218
*Free Lime Dissolved by CaTs	330	132	——
Total Calcium in Solution with CaTs	——	264	437

The data in the table above demonstrates the superior availability of calcium provided by CaTs compared to other common calcium sources. The right column reveals that CaTs is 218 times more soluble than gypsum, which has a significant impact on the amount of calcium available in solution for plant uptake when products are applied. Also, when accounting for thiosulfate chemistry, additional calcium can be made available in high-calcareous soils. The oxidation of thiosulfate can solubilize the equivalent of 132 more grams of calcium, increasing the total calcium in solution even more.

Comparison of Calcium Sources in Potatoes:

Ca Source	Application Rate (GPA)	Yield (tons/ac)	% Storage Shrink (in 6 month)	Yield out of Cellar (tons)
CaTs	20	26.79	9.9	23.24
CaTs	10	25.58	13.0	22.25
CaCl ₂	10	24.40	17.6	20.11

The data above is from a potato trial conducted near Pasco, Washington by Holland Agricultural. The objective of this study was to evaluate potato yield and storage shrink when utilizing CaTs or CaCl₂ as a calcium source. Both products were applied via irrigation water at tuber initiation. In Treatments 1 and 3, the total amount of calcium applied was equal, and the sulfur rate was balanced across the trial area. Even when applying half the amount of calcium (Trt 2) compared to the CaCl₂ application, yield was increased and storage losses were reduced, illustrating the high availability of CaTs. When 20 GPA of CaTs was applied (equivalent to 10 GPA of CaCl₂), yield was further improved and storage losses were nearly cut in half compared to CaCl₂. Again, calcium is essential to improving storage quality of potatoes, and it is critical to choose the right calcium source to ensure your crop has the available calcium it needs.

SUMMARY

- Calcium is essential for cell wall strength; it is vital to potato (tuber) quality and storability.
- Calcium is not mobile within the plant and is only transported through xylem (water conducting tissue). Therefore, strictly foliar applications of calcium are not as beneficial because when calcium is absorbed through the leaf, it will not be translocated down to the tubers.
- Fertigation, broadcast, and banded calcium applications are preferred to enhance tuber quality with higher calcium concentration.
- In most varieties, there is a critical three-week window when calcium applications are vital. This is at stolon and tuber root initiation. It is important to have calcium readily available in the root zone for those roots to uptake.
- Upon entering the soil, CaTs is immediately plant-available and ready for uptake, which is critical in order for the application to provide calcium during the uptake window.
- If CaTs is applied to a soil that contains free lime, the thiosulfate will release calcium from the lime into soil solution, further increasing calcium availability for plant uptake.
- CaTs provides soluble calcium and sulfur. Thiosulfates provide several key benefits to a fertility program including sulfur nutrition, nitrogen protection, and improved micronutrient availability.

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