SEEDS
Socio-Economic & Environmental Development Solutions

www.sendseedstoafrica.org

Please DO NOT use Genetically Modified Seeds(GM or GMO). Ask your seed provider and if they cannot give you written proof, do not buy the seed.

Try to save your own seed that you know is safe and you will get more money for your vegetables if they are organically grown, which means no pesticide use for the previous 5 years.

Lemon Trees

Planting

Select seeds from healthy mother trees for rootstocks
Hot water treat seeds at 50° C for 10 minutes
Seeds perform better when planted soon after they are extracted
Sow seeds in seedbeds or polybags (18x23 cm). Seeds germinate in 2 to 3 weeks
Water the seeds regularly, preferably twice a day until they germinate
Seedlings are normally ready for budding when reaching pencil thickness or 6 to 8 months after germination.
T-budding is the most common method.
Do budding during warm months. Avoid budding during cold periods and during dry conditions
Budded plants are ready for transplanting 4 to 6 months after budding
Alternatively, obtain budded plants from a registered fruit nursery. These budded plants should be ready for transplanting in the field.

Transplanting in the field

Transplant in the field at onset of rains.
Clear the field and dig planting holes 60 x 60 x 60 cm well before the onset of rains.

At transplanting use well-rotted manure with topsoil.
Spacing varies widely, depending on elevation, rootstock and variety. Generally, trees need a wider spacing at sea level than those transplanted at higher altitudes. Usually the plant density varies from 150 to 500 trees per ha, which means distances of 4 x 5 m (limes and lemons), 5 x 6 m (oranges, grapefruits and mandarins) or 7 x 8 m (oranges, grapefruits and mandarins). In some countries citrus is planted in hedge rows.
It is very important to ensure that seedlings are not transplanted too deep.
After transplanting, the seedlings ought to be at the same height or preferably, somewhat higher than in the nursery.
Under no circumstances must the graft union ever be in contact with the soil or with mulching material if used.

Tree management / maintenance

Keep the trees free of weeds.
Maintain a single stem up to a height of 80-100 cm.
Remove all side branches / rootstock suckers.
Pinch or break the top branch at a height of 100 cm to encourage side branching.
Allow 3-4 scaffold branches to form the framework of the tree.
Remove side branches including those growing inwards.
Ensure all diseased and dead branches are removed regularly.
Careful use of hand tools is necessary in order to avoid injuring tree trunks and roots. Such injuries may become entry points for diseases.
As a general rule, if dry spells last longer than 3 months, irrigation is necessary to maintain high yields and fruit quality. Irrigation could be done with buckets or a hose pipe but installation of some kind of irrigation system would be ideal.
[listitemCitrus is under irrigation in the major citrus world producing countries.[/listitem]

Manure and fertiliser

For normal growth development (high yield and quality fruits), citrus trees require a sufficient supply of fertilizer and manuring. No general recommendation regarding the amounts of nutrients can be given because this depends on the fertility of the specific soil. Professional, combined soil and leaf analyses would provide right information on nutrient requirements.

In most cases tropical soils are low in organic matter. To improve them at least 20 kg (1 bucket) of well-rotted cattle manure or compost should be applied per tree per year as well as a handful of rockphosphate. On acid soils 1-2 kg of agricultural lime can be applied per tree spread evenly over the soil covering the root system. Application of manure or compost makes (especially grape-) fruits sweeter (farmer experience).

Nitrogen can be supplied by intercropping citrus trees with legume crops such as mucuna, cowpeas, clover or dolichos beans, and incorporating the plant material into the soil once a year. Mature trees need much more compost/well rotted manure than young trees to cater for more production of fruit. Conventional fertilisation depend on soil types, so it is recommended to consult the local agricultural office.

Husbandry

In windy areas, a windbreak should be provided as citrus is sensitive to strong winds. A windbreak provides protection at orchard tree level for about 4-6 times its height.

Plant the windbreak as close as possible and at right angles to prevailing winds.

Symptoms of mineral deficiency

Nutrient Element	**Leaves**	**Fruit**
Nitrogen	Pale yellow to old ivory	Reduced crop
Phosphorous	Small, dull	Reduced crop. Large. Puffy, bumpy surfa enlarged core cavi and thick rind.
Magnesium	Yellow mottling along margin Developing a green wedge to "Christmas tree" pattern. Eventual complete yellowing and defoliation.	Reduced crop
Iron	Yellow veins, remain green until final stage of general chlorosis. Reduced size	Reduced crop
Zinc	Mottled yellow between main veins.	Reduced crop,

	Small narrow Early fall. Reduced size	some pale yellow off types
Manganese	Normal green along main veins. Rest of leaf pale green to light yellow	Reduced crop
Potassium	Old leaves curl and loose their green colour	Small, smooth, thi rind, drop prematurely
Copper	Deep green, oversized, then darkened	Splitting and gumming. Dark brown gum soaked eruptions. May turn black. Gum in centre cor