Kangkong
Field Production

Crop group: *Convolvulaceae* (Sweet potato, water spinach)

Climatic and soil requirements

Upland kangkong is well adapted to a wide range of climate and soil conditions but requires relatively high soil moisture for optimum growth. Soils with high organic matter are preferable. The plant produces optimum yields in the lowland humid tropics under stable high temperatures and short day lengths. Temperature averaging between 25-30°C are ideal for higher yields.

Land preparation

- Prepare the field 2-3 weeks before transplanting, however if the soil is acidic and liming is to be done, start of land preparation should be a month earlier.
- If the soil is acidic (pH below 5.8), lime should be applied one month before transplanting at a rate of 250g per m^2.
- Spread decomposed animal manure or compost over the cropping area at 1.5kg per m^2 and mix in at least two weeks before planting.
- Form 1m wide, 20-30 cm high beds spaced 0.5 m apart. Irrigation and drainage canals should be prepared to prevent water logging during rains.

Vegetative stage

Crop Establishment

Upland kangkong is generally propagated from seeds either directly seeded to the field or raised in seedling trays. Direct seeding is commonly done by sowing 3 seeds per hill in triangular arrangement with a distance of 30cm between rows and 25 cm between hills with 3 rows per plot.

Establishment of direct seeded upland kangkong

Weed management: The use of organic mulches like rice straw, corn stalk, aged rice hull, etc has been found effective in suppressing growth of weeds. Manual weeding is done using a bolo.

Harvesting

Harvesting: First harvest of kangkong is done at 3 weeks from seeding and subsequent harvesting of new shoots is done at 2-3 weeks interval depending on the stand of the crop. Shoots are about 25 cm long. Harvesting is done early in the morning or late in the afternoon. It will be done by cutting the base of the plant with a sharp knife just 2-3cm above the ground level.

Agronomy

	Kangkong growth stages				
	Pre plant	**Transplant / Establishment**	**Vegetative**		**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 sowing	1 week after planting	2 weeks after planting	3 weeks after planting	Additional applications
Rate	Complete fertilizer (16-16-16) at 10 g per hill with burnt rice hull or “biochar” mixed	Drenching calcium nitrate at the rate of 300 g per 16 L water using 150 ml per hill	Drenching calcium nitrate at the rate of 300 g per 16 L water using 150 ml per hill	Drenching calcium nitrate at the rate of 300 g per 16 L water using 150 ml per hill	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. **Do not water stress 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.				
			Green tortoise beetle (*Cassida circumdata*), brown Chrysomellid beetle, flea beetle (*Phylloides balyi*) and slant-faced grasshopper (*Attractomorpha psittacina*).	Green tortoise beetle (*Cassida circumdata*), brown Chrysomellid beetle, flea beetle (*Phylloides balyi*) and slant-faced grasshopper (*Attractomorpha psittacina*).	Green tortoise beetle (*Cassida circumdata*), brown Chrysomellid beetle, flea beetle (*Phylloides balyi*) and slant-faced grasshopper (*Attractomorpha psittacina*).
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, i.e. 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 (eg. 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.				

Mature kangkong ready for harvest

Productivity and Marketability of Kangkong Under Protected Versus Field Cropping

The yield results shown below are from a typical kangkong trial conducted conducted at Australian Centre for International Agricultural Research–Integrated Crop Management (ACIAR-ICM) project site located at the experimental area of the Department of Horticulture, Visayas State University (VSU), Baybay, Leyte.

	Marketable yield (t/ha)
Under Structure	55.0
Open Field	31.5

It resulted to significant increase in total yield under structure over open field. This could be due to the absence of leaching or washing out of nutrients under structure, hence better growth of the plants.

Postharvest

Tips should be washed carefully with water of drinking quality or clean seawater. They can be bundled with their stems trimmed and stood upright in a small amount of clean fresh water. They should be store for a day or two if covered and kept in a cool location.