



# Cabbage

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## Varieties

Bravo, Cheers, Early Jersey Wakefield, Golden Acre, Green Boy, Market Prize, Rio Verde, Ruby Ball, Ruby Perfection, Sanibel, Savoy King

## Soil Preferences

- Fertile, well-drained, medium textured soils
- pH range of 6.0 - 7.5
- Relatively well adapted to heavy soils, but poorly adapted to light sands.

## Optimum Growing Conditions

Cool days (60-70°F) with cool to cold nights (40-50°F). Will tolerate wide temperature fluctuations and warm temperatures; 15 - 20°F is normal freeze threshold.

## Establishment Methods

<b>Planting Method</b>	Direct seeded or transplanted
<b>Optimum Time</b>	Spring - soil seed zone temperature > 50°F Fall - soil seed zone temperature < 100°F
<b>Seeding rate</b>	Raw Seed - 0.5-1.5 lbs/acre at 0.25" depth Coated Seed - 6-8 lbs/acre at 0.5" depth.
<b>Approx seed/oz</b>	9,000
<b>Seedling spacing</b>	Fresh market - 1-2 rows on 24 to 40" wide raised beds with 6-12" in-row spacing Processing - 9-15" in-row spacing

### 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: 150 - 75 - 80 lb/acre	
<b>N*</b>	100-130 pre-plant 25-30 lbs N/acre side-dressed at thinning (4 true-leaf stage), or at transplanting
<b>P</b>	60-80 banded approximately 2" below seed at planting
<b>K</b>	80-100 (additional potassium 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 water demand (20-30"). Uniform moisture levels required throughout growing season for Optimum yields.

### Pest Management

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

DISEASE	FUNGICIDE*	OMRI LISTED FUNGICIDE**
<b>Alternaria</b>		Clove, Rosemary and Thyme Oil, Copper Hydroxide, Neem Oil, <i>Streptomyces lydicus</i>
<b>Bacterial soft rot</b>		<i>Bacillus subtilis</i>
<b>Black rot</b>	Acibenzolar-S-Methyl, Copper Sulfate, PCNB	<i>Bacillus subtilis</i> , Clove, Rosemary and Thyme Oil, Copper Hydroxide, Cuprous Oxide
<b>Black rot</b>	Acibenzolar-S-Methyl, Copper Sulfate, PCNB	<i>Bacillus subtilis</i> , Clove, Rosemary and Thyme Oil, Copper Hydroxide, Cuprous Oxide
<b>Downy mildew</b>	Acibenzolar-S-Methyl, <i>Bacillus subtilis</i> , Chlorothalonil, Copper Sulfate, Dimethomorph, Fenamidone, Fluopicolide, Fosetyl-Al, Mandpropamid, Maneb, Mefenoxam, Potassium Phosphite, Azoxystrobin,	<i>Bacillus pumilus</i> , Clove, Rosemary and Thyme Oil, Copper Hydroxide, Cuprous Oxide, Extract of <i>Reynoutria sachalinensis</i> , Neem Oil, Potassium Bicarbonate,

	Pyraclostrobin	<i>Streptomyces lydicus</i>
<b>Nematode</b>	1,3-Dichloropropene, Chloropicrin, Ethoprop, Metam-Potassium, Metam-Sodium, Sesame Oil	Azadirachtin

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

INSECT	INSECTICIDE*	OMRI LISTED INSECTICIDE**
<b>Aphid</b>	Acetamiprid, Bifenthrin, Cypermethrin, Diazinon, Dinotefuran, Disulfoton, Gamma-Cyhalothrin, Imidacloprid, Lambdacyhalothrin, Malathion, Methyl Parathion, Naled, Oxydemeton-Methyl, 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>	Beta-Cyfluthrin, Bifenthrin, Carbaryl, Chlorpyrifos, Cyfluthrin, Cypermethrin, Endosulfan, Flubendiamide, Gamma-Cyhalothrin, Lambdacyhalothrin, Methyl Parathion, Novaluron, Permethrin, Zeta-Cypermethrin	Azadirachtin, <i>Bacillus thuringiensis</i> , Pyrethrins, Spinosad
<b>Beetle</b>		Azadirachtin, Garlic Juice Extracts, Pyrethrins
<b>Cabbage Aphid</b>	Acetamiprid, Bifenthrin, Cypermethrin, Diazinon, Dinotefuran, Disulfoton, Gamma-Cyhalothrin, Imidacloprid, Lambdacyhalothrin, Malathion, Methyl Parathion, Naled, Oxydemeton-Methyl, Petroleum Oil, Potassium Salts of Fatty Acids, Soybean Oil, Spirotetramat, Thiamethoxam, Zeta-Cypermethrin	Azadirachtin, Garlic Juice Extracts, Neem oil, Pyrethrins
<b>Cutworm</b>	Beta-Cyfluthrin, Bifenthrin, Carbaryl, Chlorpyrifos, Cryolite, Cyfluthrin, Cypermethrin, Diazinon, Endosulfan, Esfenvalerate, Flubendiamide, Gamma-Cyhalothrin, Lambdacyhalothrin, Methoxyfenozide, Permethrin, Zeta-Cypermethrin	Azadirachtin, <i>Bacillus thuringiensis</i>
<b>Looper</b>	Bifenthrin, Cypermethrin, Methomyl, Naled, Petroleum Oil	Azadirachtin, <i>Bacillus thuringiensis</i> , Garlic Juice Extracts, Pyrethrins

<b>Moth</b>		Azadirachtin
<b>Thrips</b>	Acetamiprid, Beta-Cyfluthrin, Bifenthrin, Dinotefuran, Gamma-Cyhalothrin, Imidacloprid, Lambdacyhalothrin, Novaluron, Oxydemeton-Methyl, Petroleum Oil, Potassium Salts of Fatty Acids, Soybean Oil, Spinetoram, Thiamethoxam	Azadirachtin, Neem Oil, Peppermint and Rosemary Oil, Pyrethrins, Spinosad
<b>Whitefly</b>	Beta-Cyfluthrin, Bifenthrin, Cyfluthrin, Cypermethrin, Dinotefuran, Endosulfan, Gamma-Cyhalothrin, Imidacloprid, Lambdacyhalothrin, Novaluron, Paraffinic Oil, Petroleum Oil, Potassium Salts of Fatty Acids, Sodium Tetraborohydrate Decahydrate, Soybean Oil, Spiromesifen, Spirotetramat, Thiamethoxam, Zeta-Cypermethrin	Azadirachtin, Garlic Juice Extracts, Neem Oil, Pyrethrins

### Weeds and Common Name of Herbicidal Controls

<b>WEED</b>	<b>HERBICIDE*</b>	<b>OMRI LISTED HERBICIDE**</b>
<b>Preplant incorporated</b>	Clomazone, DCPA, Napropamide, Bensulide, Trifluralin	Corn Gluten Meal
<b>Preemergence</b>	DCPA, Napropamide	
<b>Postemergence</b>	Carfentrazone, 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 - 110-130 Transplanted - 60-80
<b>Optimum Stage</b>	Fresh market - Heads 50-60% solid, 6-8" in diameter, and weigh > 1 lb Processing - Heads 50-60% solid, > 6-8" in diameter, and weigh > 4 lbs
<b>Normal method</b>	Hand harvested
<b>Containers</b>	Bulk wagons, some direct field packing into 50 lb meshed bags
<b>Grades</b>	Based on size and uniformity <ul style="list-style-type: none"> <li>• Small - Heads under 2 lbs</li> <li>• Medium - Heads 2-5 lbs</li> <li>• Large - Heads &gt; 5 lbs</li> </ul>
<b>Packaging/Handling</b>	Normally in 50 lb mesh bags or 53 lb cartons
<b>Anticipated yield/acre</b>	15-20 tons

## Transit Conditions

32°F at 98-100% RH (freezing point - 30.4°F). Shelf life - 3 weeks to 6 months.

## Comments/Production Keys

- Warm temperatures and increasing day length will cause early flowering of the heads
- Soils pH >7.8 may induce black hollow stems; Solubor (Bo) at 5-10 lbs/A foliar applied prior to heading reduces severity
- Crop may have an allelopathic adverse effect on following crop
- High nitrogen requirements
- Shallow, horizontal rooting patterns dictates very shallow cultivation to ovoid root pruning and reduced yields
- Production on light soils requires high level of management
- Better suited to early fall production in most areas of the state
- Water management very critical for stand establishment of early fall direct seeded crop