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Ripe bell peppers are a popular greenhouse crop because the yield and quality can be higher than field-grown crops. Peppers are slower-growing and more generative than other popular greenhouse fruiting crops, like tomatoes, cucumbers, and eggplants; the plant's energy is directed toward fruit production rather than vegetation and foliage. A plant's growth habit, vegetative or generative, should be matched to the type of structure in which it will be grown.

In low-tech greenhouses with less extensive climate control, conditions cannot be optimized to the same extent as high-tech greenhouses, and plants are likely to encounter heat, cold, and other stresses more often. Stressful conditions tend to reduce a plant's vigor, so peppers bred for simpler greenhouses are more vigorous. Use field varieties and production techniques, such as a basket-weave trellis or other simple trellis, for production in low-tech greenhouses in short-season areas.

PROPAGATION:

Sow seeds $\frac{1}{4}$ – $\frac{1}{2}$ inches apart into 20-row flats in the desired medium 6–8 weeks prior to transplanting. Maintain a constant, 80–90°F/27–32°C soil temperature to achieve an ideal germination percentage and uniformity — heat mats are beneficial for maintaining a consistent temperature. When the first true leaves show, transplant the seedlings into cell-type containers or blocks. Containers 2 inches or larger will produce larger, stronger root systems.

FERTILITY:

Peppers perform best in well-drained fertile soil with high levels of calcium and phosphorus and a pH of 6.5. If you are growing a long-term crop that will be in the ground for 4 months or more it is not possible to provide all the necessary nutrients from preplanting fertility; side dressing or fertigating with extra nutrients is necessary. Use plant tissue testing to monitor the health of the plants and add extra nutrients when necessary.

STEM NUMBER:

Peppers are pruned to 2 or 4 stems and grown up a string trellis to make the best use of vertical space. Growing peppers on a 2-stemmed plant will result in larger peppers than those grown on a 4-stemmed plant. Two-stemmed plants will be more resilient under hotter-than-ideal conditions.

TRANSPLANTING/SPACING:

When transplanting into the greenhouse, try to maintain temperatures of 73°F/23°C during the day and 70°F/21°C during the night for the first week to promote rapid vegetative growth and root establishment.

For 2-stemmed plants, use a plant density of 3–3½ plants (6–7 stems) per square yard (9 square feet). For 4-stemmed plants, maintain the same 6–7 stems per square yard spacing, but with half as many plants.

One common row-spacing method to achieve this density is to use a double row of plants, trellised to 2 parallel overhead wires 2 feet apart with walkways 3 feet wide. Each stem is anchored 6 inches or so from the next one. Some growers prefer to use 4 wires

with a second set of 2 more wires 8 inches in from the first set of wires because this allows spacing the pepper stems out 1 foot from each other on each wire.

CLIMATE:

Peppers are naturally slow-growing and need warm temperatures for fast growth. The ideal growing regiment is described here, but please note that if your conditions vary modestly the plants will still produce a crop, but the yield and quality might be a slightly compromised.

7–10 days after transplanting into the greenhouse, lower night temperatures to 63–64°F/17–18°C and keep a daytime temperature of 73–75°F/23–24°C. Nighttime temperatures may be brought up as high as 66°F/19°C if more vegetative growth is needed. Lower nighttime temperatures promote generative, fruiting growth whereas higher nighttime temperatures with a flatter temperature profile encourage vegetative, leafy growth. Do not go below 61°F/16°C. Peppers have difficulty setting fruit at nighttime temperatures above 68°F/20°C, so on warm summer nights it is important to get the temperature below that level.

TRELLISING:

Tie strong twine to the overhead wire at the desired spacing. Synthetic twine is preferable, as natural twine can degrade and break under greenhouse conditions. Anchor the other end of the twine to the base of the plant with a loose knot. If the knot is too tight it can damage or kill the plant. Twist the stem of the plant around the twine or clip with trellis clips every 2 weeks to keep it supported and growing up the twine.

If you prefer to use basket-weave trellising, please refer to or request our technical sheet, Basket-Weave Trellising.

How to top a pepper branch to leave a flag leaf



Place the pruners above the leaf and cut off the flower and 2 small branches.



The flag leaf remains to shade the peppers.

PRUNING:

Peppers grow as a 1-stemmed plant until the first fruit is set, when the plant branches for the first time. Remove the initial pepper that is set in the first split before it develops. This will give the plant time to develop adequate leaf cover to support a fruit load. It is typical to remove the flowers at the second and third nodes, but if all conditions are optimized some growers allow fruit to set after removing just the first one.

Every node after the initial split will result in 1 leaf, 1 pepper, and 2 branches. Field peppers may sometimes form multiple branches per node, but greenhouse peppers are bred to form 2 even branches.

At each node after the initial split, choose the strongest of the 2 branches to continue forming the stem. Terminate the other branch after it has formed 1 leaf. This involves cutting off the flower and 2 other branches at the first node of each lateral branch.

This leaves 1 leaf to develop, called the flag leaf. This leaf will protect the peppers from sunscald and help prevent blossom end rot.

Do not prune within 8 inches of the tip of the plant, and take care not to cause damage to the growing point.

Prune every 2 weeks, or after about 6 inches of growth since the last pruning. Pepper plants will set 4–5 fruits before aborting the next few flowers. This is normal, for the plant to set fruit in “flushes” and not set every single fruit. Remove fruit if they are deformed or unmarketable to allow the plant to put the energy into setting another fruits farther up the plant.

DISEASES AND PESTS:

Practice crop rotation or use new media to reduce incidence of soil-borne disease. Minimizing the amount of time with temperatures below 65°F/18°C will reduce the amount of botrytis.

Pests that may be a problem include aphids, thrips, and earworms. If insect pests are a problem, release beneficial insects to control pests. Companies like Koppert or Biobest can advise you on the appropriate beneficial organisms based on the timing and square footage of your crops. DiPel® is an effect control for corn borers.

HARVEST:

Harvest fully ripe for immediate sales. If not being sold right away, harvest peppers when they are 80% or more final ripe color. They will reach full color in storage. Using pruners or a knife, cut the fruit off flush with the main stem of the plant. Make sure not to leave a stub on the plant, as this can be an entry point for pathogens.

STORAGE:

Peppers should be stored at 44–46°F/7–8°C. Do not store them with ethylene-producing vegetables like tomatoes, as ethylene will promote ripening to the point of being overripe.

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