What to do

1. Dig planting holes about 10 cm deep along rows. For maize, the rows should be spaced 75 cm apart with planting holes spaced at 30 cm along rows.
2. Apply about one handful of compost to each planting hole and mix well with the soil.
3. Place the seed into the hole and cover with soil.
4. Compost can also be scattered or broadcast evenly and incorporated into the seedbed before planting the seeds.
5. If you are not ready to use your compost immediately, store it in a shade or cover the heap.
6. If you are not ready to use your compost immediately, store it in a shade or cover the heap.
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How to use your enriched compost

1. Use crop residues, garden weeds, household wastes, hedge clippings and other materials produced on your farm in a sustainable way.
2. Use recommended amount of compost (400-600 kg per hectare). For maize, the rows should be spaced 75 cm apart with planting holes spaced at 30 cm along rows.
3. Place the seed into the hole and cover with soil.
4. Place the seed into the hole and cover with soil.
5. Use crop residues, garden weeds, household wastes, hedge clippings and other materials produced on your farm in a sustainable way.
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Case study

Mr. Bwibo grows maize intercropped with groundnuts on his 5-hectare farm in Bumala location, Bunyoro District, Kenya. Over the years, he became increasingly concerned about his low yields: a total of just eight bags of maize and two bags of groundnuts per hectare for the two growing seasons in 2001. Towards the end of that year, he was taught how to make enriched compost by SACRED Africa, a non-governmental organization, which works closely with Moi University.

In 2002, he applied his first enriched compost to about one hectare of his land at the beginning of the first rains. That year his yield was much higher. He obtained a total of 20 bags of maize and six bags of groundnuts. From this bumper harvest, he kept five bags of maize and one bag of groundnuts for his family and sold 15 bags of maize and five bags of groundnuts, which gave him a total income of more than US$300. In 2003, he continued making enriched compost and applied it to even more land—about 3 hectares.

With the extra income from his increased yields, he had been able to build a semi-permanent house for the family. Now, Mr. Bwibo is showing his neighbouring farmers how to make enriched compost so they too can share in his success.
Enriched Compost for Higher Yields

In Eastern Africa, soil fertility has led to declining crop yields on many small-scale farms causing food insecurity and greater poverty. Throughout the region, soils are generally low in nitrogen and phosphorus—which are essential for crops to grow well. Soil fertility can be increased by use of chemical fertilizers but these are too expensive for many farmers and are not always available, so it is to make your own good-quality compost using waste material from your farm and household.

What is compost?
Compost is decomposed (rotted) material obtained from plant waste alone or in combination with animal and other waste. What composting works
Composting depends on providing the right conditions to support the growth of tiny soil organisms (micro-organisms) and fungi which can be seen only by using a microscope. As these micro-organisms break down the plant and animal waste materials, they produce heat. After a few days your compost heap will feel hot and when opened it will even give off steam. As the waste material breaks down it releases nutrients in a form that can be used by crops.

Compost can be made using different methods, for example:
- Crop residues and organic household waste can be thrown into pits or heaps and the material is not always available, it is to make your own good-quality compost using waste material from your farm and household.
- Crop residues from cereals (maize, sorghum, millet, wheat) and legumes (bean, cowpea, groundnut and green gram).
- Crop residues from cereals (millet and green-vegetation)
- Animal manure, garden weeds, straw, garbage and leaves, will increase the compost's nitrogen content.

Benefits of making enriched compost
- Turns waste products, such as crop residues, animal manure, garden waste, weeds, garbage, into a valuable, usable product.
- Nutrients are readily available as plant food without the need for further breakdown in the soil.
- Increases crop yields
- Increases the amount of water the soil can hold, so it does not dry out fast.
- Improves the soil texture so the crop's roots can push through it more easily.
- Releases nutrients gradually and continues to improve the soil in the following seasons.
- Helps to increase beneficial soil micro-organisms and increase the soil's organic matter, which is good for your crops and the environment.
- Reduces weed growth as weed seeds are destroyed by the heat produced during composting.
- Nutrients are immediately available as plant food without the need for further breakdown in the soil.
- Increases crop yields
- Decreases the compost's nitrogen content.
- Increases soil aeration
- Improves the soil texture so the crop's roots can push through it more easily
- Increases the amount of water the soil can hold, so it does not dry out fast.

How to make enriched compost in 3-4 months
Step 1: Making a heap
1. Measure out an area at least 2.5 metres long and 2 metres wide in a convenient place, such as near your banana plantation. You will need about 10 litres of material for every square meter.
2. Mark the corners of the heap with sticks.
3. Pile the mixture into a heap at least one metre high and one metre wide and allow a little space to turn the heap.
4. Sprinkle a thin layer of animal manure, about 2 cm deep, to cover the first layer.
5. Add a layer of plant material, preferably including green manure, such as agro-forestry shrubs (like black broom or a depth of about 5 cm.
6. Sprinkle wood ash or charcoal dust on the top of the heap to reduce odour. This is good for your crops and the environment.

Step 2: Turning the compost
1. Measure out an area at least 2.5 metres long and 2 metres wide in a convenient place, such as near your banana plantation. You will need about 10 litres of material for every square meter.
2. Thoroughly mix these with fresh animal manure.
3. Chop the plant waste materials (dry or green) on your farm.
4. Turn the heap every two weeks until the compost becomes dark grey in colour.
5. By the third or fourth day, the inside of the heap should be hot. If not, add more manure and mix with the other materials.
6. From the third or fourth day onwards, turn the heap every two days so that the material from the sides and top are moved to the centre.

How to make enriched compost in just 14 days
A more rapid method of making compost has been developed in Asia. The decomposition process takes place by adding green and dry animal manures and by frequently turning the heap. Chicken manure is superior to other manures.

To do this:
1. Chop the plant waste materials (dry or green) on your farm.
2. Thoroughly mix these with fresh amounts of dry animal manures.
3. Place a manure on a heap of at least one metre high and one metre wide and allow a similar sized area to turn the heap.
4. Cover the heap with banana leaves or old sacks to reduce heat loss.
5. By the third or fourth day, the inside of the heap should be hot. If not, add more manure and mix with the other materials.
6. From the third or fourth day onwards, turn the heap every two days so that the material from the sides and top are moved to the centre.

Step 3: Monitoring progress
- From about 8 days onwards, push a stick into the middle of the heap and if it is not covered. If the stick feels hot this is a sign that decomposition is occurring.
- The compost is ready when it becomes dark grey in colour. This is good for your crops and the environment.

Step 2: Turning the compost
1. Measure out an area at least 2.5 metres long and 2 metres wide in a convenient place, such as near your banana plantation. You will need about 10 litres of material for every square meter.
2. Thoroughly mix these with fresh amounts of dry animal manures.
3. Place a manure on a heap of at least one metre high and one metre wide and allow a similar sized area to turn the heap.
4. Cover the heap with banana leaves or old sacks to reduce heat loss.
5. By the third or fourth day, the inside of the heap should be hot. If not, add more manure and mix with the other materials.
6. From the third or fourth day onwards, turn the heap every two days so that the material from the sides and top are moved to the centre.

In 14 to 18 days, the compost should be ready for use.
Enriched Compost for Higher Yields

In Eastern Africa, reduced soil fertility has led to declining crop yields on many small-scale farms causing food insecurity and greater poverty. Throughout the region, soils are generally low in nitrogen and phosphorus which are essential for crops to grow well. Soil fertility can be increased by use of chemical fertilizers but these are too expensive for many farmers and are not always available. An alternative is to make your own good-quality compost using waste materials from your farm and household.

What is compost?

Compost is decomposed (rotted) material obtained from plant waste alone or in combination with animal and other wastes.

How composting works

Composting depends on providing the right conditions to support the growth of tiny micro-organisms (or micro-organisms and fungi which can be seen only by using a microscope). As these micro-organisms break down the plant and animal waste materials, they will even give off steam. As the waste materials break down they release nutrients in a form which is good for your crops and the environment. Reduces weed growth as weed seeds are destroyed by the heat produced during composting. Many people now prefer to eat foods that are grown without the use of chemicals and artificial fertilizers.-compost helps you to produce such foods. You can sell surplus compost to your neighbours. Can be made with little or no financial input.

What you require to make enriched compost

• Plant waste material.
• Animal manure or urine.
• Water.
• Small branches, twigs and sticks.
• Sunlight.
• A space at least 2.5 metres long by 2 metres wide in a convenient place, such as near your garden or a crop field.
• A watering can.

Benefits of making enriched compost

• Turns waste products, such as crop residues, animal manure, garden waste, grass, hedge cuttings, kitchen and household waste, and other organic wastes into a valuable, useful product.

• Nutrients are immediately available as plant food without the need for further breakdown in the soil.

• Increases crop yields.

• Reduces weed growth as weed seeds are destroyed by the heat produced during composting.

• Can be made with little or no financial input.

How to make enriched compost in 3-4 months

Step 1: Making a heap

1. Measure out an area at least 2.5 metres long and 2 metres wide in a convenient place, such as near your garden or a crop field for turning the heap.

2. Mark the corners of the heap with sticks.

3. Pile the mixture into a heap at least one metre high and one metre wide and allow a similar sized area to turn the heap.

4. Cover the heap with banana leaves or old sacks to reduce heat loss.

5. Add a second layer of plant material, preferably including green manures such as sunflower, sunhemp, or brassica, to a depth of about 15 cm.

6. Sprinkle wood ash or charcoal dust on the top of the heap.

7. If the weather is dry sprinkle with about 4 litres of water to make the layer damp.

8. Turn the heap every 3 days until you have five layers each about 30 cm deep. This will make your heap about 1.5 metres tall.

9. Cover the heap with 15 cm of top soil to prevent loss of nutrients.

Step 2: Turning the compost

1. Turn the heap using a fork or other implement one month.

2. Move material from the top and sides of the heap to the middle of a new heap.

3. If necessary to water to ensure heap is damp.

4. Turn the heap every 2 weeks until the compost becomes dark grey in colour.

• Composts, chicken, sheep or goat manure and urine, or biogas slurry to speed-up the process of decomposition.

• Wood ash or charcoal dust.

How to make enriched compost in just 14 days

A more rapid method of making compost has been developed in Asia. The decomposition progress is speeded by adding a generous amount of fresh animal manure and by frequently turning the heap. Chicken manure is superior to other manures.

To do this:

1. Chop the plant waste materials (dry or green on both).

2. Thoroughly mix these with equal amounts of fresh animal manure.

3. Fill the heaps into a heap of at least one metre high and one metre wide and allow a similar sized area to turn the heap.

4. Cover the heap with banana leaves or old sacks to reduce heat loss.

5. By the third or fourth day, the inside of the heap should be hot. If not, add more manure and mix with the other materials.

6. From the third or fourth day onwards, turn the heap every two days so that the materials from the sides and top are turned to the centre.

7. In 14 to 18 days, the compost should be ready for use.
Enriched Compost for Higher Yields

Case study
Mr Bwibo grows manioc intercropped with groundnuts on his 5-hectare farm in Bumula location, Busia District, Kenya. Over the years, he became increasingly concerned about his low yields: a total of just eight bags of maize and two bags of groundnuts per hectare for the two growing seasons in 2001. Towards the end of that year, he was taught how to make enriched compost by SACRED Africa, a non-governmental organization, which works closely with Moi University.

In 2002, he applied his first enriched compost to about one hectare of his land at the beginning of the first rains. That year his yield was much higher. He obtained a total of 20 bags of maize and six bags of groundnuts. From this bumper harvest, he kept five bags of maize and one bag of groundnuts for his family and sold 15 bags of maize and five bags of groundnuts, which gave him a total income of more than US$300. In 2003, he continued making enriched compost and applied it to as much more land – about 3 hectares.

With the extra income from his increased yields he was able to build a semi-permanent house for the family. Now, Mr Bwibo is showing his neighbouring farmers how to make enriched compost so they too can share in his success.

Loss of vegetation<br>Cover from farm and surrounding land<br>Excessive collection of natural plants<br>Use crop residues, garden wastes, household wastes, hedge clippings and other materials produced on your farm in a sustainable way. Only use natural plant materials such as straws, that grow fast and take care not to destroy parent plant.<br><br>Crop yields low despite use of enriched compost<br>Not using enough compost<br>Not following full package of recommended crop practices<br>Use recommended amount of compost (400-600 kg per hectare). In addition to using enough compost, follow other recommended practices such as propagation of a good seedbed, timely planting of improved seed, weeding and diseases and pest control measures.

Other Constraints<br>Slow decomposition<br>Too much water<br>Heap not turned<br>Too small or too large heap<br>Heap not hot enough<br>Not enough animal manure<br>Heap not hot enough<br>Not enough animal manure<br>Add recommended amounts of animal manure<br><br>Heap catches fire<br>Heap gets too hot<br>This is very unusual<br>Avoid by applying water to maintain correct moisture level – damp not dry or wet.<br>Do not make heap too large – use several smaller heaps<br><br>Soil contamination<br>Polluted materials used in heap<br>Do not use materials that might contaminate the soil such as industrial wastes that may contain metals.

Steps to follow in making enriched compost<br>1. Do not make heap too large – use recommended amount of compost (400-600 kg per hectare). In addition to using enough compost, follow other recommended practices such as propagation of a good seedbed, timely planting of improved seed, weeding and diseases and pest control measures.

Crop yields low despite use of enriched compost
Not using enough compost
Not following full package of recommended crop practices
Use recommended amount of compost (400-600 kg per hectare.)

How to use your enriched compost<br>1. Dig planting holes about 10 cm deep along rows. For maize, the rows should be spaced 30 cm apart with planting holes spaced at 30 cm along rows.<br>2. Apply about one handful of compost to each planting hole and mix well with the soil.<br>3. Place the seed into the hole and cover with soil.<br>4. Compost can also be scattered or broadcast evenly and incorporated into the seedbed before planting the seeds.<br>5. If you are not ready to use your compost immediately, store it in a shade or cover heap with 10 cm of top soil to stop loss of nutrients.

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