

# Bucket Kits for Gardening

Where there is water, there is life!

The Bucket Kit is a simple drip irrigation system designed for vegetable gardens in regions where there is no rain.

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### What it is and how it works:

The Bucket Kit has all the parts needed to make an irrigation system using an ordinary bucket. The kit may be adapted for a 2-, 4-, or 6-row garden. (Bucket is not included.)

This irrigation system works by gravity. When a 20-liter (5-gallon) bucket of water is raised one meter (3.3 feet) above the ground (measured from bottom of bucket) sufficient pressure is generated to force the water from the bucket through the irrigation tape on the ground.

Tubes connect through the bottom of the bucket to the irrigation tape. Water drips from the tape into the soil and provides enough moisture for a vegetable garden to feed a family of three to four.

### What is in the kit:

There are 12 parts and no spares.

Be careful not to lose any. Handle all parts with care.

#### Bucket Adapter (3 pieces)



- Male threaded adapter with slits
- Rubber washer
- Female threaded adapter

#### Filter Screen Stopper



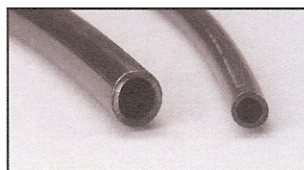
Black rubber with two holes on the flat end and a metal filter screen on the other.



Do not remove screen.

#### Supply Tubes (2)

Two 1.5m (5 feet) pieces large (8mm) tubing.



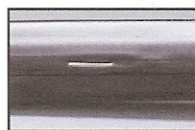
#### Connector Tubing

One 3m (10 feet) piece small (5mm) tubing.

#### Drip Tape



One 30m (100 feet) flat tape with slits every 30cm (12 inches). Inside is a strip containing 10,000 filters per 30m that keeps water flowing freely. A zig-zag pattern provides uniform pressure through the tape.

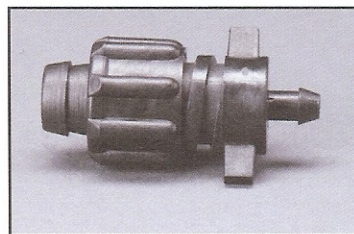


#### Header Tape



One 5m (15 feet) piece flat tape without slits.

#### Barbs (2)



Two connectors used to join supply tubes and drip tape.

#### Hole Punch



One hole punch for making holes in drip tape.

## Location of Garden

- At least 6-8 hours of full sun a day
- Away from large trees
- As level as possible
- With a fence to keep out animals

## Location of Bucket

Make a stand with two posts and crossbar. The bottom of the bucket must be at least 1m (3.3 feet) above the ground. Place crossbar higher if bucket is suspended.

Set up bucket at one end of the garden; if not level, place bucket at the high end.



## Preparing Garden

Make raised beds of soil 1m (3.3 ft) wide, 15cm (6 in) high, and 15m (50 ft) long for 2 rows; 7.5m (25 ft) long for 4 rows; or 5m (16.5 ft) long for 6 rows. If the garden extends into the rainy season, raised beds allow for water runoff.

- Dig a 30cm-deep (12 in) trench down the middle of the area where the bed will be.
- Place organic matter (banana leaves, grass, maize stalks) in trench.
- Cover organic matter with manure (80 liters (20 gal) per 15m (50 ft) row).
- Pour several buckets of water (80 liters per 15m row) over manure.
- Fill trench with soil and level off, making bed 15cm (6 in) high, straight, and flat.
- Break up large clods of soil so that drip tape lies flat.



## Bucket Kit Assembly


- 1 Cut hole in bottom of bucket (center or off-center).



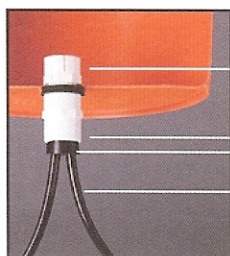
Use a new or used bucket that holds about 20 liters (5 gallons) of water. Cut a 27mm ( $1\frac{1}{16}$  in) hole with a hole saw (on a drill) or by hand with a sharp knife.

If using a knife, first trace around the threaded part of the male adapter for exact size. (Hole saw not included in kit.)



 Cut the hole exactly round for a tight seal. A metal bucket may be used, but cutting the hole is more difficult.

- 2 Insert male adapter through hole from inside bucket.



Bucket Adapter:

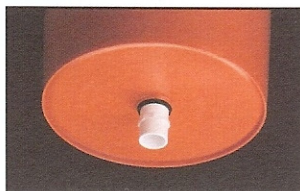
- male adapter (white)
- rubber washer (black)
- female adapter (white)

Filter Screen Stopper

Supply Tubes

- 3 Attach washer on male adapter from outside bucket.

- 4 Screw female adapter onto male adapter.



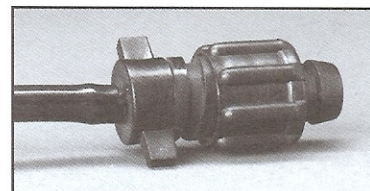
- 5 Insert both supply tubes into stopper.




- 6 Insert stopper into female adapter.



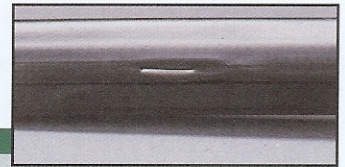
- 7 Insert small end of each barb into one end of each supply tube.



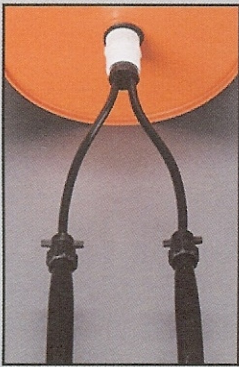
**8** Determine number of rows that fit the garden space and cut drip tape to correct lengths.

 System works best with 2, 4, or 6 rows.

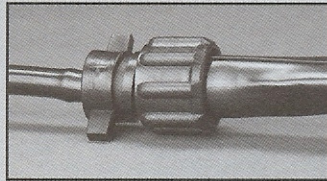
**2 Rows:** (2) 15m pieces  
**4 Rows:** (4) 7.5m pieces  
**6 Rows:** (6) 5m pieces




## 2 Rows: Attach drip tapes to supply tubes with barbs.

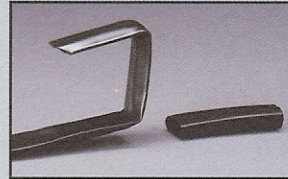


**9** Insert large end of each barb into one end of each piece of drip tape; tighten collars.

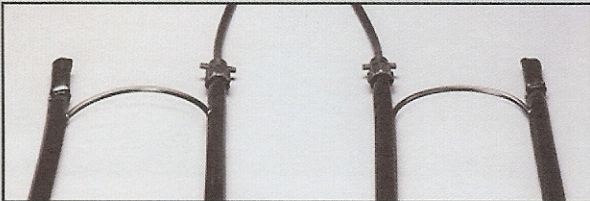


**10** Close ends of drip tape: fold tape twice and squeeze lengthwise so that it will fit into a sleeve made from a short piece of tape. Go to Steps 18-20.

 Lay tape with slits on top to prevent clogging.

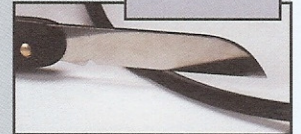


## 4 Rows: Set up as 2 rows and attach 2 more drip tapes.



**11** Close both ends of the two added drip tapes as in Step 10.

**12** Cut both ends of 2 connector tubes at a 45° angle (length depends on row spacing).



**13** Make hole with hole punch (about 20 cm from end) in all 4 drip tapes

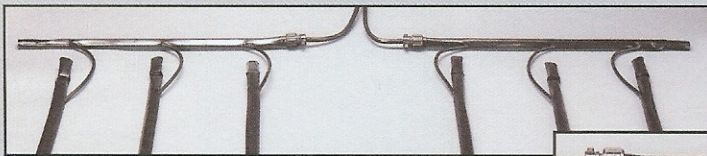
When making hole, squeeze tape to form an oval, and then use the punch to make the hole.



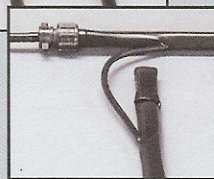
**14** Insert ends of connector tubes into holes in drip tape. (It is a tight fit!) Go to Steps 18-20.



## 6 Rows: Attach header tapes to barbs and connector tubes to drip tapes.




**15** Cut header tape into 2 pieces and connect one end to supply tubes as in Step 9, and close the other end as in Step 10.




**16** Close ends of drip tape as in Step 10 and make holes in both header and drip tapes as in Step 13.

**17** Cut 6 connector tubes, 45 cm (18 in) each, as in Step 12 and insert into holes as in Step 14.

 Do not use all connector tubing, keep some for repairs.

**18** Fill bucket with water. If water is dirty pour through heavy cloth.

**19** Fill bucket again and let water run through drip tapes.

 Two buckets of water are needed to wet soil for planting.



**20** Plant in each wet spot in the soil. Fill bucket each morning and afternoon. If there is a hot dry wind and the crop is well developed, fill bucket a 3rd time.



## The Bucket Kit 3-Stage Filtering System

- Heavy cloth over bucket:  
Filters dirty water and prevents wind from blowing dirt into bucket.
- Stopper containing filter screen:  
Filters out small pieces of debris before water enters drip tape.
- Full length strip of filters inside drip tape:  
Filters water through a series of filter segments.

## Maintenance

- Remove stopper from adapter and rinse filter screen if bucket takes longer than usual to empty.
  - ⚠ Do not remove screen from stopper or rub screen with fingers.
- Keep drip tapes in place.  
The drip tapes are lightweight and when not filled with water, they could be blown off the bed with a heavy wind. Place a stone over the end of each tape.
- Protect the tapes from animals.  
Fences may be needed.

## End-of-Season Maintenance

With care, the Bucket Kit should last 5 to 7 years.

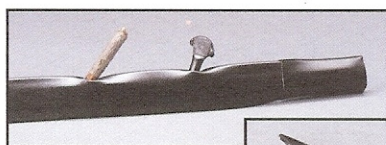
At the end of each season, remove sleeves from the far ends of the drip tape, pour water in bucket to flush out tape, and replace sleeves.

Store the system in such a way that it will not be damaged by rodents.

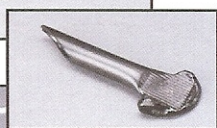
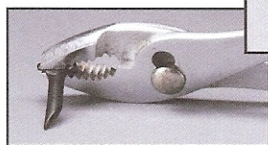


## Repairs

### The Plug.

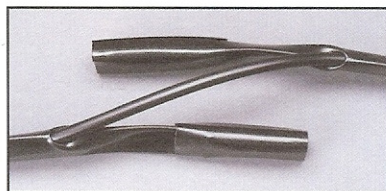


Plug hole in drip tape with small piece of tubing which has been heated with a match or torch and crimped with pliers.



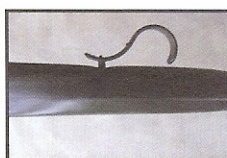
A round piece of wood also works; it swells when wet and makes a tight fit.

### The Bridge.



To repair drip tape, cut away damaged area and connect the two pieces with a "bridge" of small tubing.

For bridge: close off tape ends; make a hole in each piece of tape with nail; insert a piece of tubing into each hole.



Use hole punch to make a hole; squeeze tape to make an oval.



*Photography of Bucket Kit by Ron Bergeron and booklet design by Sherry Palmer, both of UNH Photographic Services, University of New Hampshire, Durham, NH, USA. Printing by RAM Printing Inc., East Hampstead, NH, USA.*

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