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# Center for Smart Agriculture Organic Farming



**Module 3: Organic crop management**

**Session 12: Nutrient management in organic production**



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Use of organic manure makes the availability of nutrients less controllable. This might result in lower yield stability.

In organic systems, often a higher soil organic matter content is observed than in conventional systems. This might partly compensate for the yield limiting effect of the low nutrient availability by increasing the water holding capacity and nutrient retention capacity of soils under organic production.

In low input system such as organic farming, within field variation might affect yield stability. Most essential in the use of organic fertilizer necessity for active soil organisms, to regulate nutrient cycling processes, to make nutrients available to the crops, to make the soil structure and systems and to suppress pests and diseases.



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Besides organic and composted manure, crop residue management are also fundamental tools for enhancing soil fertility. Nutrient catch crops, green manure crops, trap crops and crops with a relatively low harvest Index , like cereals , contribute to the organic matter in the soil after harvest.

Integrating these tools and attuning them specific farm, site and soil will be even more important in the future with reduced availability of manure input. This is because, in the ongoing development of organic farming, the aim is to close nutrient cycles within the organic sector and to become independent of stable manure from conventional farming systems.

With tightly closed nutrient cycles, nitrogen will be less of a problem than for instance potassium and phosphorous, because nitrogen can be supplied by growing legumes that live in symbiosis with nitrogen-fixing organisms.



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Organic materials such as farm yard manures, biogas slurry, compost, straw or other crop residues, green and brown manures and cover crops can substitute for inorganic fertilizers to maintain the environmental quality.

The use of organic manures will increase the organic matter content of the soil increasing the water holding capacity. Erosion is reduced by organic manures.

Crop rotation with legumes adds to soil fertility. Green manure provides the nutrients and improves the soil.

Application of biofertilizers may be done to supply nutrients to crops as well as to increase the biological activity of the soil





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## Variety requirement in Organically managed soil

Consequence of the above-described organic soil fertility management is that, plants have to form and maintain a larger and more active root system for nutrient uptake (have to be efficient in acquiring nutrients) and are more dependent on interaction with beneficial soil microorganisms that promote nutrient uptake.

Therefore, organic farmers require varieties that are adapted to such specific low(er) input soil management and that are efficient in nutrient and water uptake under organic farming conditions that have adequate root system architecture and can interact with beneficial soil micro organisms.

1. Organic Varieties Need Adaptation to Low(er) and Organic Input Conditions
2. Organic Varieties Need Adequate Root System
3. Organic Varieties Need Large Capacity to Interact With Beneficial Soil Micro organisms



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## Sources of Nutrient

- Soil
- FYM
- Compost
- Biofertilizer
- Green manuring etc..



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**THANK YOU**