

## Vegetable Gardening - Nitrogen Recommendations

Fact Sheet 7.247

Garden Series | Basics

By C.E. Swift\*

Revised by E. Hammond\*\*

Soil should contain an adequate supply (40 ppm) of nitrogen (N) when the garden is planted. A soil test conducted the previous fall or in early spring is the best way to determine if more nitrogen is needed. As the plants use up the soil's supply of nitrogen they become starved for more. While N starvation may not be obvious it may affect the quality and quantity of the vegetables you harvest.

*Note:* If a *soil test* indicates a high level of N to start the season, additional N during that growing season *may not be needed*.

If a soil test was not conducted, the application of eight ounces (one-half pound) of N per one-thousand square foot of the vegetable garden, prior to planting is recommended. In areas where beans, peas, or other legumes are to be planted the application of N should be avoided as this can reduce the yield of these vegetables.

### Calculating the amount of fertilizer needed

The recommendations in this fact sheet are based on the weight of N, not the weight of the fertilizer that needs to be applied. Synthetic fertilizers<sup>1</sup> and organic products used as fertilizers contain varying levels of N. To ensure you don't over apply nitrogen, the percentage of the N in the product needs to be taken into account when applying it. *The*

*recommendation of four ounces of N per one-thousand square foot area of garden does not mean four ounces of fertilizer should be applied.*

To determine the amount of fertilizer needed to apply the recommended amount of fertilizer, divide the ounces of N recommended by the percentage of N in the fertilizer.

### Examples

Ammonium Sulfate with 21% N: If four ounces of N is required, divide 4 by .21 (% of N in the product). Thus 19 ounces (1 pound plus three ounces) of ammonium sulfate are needed to supply the 4 ounces of N needed. *Note:* One cup of ammonium sulfate weighs approximately 8 ounces.

Corn gluten with 9% N: When four ounces of N is needed then slightly over 2 <sup>3</sup>/<sub>4</sub> pounds of corn gluten needs to be applied ( $4 \div 0.09 = 44.4$  ounces (2.78 pounds)). *Note:* One pound=16 ounces.

### Recommendations

The following information provides guidelines for additional amounts and timing of N needed by vegetables during the growing season, to ensure they produce the best crop possible.



### Quick Facts

- Vegetables need varying amounts of nitrogen (N) during the growing season for maximum production and quality.
- Over-application of nitrogen can result in poor vegetable quality and low yields.
- Nitrogen can be applied in an organic or inorganic form.
- Determining the amount of nitrogen in a fertilizer and how much of the fertilizer product to apply is easy.
- The application of nutrients other than nitrogen should be based on a soil test.

\*C.E. Swift, former Colorado State University Extension area horticulture agent, TriRiver Area, Grand Junction. \*\*E. Hammond, Colorado State University Extension agent, horticulture, Adams County.

## **Asparagus**

Apply 1.6 to 2.4 ounces of N per 100 square foot area in early spring as the asparagus emerges and again after the last harvest in June.

## **Beans**

Use an inoculum of nitrogen-fixing bacteria—do not side-dress<sup>2</sup> with N.

## **Broccoli**

Side-dress with 4 ounces of N per 250 foot of row when plants are half grown.

## **Brussels sprouts**

Apply one side-dress application of 4 ounces of N per 250 foot of row when plants are 12 inches tall. Water appropriately to keep the crop growing vigorously during the heat of summer.

## **Cabbage**

Side-dress with 8 ounces of N per 250 foot row when plants are half grown.

## **Carrots and beets**

Side-dress with 4 ounces of N per 250 foot of row, 4 to 6 weeks after planting. Do not apply fresh manure; misshapen roots may result.

## **Cauliflower**

Side-dress with 4 ounces N per 250 foot row when plants are half grown.

## **Eggplant**

Side-dress with 4 ounces of N per 250 foot of row when plants are half grown and again immediately after harvesting the first fruits.

## **Leafy Vegetables**

Side-dress with 12 ounces ( $\frac{3}{4}$  pound) of N per 250 foot of row, 4 to 6 weeks after planting.

## **Onions**

Apply 8 ounces (one-half pound) of N per 100 foot of row 3 weeks after planting. Repeat every two to three weeks until the necks start to soften.

Avoid applying N after bulbs begin to form as this can result in late maturity, large necks that are difficult to cure, soft onion bulbs, and overall poor storage quality

## **Peas**

Approximately 80% of the N requirement of peas comes from nitrogen fixation by Rhizobia. Apply one-half pound of N per 1000 square foot area at seeding if the soil test shows the N-NO<sub>3</sub> level below 5 ppm. This will help ensure nitrogen deficiency does not occur before N fixation occurs. Rhizobia inoculation is strongly recommended.

## **Peppers**

Apply 4 ounces of N per 250 foot of row after the first flush of peppers is set.

## **Potatoes**

Apply 12 ounces of N per 250 foot row per season as follows: 30% (3.6 oz) of N at planting; ~20% (2.8 oz N) at tuber set when tubers are approximate nickel size, ~20% (2.8 oz N) two weeks later followed by a final application of ~20% (2.8 oz N) two week after second application but no later than July 31st.

## **Sweet Corn**

Apply 8 ounces of N per 250 foot row when plants have 8 to 10 leaves.

Apply 3.2 ounces ( $\frac{1}{5}$  pound) of N per 250 foot row when silks first appear.

## **Tomatoes**

Work 4 ounces of N per 250 foot of row into the soil at planting; Side-dress with another 4 oz N when fruit are about  $\frac{1}{3}$  grown. After picking the first ripe fruit, side-dress with another 4 oz N. Urea or ammonium nitrate fertilizers are not recommended sources of N.

## **Vine Crops**

Melons, pumpkins, squash, cucumbers, etc.

When the plants begin to vine, in midseason, apply a side-dressing of 2.5 ounces of N for each 250 feet of row.

<sup>1</sup>Do not use 'Weed and Feed' type fertilizers on vegetables. They contain weed killers that will kill vegetable plants.

<sup>2</sup>Side-dress, aka lay-by, refers to applying fertilizer beside the crop row.