

How and why should I apply fertilizer?



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Words Explained

Fertilizer: Something added to the soil to help the plants grow

Harvest: Gathering the crops from the field

Leaching: Washing away of nutrients from the soil

Microorganisms: Very small soil insects

Mineral fertilizer: NPK blends you buy at the agrovet or shop

Nutrients: Tiny particles in the soil that a crop needs as food

Organic fertilizer: Natural materials that contain nutrients like crop parts, compost or manure

Top-dressing: Second application of fertilizer 6 weeks after planting

Remember that our crops need nutrients for food? Those nutrients are in the soil and taken up by the plant's roots and stored in the stem, leaves and fruit of our crops.

Wow! So there are nutrients in this leaf!



The nutrients from the soil are taken up and stored in the stem, leaves and fruit of the crop. This is why we eat our crops, to nourish ourselves with the nutrients stored in them.



Because the nutrients have now been stored in the crop, there are fewer nutrients in the ground. If we keep harvesting crops from the same field, we keep removing nutrients from the soil.

When you harvest the crops for eating, you take away any nutrients which were once in the soil, but are now in the plant!



Each time we harvest we take away nutrients that were first in the soil. If we don't replace these nutrients with new ones, the new crops will not grow properly. We can put extra nutrients in the soil in different ways.

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When we leave some of the crop parts after harvesting in the field, they are eaten by tiny insects in the ground. The nutrients in these crop parts will be released in the soil again.

Wow, So some of the nutrients that were in the crop are now back in the soil!



Because only part of the crop is left in the field, there are still fewer nutrients in the ground than before. We still need to put extra nutrients in the soil.

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Exactly! But we still need to add more nutrients. We can do this by adding organic fertilizer or mineral fertilizer.

That is why we test our soils: to know exactly which nutrients are already in the soil so we know what fertilizers we need to add and in what amount.



Fertilizing your field means you are putting extra nutrients in your soil. You can do this using organic fertilizers like compost or manure or by using mineral fertilizer like the NPK blends you buy at the agrovet or shop.



Organic fertilizer

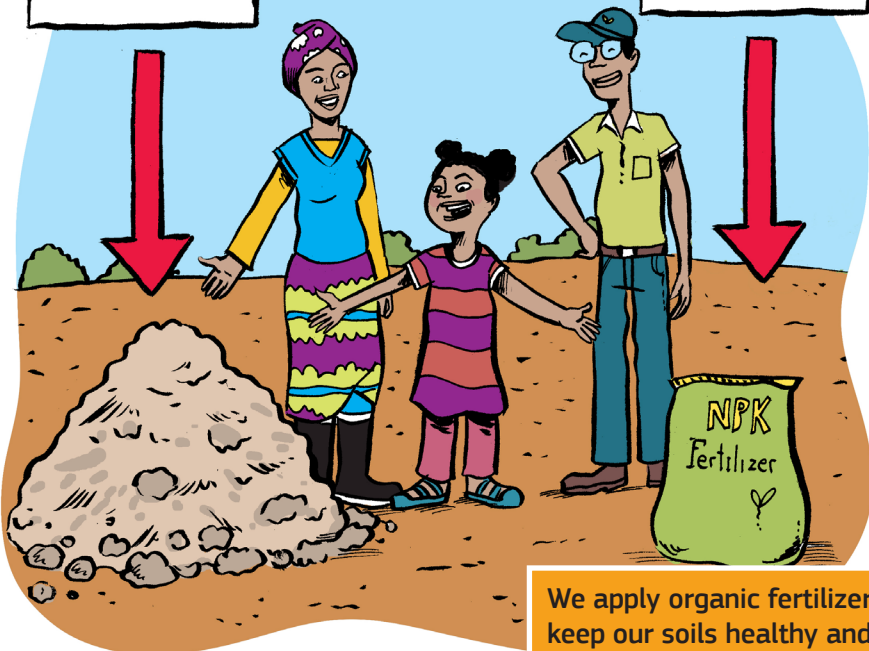
- feeds the soil insects
- improves soil structure and quality
- keeps soil healthy
- provides nutrients slowly in uncertain amounts

What are the differences between that brown pile and that bag?

That pile can be compost or manure, the bag is mineral fertilizer you buy at the agrovet or shop. They both have different characteristics.


Mineral fertilizer

- provides needed nutrients
- quickly available to the crop
- provides boost when needed
- provides nutrients in certain amounts



We apply organic fertilizer to keep our soils healthy and mineral fertilizer to be sure our crops are well fed.

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Without healthy soils, mineral fertilizer won't have a big effect. A lot of nutrients from the mineral fertilizer will just wash away with the rain.

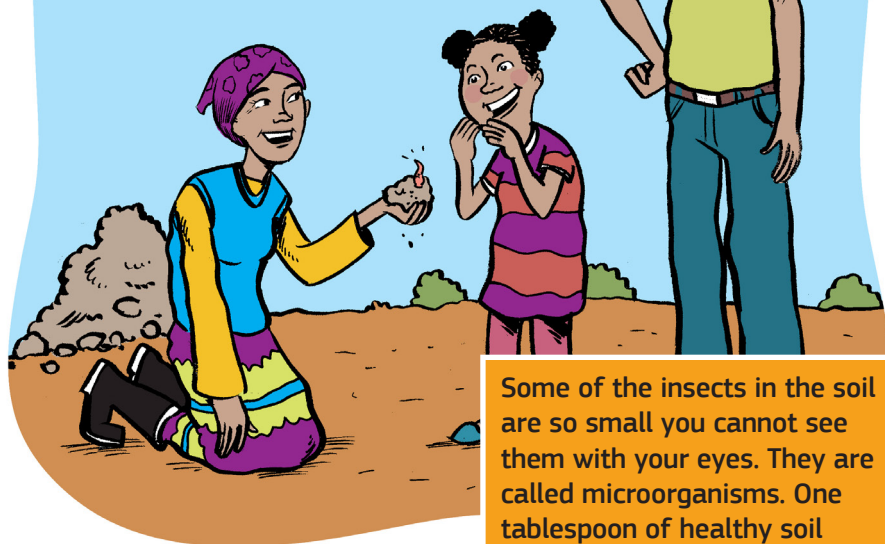
Why is that?

When your soil is not healthy, the nutrients from the mineral fertilizer will just wash away. This is called leaching. Organic fertilizers like compost and manure make your soil healthy.



You remember the leaves being eaten by the small soil insects? This also happens to compost and manure when you apply them to your field.

Ah! I can see an earthworm eating inside the compost!



Some of the insects in the soil are so small you cannot see them with your eyes. They are called microorganisms. One tablespoon of healthy soil contains more of them than there are people on this planet!

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Because the soil insects are moving and eating in the soil they make the soil healthy and crumbly. Nutrients in the soil attach to these crumbs.

Yes, without the crumbs, the nutrients of the mineral fertilizer would easily wash away when it rains because they can't hold on to the soil.



The soil insects are very important. You need to take good care of them so they stay alive and make nice crumbs in your soil so the nutrients of the mineral fertilizer can attach and are available to the roots of your crop.



Before planting

Eating the organic fertilizer and releasing the nutrients takes time. So, apply compost and manure a month before planting.

At planting I will now add the mineral fertilizer so these extra nutrients are quickly available to the crop.



When you apply organic fertilizer a month before you plant, you make sure the nutrients are all released from the materials so the seedling can access them.

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At planting


How do I now apply the mineral fertilizer?

When you put the fertilizer on top of the soil, many of the nutrients will disappear into the air or wash away with the rains. That's why you put the fertilizer in the planting hole and cover it with soil.



Put the fertilizer at the bottom of the planting holes, put 10 cm (the size of your index finger) of soil on top, then add the seed and cover the seed with soil.





It is important that the mineral fertilizer and the seed do not directly touch. When they touch it will burn the seed.

Ah, ok. So that is why we put soil in between.

Since the mineral fertilizer is a strong chemical, it should never be touching the seed or plant. By placing the seed 10 cm above the fertilizer, it can access all the nutrients easily without being burnt.

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After planting

6 weeks after planting you need to top-dress with fertilizer. This means you can spread it around your field, but make sure you mix it into your soil. This is best done during weeding.



By incorporating the fertilizer into the soil at topdressing you make sure you don't lose nutrients to the air or leaching.



Colophon

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Last edited: December 2018

This booklet is part of the Fertilizer Series of SoilCares Foundation. It explains how and why you should apply fertilizer and explains the differences between organic and mineral fertilizers.

Through these training booklets SoilCares Foundation wants to show you how to take care of your soil – so the soil can take care of you.

Other SoilCares Foundation booklets:

1. Why should I test my soil?
2. How do I collect a good soil sample?
3. What do the recommendations of the soil test report mean?
4. How and why should I apply fertilizer?
5. What are the differences between mineral fertilizers?

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