

Production of Kales (Sukuma wiki) and Onions Using Bucket Drip Irrigation



Compiled by S N Ngulu

More information can be obtained from:

KARI-Katumani
PO Box 340,
Tel: +254 44 20422,
Fax: + 254 44 21122
Machakos

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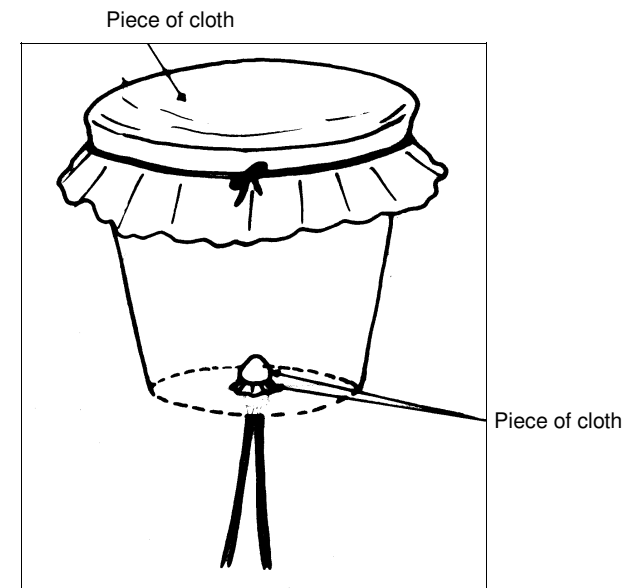
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Maintenance instructions for the bucket drip kit

- The main requirement is to use water which is clear, not muddy. Filtering is a must if muddy water is used. Experience has shown that water can easily be cleaned by using locally available materials in the homesteads.
- Put an old cloth on top of the bucket and at the base, before the kit filter.
- Let the water settle, and slowly pour the water into a bucket and filter.
- Using filters bought from dealers
- You can flush off dirty water by opening the drip tape end away from the bucket and squeeze out the dirt.

Please note: Never use a sharp object to unblock a clogged hole (emitter) to avoid destroying your drip tape.



Drip pipe

Bucket drip kit

Watering

Fill the bucket 2-3 times daily, morning, mid-day and evening.

Income

Farmers have reported incomes ranging from KES. 80 to 200 per week from sale of sukuma wiki leaves.

It is possible to earn KES. 3,000 to 4,000 from each crop of onions during the dry season.

Introduction

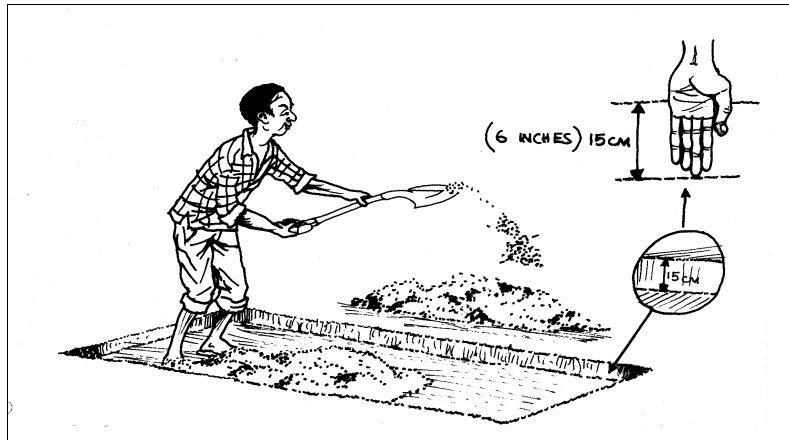
Grow a variety of vegetables for your family and neighbours using the bucket drip irrigation kit during the dry season. You only need three buckets of water a day at most. The bucket drip kit consists of a bucket and two drip tapes of 15m in length with holes (emitters) at 30 cm spacing. The bucket is supported one meter above the ground.

Seed bed preparation

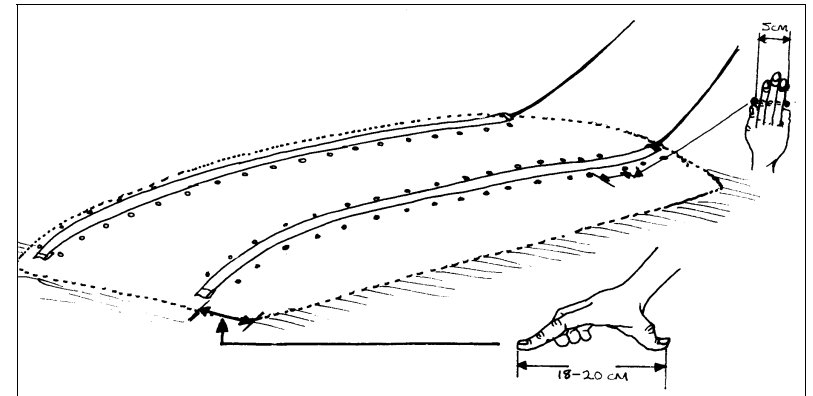
There are two main methods of preparing seed beds namely: double digging and planting on flat land. In dry areas (agro-ecological zones 4 and 5), practice double digging. In less dry areas (agro-ecological zone 3) you may use the conventional method of planting on flat land.

Double digging

- Measure a plot 1 m width 15 m length (1 step by step 15 steps)
- Dig to a depth of 15 cm (length of palm of the hand)
- Remove the dug soil and put it to one side of the dug portion
- Cover the dug portion with green plant materials (e.g banana leaves, young weeds, tree leaves, green maize leaves) so that the ground is properly covered
- Put farm yard manure to a depth of 5 cm
- Mix the soil removed earlier and mix it well with a bucket (15 kilograms) of well decomposed animal manure, then return it on top
- Flatten the seedbed and break large soil clods so that the bed is well levelled. You're now ready to plant the vegetable seedlings.



Digging out soil



Spacing on the ground

Pests

The most serious pest is the onion thrips. These are thin insects which cause silver spots and withering from the top of the leaves downwards. The pest is common during dry weather.

Control

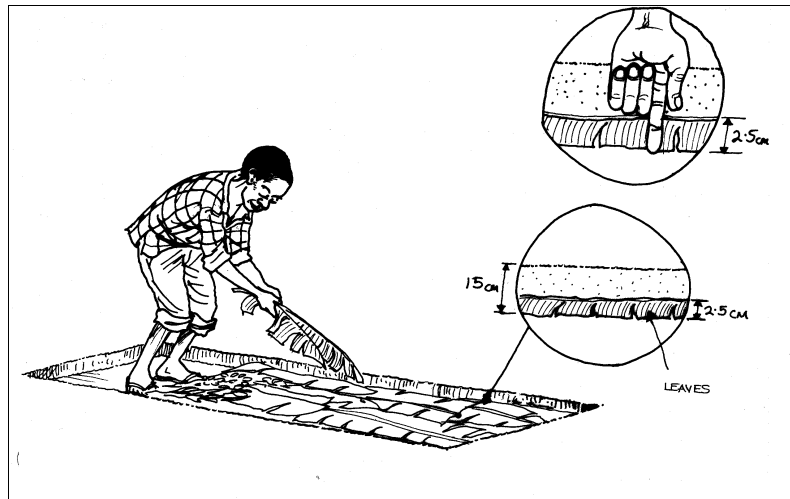
Apply diemthoate or folimat when insects are noticed on the leaf sheaths.

Diseases

Fungal diseases are the most serious. The most common is purple blotch causing purple spots on leaves and leaf curling. Eventually the plants die.

Bulb rot occurs if onions are grown in the same field continuously and when the weather is wet. It is controlled by crop rotation with non related crops eg. kales, cabbages, carrots.

You can also spray with Dithane or Mancozeb.



Laying Banana leaves

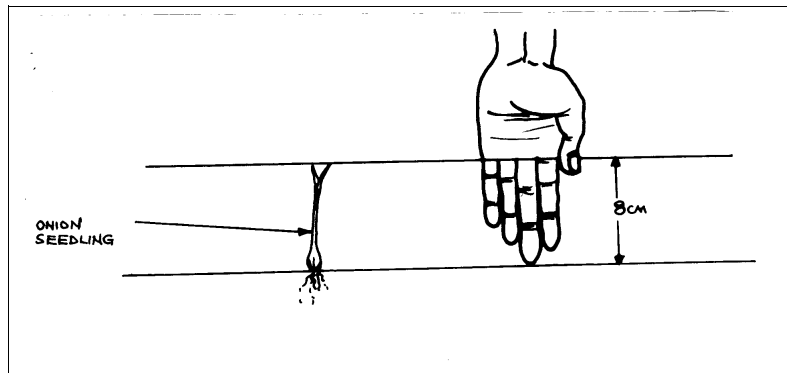
Note: New seed beds should be made every two years to avoid disease and pest build up.

Onion Production

Recommended varieties: Red creole and Tropicana hybrid do best in dry areas.

Transplanting

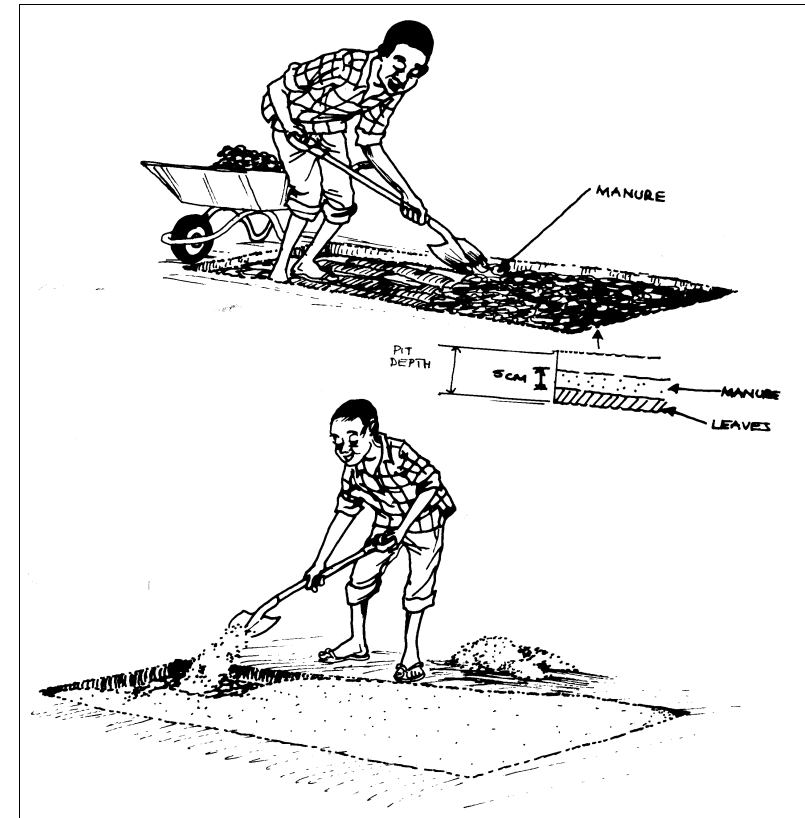
Transplant onion seedlings when they attain a height of 7-8 cm (after about one and a half months after sowing in the nursery)



Onion seedling

Planting on the drip seed bed

- To mark where the onion rows will start on the drip bed, leave 20 cm from each side of the seed bed
- Plant seedlings on two paired rows with the drip tape in between each pair
- Spacing between the paired row is 8 cm
- Spacing between onion plants within the row is 4-5 cm
- Plant seedlings shallowly about 2 cm deep
- One seed bed carries 900-1000 onion plants



Putting manure and flattening the seed bed

Production of Kales (Sukuma wiki)

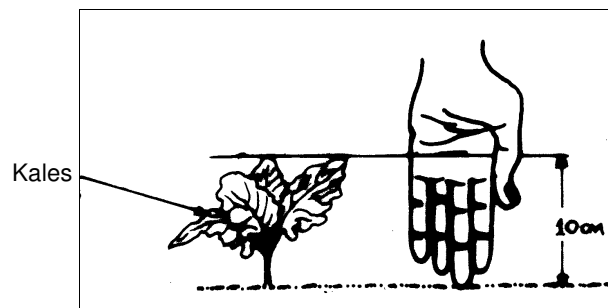
Recommended varieties: Thousand headed and Marrow stem.

Transplanting

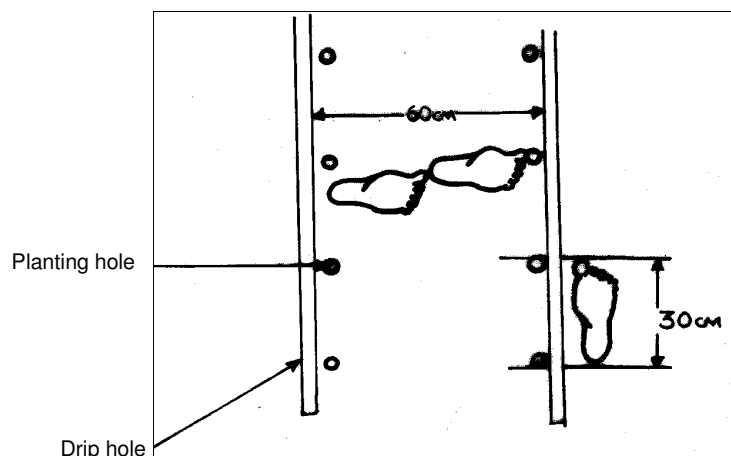
Transplant when plants are 3 weeks old or when they have four true leaves. They should be about 10 cm tall.

Spacing

Plant at each drip hole (30 cm) and keep rows 2 feet apart.



Four true leaves



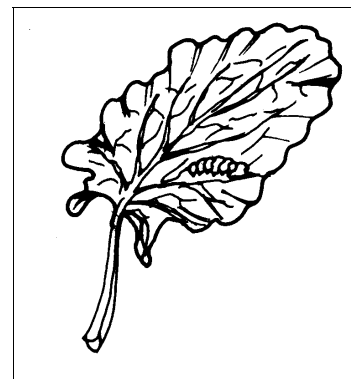
Spacing

Fertiliser and manure

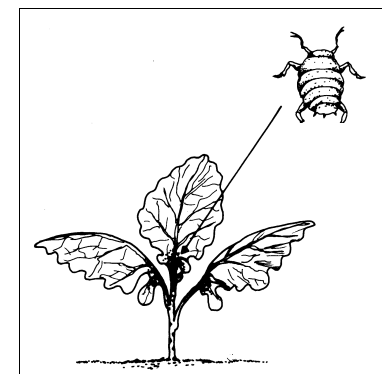
- Apply one teaspoonful of CAN when plants are 8 inches (20 cm) high
- After every 3 weeks repeat the fertiliser application
- Apply 2 handfuls of manure in each planting hole when double digging is not practised.

Pests

The most serious pests are caterpillars (produced by diamond back moth and cabbage saw fly) and aphids.



Caterpillars



Aphids

Control

- Apply Karate when caterpillars are observed on leaves
- Apply dimethoate to control aphids

Diseases

The most serious diseases are black rot and leaf spot.

Black rot

It attacks the stem and gives it a wet grey colour; when touched it feels slippery. The rot gives a characteristic offensive smell.

Leaf spot

Brown spots on the leaves are characteristic symptoms.

Control

- Always practice rotation to reduce incidence of black rot. Use non related plants eg. onion, tomatoes, chillies and capsicum
- Apply Dithane against fungal diseases eg. leaf spots