



# Onion

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## Varieties

Onion varieties are day length sensitive regarding bulbing. As such, they are classified as short, intermediate and/or long day types according to length of day light hours required for bulbing to initiate.

*Long Day Bulbs (14-16 hours):* Armado, Candy, Carmen, White Sweet Spanish, Yellow Sweet Spanish

*Intermediate Day Bulb (12-14 hours):* Alabaster, Candy Super Star, Cimarron, Yula

*Short Day Bulb (10-12 hours):* Crustal Wax, Early Grano 502, Eclipse, Granex, Red Burgandy, Yellow TX Supersweet 1015

*Bunching:* Crimson Forest, Evergreen Long White, Southport White

## Soil Preferences

Fertile, well-drained sandy loam soils with good moisture holding capacity and a pH range of 6.0-8.4. Onions will tolerate a wide range of soil types. Avoid acid soils or heavy, tight soils with poor internal drainage or those that crust or bake. They will require liming if pH below 6.

## Optimum Growing Conditions

Onions perform best when during early growth conditions are moist to dry and cool (mean temperature of 60°F). During maturity and bulbing the best conditions are hot and dry (bulbing favored by 70-80°F in combination with correct day length). No bulbing occurs below 50-60°F, regardless of day length.

## Establishment Methods

<b>Planting Method</b>	Predominantly direct seeded, but can be transplanted
<b>Optimum Time</b>	Fall - temperature < 95°F in seed zone Spring - temperature > 50°F in seed zone
<b>Seeding rate</b>	Raw - 2-4 lbs/acre Coated - 10-20 lbs/acre
<b>Approx seed/oz</b>	8,500

<b>Seeding depth</b>	0.25-0.75"
<b>Seedling spacing</b>	2-4" in-row with 2-4 rows on 38-40" wide raised beds; 5-7 rows on 80" wide raised beds

### Fertility/Fertilization

Rates presented as actual lbs/acre N<sub>2</sub>, P<sub>2</sub>O<sub>5</sub>, and K<sub>2</sub>O (base actual rates applied on soil test results).

Generalized rate: 120 - 80 - 80 lb/acre	
<b>N*</b>	70-150; 20 lbs pre-plant + 25-40 lbs side-dressed on 3 week intervals until 40 days prior to maturity
<b>P</b>	60-80 lbs/acre banded 2" below seed at planting
<b>K</b>	60-80 lbs/acre (not normally required in most areas of Texas)

\* Ammonium nitrate is very stable and least likely to evaporate. Urea and ammonium sulfate evaporate if not incorporated.

### Water/Irrigation

High demand (25-30"/season or 1-3"/week). Critical periods are during stand establishment and bulb development through maturity. Discontinue irrigation at first evidence of top falling. Moisture stress induces splits and doubles.

### Pest Management

#### Onion Diseases and Common Name of Fungicidal Controls

DISEASE	FUNGICIDE*	OMRI LISTED FUNGICIDE**
<b>Botrytis blast and neck rot</b>	Azoxystrobin, Chlorothalonil, Fluopicolide, Iprodione, Pyrimethanil, Sodium Tetraborohydrate Decahydrate	<i>Bacillus subtilis</i> , Clove, Rosemary and Thyme Oil, Extract of <i>Reynoutria sachalinensis</i> , Hydrogen Dioxide, Neem Oil, <i>Streptomyces lydicus</i>
<b>Downy mildew</b>	Acibenzolar-S-Methyl, Azoxystrobin, Chlorothalonil, Copper Sulfate, Decahydrate, Dimethomorph, Fenamidone, Fluopicolide, Fosetyl-Al, Mancozeb, Mandpropamid, Maneb, Potassium Phosphite, Pyraclostrobin, Sodium Tetraborohydrate	<i>Bacillus pumilus</i> , <i>Bacillus subtilis</i> , Clove, Rosemary and Thyme Oil, Copper Hydroxide, Cuprous Oxide, Extract of <i>Reynoutria sachalinensis</i> , Hydrogen Dioxide, Neem Oil, <i>Streptomyces lydicus</i>
<b>Nematode</b>	1,3-Dichloropropene, Chloropicrin,	Azadirachtin

	Metam-Potassium, Metam-Sodium, Sesame Oil	
<b>Pink root</b>	1,3-Dichloropropene	
<b>Purple blotch &amp; Stemphyllium blight</b>	Azoxystrobin, Boscalid, Chlorothalonil, Copper Sulfate, Fenamidone, Fosetyl-AI, Iprodione, Mancozeb, Maneb, Potassium Phosphite, Propiconazole, Pyraclostrobin, Pyrimethanil, Tebuconazole	<i>Bacillus subtilis</i> , Copper Hydroxide, Cuprous Oxide, Extract of <i>Reynoutria sachalinensis</i>

### Onion Insect Pests and Common Name of Insecticidal Controls

<b>INSECT</b>	<b>INSECTICIDE*</b>	<b>OMRI LISTED INSECTICIDE**</b>
<b>Armyworm</b>	Cypermethrin, Gamma-Cyhalothrin, Lambdacyhalothrin, Permethrin, Spinetoram, Zeta-Cypermethrin	Azadirachtin, <i>Bacillus thuringiensis</i> , Pyrethrins, Spinosad
<b>Cutworm</b>	Cypermethrin, Deltamethrin, Gamma-Cyhalothrin, Lambdacyhalothrin, Permethrin, Zeta-Cypermethrin	Azadirachtin, <i>Bacillus thuringiensis</i> , Peppermint and Rosemary Oil, Spinosad
<b>Onion Maggot</b>	Chlorpyrifos, Diazinon, Malathion	Azadirachtin, Pyrethrins
<b>Thrips</b>	Acetamiprid, Deltamethrin, Imidacloprid, Malathion, Methomyl, Methyl Parathion, Oxydemeton-Methyl, Petroleum Oil, Potassium Salts of Fatty Acids, Sodium Tetraborohydrate Decahydrate, Spinetoram	Azadirachtin, Kaolin, Neem Oil, Peppermint and Rosemary Oil, Spinosad
<b>White Grub</b>		Azadirachtin
<b>Wireworm</b>	1,3-Dichloropropene, Diazinon	Peppermint and Rosemary Oil

### Weeds and Common Name of Herbicidal Controls

WEED	HERBICIDE*	OMRI LISTED HERBICIDE**
<b>Preplant incorporated</b>	Flumioxazin, DCPA, Bensulide, Pendimethalin, Trifluralin	Corn Gluten Meal
<b>Preemergence</b>	DCPA, Pendimethalin	
<b>Postemergence</b>	Carfentrazone, Buctril, Flumioxazin, Fluazifop, Oxyfluorfen, Paraquat, Sethoxydim, Glyphosate, Pelargonic Acid, Clethodim	D-Limonene, Clove Oil, Cinnamon and Clove Oil

\* The above is a partial listing of controls intended as examples. Some labels may have been revoked since the publication of this guide. Refer to product labels for specifics and use accordingly. Ensure that products with one of the listed active ingredients are registered for the crop it is to be used on. Failure to do the above may result in crop injury, death and/or citation for law violation. Humans, animals and the environment may also be adversely affected by misuse.

\*\* As stated in §205.206 of the National Organic Standards, pest management decisions should follow a hierarchical approach, which should be defined in a farm's organic systems plan. Please ensure that you have followed the appropriate steps and any product to be used in certified organic production systems has been approved by your certifying agent.

### Harvest

<b>Days after planting</b>	Direct seeded - 120-210 days Transplanted - 85-95 days Initiate harvest when 50-80% of the tops have fallen over
<b>Normal method</b>	Hand or machine Soil loosened with wing sweeps or rod weeder run several inches below bulbs. Bulbs then hand pulled, tops and roots clipped, and bagged. Normally allowed to field dry in bags prior to grading and packaging (can be forced air dried at 90-93°F for 8-16 hours).
<b>Containers</b>	50 lb sacks or fiberboard cartons
<b>Grades</b>	Based on bulb diameters ranging from 1" (boilers/prepacks) to over 4"(colossal)
<b>Packaging/Handling</b>	Graded, sorted and sacked(50 lbs)
<b>Anticipated yield/acre</b>	400-800 50 lb sacks

### **Transit Conditions**

32°F at 65-70% RH for 1-8 months; Chill injury at 31°F

### **Comments/Production Keys**

- Unlike many other vegetables, bolting (flower production) in onion is dependent upon temperature and not day-length
- If pencil size plants are exposed to temperatures in the low to mid 40's for a prolonged period, the incidence of bolting increases. This is especially true when rapid growth of early seeded onions is followed by a period of cool weather. The chilling effect appears to be accumulative over time.
- Successful production is dependent upon proper day-length class and variety selection for growing area. Bulbing is dependent upon day-length and temperature, not size or age of plants.
- Onions bulb earlier at warm temperatures than at colder temperatures
- Excessive moisture and fertility, particularly N, can delay maturity, reduce bulb quality and enhance transit or storage decay
- Bulb pungency is influenced by genetics, growing conditions, and soil nutrient content. High sulfur can increase bulb pungency.