

# Grow vegetables in a maize-meal bag

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The Agricultural Research Council's (ARC) Institution for Vegetable and Ornamental Plants is conducting research trials on container gardening to optimise production of leafy vegetables with the aim of addressing food security. Availability of good soil and land for household vegetable production is becoming a major concern.



Lettuce growing in a bag.

However, there is an alternative way of growing vegetables and to optimise yield per unit area for household production. Plants grown in bags grow vertically upwards which results in efficient use of space/land. The bag system can be used in places that have not previously been considered appropriate for food gardens, such as small gardens, paved land and balconies.



Swiss chard (spinach) growing in a bag.

The bag is able to hold water for longer, without water and nutrients draining into the soil. Plant leaves are not in contact with the soil resulting in less effort to clean the leaves before marketing or consumption. In order to plant vegetables by using the bag system, the following are required: empty maize-meal bag (80kg, 50kg or 25kg), soluble fertiliser, growing medium (compost, sawdust or soil with good drainage), watering can and seedlings. Follow the steps below to grow your own vegetables in a maize bag.

## Steps to follow



Mustard spinach grown in a bag.

- Moisten the growing medium with water to allow good distribution of water during irrigation.
- In an 80kg maize meal bag you can plant on average of 56 plants.
- Fill a maize-meal bag with the moistened growing medium such as sawdust or compost.
- Use a sharp blade to cut planting holes in the bag at a 20cm x 10cm distance to transplant leafy vegetables such as kale, rape, mustard spinach, Swiss chard, spinach, beetroot and lettuce.
- Push the seedling root plug into the planting hole in the maize-meal bag.
- Make sure that the bag is upright to allow the uniform distribution of water.
- Make sure that the growing medium doesn't dry out. Plants should be watered from the top of the bag. The water will drain downwards to benefit the lower plants.
- Complete nutrient solution can be applied on a weekly basis to supply plants with nutrition. Dissolve 1g of soluble fertiliser per litre of water for each of the following fertilisers: Multifeed and Calcium Nitrate.
- Plants can be watered every second day (e.g. in an 80kg bag 60-90l of water can be applied per week).
- Plants should be exposed to sunlight for the process of photosynthesis to take place.

## Advantages of bag system

- Water is conserved as very little drains out of the bag.
- It suppresses weeds; no weed control is needed.
- Plant leaves are free from soil particles since leaves face upwards.
- There is high yield per unit area, compared to growing on a flat area.
- Less area is required to produce food (56 plants/m<sup>2</sup>).

## Disadvantages

- Poor drainage medium can have a negative effect on moisture distribution and root aeration.
- Bags need to be supported and kept upright for uniform distribution of water.
- Maize-meal bags cannot be reused. With time, it may be torn and will disintegrate, depending on how strong the bag is.