



Crop rotation

Rūta Ekmāne

Marek Kopecký

Nataša Kunst

Crop rotation?

- Crop rotation is the practice of growing a series of different types of crops in the same area in sequential seasons.

- Grain legumes
- Faba bean
- Pea
- Soybean
- Lentils
- Lupines
- Vetch
- Small grain legumes (fodder legumes)
- Clover (red, white, ...)
- Alfalfa

- Sugar beet
- Fodder beet
- Potato
- Carrot
- Onion

Legume

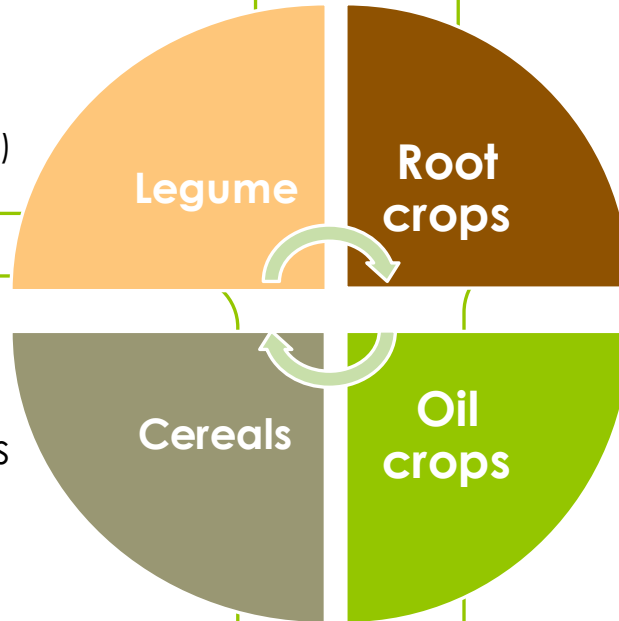
Root crops

- Summer cereals
- Winter cereals

Cereals

Oil crops

- Soybean
- Oil seed rape (autumn sown)
- Sunflower
- Pumpkin
- Linseed
- Hemp



Correct crop rotations contribute to:

- Natural soil fertility
- Stabilization processes of humification and mineralization
- Increased utilization of water and nutrients
- Support to soil microbial activity
- The intake of nitrogen
- Reduce of diseases and pests
- Reduce weed competitiveness
- Control effect of growth substances from crop residues
- Increase biodiversity and agrosystem stability
- More efficient production

Guidelines for crop rotations in organic farming

- Legumes 25 – 35 %
- Cereals < 50 %
- Potato + maize < 33 % (humus degradation!)
- Cover crops \geq 33 % of the years

General principles of crop rotation

- Respect of location conditions
- Rotate crops enriching the soil of organic matter and crops depriving the soil of organic matter
- Rotate crops worsening and improving the physicochemical soil properties
- Rotate shallow-rooted crops and deeply rooted crops

General principles of crop rotation(2)

- Add intercrops to crop rotation
- Higher biodiversity
- Using of resistant species and varieties
- Adequate interval during growing similar crops in same field
- Long lancover of crops in the field

The consequences of unilateral crop rotation are:

- Excessive soil erosion
- Weeds, diseases, pests
- Unilateral depletion of soil
- Negative effects on soil structure
- Reduced fertility of the soil
- Errors in the rotation (crop production in monoculture or only on the same field) do not show as fast as the lack of nutrients (but after a long time in spite of good care does not achieve higher, better yield).

How to mitigate the negative effects of poor crop rotations

- Fertilization with organic fertilizers (manure, compost)
- Sowing green manure crops (phacelia, oilseed radish, legumes), which increase the organic matter content and biological activity of the soil

Legislation in organic farming

- Council Regulation (EC). 834/2007 of 28 June 2007 on organic production and labeling of organic products and repealing Regulation (EEC). 2092/91
- Commission Regulation (EC). 889/2008 of 5 September 2008 laying down detailed rules for implementing Council Regulation (EC). 834/2007 on organic production and labeling of organic products with regard to organic production, labeling and control



Crop rotation (specializing in the production of milk)

- Examples:

1. Clover
2. Clover
3. Winter wheat (undersown white clover)
4. Oats (grain legumes-intercrop: mix)
5. Potatoes (fodder beet)
6. Rye (undersown clover)

1. Alfalfa
2. Alfalfa
3. Potato / corn silage
4. Spring wheat (undersown: white clover ryegrass)
5. Grain legumes (green mix the feed-radish crop, phacelia, spring vetch)
6. Oats / malting barley (possible undersown Alfalfa)

Crop rotation (specializing in the production of pork meat)

- Example:

1. Clover, green fallow
2. Winter wheat (undersown white clover)
3. Mix oats + peas
4. Grain legumes (beans, peas, lupine), undersown ryegrass
5. Winter barley / triticale

Crop rotation (specializing in the production of pork and beef meat)

- Example:

1. Clover-grass mix
2. Clover-grass mix
3. Winter wheat or rye
4. Root crops
5. Grain legumes
6. Spelt
7. Oat



Crop rotation (without livestock)

- Example:

1. Grain legumes
2. Potato
3. Winter wheat or rye (mustard, phacelia)
4. Oat (phacelia, mustard)
5. Pea
6. Winter wheat (undersown: clover-grass mix)



**Thank you for your
attention!**

