The Importance of Crop Rotations

1. **Read the definitions of crop rotation and monoculture below! (10min)**
   a) **Are there any words you don't understand? List them on the last page!**
   b) **Use the words from the box to fill in the missing words!**

What is a crop rotation?

A crop rotation is a series of different crops planted in the same field in a defined order (i.e., maize-cotton-sunflowers or maize-soybeans).

Monoculture is the repeated planting of the same crop in the same field year after year.

repeated – field – year – crops – order – year

2. **What are the correct words in the text "What problems occur with monocultures"? (10min)**
   a) **Are there any words you do not understand? List them on the last page!**
   b) **Choose the correct options in the following text!**

What problems occur with monocultures?

In monocultures, increases in crop-specific pests and diseases/deformations are observed over time. Continuously growing the same crop will tend to exploit/nourish the same soil root zone, which can lead to a decrease in available soil organisms/nutrients for plant growth and to a decrease in root/insect development.

3. **Watch the video: "Why Do Farmers Rotate Crops? - Farm Basics" (15min) (https://www.youtube.com/watch?v=3QLYFg4NIN8)**
   a) **List the words you don't understand on the last page!**
   b) **Watch the video again and note down the benefits of crop rotations! Discuss your key terms together!**
      Benefits of crop rotations:
      1. Helps avoid problems with insects and diseases
      2. Improves weed control
      3. Nutrients: new crops profit from the nitrogen residues from the last crop
      4. Spreads out the workload

   c) **In addition to the video, what are some other benefits of crop rotations you know about? (5min)**

   d) **What diseases and pests do you know which can be avoided by crop rotations? (If necessary, watch the video again!) (5min)**

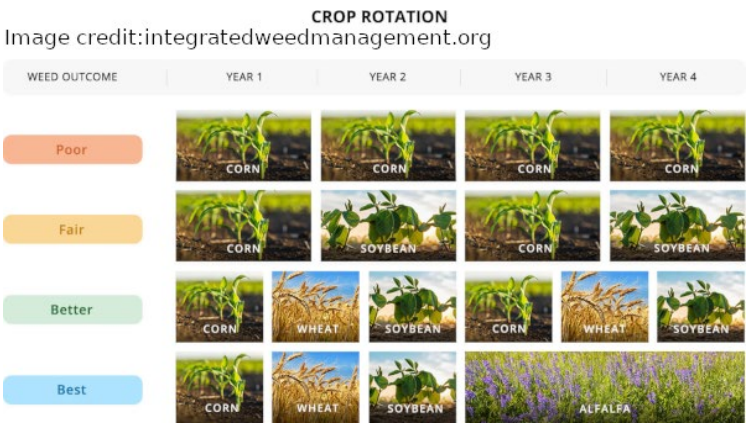
Western corn rootworm (Diabrotica virgifera virgifera), Nematodes, Sclerotinia White Mold

4. **Take a book about crop production (i.e., "Pflanzenbau 1 – Grundlagen") or do research on the internet to find out the recommended cultivation breaks of the following crops! What could be possible reasons for the break? (15min)**

Crop	Years of Break	Possible Reason(s)
Wheat, Barley	2-3	
Potato	3-4	
Soybeans	4-5	
Sugarbeet	4-5	
Sunflowers	5-6	
Rapeseed	3-4	

5. **Rules for planning your crop rotation. (15min)**
   a) **Read the rules for crop rotation!**
   b) **Are there any words you do not understand? List them on the last page!**
   c) **Group work: Build a group of four, mark the important keywords and compare your results!**

⇨ Do not plant the same family of plants in the same spot 2 years in a row (because insects, nematodes, and pathogens are all attracted to specific kinds of plants so by mixing up the plant families you plant in a spot it helps prevent infection from pests).
⇨ Do not grow the same kind of plant in the same spot 2 years in a row.
⇨ Follow deep-rooted plants with shallow rooted plants and vice versa.
⇨ When growing high yielding plants alternate them with low yielding plants that are very resistant to diseases.
⇨ Alternate high effort plants with low effort plants.
⇨ Preferably, have a 4-year cycle because many soil borne diseases stay in the soil for 3 years. Even if the plants are not affected, you can avoid the infection.
⇨ It is good to have cover crops as part of your crop rotation as many of them build up the soil and some of them deter pests.
⇨ The more crop rotation crops you cultivate, the better. (As illustrated in the image below!)



6. **Plan two crop rotations with four parts! Present the result of your groupwork in front of your classmates! Explain the reasons of your selections! (15min)**

Your Own Crop Rotation:			

Vocabulary:

Word	Description

List of references:

https://alaskamastergardener.community.uaf.edu/2019/12/06/crop-rotation/

https://boku.ac.at/fileadmin/data/H03000/H73000/H73300/PJ/Mozambique/CIMMYT_ExtBulletins02.pdf

https://www.youtube.com/watch?v=3QLYFg4NIN8

Pflanzenbau 1 – Grundlagen, Leopold Stocker Verlag, 2022