

THIS ISSUE

- **Water convolvulus (or Kangkong)**
- **Coriander spice seed**

EVERYTHING YOU WANTED TO KNOW ABOUT WATER CONVULVULUS

Neville Fernando (DPI Victoria, Bairnsdale Tel. 03 5152 0600)

Water convolvulus (*Ipomoea aquatica*), also popularly known as kangkong and Chinese water spinach, is a member of the Convolvulaceae family. The species originated in India and South East Asia and is a very popular food among Asian communities. Practically all parts of the young plant tissue are edible although the shoot tips and younger leaves are preferred. Coarse stems and leaves are often used for animal feed.

Tender shoot tips and leaves can be eaten fresh or lightly cooked like spinach. Cooking in oil is



common and the addition of spices enhances the relatively bland flavour. Water convolvulus is rich in essential nutrients and contains more iron than many other greens.

Alternate branches and leaves arise at the leaf axils of the trailing vine-like, hollow stems which are adapted for floating in aquatic environments. Adventitious roots readily develop at nodes when in contact with moist soil or water. The succulent foliage and stem tips are generally light green in colour. Flowering is favoured by short days with the development of white and light pink flowers. Purple flowers develop in some wild forms.

Climate

This herbaceous, aquatic plant is widely grown throughout Asia and in most situations is a water-weed. In warmer climates it is a perennial but has an annual type life-cycle at cooler locations. Water convolvulus prefers warmer conditions and grows best when temperatures are between 24°C and 30°C. The plant is frost sensitive and does not grow effectively below 10°C.

Types

Two major cultivar types are grown.

Lowland or aquatic type ('Water' ipomoea) ~ Pak quat type

This is adapted for growth in very wet situations. The leaves are relatively broad, arrowhead-shaped, 12 to 15 cm long and up to 5 cm wide.

Upland or dry type ('Dry' ipomoea) ~ Ching quat type

This can be grown in beds, provided there is always plenty of moisture. The pointed leaves are narrow, about 1 to 2.5 cm wide and 15 to 25 cm long. Its growth habit can be taller and upright.

To obtain seed for sowing, harvesting is stopped to allow developing flowers to mature and produce seed-bearing pods.

Planting

Water convolvulus needs fertile soil, rich in organic matter.

Water convolvulus grows best under conditions of full sun but should be protected from strong winds. Two production practices are typically adopted depending on soil conditions and water availability.

Wet culture (dry soil procedure) - Raised beds are usually used and planted with seedlings or stem cuttings, or beds can be directly sown with seed. Seedlings for transplanting are produced under warm conditions at about 21°C and are transplanted when 10 to 15 cm tall with four fully developed leaves. Direct sowing can be undertaken only if the temperature is above the 20°C required for successful germination.

Relatively close spacings of 10 to 15 cm are adopted in order to maximise the yield of tender shoots and leaves, with the resultant growth intended to climb into trellises that help to maintain continued production and quality. The crop is harvested several times as regrowth of shoots readily occurs.

Aquatic culture (wet soil procedure) - Stem cuttings, about 30 cm long with seven to nine nodes, are transplanted into puddled soil which is prepared similarly to that for lowland rice culture. The bottom 15 cm of cuttings are buried about 30 cm apart in rows. As the vines grow, the field is initially flooded with water up to 5 cm in depth and as growth proceeds, the water level is also gradually increased up to a maximum depth of 15 cm and a slow flow of water is maintained through the field. Water flow is stopped for fertilisation.

Growth is usually rapid in aquatic culture and harvesting can be started four to five weeks after planting, whereas dry soil culture takes at least six weeks until first harvest. With the dry soil (wet culture) method, although crop development is somewhat restricted, it is the preferred management technique because it is easier and less water is required.

If the soil is not rich in organic matter the crop responds well to nitrogen fertilisers.

Pest and diseases

Water convolvulus is generally free from serious pests and diseases. However, the crop is affected by organisms similar to those that attack sweet potato. Insect pests include whitefly, flea beetles, aphids and perhaps sweet-potato weevil. The more troublesome diseases are *Fusarium* wilt or stem rot, and *Erwinia* bacterial soft rot. These diseases are best controlled by using disease-free seed or cuttings.

Harvesting and storage

Water convolvulus is harvested before flowering. The common procedure is to cut across the plant stems about 5 cm from ground level at four to five week intervals.

Sometimes young leaves and tender shoots are selectively picked, or the whole plant is pulled up when the season is over. If required, and depending on the weather, several sowings can be undertaken in a season.

Immediately following harvest, shoots should be protected from direct sunlight and then cooled to just below 10°C. Chilling injury, which appears as browning of young leaves, can occur if storage temperatures drop below 4°C for more than two or three days.

High relative humidity should be maintained around the crop to prevent wilting of leaves and tender tips. However, bulk packing should be avoided to minimise physical injuries like compression bruising.

CORIANDER SPICE SEED

Coriander spice seed has been grown in Australia since the 1970's and in 1998 production was estimated to be 5,000 tonnes worth \$5.75 million. More recently, production has declined, principally through the effects of disease on yields and production costs.

RIRDC has funded work by Peter Hooper and Jeremy Dennis that reports on research, development and extension efforts to develop disease control methods, and improve crop nutrition and weed control.

The full report, RIRDC publication No. 02/147 (*Coriander - overcoming production limitations*) is available at :

www.rirdc.gov.au/fullreports/index.htm

or, call RIRDC on 02 6272 4819.

Editors: Graeme Thomson and Wendy Morgan	
☎ 03 9210 9222	Fax: 03 9800 3521
Department of Primary Industries, Knoxfield	
Private Bag 15	
Ferntree Gully Delivery Centre VIC 3156	
Email: graeme.thomson@nre.vic.gov.au	
Website: www.nre.vic.gov.au/trade/asiaveg	
ISSN 1329-9174	

DISCLAIMER: This publication may be of assistance to you but the State of Victoria and its employees do not guarantee that the publication is without flaw or is wholly appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequence which may arise from you relying on any information in this publication.