



# Lettuce

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## Varieties

*Butterhead/Bibb:* Buttercrunch, Ermosa, Esmeralda, Summer Bibb

*Crisphead/Iceberg:* Classic, Mission, Prizehead

*Loose Leaf:* Black Seeded Simpson, Brunia Red, Crawford Re-Seeding, Green Ice, Lolla Rossa, Oakleaf, Red Fire, Red Sails, Redina, Ruby Red, Salad Bowl, Simpson Elite, Tango, Vulcan Red

*Romaine:* Frechles, Giant Caesar, Little Caesar, Parris Island, Plato II, Valmaine

## Soil Preferences

Deep, well drained, black sandy loams with a pH 6 - 7.6; can tolerate a wide range of soils from fairly sandy (spring planting) to heavy clays (fall planting). Will not tolerate acid soils.

## Optimum Growing Conditions

Cool-season, mean temperatures between 55-60°F, cool nights especially critical for head quality. Temperature above 80°F retards heading and induces seed stalk initiation, tends to cause loose heads and bitterness.

## Establishment Methods

<b>Planting Method</b>	Direct seeded or transplanted
<b>Optimum Time</b>	Spring - soil seed zone temperature >40°F Fall - soil seed zone temperature <90°F
<b>Seeding rate lbs/acre</b>	Cool soils - 1.5-2 Warm soils - 2.5-3.5 Raw seed precision planted - 0.25-0.5 Coated seed - 3-4 seed/row ft/seedling row
<b>Approx seed/oz</b>	25,000
<b>Seeding depth</b>	1/8-1/4"
<b>Seedling spacing</b>	9-12" in 40" raised beds with 2 lines 12-14" apart

### 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: 70 - 80 - 120 lb/acre	
<b>N*</b>	60-100 lbs pre-plant incorporated
<b>P</b>	80-120 lbs banded approximately 2" below seed at planting
<b>K</b>	60-170 (mainly in East Texas)

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

### Water/Irrigation

8 - 12" uniformly applied; key stage during stand establishment; avoid excessive moisture just prior to head maturity, as it can cause puffiness or soft heads.

### Pest Management

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

DISEASE	FUNGICIDE*	OMRI LISTED FUNGICIDE**
<b>Damping off</b>	Thiram, Fludioxonil	
<b>Downy mildew</b>	Acibenzolar-S-Methyl, Copper Sulfate, Cymoxanil, Dimethomorph, Fenamidone, Fluopicolide, Fosetyl-Al, Mandpropamid, Maneb, Mefenoxam, Potassium Phosphite, Azoxystrobin, Propamocarb Hydrochloride, Pyraclostrobin, Sodium Tetraborohydrate Decahydrate	<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, Potassium Bicarbonate
<b>Gray mold</b>	DCNA Dicloran, Iprodione	Clove, Rosemary and Thyme Oil
<b>Nematode</b>	1,3-Dichloropropene, Metam-Potassium, Chloropicrin, Sesame Oil, Metam-Sodium	Azadirachtin
<b>Sclerotinia drop</b>	Metam-Potassium, Metam-Sodium	<i>Streptomyces lydicus</i> , <i>Gliocladium virens</i> GI-21
<b>Viruses</b>	Paraffinic Oil	

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

INSECT	INSECTICIDE*	OMRI LISTED INSECTICIDE**
<b>Aphid</b>	Acetamiprid, Bifenthrin, Diazinon, Dimethoate, Dinotefuran, Gamma-Cyhalothrin, Imidacloprid, Lambdacyhalothrin, Malathion, Methomyl, Oxydemeton-Methyl, Permethrin, Petroleum Oil, Potassium Salts of Fatty Acids, Sodium Tetraborohydrate Decahydrate, Soybean Oil, Spirotetramat, Thiamethoxam , Zeta-Cypermethrin	Azadirachtin, Garlic Juice Extracts, Neem Oil, Pyrethrins
<b>Armyworm</b>	Acephate, Bifenthrin, Carbaryl, Cryolite, Cypermethrin, Endosulfan, Flubendiamide, Gamma-Cyhalothrin, Lambdacyhalothrin, Spinetoram, Thiodicarb, Zeta-Cypermethrin	Azadirachtin, <i>Bacillus Thuringiensis</i> , Pyrethrins, Spinosad
<b>Corn Earworm</b>		Garlic Juice Extracts
<b>Cutworm</b>	Beta-Cyfluthrin, Bifenthrin, Carbaryl, Cyfluthrin, Cypermethrin, Diazinon, Flubendiamide, Gamma-Cyhalothrin, Lambdacyhalothrin, Methoxyfenozide, Permethrin, Zeta-Cypermethrin	Azadirachtin, <i>Bacillus thuringiensis</i>
<b>Leafhopper</b>	Beta-Cyfluthrin, Bifenthrin, Carbaryl, Cyfluthrin, Cypermethrin, Dimethoate, Dinotefuran, Endosulfan, Gamma-Cyhalothrin, Imidacloprid, Lambdacyhalothrin, Malathion, Paraffinic Oil, Permethrin, Petroleum Oil, Potassium Salts of Fatty Acids, Soybean Oil, Thiamethoxam, Zeta-Cypermethrin	Azadirachtin, Garlic Juice Extracts, Pyrethrins
<b>Leafminer</b>	Cyromazine, Dimethoate, Dinotefuran, Paraffinic Oil, Permethrin, Petroleum Oil, Thiamethoxam	Azadirachtin, Garlic Juice Extracts, Spinosad
<b>Looper</b>	Bifenthrin, Cypermethrin, Petroleum Oil, Zeta-Cypermethrin	Azadirachtin, <i>Bacillus thuringiensis</i> , Garlic Juice Extracts, Pyrethrins
<b>Thrips</b>	Beta-Cyfluthrin, Cyfluthrin, Dinotefuran, Imidacloprid, Methomyl, Petroleum Oil, Potassium Salts of Fatty Acids, Soybean	Azadirachtin, Neem Oil, Pyrethrins, Spinosad

	Oil, Spinetoram	
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**Weeds and Common Name of Herbicidal Controls**

<b>WEED</b>	<b>HERBICIDE*</b>	<b>OMRI LISTED HERBICIDE**</b>
<b>Preplant incorporated</b>	Bensulide	
<b>Preemergence</b>	Pronamide	
<b>Postemergence</b>	Carfentrazone, 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>	45-85
<b>Normal method</b>	Hand
<b>Containers</b>	Field cartons 18-30 heads each
<b>Grades</b>	Field graded based on defects and head firmness
<b>Packaging/Handling</b>	40-45 lb fiberboard boxes Immediate cooling (preferably vacuum type) required to preserve quality and extend shelf life
<b>Anticipated yield/acre</b>	22,500 lbs/acre (500 cartons)

**Transit Conditions**

32°F at 98% RH

### **Comments/Production Keys**

- Extremely perishable vegetable. Rapid pre-cooling a must.
- Discontinue or reduce irrigation at the onset of maturity with crisp head types
- High temperatures tend to cause loose heads and bitterness
- Raised bed culture is ideal for lettuce, as it:
  - reduces incidence of soil compaction during stand establishment
  - reduces disease
  - enables better soil moisture management
- Cannot tolerate low pH soils(below 6 may need liming)
- Shallow planting of the small seed causes problems with stand establishment, especially with early fall planted crop
- Will tolerate considerable frost during its early stages of development; severe frost when nearly mature increases the incidence of slime development
- Shallow rooted crop, very poor competitor for nutrients
- Shallow root system dictates uniform moisture levels throughout growth for Optimum yield and quality