

Handout (Answer Key)

Now you will conduct your own experiments to see which type of agriculture yields the most amount of crops. Gather up your different coloured pieces and a die to start!

- Referring to the Activity Chart on page 2, you can begin the activity comparing monoculture and polyculture by working through scenarios 1 to 8. Write your results in the chart below:
(**Bonus:** on another sheet, draw pictures of your farm crops before and after the scenarios!)

	The amount of crops at the end of Experiment #1	The amount of crops at the end of Experiment #2	The amount of crops at the end of Experiment #3
Monoculture:			
Polyculture:			

- On average, which type of farming yielded the most crops in your experiments?
Depends on what their experiments yield. Most likely polyculture.
- Why do you think it was more successful than the other?
(Assuming it is polyculture) Polyculture has different types of species so it has a higher resistance to impacts and is able to naturally self-sustain itself.
- Which method has a higher biodiversity? What are the pros and cons of each?
Polyculture has a higher biodiversity.
Monoculture (pros): Efficient for machinery. Able to meet the high demands of certain products. **Monoculture (cons):** The soil can't replenish in nutrients. A lot of pesticides are used.
Polyculture (pros): Nutrients stay in soil. The plants form their own self-sustaining ecosystem.
Polyculture (cons): Time-consuming/difficult to use machinery. Long process to obtain self-sustaining level.

MONOCULTURE	POLY CULTURE
<ol style="list-style-type: none"> 1. Bugs started attacking your crops because they are resistant to your pesticide <ul style="list-style-type: none"> ● MONOCULTURE <ul style="list-style-type: none"> ○ lower than 5 remove one ○ higher than 5 add one 2. Your machinery started leaking oil which is polluting your soil. <ul style="list-style-type: none"> ● MONOCULTURE <ul style="list-style-type: none"> ○ lower than 5 remove one ○ higher than 5 add one 3. Crows made a nest nearby and ate your planted seed. <ul style="list-style-type: none"> ● MONOCULTURE <ul style="list-style-type: none"> ○ lower than 3 remove one ○ higher than 3 add one 4. You did not add mulch or topsoil on your field and your soil is drying up faster and you need to use more water <ul style="list-style-type: none"> ● MONOCULTURE <ul style="list-style-type: none"> ○ lower than 5 remove one ○ higher than 5 add one 5. You have invested in a new irrigation system that helps water to your crops. <ul style="list-style-type: none"> ● MONOCULTURE <ul style="list-style-type: none"> ○ lower than 2 remove one ○ higher than 2 add one 6. To increase nutrients in your soil, you use the crop rotation technique. <ul style="list-style-type: none"> ● MONOCULTURE <ul style="list-style-type: none"> ○ lower than 3 remove one ○ higher than 3 add one 7. A disease invaded your crops since you have all the same species of plant, this affected half of your field <ul style="list-style-type: none"> ● MONOCULTURE <ul style="list-style-type: none"> ○ lower than 5 remove one ○ higher than 5 add one 8. Kudzu vines, an invasive species, were introduced and are cutting off nutrients to your crops. <ul style="list-style-type: none"> ● MONOCULTURE <ul style="list-style-type: none"> ○ lower than 3 remove one ○ higher than 3 add one 	<ol style="list-style-type: none"> 1. You found a plant species that thrive when paired with another plant species. <ul style="list-style-type: none"> ● POLY CULTURE <ul style="list-style-type: none"> ○ lower than 2 remove one ○ higher than 2 add one 2. You added livestock to your property and this helps spread manure and fertilize your crops. <ul style="list-style-type: none"> ● POLY CULTURE <ul style="list-style-type: none"> ○ lower than 3 remove one ○ higher than 3 add one 3. Some pesticides from the neighbouring farms got into your water supply and have affected some of your plants. <ul style="list-style-type: none"> ● POLY CULTURE <ul style="list-style-type: none"> ○ lower than 4 remove one ○ higher than 4 add one 4. Gophers started eating some of your crops. <ul style="list-style-type: none"> ● POLY CULTURE <ul style="list-style-type: none"> ○ lower than 4 remove one ○ higher than 4 add one 5. Predators are hunting the gophers that are eating your crops. <ul style="list-style-type: none"> ● POLY CULTURE <ul style="list-style-type: none"> ○ lower than 2 remove one ○ higher than 2 add one 6. Some of your crops are growing before other ones which shelter the seeds from being eaten by birds. <ul style="list-style-type: none"> ● POLY CULTURE <ul style="list-style-type: none"> ○ lower than 2 remove one ○ higher than 2 add one 7. You set up a bat house and 6 pairs move in. This helps control the bug population. <ul style="list-style-type: none"> ● POLY CULTURE <ul style="list-style-type: none"> ○ lower than 2 remove one ○ higher than 2 add one 8. You added beehives that are now housing thousands of bees, this pollinates your crops and gives you more fruits and vegetables. <ul style="list-style-type: none"> ● POLY CULTURE <ul style="list-style-type: none"> ○ lower than 2 remove one ○ higher than 2 add one