

Michigan State University Extension

Tollgate Farm and Education Center

HARVEST FARM ECOLOGY

Big Idea: Plants and animals have unique and diverse life cycles. They use their internal and external parts and specific behaviors to help them prepare for the coming winter.

Big Question: How do plants and animals prepare for winter?

Michigan NGSS Performance Expectations:

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| K-LS1-1 | Use observations to describe patterns of what plants and animals (including humans) need to survive. |
| K-ESS2-2 | Construct an argument supported by evidence for how plants and animals (including humans) can change the environment. |

Common Core ELA and Math Standards:

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| ELA-LITERACY.SL .2.1a-c | Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups. <ol style="list-style-type: none"> Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion). Build on others' talk in conversations by linking their comments to the remarks of others. Ask for clarification and further explanation as needed about the topics and texts under discussion. |
| ELA-LITERACY.SL .2.3 | Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue. |
| Math.Content.2 .OA.2 | Add and subtract within 20. <ul style="list-style-type: none"> Fluently add and subtract within 20 using mental strategies.2 By end of Grade 2, know from memory all sums of two one-digit numbers. |
| Math.Content.2 .MD.1-4 | Measure and estimate lengths in standard units. <ol style="list-style-type: none"> Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes. Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen. Estimate lengths using units of inches, feet, centimeters, and meters. Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit. |
| Math.Content.2 .MD.10 | Represent and interpret data. <ol style="list-style-type: none"> Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph. |

Content Outcomes:

- Understand how plants and animals use their internal and external parts to survive.
- Understand how plants and animals use the world around them to survive.
- Explore adaptations of plants and animals (including humans) to changing environments.

Rotations:

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|---|------------------------------------|
| ● Pumpkins at the Patch | <i>Wagon Ride to Pumpkin Patch</i> |
| ● Amazing Apple: Life Cycle And Taste Test | <i>Orchard</i> |
| ● Apple Picking and the Science of Cider Pressing | <i>Pavilion</i> |
| ● Animals in Autumn with Animal Chores | <i>Animal Barn</i> |

Assessment:

Revisit the big question at the end of the program and discuss, in pairs, small groups, or as a large group. What new understandings have students gained?

Program Introduction: Welcome to the farm! Today we are going to explore how plants and animals prepare for winter.

Tollgate would like to acknowledge that the land we are meeting on today is the original homelands of the Anishinaabe tribal nations. We owe a debt of gratitude to the people who first lived on this land. We honor and respect the many diverse indigenous peoples still connected to this land on which we gather.

Teacher Resources:

Background Information:

- [Michigan.org Apple Teachers Guide](#)

Children's Literature:

- [The Apple Pie Tree](#) by Zoe Hall
- [Goodbye Summer, Hello Autumn](#) by Kenard Pak
- [Apples](#) by Gail Gibbons
- [Apples and Pumpkins](#) by Anne Rockwell
- [Seed, Sprout, Pumpkin, Pie](#) by Jill Esbaum
- [From Seed to Pumpkin](#) by Wendy Pfeffer
- [Pumpkin Jack](#) by Will Hubbell
- [Winter Survival: Nature's Way of Coping with the Cold](#) by Mari Friend

CURIOSITY PHOTOS

How do plants and animals prepare for the winter?



How do apples grow on trees?



How do apples become cider?



How do animals prepare themselves for winter?



How do pumpkin plants make more pumpkins?





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