

1. CROPPING METHODS

There are several techniques to practice a sustainable cropping plan. Crop Rotation, Intercropping, Succession Planting and Companion Planting are the most simple and effective options to try out in your homestead garden.

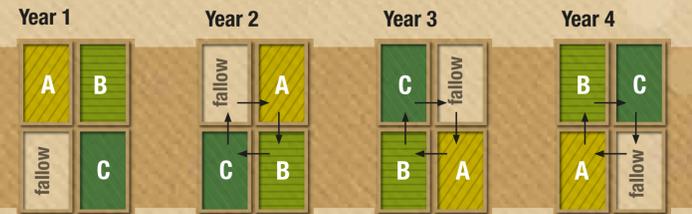
A) Crop rotation

Crop rotation is the practice of alternating different crops each season in the same plot.

Different plants use soil nutrients at different rates and amounts (cabbage uses a lot of nutrients while green leafy crops need less). We need to rotate our crops so nutrients in the soil are optimised and yields are increased. Rotation improves the quality of our soils, building up nutrients and preventing soil exhaustion.

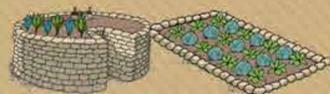
Crop rotation also breaks the life cycle of pests and diseases as they generally need a specific host plant family to live on and reproduce. By alternating the crops, the pests are prevented from establishing themselves in our soils. An example of crop rotation can be seen in the diagram below:

- A garden can be divided into 4 sections, shown here as A, B and C with one section left fallow (not planted so that soil can rest).
- The following groups of vegetables can be grown together in the different sections of the garden:
- 1) Onion and garlic
 - 2) Carrot, beetroot, turnip
 - 3) Tomato, lettuce, spinach
 - 4) Beans, peas



Each following year, move the vegetable groups into the next quarter of the garden so that each group of vegetables is grown in the soil used by another group the previous year. This rotation keeps the soils fertile and the plants healthy and vigorous. A different section gets to rest every year.

B) Intercropping



Intercropping is the practice of planting more than one crop together. Intercropping improves crop fertility and water use. Intercropping reduces pests and diseases (examples of good companion plants are provided below). It is advised to intercrop leafy and root crops in the keyhole garden plot (e.g. spinach, rape, carrots, beetroot) while a trench garden plot is more adequate for crops that would take too much space in the keyhole or could damage it (e.g. cabbage, tomato, peas, beans).

C) Succession planting



Succession planting is the practice of planting seeds in intervals of few weeks during the planting season instead of planting all seeds at the same time. Succession Planting is a good way of ensuring you have a continuous supply of a particular vegetable over the course of the season instead of having all crops ripening at the same time for a short period. See planting calendar in Poster 3.

D) Companion planting for intercropping

When planted together, certain plants will produce higher yields and are better able to defend themselves against diseases and insects. On the other hand, planting certain types of incompatible plants together interferes with their growth. When grown together, these incompatible plants tend to be less vigorous, produce fewer vegetables and are more prone to diseases and pests. Examples of good and bad pairings:

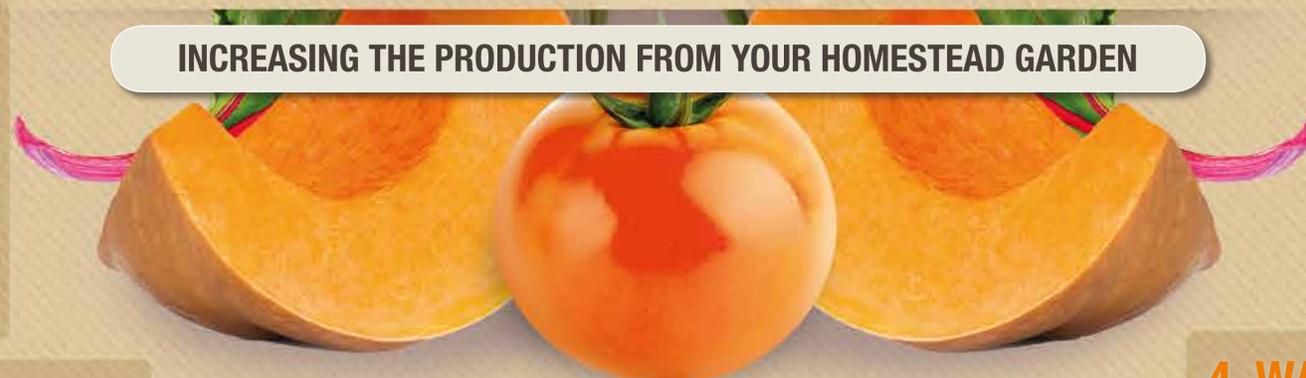
This crop:	is good when planted together with: ✓	but not together with: ✗
Peas	Carrots, Cabbages, Spinach, Beans, Peas	Onions, Garlic
Onions	Carrots, Cabbages, Spinach, Beans, Peas	Peas
Carrots	Peas, Beans, Peas	Onions, Garlic
Spinach	Peas, Beans, Peas	Onions, Garlic
Beans	Peas, Beans, Peas	Onions, Garlic
Peas	Peas, Beans, Peas	Onions, Garlic
Onions	Peas, Beans, Peas	Peas
Garlic	Peas, Beans, Peas	Peas

By planning how we plant, we can increase our yields and protect our crops from pests and diseases. Compost making will enrich our soil and help us to improve our production in a sustainable manner.



IMPROVE YIELDS

INCREASING THE PRODUCTION FROM YOUR HOMESTEAD GARDEN



2. ORGANIC PEST-CONTROL

Although pests and diseases can be controlled by using chemicals, these are expensive and risky to human and animal life and can harm the environment if misused. Organic pest and disease control can be used effectively but they need good management and for you to watch out for pests and diseases at an early stage.



- Keep plants strong and healthy by regular fertilisation and irrigation. Pests and diseases easily attack weak and unhealthy plants.
- Regularly weed and cultivate area around plants to improve drainage and destroy any damaging pest larvae that live in soil. Intercropping can also reduce the number of weeds (see section B - Intercropping and C - Succession planting left on this Poster).
- Be vigilant. Inspecting the garden regularly and removing eggs and larvae of insects from your plants disrupts the life cycle of pests and prevents build up of insect populations.
- Nevertheless there are some beneficial insects for your garden (spiders, bees). Do not eradicate them.
- Home-made organic insecticides: information on how to make your own organic insecticides with products available at home (milk, dishwashing liquid and cooking oil) is available on the reverse of this Poster.

3. COMPOST MAKING

Compost is decomposed material from plant, farm and household waste. It can be applied either alone or together with animal waste (manure). Compost improves soil fertility and soil water holding capacity. It also reduces production costs and increases yields in quantity and quality.

Materials needed:



How to make compost in 3-4 months:

- 1) Roughly chop large green or dry waste into smaller bits (not too small as it should allow some air flow through it for composting).
- 2) Make a 15cm layer of this plant material then add a 2cm layer of animal manure on top of this.
- 3) Add a 15cm layer of plant material then add a 2cm layer of wood ash. Repeat the steps above until heap is 1m to 1.5m high.
- 4) Cover with layer of soil to prevent loss of nutrients. Add water to dampen if the material is dry.
- 5) Cover soil with long grass or cloth sacks to keep it humid. Do NOT cover with plastic bags as they prevent air flow through it. Compost making requires air flow through the materials.
- 6) Turn heap after 1 month. Move top and sides of heap into the middle. Sprinkle with water if dry and turn every 2 weeks thereafter until material is a rich, dark grey or brown colour.

4. WATERING

- Do a simple soil moisture test:
- 1) Take a handful of soil from the garden and squeeze it tightly.
 - 2) If water drips out through the fingers there may be too much water.
 - 3) If soil remains compacted after opening your hand, there is no need for watering.
 - 4) If soil falls apart after opening your hand, watering is required.
- For keyhole garden, use water that was used for other household purposes – “grey water” eg. water that was used for rinsing dishes and clothes. Grey water needs to be poured through the basket and clean water can be used directly on the garden.
- Use cans and plastic bottles to make drip irrigation. Make about 4 tiny holes at bottom of used empty containers; partially bury the empty container into ground, 5 to 15cm, next to plant roots. Fill the containers with water once a week or as needed.



These materials have been commissioned by the United Nations Food and Agriculture Organization (FAO) in Lesotho and the Ministry of Agriculture and Food Security (MAFS) with financial support from the European Commission Humanitarian Aid and Civil Protection Directorate (ECHO), the Office of U.S. Foreign Disaster Assistance (OFDA) and the UK Department for International Development (DFID) in 2013. These materials were developed in coordination with, and endorsed by, the Home Gardening and Nutrition Working Group in Lesotho (HGNGW) and can be freely reproduced for non-commercial purposes ensuring attribution to MAFS, FAO and HGNGW. Any derivative work must be approved by FAO and MAFS. The members of the HGNGW are the following: Action Aid, Apostolic Faith Mission, CARE Lesotho, Caritas, Catholic Relief Services (CRS), Food and Agriculture Organization (FAO), Food and Nutrition Coordination Office (FNCO), Growing Nations, Lesotho Agricultural College, Lesotho College of Education, Lesotho Council of NGOs (LCN), Lesotho Red Cross Society, Machobane Foundation, Ministry of Agriculture and Food Security, Ministry of Forestry and Land Reclamation, National University of Lesotho (NUL), Rehobotho Church, Rural Self Help Development Association (RSDA), Send a Cow Lesotho, UNICEF, World Food Programme, World Vision Lesotho. Special thanks to Catholic Relief Services (CRS) for its guidance in the preparation of Keyhole Gardening contents and UNICEF for its contribution in Nutrition.



