

ACTIVITY 2: Monoculture Farming Conversion to Polyculture Farming

Activity Objective: Locate a farming project that uses the monoculture approach to farming and develop a plan to convert it to a more diverse polyculture form and actually grow several crops side by side.

Materials: Chapter 14, paper, computer, printer, Internet Access, Monoculture farm, seeds as needed.

Definition: Monoculture a form of agricultural biodiversity, which is the agricultural practice of producing or growing a single crop, plant, or livestock species, variety, or breed in a field or farming system at a time. Polyculture is when more than one crop is grown in the same space at the same time and is the alternative to monoculture. Monoculture is widely used in both industrial farming and organic farming and has allowed increased efficiency in planting and harvest for greater sustainability of natural resources. Continuous monoculture, or monocropping, where the same crop is grown year after year, can lead to the quicker buildup of pests and diseases, and then rapid spread where a uniform crop is susceptible to a pathogen. The practice has been criticized for its environmental effects and for putting the food supply chain at risk. Diversity can be added with a crop rotation or sequence, or in space, with a polyculture

The control of associated biodiversity is one of the great agricultural challenges that farmers face. On monoculture farms, the approach is generally to eradicate associated diversity using a suite of biologically destructive pesticides, mechanized tools and transgenic engineering techniques, then to rotate crops. Although some polyculture farmers use the same techniques, they also employ integrated pest management strategies as well as strategies that are more labor-intensive, but generally less dependent on capital, biotechnology and energy.

Interspecific crop diversity is, in part, responsible for offering variety in what we eat. Intraspecific diversity, the variety of alleles within a single species, also offers us choice in our diets. If a crop fails in a monoculture, we rely on agricultural diversity to replant the land with something new. If a wheat crop is destroyed by a pest we may plant a hardier variety of wheat the next year, relying on intraspecific diversity. We may forgo wheat production in that area and plant a different species altogether, relying on interspecific diversity. Even an agricultural society which primarily grows monocultures, relies on biodiversity at some point. Monoculture was a contributing factor to US southern corn leaf blight epidemic in the seventies.

The environmental movement wants to improve sustainability by redefining the perfect lawn to be something other than a turf monoculture, and seeks agricultural policy that provides greater encouragement for more diverse cropping systems. Local food systems may also encourage growing multiple species and a wide variety of crops at the same time and same place to improve sustainability. Heirloom gardening and raising heritage livestock breeds have come about largely as a reaction against monocultures in agriculture.

REVIEW VIDEOS:

Why is biodiversity so important https://www.youtube.com/watch?v=GK_vRtHJZu4

Monoculture systems vs Polyculture system: <https://www.youtube.com/watch?v=du7lafqUnE>

Seeking drought tolerance for better crops: <https://www.youtube.com/watch?v=-3MvkgrScc>

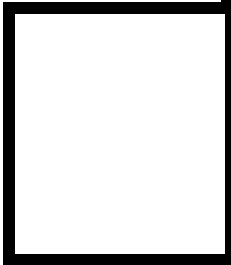
Procedure:

1. Work as partners or small teams.
2. Research and brainstorm biodiversity and polyculture farming.
3. Locate a monoculture farm or use your own garden and actually plant a polyculture farming project with the crops of your choice.
4. List the plants or crops used to create your polyculture farming project.
5. Create a side by side table to list the benefits of converting a monoculture farm to a polyculture farm along the lines of sustainability.
6. Provide pictures of your crops.



RUBRIC

4 World-Class Learner	3 Proficient Learner	2 Developing Learner	1 Emergent Learner
Learner at this level has gone beyond mastery of knowledge, skills, & attitudes described in project. World-class learner consistently exhibits high-quality performance.	Learner at this level has had opportunities to apply knowledge, skills, & attitudes of component of project. Proficient learner has mastered essential attributes, thus proving mastery.	Learner at this level has been exposed to & had opportunity to apply knowledge, skills, & attitudes of project. Developing learner may have only a few essential attributes to master before mastery.	Learner at this level may or may not have been exposed to knowledge, skills, & attitudes required by academic standards of the project.



- 1= Emergent Learner
- 2 = Developing Learner
- 3 = Proficient Learner
- 4 = World-Class Learner