Application Recommendations

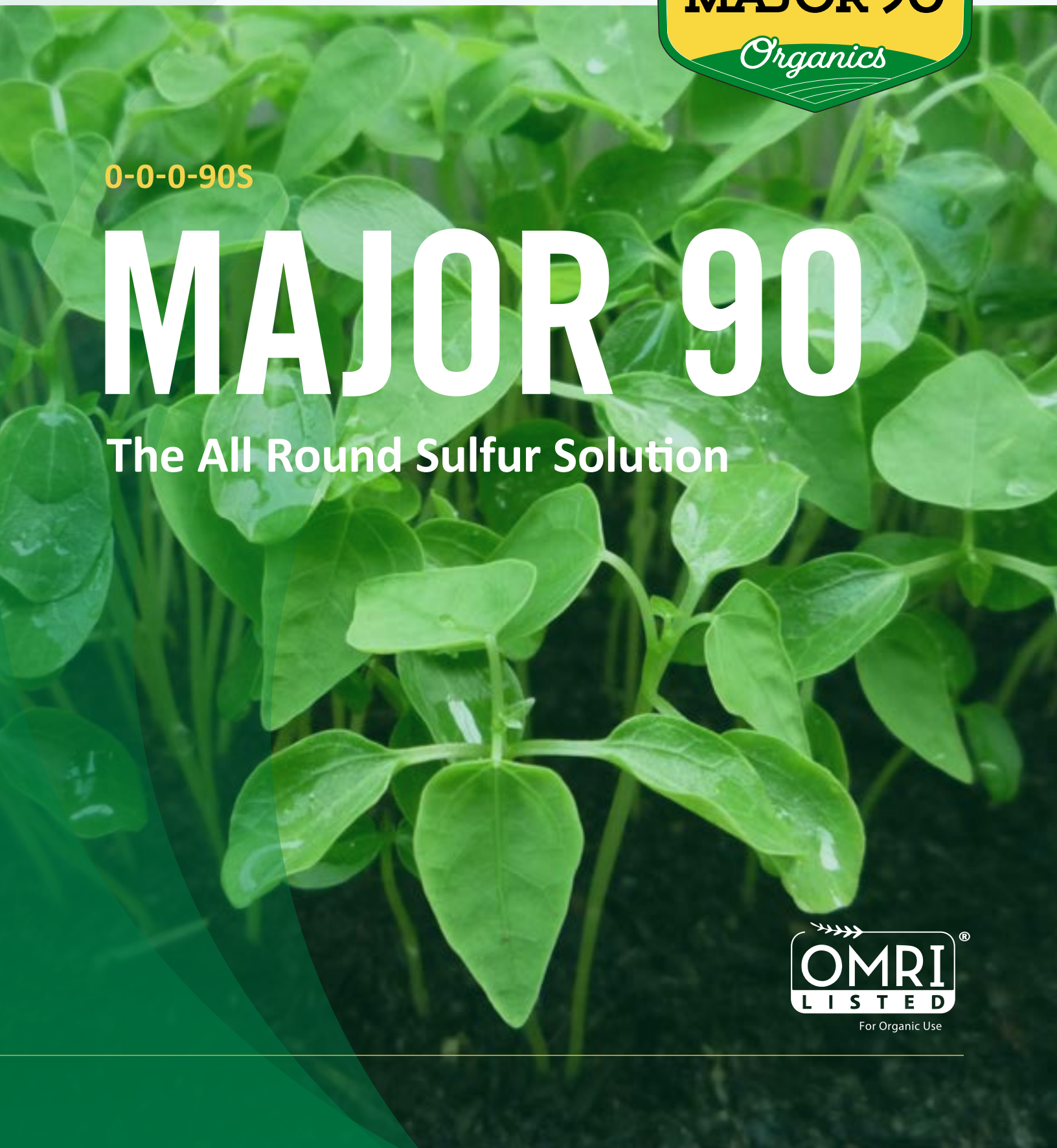
TESSENDERLO Kerley

MAJOR 90™ Organics

0-0-0-90S

MAJOR 90

The All Round Sulfur Solution



OMRI® LISTED

For Organic Use

WHY USE MAJOR 90?

- **MAJOR 90™** is a high analysis, granulated, sulfur fertilizer utilized for crop nutrition and as a soil amendment.
- Apply **MAJOR 90** to increase sulfur levels in the soil – an essential macronutrient for proper plant growth.
- **MAJOR 90** can also be used to increase nutrient availability in high pH soils.
- In calcareous soils, use **MAJOR 90** to improve the soil physical properties by dissolving calcium carbonate and freeing up calcium.

GUARANTEED ANALYSIS
90% Sulfur

PHYSICAL PROPERTIES

Color	Yellow / Green
Shape	Spherical
Fertilizer Granule Size	Average Grade, 300 SGN

HOW IT WORKS

MAJOR 90 granules are uniformly sized for blending with other similarly sized granular N, P, K fertilizers. The bentonite component imbibes soil moisture, causing the granules to disperse into finely divided particles, to speed up the conversion to sulfate (SO_4^{-2}). The elemental sulfur component of **MAJOR 90** works as a soil amendment by generating acidity as the sulfur is converted to sulfate by soil bacteria. Additionally, elemental sulfur resists leaching until converted into the sulfate form.

GENERAL APPLICATION AND USE RECOMMENDATIONS

Soil pH and Crop Productivity:

Soil pH has a direct effect on nutrient availability as well as soil microbial activity. An excessively low soil pH can increase the solubility of nutrients and induce toxicity symptoms in some crops. A soil with a high pH can indicate the presence of free lime in the soil as well as suboptimal plant-availability of essential nutrients. Optimum nutrient uptake for most crops occurs when the soil pH is between 6.0 and 7.5. Periodic testing of soils is the only way to determine soil pH and the appropriate course of action to maintain soils at their full productive potential.

Application Rates:

Soil amendment rate: Apply **MAJOR 90** depending on soil type, initial pH, free lime content (calcium carbonate) and crop nutritional needs. For the best results, follow soil test recommendations for your soils.

Nutrient rate: Most crops require between 5 and 40 pounds per acre of sulfur. **MAJOR 90** can supply sulfur alone or in combination with other sulfur-containing fertilizers as described in the following section.

MANAGEMENT STRATEGIES

Sulfur Nutrition:

Crops require sulfur in the form of sulfate (SO_4^{2-}) to reach their yield potential. Because **MAJOR 90** contains only elemental sulfur, it has to be oxidized by bacterial action in the soil before the crop can benefit from this form of sulfur. In cool soils, the conversion of elemental sulfur to sulfate sulfur can take several weeks to months.

Applications of **MAJOR 90** can be made in the Fall or early Spring to allow time for the elemental sulfur to become available to the plant.

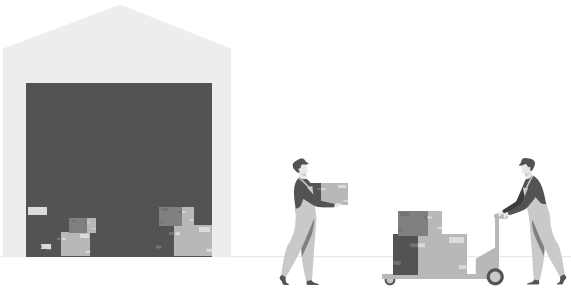
As soil temperature increases in the Spring, conversion to sulfate will increase but may not be fast enough for early season crop requirements. In this case, use a soil test to determine if a supplemental source of sulfate sulfur is necessary. Thio-Sul® (ammonium thiosulfate) and KTS® (potassium thiosulfate) are excellent products to supply a quickly available liquid form of sulfur. Thio-Sul blends in any ratio with UAN and/or urea solutions. KTS blends in any ratio with 10-34-0 solution. In the case of crops like established alfalfa where soil incorporation is not possible, a supplemental form of sulfate or thiosulfate sulfur may be necessary to meet crop requirements until the elemental sulfur in **MAJOR 90** becomes available to the crop.

Soil Amendment:

MAJOR 90 can be used to reduce soil pH in high pH soils. Soil tests are important to determine the right rate and timing of application in these situations. Soil texture and organic matter content should be considered when attempting to lower soil pH. Soils with higher levels of clay and organic matter require more sulfur than in sandier soils.

MAJOR 90 can also function as part of a management program for saline and sodic soils. When free lime (calcium carbonate) is present in the soil, the acidity generated from the oxidation of the elemental sulfur will dissolve the calcium carbonate and free up the calcium (see the equation below). Calcium improves soil physical properties by allowing water to move more efficiently through the soil to help leach accumulated salts below the root zone.

$$CaCO_3 + 2H^+ \rightarrow Ca^{2+} + CO_2 \uparrow + H_2O$$



HANDLING AND STORAGE

MAJOR 90 Sulfur will blend and store well with other granular fertilizer products. Accepted blending and handling procedures should be followed.

SAFETY

Please refer to the MAJOR 90 Safety Data Sheet for all safety-related information.

CONTACT INFORMATION

2910 N 44th Street, STE 100 | Phoenix, AZ 85018

Telephone: 602-889-8300 | Toll-Free: 800-525-2803

Email: info@cropvitality.com | **cropvitality.com**