FARMER FACTSHEET

Tomato

Open field production

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

Tomatoes are a temperate vegetable. The optimum temperature for fruit setting is 20–25°C. Fruit set is severely reduced at temperature above 32°C and below 18°C at night. Tomatoes can grow in soils ranging from sandy loam to clay-loam, which are rich in organic matter, ideally with a pH of 6.0–6.5.

Land preparation

Begin soil preparation 2–3 weeks before transplanting. Clear the area and remove weeds.

If the soil is acidic (pH below 5.8), lime should be applied one month before transplanting at a rate of 250g per m2. Measure the desired planting area and plough.

Spread decomposed animal manure or compost over the cropping area at 1.5 kg per m2 and mix into the soil at least two weeks before planting.

Form 1m wide, 20–30cm high beds spaced 0.5m apart. Higher beds are better during the wet season. Irrigation and drainage canals should be prepared to prevent water logging during rains. Cover the beds with mulch to minimize weeding. Mulch options include:

Plastic mulch: Use 1.2m wide silver plastic mulch. Unroll the plastic mulch over the plot (make sure that silver colour is on top while black is underneath). Clip the plastic mulch on both sides and ends with a bamboo staple every 15–20cm apart. Alternatively, clip the plastic mulch on both sides and at the ends using bamboo sticks (1.5cm between 5–10m lengths) and clip with small twigs from hardy shrubs or tree branches every 50cm apart per twig. Stretch and fit the plastic over the bed.

Plastic mulch ready to punch planting holes.

Organic mulching (optional): Instead of plastic mulch, you can apply organic mulch about 2.5cm thick on the surface of the soil to minimize evaporation of moisture in the soil and suppress the growth of weeds. Trials in Leyte have shown a 25% increase in tomato yield using organic mulch compared to bare soil. The following mulch materials can be used: wedelia (*Sphagneticola trilobata*), hagonoy (*Chromolaena odorata*), chicken dung, carbonized rice hull, cabbage waste, wild sunflower (*Helianthus quinquelobus*). Chicken dung should be composted before use.

Transplanting

Mark out two rows per bed, 75cm apart, and on each row mark planting holes 50cm apart (26,000 plants per hectare or 10,000 plants per acre). For plastic mulch, burn planting holes with a 1kg tin can filled with hot coals.

Ensure seedlings are healthy, disease- and insect-free before transplanting, and always 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.

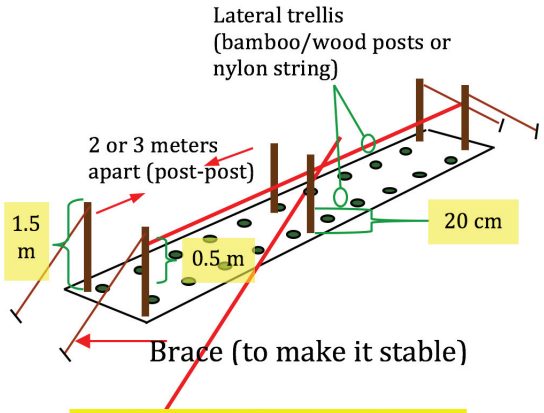
Transplant late in the afternoon, or morning – if it's cloudy. Gently press the soil around the plant base to avoid injury of the seedlings, seal the hole with soil.

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

Transplant seedlings so that the top of the root ball is level with the soil surface.

Trelising

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 an upright position to avoid overlapping that causes insect pests to hide. Tie all droopy branches especially those with many fruits to avoid breaking.



How to make the trellis

Pinch young lateral shoots emerge from between the leaf and the main stem.

Pruning

Remove all lateral branches that emerge from between the leaf and the main stem as these branches are not very productive. Avoid the use of pruning tools that might cause disease transfer, prune regularly when the branches are still young and tender using a hand pinch. Regular pruning is twice a week.

Weeding

- Cultivate the soil before planting to reduce weeds or stale seedbed.
- Mulch to control or minimize the growth of weeds.
- During the growth of the crop use a bolo to manually remove weeds.
- Spray canals and alley ways with contact/systemic herbicide as the need arises.

Fertilizer, irrigation, pest and disease management

	Tomato 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	2 weeks after planting	4 weeks after planting	6 weeks after planting	8weeksafterplanting
Rate	1 tablespoon (10g) complete fertiliser (16:16:16 N-P-K)	150g calcium nitrate (19% Ca and 15.5% NO3) per 16 liter water. Drench 150ml per plant.	225g calcium nitrate (19% Ca and 15.5% NO3) per 16 liter water. Drench 150ml per plant.	150g calcium nitrate (19% Ca and 15.5% NO3) per 16 liter water. Drench 150ml per plant.	300g calcium nitrate (19% Ca and 15.5% NO3) per 16 liter water. Drench 150ml per plant.
Irrigation is essential for protected cropping	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.				
		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. Do not under or over water plants.	
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 uninfested crop.				
		Must commence plant protection immediately after transplanting out.	Cutworm and fruit worm in terminals; Leaf miner, mites	Fruit worm, aphids, white fly, mites, mirids and leaf miner	Fruit worm, aphids, white fly and leaf miner
Diseases	Monitor the crop regularly for early disease symptoms. Rogue infected plants showing systemic symptoms and carefully prune away infected parts for localized diseases. If pruning needs to be done disinfect pruning tools after use on every plant. Bacterial wilt and blight can be transmitted via pruning tools. Preferably carry a container for pruned plant materials (e.g. a plastic bag) 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	Bacterial wilt, damping off	Tomato mosaic virus (TMV), late blight, bacterial wilt, bacterial spot, early blight, powdery mildew, leaf mold and blossom end rot.	Tomato mosaic virus (TMV), late blight, bacterial wilt, bacterial spot, early blight, powdery mildew, leaf mold and blossom end rot.

Harvesting

Harvest fruit intended for market 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 according to buyers' preference.

Immature or over-mature fruit deteriorate fast, 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

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. **Store** 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 and know the condition of the** fruit as it arrived at the market and aim to continuously improve the quality.

Follow up

Finished crop should immediately be removed and destroyed, ground ploughed to prevent pest and disease populations spreading to other crops. This is extremely important!