



Kangkong

Crop group: Convolvulaceae (kangkong)

Summary

The best insect pest and disease management is prevention and knowledge. Kangkong has relatively few pests and diseases and these are rarely serious (see tables below). If one or a number of these pests and disease regularly infest or infect kangkong crops in a particular area then ensure the management strategies below are followed. There are some general crop management or “cultural” practices that can be used to reduce the chance of bringing pests and diseases into crops and minimising their spread if present. Crops that have optimal (not too much or too little) nutrition and water, and are growing in suitable environmental conditions, will grow more quickly, produce higher yields and in general be more resistant to disease infection and outgrow damage (refer to the Best Practice Guide for Kangkong).

Site selection

Practice crop rotation and choose a site that has not recently grown kangkong to reduce soil borne diseases. Do not plant next to, down-wind or down-

slope of an older kangkong crop with white rust or fleabeetle to reduce disease and pest movement from the older to younger crop. Remove weeds from the Convolvulaceae family from around production area as they may be a source of pests and diseases. Similarly, remove weed hosts of the other potential pests.

Land preparation

Waterlogging favours many soilborne diseases, stops plants growing and reduces their chance of resisting infection or infestation, so good drainage is important.

Seedling production

Kangkong can be direct seeded or transplanted from seedlings. Use certified disease-free seed and clean planting materials. Clean media for planting seeds (sterilized best); monitor seedlings; grow seedlings away from main production area and net well to prevent pest infestation. Check seedlings are pest and disease free before transplanting (refer to Best Practice Guide to Seedling Production).



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Transplanting

If using seedlings it is important to handle seedlings with care when pricking and transplanting. Extra care should be taken to minimise root wounding. Fungicide drenching may be applied to newly transplanted seedlings when fungal-like white rust is a recurring problem. Increasing plant spacing to improve air movement will reduce spread of white rust.

Vegetative

Monitor leaves for small shot-holes indicative of flea beetles; pale serpentine lines indicating leafminers; egg masses, caterpillars and ragged chew holes of cutworm; folded leaves and leaf windowing of the green or black leaffolders; and brown patches, leaf distortion and wilting above stem girdling caused by mirid bugs. Not all insects or mites seen in crops are causing economic losses. Many are 'natural enemies' or 'beneficials' and need to be maintained to assist in managing pest insect populations. Learn to recognise the common natural enemies. Monitor pest and natural enemy populations 1–2 times per week and record numbers per plant to track whether populations are increasing or decreasing. If pest populations are increasing and natural enemies absent or in very low numbers an insecticide spray may be needed. However, usually with kangkong, physical removal of affected plant parts, squashing egg masses or larvae will be sufficient to reduce the pest problem. If an insecticide is necessary choose one that is specific to the pest group and least toxic

to natural enemies and humans. Always read the label and use appropriate personal protection when spraying.

Monitor the plants for white rust disease symptoms, such as white or creamy yellow pustules on the lower leaf surface or yellow spots on upper surface. This symptom can look similar to whitefly infestations on the underside of the leaf. Stunting can occur with severe infection. The problem increases during wet conditions, so regulate moisture, do not over-irrigate and drain the field quickly after rain by providing drainage canals, especially in an open field cultivation. Protected cropping can help. Removing infected plant parts and disposing them away from the crop will reduce disease increase.

Harvesting

Collect any infested plants and properly dispose of them to ensure no pests can continue to develop and prevent them becoming a source of pests or disease of any younger plantings.

Postharvest

As soon as possible after harvest has finished the crop should be removed and ground ploughed to prevent pest populations continuing.

In the tables below is some information of the disease and pests that can be found in kangkong.

Proper identification of the problem is a pre-requisite for effective pest and disease management.

Table 1. A major disease of kangkong

Image	Diseases name	Damage symptoms	Management strategies
	White rust/White blister <i>(Albugo ipomoeae-panduratae)</i>	White or creamy yellow pustules on lower leaf surface. Yellow markings on the upper leaf surface correspond to the lower leaf infections. In severe cases, plants become stunted. Common during rainy season.	Destroy infected plant parts and all plant debris after harvest. Remove weeds especially of the same family. Practice crop rotation and grow the crop where air circulation is good or under protective structures.

Table 2. Major pests of kangkong

Image	Disease name	Damage symptoms	Management strategies
	Mirid bug (<i>Helopeltis collaris</i>)	Nymphs and adults suck sap of shoots and young leaves, causing brownish patches and distortion of leaf. When feeding on a stem they can girdle, causing plant wilting and death above.	Remove alternate weed hosts.
	Common cutworm (<i>Spodoptera litura</i>)	Larvae feed in groups on leaves at early instars, resulting in numerous pin holes on leaves. Irregular holes caused by feeding of older larvae.	Hand picking egg mass and larvae. Use mulches to prevent pupation in the soil. Remove alternate weed hosts. Maintain sanitation in the field.
	Green leaf folder (<i>Psara hipponalis</i>) Black leaf folder (<i>Brachmia convolvuli</i>)	Larva feed inside folded leaf creating small windows and holes.	Collect and destroy larvae. Remove alternate weed hosts.
	Leafminer (<i>Liriomyza sativae</i>)	Larva feed inside the leaf epidermis, creating characteristic serpentine tunnels/mines on intermediate or older leaves.	Maintain sanitation and remove infected leaves and burn or bury. Use yellow sticky traps.
	Flea beetle (<i>Phyllotreta</i> sp.)	Adults damage leaves by making small holes.	Remove alternate weed hosts. Maintain field sanitation. Practice crop rotation.

Refer to the Pesticide table for further information.

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For more information, see individual factsheets and crop best practice guides also produced from this project.

Other information available from www.plantwise.org.

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