

GROWING NUTRITIOUS LEAFY VEGETABLES IN AN OLD MAIZE-MEAL BAG

Background

Availability of good soil and land/space for household vegetable production is becoming a major concern. However, there is an alternative way of growing vegetables and to optimise yield per unit area for household production. Plants grown in a bag system are growing vertically upwards which results in efficient use of space. The bag system can be used in places that have not been previously thought of as appropriate for food gardens, such as paved land and balconies. The bag is able to hold water for a longer time, without water and nutrients draining out of the soil. Plant leaves are not in contact with the soil, resulting in less effort to clean the leaves before consumption or marketing. Plants can also be produced organically.

This small bag system when fully planted with Swiss chard/spinach can feed a family of four with a bunch of spinach every week.

Inputs required to plant vegetables in a bag system

- Empty maize-meal bag (80, 50, 25 or 12.5kg bag)
- Water-soluble fertilizer (multifeed & calcium nitrate)
- Growing medium (sawdust, compost, topsoil mixed with kraal or chicken manure or soil with very good drainage)
- Watering-can
- Seedlings

Steps to follow when preparing the bag system

- Moisten the growing medium to allow good distribution of water during irrigation
- Fill the maize-meal bag with the moistened growing medium
- Use a sharp blade to cut openings in the bag at a distance 20cm x 10cm for planting holes. Leafy vegetables such as kale, rape, mustard spinach, Swiss chard, spinach, beetroot and lettuce can be planted successfully in the bag system
- 80kg maize-meal bag can hold on average up to 56 plants
- Push the seedling root plug into the planting hole in the maize-meal bag
- Make sure that the bag is upright to allow uniform distribution of water
- Make sure that the growing medium doesn't dry out and water the plants from the top of the bag so that it will drain downwards to benefit the lower plants
- Complete nutrient solution can be applied on a weekly basis to supply plants with nutrients

Fertilizer formulation:

- Dissolve 1g/litre of water for each of the following fertilizers: multifeed and calcium nitrate. Organic fertilizers like kraal or chicken manure can also be used in the system
- Plants can be watered every second day (e.g. 80kg bag requires about 60-90ℓ water/week)
- Plants should be exposed to sunlight for the process of photosynthesis to take place



Swiss chard 'spinach' growing in a bag system



Cost for production of 1x bag system with Swiss chard/spinach

- 12.5kg empty bag @R3.80
- Sawdust @R15.00/refuse bag
- 40x seedlings @R20.00 (enough for 12.5kg bag)
- Labour @R63.00/hr

TOTAL = R101.80



Cutting of holes and transplanting of seedlings in the bag system



Mustard spinach growing in a bag system

Advantages of bag system

- It conserves water since little drains out of the bag
- It suppresses weeds so no weed control is needed
- Plant leaves are free from soil particles since they face upwards
- There is high yield per unit area, compared to growing on a flat area
- Requires less area to produce food (56 plants/m²)

Disadvantages of bag system

- 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 bag cannot be reused; with time it can be torn or disintegrate, depending on the durability of the bag



Leafy lettuce growing in a bag system

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