

SDG 15 Seeding Sustainability

MM4 Growing and Foraging



MM4: Growing and Foraging

Experimentation and Exploration

Lesson 9: Crop Rotation

Subjects: CSPE, English, Geography, Horticulture, Science

Lesson Title and Summary: Crop Rotation

Crop rotation focuses on growing a different crop on a given land area every growing/planting cycle and season. Crops are rotated for different reasons, but one reason is to break disease and pest cycles. In some areas of the world conventional agriculture means crops are rotated for a given land area either seasonally or yearly.

Learners will explore different aspects of growing vegetables using crop rotation, e.g. plant family, soil composition and nutrient cycles.

Vocabulary: Brassica, Crop rotation, Legumes, Manure, Mulch, Nutrient cycle, Plant family, Root, Solence

In this lesson, the learner will:

- begin to identify different plant families
- develop understanding of plant nutrients cycles
- consolidate their understanding of nutrient cycles
- learn how to add nutrients to soils using plants and other soil food

Materials

- Access to the internet/class set of tablets, computers



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ACTIVITY INSTRUCTIONS

Activity 1: Introduction to crop rotation (15 mins)

1. Put learners into small groups to discuss the following questions:
 - Do you know what a crop rotation is? Why are crops rotated?
 - What does 'plant family' mean? Do you know any?
2. Review the answers to the first two questions as a whole class. See Support Sheet: Suggested responses.
3. Ask learners to list as many vegetables as they can in 1 minute (put on a timer!).

Activity 2: Plant Families (25 mins)

1. Write up the 4 plant families on the board:
 - Legumes: peas and beans
 - Brassica: cabbage, leafy
 - Root vegetables: carrots, parsnip, beetroot, onion
 - Solence: potato, tomato, peppers
2. In groups, sort the vegetables from the learners' lists created in their discussion into the family categories on the board.
3. Divide learners into 4 groups and assign each group a plant family. Give them 5-10 mins to research the nutrient needs of their family. They can use their phones or class tablets or alternatively, watch the Video: The Vegetable Families. Write the information on the board next to each family.
4. What nutrients do the plants in the family need to thrive? See Support Sheet: Suggested responses.

Activity 3: Sharing findings (10 mins)

1. Jigsaw groups so that there is a representative from each plant family in each new group.
2. Allow time for learners to share their findings and make notes on the other families.

REFLECTIVE EXERCISE: 3-2-1 (10 mins)

- Three things they feel they have learnt from the tasks
- Two things they found most interesting and would like to explore more
- One – their opinion they have about the tasks

Use Post-its or a mentimeter survey - www.mentimeter.com - to gather reflections

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EXTENSION / REDUCTION ACTIVITIES:

Reduction (40 min lesson): For a shorter lesson, focus on Activities 1-2 and follow up with Activity 3 in the next lesson.

Extension (80 min lesson): For a longer lesson, spend more time on Activity 3, linking local growing to the 4 plant families.

Review different nutrient requirements for types of crops, talk about the use of different green manures and mulches, discuss in group how green manures and mulches can be added to your crop rotation. Use the video in the media box 'Cover Crops To Recharge Your Soil This Winter'.

Additional Lesson: Watch the video 'Crop Rotation made simple' and ask learners to think about how this might affect their garden design, ask them to attempt to do a 4-bed crop rotation plan.

MEDIA BOX: (materials, online video links, extra resources, case studies etc)

Video: 'Crop Rotation made simple' (7:48 min) <https://www.youtube.com/watch?v=XeNA6XdMoF8>

Video: GIY The Vegetable Families (5:43 min) <https://www.youtube.com/watch?v=aXZcMk5RttE>

Video: Cover Crops To Recharge Your Soil This Winter! (1:21 min) <https://www.youtube.com/watch?v=XvERk9kwmVI>

Bord Bia - Module 1 Audit, plan & Design a School Garden (8:55min) <https://youtu.be/SzeMTnETSkw>

Oakdene Nursery Allotment plan <https://www.growveg.co.uk/garden-plans/872417/oakdene-nursery-allotment/2017/nursery/>

Traditional Landscape Design vs Permaculture Landscape Design (11:50min) <https://www.youtube.com/watch?v>

Permaculture Ireland - <https://permaculture.ie/map/>

LOCAL TRIP / EXPERTISE / ADDITIONAL WORK AND ASSESSMENTS

Visit local growers or Tidy Town groups who are planting in the local community and discuss crop rotation with them.

Invite a local grower to come in and talk about crop rotation and do an analysis of any existing raised beds in the school.

Consider contacting a Permaculture specialist (see media box) to advise learners on their designs.