

# The World Vegetable Center

- **Introduction:** There are many species of Amaranth (*Mchicha* in Kiswahili) and they can be distinguished by either the size of the plant, the color of the leaves or flowers or the presence or absence of spines. All are grown for their edible leaves and some types also have edible grain. Amaranth leaves are highly nutritious and because of its high protein, iron and vitamin A content amaranth is one of the most nutritious leafy vegetables. Whole young plants can be uprooted and harvested 3-5 weeks after sowing or young tender leaves can be harvested continuously from growing plants.
- **Varieties:** Amaranth has several types which can be recognized namely by the leaf and plant size as well as by leaf color. Varieties promoted by AVRDC- The World vegetable Center have large green leaves, grow tall (up to 2-2.5 m) and produce a relatively high number of leaves. These varieties are rather sweet. Another common type has narrow leaves, is shorter (up to 1.5 m) and produces a high number of leaves. Some varieties have spines and purple, pink as red stems, leaves and flower heads. Choosing a variety to grow will also depend on local tastes as all amaranth varieties grow well in a range of cool, warm, humid or dry environments. All varieties can be used in either short or long term production.



- **Sowing times:** All amaranth types can be grown throughout the year if water is available.
- **Sowing depth:** The fine seeds should be mixed with sand (at a ratio of 1:3) to make them easier to spread evenly, and sown at a depth of 0.5 to 1 cm in rows 20-30 cm apart, or by broadcasting onto the bed. Cover the seeds with a thin layer of soil followed by watering.
- **Spacing:** If sown in rows, seedlings should be thinned three weeks after sowing when they have 3-4 true leaves. Allow 10-15 cm between plants. If seed was broadcast, allow up to 5 cm spacing between plants.
- **Short-term harvest by plant uprooting:** This is the quickest and easiest way to grow amaranth. Land should be well prepared and mixed with cattle, chicken or compost manure at a rate of 2 kg/m<sup>2</sup>. Sow seed on ridges, or broadcast onto flat beds. During the dry season where water is scarce, use sunken or flat beds. During the rainy season, use raised beds.  
  
Harvesting is usually done within 3-5 weeks of sowing, depending on the species. Pests and diseases are rarely a problem with such a quick crop. Weeds should be removed within the first two weeks to avoid competing with the crop and contamination of the harvest.

- **Long-term harvest by leaf plucking:** Seed is best sown into a nursery bed and plants transplanted into the field 3-5 weeks after



emergence. This ensures a high and even plant population and good plant vigor but delays the first leaf harvest. If plants are direct-sown the total leaf yield will be similar, but a more uneven plant stand is likely and this may have more weed problems.

The nursery should be in flat fertile soil close to a water source but not in a shaded area to avoid diseases and producing spindly seedlings. Soil should be well prepared and mixed with cattle or chicken manure or compost at a rate of 2-5 kg/ m<sup>2</sup>.

Harvesting leaves is done every 4-5 weeks. The harvest can continue for 4 months, especially if local varieties are used. Once plants are older than 4 months leaf production falls and the quality of leaves deteriorates. In this case, the old established plants can also be chopped at the base to produce new edible sprouts.



■ **Pests and diseases:** These are mainly problems on old established crops, where aphids and sometimes mites can cause problems. In general, the crop suffers little from disease problems.

■ **Weeding:** This is most important when the crop is young or to avoid contaminating harvests when the whole plot is uprooted for sale. Amaranth grows rapidly and regular watering is necessary.

■ **Cooking:** The cooking time for whole plants is generally less than that for older leaves which can be tougher. Several recipes involving onion, tomato and cooking oil have been developed by the World Vegetable Center and are available as leaflets. The cooking time does not exceed 35 minutes. Amaranth leaves are one of the most nutritious leafy vegetables and are rich in proteins, carotenoids, calcium, iron, phenols, antioxidants, and vitamins including vitamin C.

■ **Sale of leaves:** Whole plants are regularly sold in local markets and major cities are supplied by peri-urban production. In Tanzania prices range between 50-100 Tsh for a bundle of roughly 100 g and in Kenya a bunch of 500-700 g sells for 6-10 Ksh. Prices are generally higher in the formal market.

■ **Seed production:** For producing seed of either type of amaranth the recommended plant spacing is 60-75 cm between rows and 25 cm between plants. Mature seed heads are harvested and threshed to extract seed.



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## How to Grow AMARANTH

For a quick harvest  
or a regular leaf supply

