



Sweet Pepper

Protected Cropping

Crop group: Solanaceae (sweet pepper, tomato, eggplant)

Crop Rotation

Follow this crop with cucurbits, leafy vegetables, brassicas or sweet corn. Avoid following with sweet pepper, tomato, eggplant.

Climate & Soil

Sweet peppers can tolerate shade conditions up to 45% and grow at wide range of altitudes with rainfall between 600-1250 mm. They grow best on well-drained loamy soils with a pH 5.5-6.8. Sweet pepper prefers a warm climate with temperature ranging 18–35°C.

Protective Structures

The most successful designs for the protected cropping production of sweet pepper in the Philippines are house-type rain shelters. The structures can be covered with UV-stabilized plastic, which keeps all the rain out, or fine netting which reduces the impact of rain but allows water to penetrate, minimizing need for irrigation.

The structures can be made from locally sourced bamboo and have a life expectancy of 3–5 years. Yield of sweet pepper under protected cropping increases to more than 50% compared to the open field.

The main reasons for the extra yield under protected cropping is that the crop can be keep producing fruit for longer because there is less disease and the growing conditions are better, especially during periods of heavy rain.

For more detail on how to build structures for growing vegetables in the Philippines, refer to the separate fact set in this series.

Land preparation

Clear the area and remove weeds. Prepare the area under protective structure thoroughly by ploughing and harrowing twice, one week apart. If soil pH is below 5.5, apply lime one month before planting, at the rate of 3-5 t/



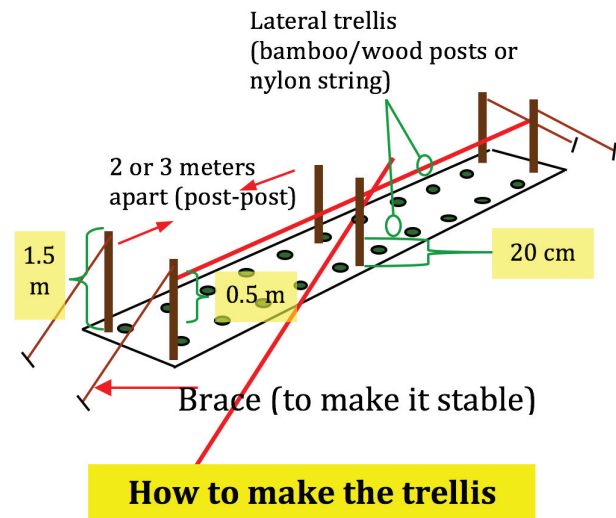
Sweet pepper under a house-type protective structure made from bamboo

ha. Mix decomposed animal manure or compost at a rate of 1.0 kg/m².

Lay out 1m-wide beds with 0.5m-wide canals in between. Raise the beds 20-30cm high. Level the bed with a rake, ready for plastic mulching.

Prepare 1m-wide bed spaced 0.5m in between at a height of 30cm.

Mulching (optional): Apply organic mulch about 2.5cm thick on the surface of the soil to minimize evaporation of moisture in the soil and suppress growth of weeds. Hagonoy weed (*Chromolaena odorata*) was found in trials to be the best mulching material, which may also have some disease suppressive effect. Rice straw, rice hull, and kakawate leaves can also be used. Plastic mulch is not effective for sweet pepper in house-type protective structures.



Seedling management

Ensure seedlings are healthy, disease- and insect- free before transplanting, then handle seedlings carefully to minimize injury to the roots. Under good conditions, seedlings will be ready to transplant after 4 weeks, and should have 4–5 true leaves.

A drinking straw wrapped around the stem a day before transplanting, when the seedlings are still on the trays, can help reduce damage caused by crickets or other chewing insects.

Transplanting

Transplant late in the afternoon or morning – if it’s cloudy. Gently press the soil around the plant base to avoid injury of the seedlings, then seal the hole with soil.

Water immediately to establish good root-soil contact. Drench around the plants with fungicide as needed.

Trellising

1. Trellis the plants two weeks after transplanting.
2. Construct the trellis using bamboo ipil-ipil poles or stakes on each side of the bed, 2–3m apart and 1.5m high.
3. Attach wires to the bamboo post horizontally at a height of 0.5m and tie stems to the wire using twine or blue string.
4. When the plants are fruiting, maintain all branches in upright position to avoid overlapping that causes insect pests to hide. Tie all droopy branches, especially those with many fruits, to avoid breaking.


Pruning

Remove all lateral branches below the “V” or the axil where the first flower comes out, as those branches are not so productive. Re-prune all buds that come out in this part. To avoid the use of pruning tools that might cause disease transfer, prune regularly when the branches are still young and tender using hand pinch. Regular pruning on newly emerged buds must be done twice a week.

Weeding

- Cultivate the soil before planting to reduce weeds or stale seedbed
- Practice mulching to control or minimise the growth of weeds
- During the growth of the crop use a bolo to manually remove weeds
- Spray canals and between beds with contact/ systemic herbicide as necessary

Fertilizer, irrigation, pest and disease management

Sweet pepper growth stages					
	Pre plant	Transplant / Establishment	Vegetative	Flowering/ fruit development	Maturity
					
Fertilizer	Before planting apply fertilizer into each planting hole and mix in with soil. During plant growth, apply fertilizer to each plant an inch away from the base of the plant. Ensure no fertilizer touches the leaf of the plant to avoid leaf burning. Additional application can be applied 2 weeks apart during fruit development and harvest. Use the following rates per plant.				
Timing	At planting	1 week after planting	2-4 weeks after planting	3 weeks after planting	Additional applications
Rate	10g complete fertilizer (16-16-16) 1 handful of organic fertilizer per plant.	150g of calcium nitrate (CaNO ₃) dissolved in 8L water- 3, 6 and 9 days after transplanting. Rate = per m ² (check)	10g ammonium phosphate (16-20-0) per whole (week 2 and 4) complete fertilizer (16-16-16) per plant (week 3).	1 tablespoon (10g) of muriate potash (0-0-60) weeks 5,6,8 and 9. 1 tablespoon (10g) complete (16-16-16) weeks 7 and 10. Rates are per plant.	Repeat application further if needed.
Irrigation	Lay out trickle irrigation drip tube along the beds. Use one tube along each planting row. The spacing of drippers in the tube should be about 25cm or closer. The best strategy is to fully wet the soil profile and encourage roots to grow out into the moist soil. Sweet pepper does not tolerate drought conditions but neither does it like too much water; drain fields quickly after heavy rain. To prevent rapid spread of fungal diseases, water only in the morning, not in the afternoon.				
		Water immediately after transplanting until soil profile is fully wet.	Water every 3-4 days for 4-6 hours or until soil is fully wet.	Water every 3-4 days for 4-6 hours or until soil is fully wet.	
Insect Pests	Monitor the crop regularly for pest infestations, look in growing points and on underside of leaves. Approved insecticide should be used as indicated on product labels. Where possible squash eggs and young larvae, prune leaf miner infested leaves and remove caterpillar infested fruit. Bury or bag pruned leaves and removed fruit. Avoid moving from a mite-infested crop into an un-infested crop.				
		Must commence plant protection immediately after transplanting out.	Broadmite, thrips, aphids, whitefly, red spider mite.	Cutworm, fruit worm.	Fruit worm, aphids, white fly leaf miner, fruit fly.
Diseases	Monitor the crop regularly for early disease symptoms. Rogue infected plants showing systemic symptoms and carefully prune away infected parts for localized diseases. Disinfect pruning tools after use on every plant. Bacterial wilt and blight can be transmitted via pruning tools. Preferably carry a container, such as a plastic bag, for pruned plant materials during pruning and immediately place the pruned diseased or infested plant parts inside the bag to minimize dispersal of inoculum to healthy plants. Approved fungicides should be used as indicated on product labels.				
		Must commence plant protection immediately after transplanting out. Damping off.	Leaf and shoot blight, bacterial wilt and blight.	Leaf spots, powdery mildews and blights .	Tomato mosaic virus (TMV), late blight, bacterial wilt, bacterial spot, early blight, powdery mildew, leaf mold and blossom end rot.

Harvesting

Harvest fruits intended for market preferences at 3–4 day intervals. Fruit are usually ready to harvest 55–65 days after transplanting (DAT) when they are mature green to 50% green/breaker stage or depending on buyers' preference.

Immature or over-mature fruit deteriorates quickly, therefore it is important to pick at optimum harvest maturity. Harvest early in the morning while the temperature is low to minimize field heat load. Place the harvested fruit immediately under shade, avoid sun exposure.

Method of Harvesting: For harvesting and trimming use sharp, clean tools.

Collect infected or insect infested fruits and dispose of them properly by bagging or burying to minimize pest or disease build-up.

Postharvest Handling

Once harvested, the fruits are much more susceptible to deterioration than while they are attached to the plant

1. **Harvest** in the cooler part of the day – early morning or late afternoon.
2. **Place** the harvested fruit out of the sun and in as cool a place as possible.
3. **Remove** and discard any fruit which is deformed or insect damaged.
4. **Grade** the fruit into color and size grades. Keep a premium grade fruit which is the correct size for your market. Grade into green, breaker and colored fruit, and pack separately. Show grade and colour standards. Put the remaining fruit into a second grade category and send that separately from the first grade. This will maximize the price you get for the first grade fruit.



5. **Pack** the fruit carefully in cartons if possible, in a way that will minimize damage to the fruit in transit to the market. Do not sit or stand on top of vegetables.
6. **Deliver** the fruit to market as soon as possible after harvesting. Transport at night or in early morning, if possible. Storage reduces shelf life and quality.
7. **Monitor** Find out how your fruit arrived at the market and aim to continuously improve the quality of your arriving at the market.

Follow up in the field

The finished crop should immediately be removed and destroyed, and the ground plowed to prevent pest and disease populations spreading to other crops. This is extremely important!



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