

## PEPPER

VARIETIES*	Season	Fruit Shape	Comments
Acapulco	Early	Blocky	Vigorous plant
Early Sunstation	Early	Blocky	Yellow at maturity
King Arthur	Early	3-4 lobes, blocky	Resistant to strain 2 of bacterial spot
Merlin	Early	Blocky	
X3R Red Knight	Early		Very good red
Paladin	Early - Main	Long blocky	Tolerant to phytophthora
Sentinel	Early - Main	Blocky	Resistant to strains 1,2 of bacterial spot
Vidi	Early - Main	4 lobes, long	Good for red peppers
Boynton Bell	Main	Blocky	Resistant to strains 1,2,3 of bacterial spot
Commandant	Main	Long blocky	Resistant to strains 1,2,3 of bacterial spot
Bell King	Main	Long blocky	
Camelot X3R	Main	Long blocky	Resistant to strains 1,2,3 of bacterial spot
Enterprise	Main	Long blocky	
Lantern	Main	Long blocky	

**Green Bells for trial:** Brigadier, X3R Aladdin, X3R Wizard (both with some resistance to bacterial spot).

**Colored Bells for trial:** Gold Finch (yellow); Orange Grande, Oriole (orange); Sweet Chocolate, Blackbird (brown to black).

**Banana peppers/cubanelles:** Sweet Banana (turns red at maturity); Key Largo (cubanelle, orange-red at maturity).

**Hot Peppers:** Hungarian Hot Wax, Jalapeno Mitla, Long Thick Red, Ring of Fire, Copacabana (yellow).

### SPACING

Rows 2 1/2 to 4 ft. apart. Plants 12 to 18 in. apart in row. Or plant in double/twin rows with 18 in. between row and 12 in. between plants. Raised beds, plastic mulch, and trickle irrigation recommended.

### GROWING TRANSPLANTS AND TRANSPLANTING

Fairly large, slightly hardened 6-9 week old plants are the best transplants. These should be grown in greenhouses having 75°F daytime temperatures. Germination is rapid between 65 to 85°F, very slow at 60°F, and ceases below 55°F. A few days at 60 to 65°F are sufficient for hardening before transplanting.

Transplants are often grown by seeding directly in plant-growing flats and thinning to about 4 sq. in. per plant when the first true leaf appears. Larger cell sizes (No. 50 or 72) work well to promote early yield, with smaller cell sizes (No. 100 or 120) recommended for plants to be grown for the remainder of the season. Direct-seeding in outdoor hotbeds or spotting seedlings in the plant growing flats also produces good transplants. Large-scale growers often use plants grown outdoors in southern states. An ounce of seed produces 1,500 to 2,000 good plants, and 4 oz. provides enough plants for an acre.

Set plants in the field when frost danger has passed, when the soil has warmed, and when the average daily temperature reaches 65°F. It does not pay to rush the season by planting too early. Raised beds and plastic mulch are recommended.

### FERTILIZING

**Lime:** To maintain a soil pH of 6.0 to 6.8.

**Preplant:** N, for soils with more than 3% organic matter and following soybeans, alfalfa or a grass-legume hay crop apply 50 lb. N per acre. For soils with less than 3% organic matter and the above rotation, apply 80 lb. N per acre. For peppers following corn, rye, oats, wheat, or a vegetable crop, apply 70 to 80 lb. N per acre. P<sub>2</sub>O<sub>5</sub>, 0 to 150 lb. per acre; K<sub>2</sub>O, 0 to 200 lb. per acre. Adjust according to soil type, previous management, and soil test results for your state. For transplants, a starter solution at the rate of 1 cup (8 oz.) per plant is recommended. See p. 3 for fertilizer type suggestions. If the transplant flat receives a heavy fertilizer feeding just prior to setting, the starter solution can be eliminated.

**Sidedress N:** Apply 40-50 lb. N per acre in a band to either side of the row 3 to 4-weeks after transplanting. Urea or calcium nitrate is recommended. If plastic mulch is used, this sidedressing can be skipped. Peppers are susceptible to calcium deficiency even when adequate levels of calcium are present in the soil. This disorder is called blossom end rot. It often occurs under conditions of inadequate or excessive watering and/or excessive N fertilization with an ammonium source. Where the soil pH has been adjusted to 6.0 or above, additional soil applied calcium does not correct the disorder. Addition of a foliar spray directly to the developing fruit may reduce the incidence of blossom end rot. Use calcium nitrate at the rate of 10-15 lb. per 100 gallons of water per acre.

DISEASES CONTROLLED	TREATMENT	COMMENTS
Anthracnose	Use disease-free seed and/or transplants. Practice a 3-4 year crop rotation.	
	Quadris Flowable at 6.2 to 15.4 oz. per acre.	Begin applications before disease outbreak. Use 7-14 day spray interval. Do not apply more than 2 sequential applications before alternating to a fungicide with a different mode of action.
	Cabrio EG at 8 to 12 oz. per acre.	Begin application of Cabrio EG prior to disease development and continue on a 7-14 day interval. Do not apply more than 2 sequential applications before alternating to a fungicide with a different mode of action. See label to avoid practices that could result in crop injury. 0 day PHI.
	Apply Flint at 3 to 4 oz. per acre.	Maximum 16 oz. and 4 applications per season. No more than 3 sequential applications of Flint or other strobilurin fungicide. 3 day PHI.
	Apply Maneb 80 (1.5 to 3 lb. per acre) or Manex (1.2 to 2.4 qt. per acre) at first sign of disease. Repeat at 7-10 day intervals.	7 day PHI.
Bacterial spot	Use resistant varieties wherever possible.	Use disease-free seed and/or transplants.
	In greenhouse apply Kocide DF at 2 to 3 TBSP, Kocide 2000 at 1.5 to 2.25 TBSP, or Kocide 101 at 4 to 6 TBSP per 1000 square feet. Champion WP at 4 to 6 TBSP per 1000 square feet. OR	Repeat at 5-10 day intervals.

DISEASES CONTROLLED	TREATMENT	COMMENTS
Bacterial spot (cont.)	Agri-mycin 17 at 200 ppm.	Begin applications at the 2 leaf stage on a 4 to 5 day schedule until transplanted in the field.
	Use copper sprays to reduce the rate of bacterial spread in the field. The combination of a copper fungicide plus Maneb will increase the effectiveness of the application.	Avoid consecutive seasons with peppers or tomatoes in the same field. Avoid working in the fields when plants are wet.
Phytophthora blight	Avoid waterlogged root zones throughout the season.	Grow peppers in well drained fields. Planting on raised beds will increase soil drainage. Rotate infested fields with non-host crops for several years.
	Use <b>resistant varieties</b> that are becoming available for commercial production. Check with seed sales representatives.	Water management is of primary importance for Phytophthora control.
	Treat soil with Ridomil Gold EC at 1 pt. per acre (broadcast; use less for band application) before transplanting. Subsequent directed sprays may be needed. OR Maneb 80 at 1.5 to 3 lb. per acre, or Manex at 1.2 to 2.4 qt. per acre at 7-10 day intervals.	Fungicides will not be effective if peppers are planted in poorly drained fields with a history of the disease. 0 day PHI.  Spray on a 7-10 day schedule when disease threatens. 7 day PHI.
Blossom-end rot	Avoid drastic fluctuations in moisture. Mulching plants may help. Avoid excessive nitrogen or potassium fertilization, rapid plant growth and root pruning during cultivation. Maintain soil pH and calcium levels in desired range. Choose varieties that are less susceptible.	Blossom-end rot is caused by a calcium deficiency in the fruit, although calcium levels in the soil may be sufficient. Wide fluctuations in water levels in the soil can trigger the disorder.
Root-knot nematode	Methyl bromide or Sodium methyl dithiocarbamate or Vydate L.	Sample fields during growing season for plant parasitic nematodes before planting. Avoid fields with high numbers of root-knot nematode. Methyl bromide and sodium methyl dithiocarbamate give best results when nematode populations are moderate to high. Vydate gives adequate control when nematode populations are low to moderate.

DISEASES CONTROLLED	TREATMENT	COMMENTS
Virus diseases	Grow resistant varieties. Plant disease-free transplants. Eliminate broadleaf weeds within 150 feet of field before crops are established.	Some broadleaf weeds may act as reservoirs for pepper viruses. Aphids may spread virus diseases from weeds to peppers and from diseased peppers to healthy peppers. Oil sprays timed with periods of aphid flight may prevent transmission of viruses by aphids but have short term residual effectiveness. Light-colored and reflective mulches may deter aphids from landing on plants and transmitting the virus.

HERBICIDE*	TREATMENT**	COMMENTS
<u>PREEMERGENCE</u>		
Dacthal 75WP	6 lb. on light-colored soils (less than 2% organic matter), 14 lb. on darker-colored soils in at least 50 gal. water per acre.	Apply 4-6 wks. after transplanting. Use 50-mesh or larger screens. Not effective on muck soils or other high organic soils.
Devrinol 50DF	2 lb. per acre on light-colored soils (less than 2% organic matter), 4 lb. on other soils.	Incorporate Devrinol 1 to 2 in. before seeding or transplanting. After harvest or prior to planting succeeding crops, a deep moldboard or disc plowing operation must be done. Do not seed alfalfa, small grains, sorghum, corn, or lettuce for 12 months after using Devrinol.
Trifluralin (4 lb./gal.)	1 pt. per acre on light-colored soils (less than 2% organic matter), 2 pt. on darker soils.	Apply before transplanting and incorporate immediately.
Prefar 4E	5 qt. per acre on light-colored sandy soils (less than 1% organic matter), 6 qt. on other soils.	Apply before planting and incorporate 1-2 inches.
Command 3ME	0.67 to 2.67 pt. per acre. Lower rates on coarse soils; higher rates on fine soils.	Apply before transplanting. <b>Not for use on banana peppers.</b>

\* For specific weeds controlled by each herbicide, check table on page 29.

\*\* Rates given are for overall coverage. For band treatment, reduce amounts according to the portion of acre treated.

## PEPPER

## WEED CONTROL (CONT.)

HERBICIDE*	TREATMENT**	COMMENTS
<u>POSTEMERGENCE</u>		
Poast 1.5E	1 to 1.5 pt. per acre plus 1 qt. COC per acre.	Apply to actively growing grass. Maximum of 4.5 pt. per acre per season. 20 day PHI.
Select 2EC	6 to 8 fl. oz. for annual grasses; 8 fl. oz. for perennial grasses; plus 1 qt. COC per 25 gal. spray solution (1% v/v).	Apply to actively growing grasses. Wait at least 14 days between applications. Maximum 32 fl. oz. per season. 20 day PHI.

NON-SELECTIVE HERBICIDES

paraquat	1.6 to 3.2 pt. per acre of 2.5L or 1.3 to 2.7 pt. per acre of 3L, plus 1 qt. COC or 4 to 8 fl. oz. nonionic surfactant per 25 gal. spray solution.	Apply to emerged weeds before transplanting, or apply the lowest rate as a directed spray to emerged weeds between crop rows. Do not allow spray to drift onto crop. RUP.
glyphosate	0.75 to 1.1 lb. acid equivalent (ae) per acre, equivalent to: 32 to 48 fl. oz. of 3 lb. ae/gal.; 26 to 40 fl. oz. of 3.7 lb. ae/gal.; 24 to 36 fl. oz. of 4 lb. ae/gal.; 1.2 to 1.8 lb. of 64.9% ae WSG.	Some formulations permit spot spray application - check label. Apply to emerged weeds before planting crop. Wait 3 days before planting. These rates are for annual weeds at application volumes of 10-40 gal. per acre. See label for rates at lower application volumes, for perennial weeds, and suggested adjuvants.

\* For specific weeds controlled by each herbicide, check table on page 29.

\*\* Rates given are for overall coverage. For band treatment, reduce amounts according to the portion of acre treated.

INSECTS CONTROLLED	TREATMENT	COMMENTS
European corn borer and flea beetles	Orthene 75S at 1 to 1.33 lb. per acre.	Also controls aphids. 7 day PHI.
	OR	
	Ambush 2EC at 6.4 to 12.8 fl. oz. per acre, or Pounce 3.2EC at 4 to 8 fl. oz. per acre or Pounce 25WP at 6.4 to 12.8 fl. oz. per acre.	<b>Bell peppers only.</b> Do not exceed 1.6 lb. a.i. per acre per season. Use higher rate for European corn borer. 3 day PHI.
	OR	
	Baythroid 2E at 1.6 to 2.8 fl. oz. per acre.	Do not exceed 16.8 fl. oz. per acre per season. Allow 7 days between applications. 7 day PHI.
	OR	
	SpinTor 2 SC at 4 to 8 fl. oz. per acre.	<b>European corn borers only.</b> Do not exceed 29 fl. oz. per acre per season. 1 day PHI.
	OR	

INSECTS CONTROLLED	TREATMENT	COMMENTS	
European corn borer and flea beetles (cont.)	Admire 2F at 16 to 32 fl. oz. per acre.	Do not exceed 0.5 lb. a.i. of Admire or Provado per acre per season. <b>Flea beetles only.</b> 21 day PHI.	
	OR Asana XL at 5.8 to 9.6 fl. oz. per acre.		<b>Flea beetles only.</b> Do not exceed 0.35 lb. a.i. per acre per season. 7 day PHI.
	OR Actara 25WDG at 2 to 3 oz. per acre	<b>Flea beetles only.</b> Do not exceed 8 oz. per acre per season. 0 day PHI.	
	Capture 2SC at 2.1 to 6.4 fl. oz. per acre.	Do not exceed 12.8 fl. oz. per acre per season. 7 day PHI.	
	Mustang at 2.4 to 4.3 fl. oz. per acre.	Do not exceed 25.6 fl. oz. per acre per season. 1 day PHI.	
Aphids	Conserve natural enemies.		Limiting the use of insecticides will conserve predators and parasites that will help keep aphid populations under control.
	Platinum 2SC at 5 to 8 fl. oz. per acre. OR	Do not exceed 8.0 fl. oz. per acre per season. 30 day PHI.	
	Admire 2F at 16 to 32 fl. oz. per acre. OR	Do not exceed 0.5 lb. a. i. or Admire or Provado per acre per season. Will not control viruses. 21 day PHI.	
	Provado 1.6F at 3.75 fl. oz. per acre. OR	Do not exceed 18.75 fl. oz. per acre per season. Allow 5 days between applications. 0 day PHI.	
	Fulfill 50WG at 2.75 oz. per acre. OR	Do not exceed 5.5 oz. per acre per season. 0 day PHI.	
	Orthene 75S at 0.67 to 1.33 lb. per acre. OR	7 day PHI.	
	Metasystox-R at 2 pt. per acre. OR	Do not exceed 2 applications per season. 3 day PHI.	
	Actara 25WDG at 2 to 3 oz. per acre. OR	Do not exceed 8 oz. per acre per season. 0 day PHI.	
	Dimethoate at 0.75 to 1 pt. per acre. OR	Use sufficient water to assure good coverage of plants. 0 day PHI.	
	Lannate LV at 1.5 to 3 pt., or 90SP at 0.5 lb. per acre. OR	3 day PHI.	

Threshold

Treat at 5-day intervals when peppers are fruiting if blacklight trap catches exceed 5 to 10 moths per night.

Aphid-transmitted viruses cannot be controlled by killing aphids with insecticides.

INSECTS CONTROLLED	TREATMENT	COMMENTS
Aphids (cont.)	Thiodan, Endosulfan, or Phaser 50WP at 1 to 2 lb. or 3EC at 0.6 to 1.3 qt. per acre. OR	Use sufficient water to assure good coverage of plants. Maximum of 2 applications per season. 4 day PHI, 1 day if less than 1 lb. applied.
	M-Pede at 1 to 2% by volume.	Must contact aphids to be effective. 0 day PHI.
Whiteflies	Platinum 2SC at 5 to 8 fl. oz. per acre. OR	Do not exceed 8.0 fl. oz. per acre per season. 30 day PHI.
	Admire 2F at 16 to 32 fl. oz. per acre. OR	Do not exceed 0.5 lb. a.i. of Admire or Provado per acre per season. 21 day PHI.
	Provado 1.6F at 3.75 fl. oz. per acre. OR	Do not exceed 18.75 fl. oz. per acre per season. Allow 5 days between applications. 0 day PHI.
	Align or Neemix according to label directions. OR	0 day PHI.
	M-Pede at 1 to 2% by volume. OR	Use sufficient spray to wet all infested plant surfaces. Must contact whiteflies to be effective. 0 day PHI.
	Actara 25WDG at 3 to 4 oz. per acre. OR	Do not exceed 8 oz. per acre per season. 0 day PHI.
	Capture 2SC at 2.1 to 6.4 fl. oz. per acre. OR	Do not exceed 12.8 fl. oz. per acre per season. 7 day PHI.
	Knack 0.86E at 8 to 10 fl. oz. per acre.	14 day PHI.