



ISP technologies

environmentally clean crop production for healthier food

Onion

Drip Irrigation

(Rates Based on "Per Acre", at a population of 87,060 plants)

Dry or Bulk Fertilizer: Apply approximately 30% - 50% of your expected nutrient requirements as granular materials prior to planting. These products should be incorporated into the soil with final bed preparation. Applying only a portion of the necessary nutrients before planting will help prevent nutrient leaching and runoff while still providing a good nutritional start to the season. Fertility guidelines: 150 units of N, 90 units P₂O₅, 200 units K₂O, 50 units Ca, 30 units Mg, and 48 units S for a good yield. Once you determine your fertility requirements based upon your soil levels, it is always recommended that bulk fertility be split into three applications. The granular preplant, then another 25% - 30% through fertigation in late May to early June, then the balance two to three weeks later. The S can be achieved with ammonium sulfate, and from 100 to 200 pounds per acre is recommended, based upon current S levels. Sufficient magnesium in balance with calcium is critical in growing great onions. Adjust soil pH upward if your soil is 6.0, or lower.

It should be noted that this program is presented as a guideline only based upon research and the experiences with a number of growers. It is based on transplanting the second week of April, or direct seeding in the last week of March. Recommendations are presented as if planting 4 "lines" per bed, with 6" spacing in each line. With the wide variances possible from both soil types and environmental conditions present during any particular season, your actual recommendation can vary from what is presented. It is always advisable to discuss actual management practices with your local ISP specialist.

Soil Application Prior to Planting:

Prior to seeding, 16 fluid ounces Metabolik HV-1, and 1/2 to 2 gallons PhytoGro Xtra. These products can be applied with a burn-down application of herbicide prior to planting.

Direct Seeding:

24 - 32 fluid ounces Metabolik SB, broadcast across bed just prior to planting.

Seeding into Trays: (per 100 square feet):

Following planting mist top of trays with, 1 - 2 fluid ounces Metabolik SB, and 1/8 cup 10-45-10 or 15-30-15.

Transplanting: Mix should contain: 8 pounds 10-45-10; 24 fluid ounces PhytoGro Xtra; and 16 fluid ounces Metabolik SB per 100 gallons of solution.

NOTE, The goal is to achieve aggressive early vegetative growth in order to increase potential number of leaves, as there is a direct correlation between leaf count and final bulb size. The more aggressive growers are always observing all aspects of plant growth, vegetative development and of course any outbreak of pests or disease. Although this provides valuable data, it is recommended that tissue tests be taken to monitor actual nutrient uptake and potential deficiencies. The first tissue sample should be taken three weeks following transplanting; or, if direct seeded, four weeks following flag leaf. The second should be no less than five weeks prior to expected harvest. Use the following as targets from your lab results: N - 3 - 4%; P - .6%; K - 3 - 4%; Ca - .8%; Mg - .3%; S - .6%; B - 25 ppm; Zn - 20 ppm; Mn - 20 ppm; Fe - 100 - 200 ppm; and Cu - 10 - 15 ppm. Although it is usually a separate test, silicon should be at 3,500 ppm.



Samples from research projects drying, Colorado.

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Begin feeding one to two weeks following transplanting, or if direct seeded when the plants have emerged and have three to four leaves. The information in the table below is shown as "per week" application rates, and based on a mid-April transplanting.

Week	Per Acre	ISP Soluble Plant Foods	Other Notes, micronutrients, calcium, magnesium
1 - 2	10 pounds	15-30-15	Include SiGuard at 1 tsp. (5 ml), plus MetaboliK HV-1 at 1 tsp. (5 ml) per gallon either every 10 days or with crop protection sprays.
3	15 pounds 10 pounds 8 ounces	15-30-15 & 34-4-4-4S SiGuard	Watch soil moisture throughout growing season, as onions require significant water but excess can create disease opportunities.
4	10 pounds 15 pounds 8 ounces	15-30-15 34-4-4-4S SiGuard	First tissue test. Begin adding 64 ounces MetaCal to weekly fertigation.
5	15 pounds 8 ounces	5-25-25 SiGuard	Fertigate second "bulk fertility" application based upon tissue numbers, split into 2 or more applications during next 2 weeks. NC237 is a good N source.
6	15 pounds 8 ounces	5-25-25 SiMag58	Switch from SiGuard to SiMag58 foliarly at 1 tsp (5 ml) per gal. every 5 - 7 days with other foliar materials. Continue MetaboliK HV-1 at 1 tsp. per gallon at 7 - 10 day intervals.
7	20 pounds 20 pounds	5-25-25 4-18-38	Second tissue test, adjust nutrients accordingly. Complete third "bulk fertility" applications.
8	20 pounds	5-25-25	
9 to end	20 pounds	5-25-25	Continue until 10% of tops have dropped. At that point, discontinue feeding and reduce watering. At 40% - 50% top drop, discontinue watering.

Apply 64 fluid ounces MetaCal, or CalStore, through the fertigation system weekly when not applying any P containing nutrients. Onions require calcium for both flavor and storage quality. Fill irrigation lines with water, inject CalStore or MetaCal, then flush lines with clear water. This will ensure that no clogging precipitates are formed and that your onions get plenty of calcium in balance with magnesium.

The seasonal target for SiGuard is 2 pounds per acre to be applied through fertigation and another 1/2 pound through foliar applications. Control of thrips is necessary for an optimum onion crop.

Foliar Applications: Foliarly applied nutrient (K, Ca and Mg) will greatly assist growers in maintaining sufficient amounts of nutrient when coupled with a proper fertigation program, especially at key stress points. Examples are early bulb swell and maturation. Include ISP Plant Food and SiMag58 at 1 - 2 tsp. each per gallon of foliar solution. Spray weekly with any foliar applications for pest management. Calcium supplements CalStore and MetaCal can be applied foliarly with pest management materials, but not with 5-25-25 in order to avoid any reactions with phosphorous (P).



Onion trial, Michigan, 2012. Variety: Candy. Nutrient applied through the drip line was identical, this trial was to illustrate foliar differences alone. The control (top of photo) yielded 32.28 pounds, the foliar treated yielded 36.12 - a 19.65% increase.

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