California Fertilization Guidelines

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California Fertilization Guidelines

These guidelines have been written by scientists from the University of California, Davis with support from CDFA-FREP. The guidelines are based on research results from studies carried out in California and elsewhere. For an optimal fertilization program, site-specific information needs to be taken into account. A discussion about site-specific adjustments can be found [here](#).

Field crops and vegetables

- Alfalfa
- Barley
- Dry Beans
- Broccoli
- Carrot
- Cauliflower
- Celery
- Corn
- Cotton
- Lettuce
- Melons
- Onion
- Potato
- Rice
- Strawberries
- Sunflower
- Processing Tomatoes
- Wheat
- Annual Crops in General
- Cebolla (en Español)
- Tomate (en Español)
- Cultivos Anuales (en Español)
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Tree crops

- Almonds
- Avocado
- Citrus
- Grapevines
- Olives
- Peaches / Nectarines
- Pistachio
- Prunes / Plums
- Walnuts
Fertilization Guidelines

Additional Information:
- Tomato Nitrogen Uptake and Partitioning
- Tomato Production in California
- Tomato Nitrogen Management Brochure
- FREP Database

Links:
- UCCE Vegetable Research & Information Center
- UC Vegetable Crops Nutrient Management
- UC Integrated Pest Management online
- California Tomato Research Institute
- California Tomato Growers Association (CTGA)
- Processing Tomato Advisory Board
- World Processing Tomato Council
- Tomato & Health
- Tomato Wellness

Nitrogen (N)
- Preplant N
- Starter N

Phosphorus (P₂O₅)
- Preplant P
- Starter P

Potassium (K₂O)
- Preplant K
- Starter K

Soil Test

Leaf Analysis
- Soil Applied N
- Foliar N

Soil Applied N

Application Rate

For drip-irrigated processing tomatoes, Hartz and Bottoms[4] found that a seasonal rate of approximately 175 lbs N/acre is adequate to maximize fruit yields in most soils. Contact your local farm advisor for more information.

Krusekopf and coworkers[5] carried out a study in the Central Valley in ten furrow irrigated fields. A response to N fertilization was observed in only four fields. In the responsive fields, no significant yield increase with sidedress N application rates above 100 lbs/acre was observed. The total available N in these fields, which included the pre-sidedress nitrate-N in the top 2 feet of the profile and the sidedress N, averaged 170 lbs/acre[6]. Based on this and other studies, the recommended seasonal N application rate for furrow irrigated tomatoes is 100–150 lbs N/acre[6].

Mode of Application

Fertilizer Type

Time of Application

References:
- Nitrogen
Fertilization Guidelines

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Guidelines Home
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N uptake and removal rates

Tomato Nitrogen Uptake and Partitioning

Seasonal N Uptake

Nitrogen in the aboveground biomass of processing tomatoes measured in 11 commercial fields in the Central Valley. Uptake was determined by harvesting the aboveground biomass at different times during the season [3].

Nitrogen Partitioning

Approximately 70% of the total aboveground N of processing tomatoes grown in research plots at UC Davis and in commercial fields was in the fruits, with the rest being in the vines [4].

Nitrogen Removed at Harvest

Nitrogen removed at harvest of processing tomatoes. The overall average is weighted for the number of observations in each data set. More information can be found here [2].

<table>
<thead>
<tr>
<th>Location</th>
<th>Years</th>
<th>Removal (lbs N/ton fresh weight)</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hartz and Bottoms, 2009</td>
<td>2007-2008</td>
<td>Mean 3.00, Range 2.6 - 3.3</td>
<td>[4]</td>
</tr>
</tbody>
</table>