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Organic production of cucumber and tomato

In greenhouse vegetable production, large amounts of plant nutrients are needed. In organic production this may cause problems. Plant nutrients are a limited resource in organic crop production, and it can be difficult to acquire the amounts needed. Large amounts of manure added to the soil can lead to nitrogen leaching. Since plant nutrition cannot be controlled as precisely as in conventional production, temporal quality problems can occur due to imbalance between plant nutrients.

These problems, in combination with large investments for converting greenhouses and the risk for build up of soil diseases and pests, have led to an interest in production systems with compost in limited beds. Here, the soil can be changed and the drainage water can be collected. Conversion of greenhouses to organic production is cheaper, as fewer changes are needed. However, growing crops in limited beds are often considered by many as conflicting with the basic ideas behind organic farming. The advantages of a large soil volume, where plants can find nutrients, trace elements and water, are not utilised.

A solution could be a combined system. Most of the compost is added to a limited bed, but the plants develop their root system both in compost and in the surrounding soil. The amount of compost can be reduced and thereby the leaching risk will be reduced. The drainage water can be collected, and the compost will be changed before each crop, so that it will not carry soil-borne pests and diseases.

The objective of the project is to:

1. Study existing organic greenhouse vegetable production systems.
2. Develop composts primarily based on plant materials, easily obtained from organic farms.
3. Develop and compare growing systems allowing the plants variable access to the greenhouse soil, and to study their effect on nutrient balance, leaching losses, crop production and quality.

Publications

Project title

I.1 Organic production of cucumber and tomato grown in composted plant material from field crops (ORCTOM)

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