

# Michigan State University Extension

## Tollgate Farm and Education Center

# THE SECRET LIFE OF TREES

**Big Ideas:** Trees have unique and diverse life cycles. Trees have structures and functions that help them survive and grow. Trees use resources in their environment to survive.

### Big Questions:

- Which trees grow on the farm?
- How do trees survive and grow on the farm?
- Do trees compete or cooperate to survive?
- How do we rely on trees?
- Do trees rely on us?

### Michigan NGSS Performance Expectations:

|            |  |
|------------|--|
| 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 to meet their needs.          |
| K-ESS3-1   | Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.            |
| 1-LS3-1    | Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.              |
| 2-LS4-1    | Make observations of plants and animals to compare the diversity of life in different habitats   |
| K-2-ETS1-2 | Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem. |

Science and Engineering Practices: 1, 2, 3, 4, 5, 7

Crosscutting Concepts: 1, 4, 6

### Common Core ELA and Math Standards:

|                            |  |
|----------------------------|--|
| ELA-LITERACY.SL<br>.K.1a-b | Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.<br>a. Follow agreed-upon rules for discussions (e.g., listening to others and taking turns speaking about the topics and texts under discussion).<br>b. Continue a conversation through multiple exchanges. |
| ELA-LITERACY.SL<br>.K.2    | Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood.   |

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|----------------------------|--|
| ELA-LITERACY.SL<br>.K.3    | Ask and answer questions in order to seek help, get information, or clarify something that is not understood.  |
| ELA-LITERACY.R<br>L.1.7    | Use illustrations and details in a story to describe its characters, setting, or events.   |
| ELA-LITERACY.R<br>L.1.1    | Ask and answer questions about key details in a text.  |
| ELA-LITERACY.RI<br>.2.7    | Explain how specific images (e.g., a diagram showing how a machine works) contribute to and clarify a text.  |
| Math.Content.K<br>.CC.4-5  | Count to tell the number of objects.<br>4. Understand the relationship between numbers and quantities; connect counting to cardinality.<br>a. When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.<br>b. Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.<br>c. Understand that each successive number name refers to a quantity that is one larger.<br>5. Count to answer “how many?” questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects. |
| Math.Content.K<br>.CC.6    | Compare numbers.<br>6. Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.1   |
| Math.Content.K<br>.MD.1-2  | Describe and compare measurable attributes.<br>1. Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.<br>2. Directly compare two objects with a measurable attribute in common, to see which object has “more of”/“less of” the attribute, and describe the difference. For example, directly compare the heights of two children and describe one child as taller/shorter.  |
| Math.Content.K<br>.MD.3    | Classify objects and count the number of objects in each category.<br>3. Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.   |
| Math.Content.1<br>.MD.C.4  | Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.   |
| Math.Content.2<br>.MD.D.10 | 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 <sup>1</sup> using information presented in a bar graph.   |

### Content Outcomes:

- Understand what trees need to survive and to grow.
- Understand how plants change the world around them to survive.
- Understand the structures of trees and their functions.

### 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 Tollgate Farm! Today we will be exploring the life cycle of trees and how they survive and grow! You will be helping us to solve a very important questions: How do trees survive and grow on the farm? Do trees compete or cooperate to survive? And we will also find out how we rely on trees and if trees rely on us.

**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.**

### **Rotations:**

- Be a Tree, Meet a Tree *From the Arb*
- Forest Exploration: Leaf It To Us *From the Forest*
- Every Tree For Itself: Tree Needs *From the Orchard*
- Trees and Us: How We Rely on and Care for Trees *From the Upper Barn/Kitchen*

### **Teacher Resources:**

Background Information:

- [LEAF- Wisconsin's K-12 Forestry Education Program](#)
- [Michigan.org Apple Teacher's Guide](#)
- [Michigan Apple Orchard Just for Kids](#)
- [Trees, Trees, Trees song](#)

Children's Literature:

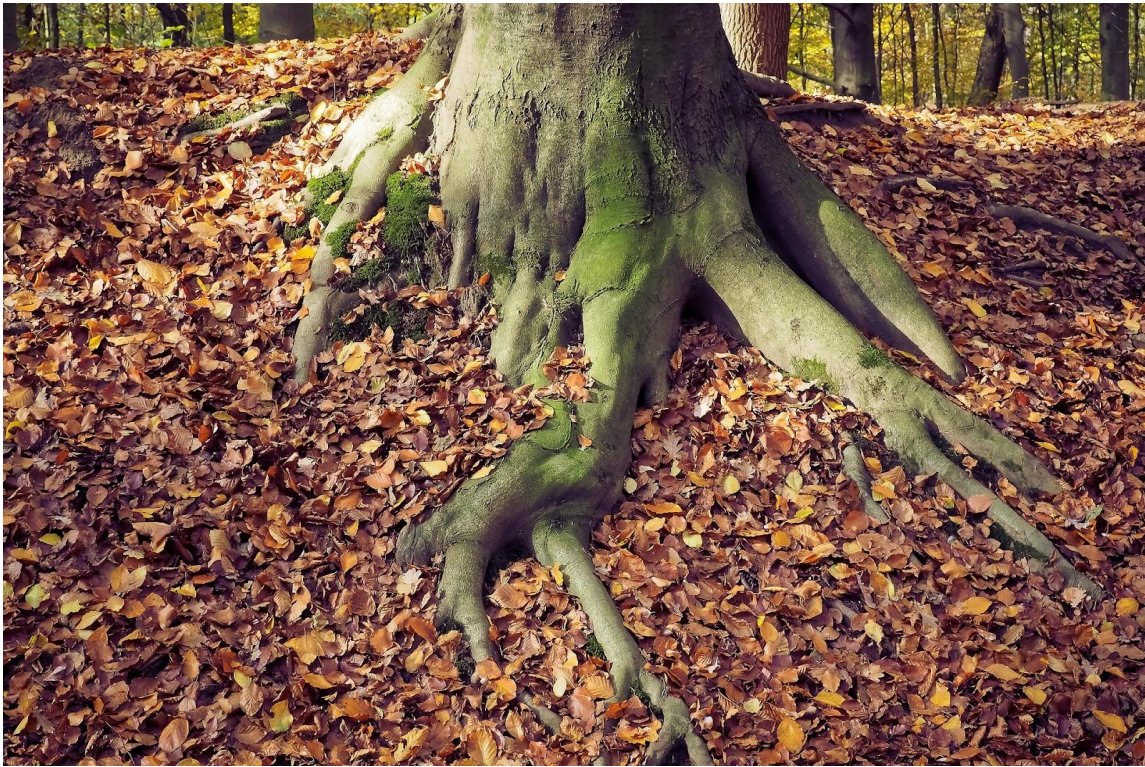
- [The Tree Book: For Kids and Their Grown-ups](#) by Gina Ingoglia
- [Be a Friend to Trees](#) by Patricia Lauber
- [A Grand Old Tree](#) by Mary Newell DePalma
- [Hello, Tree](#) by Joanne Ryder
- [Quiet in the Garden](#) by Alike
- [The World's Largest Plants: A book about trees](#) by Susan Blackaby
- [Forest Explorer: A Life-Size Field Guide](#) by Nic Bishop
- [From The Woods: Incredible Wood](#) by Sanford S. Smith, and Lee R. Stover
- [The Apple Pie Tree](#) by Zoe Hall
- [Goodbye Summer, Hello Autumn](#) by Kenard Pak
- [Tree: A Peek-Through Picture Book](#) by Britta Teckentrup
- [Apples](#) by Gail Gibbons
- [Because of an Acorn](#) by Lola M. Schaefer
- [The Apple Orchard Riddle](#) by Margaret McNamara
- [Why Do Leaves Change Color?](#) By Betsy Maestro
- [Going on a Leaf Hunt](#) by Steve Metzger

References:

Be a Tree, Meet a Tree is adapted from Shelburne Farms' [Project Seasons](#) by Deborah Parrella

# CURIOSITY PHOTOS

Following are photographs and questions intended to inspire curiosity and wonder throughout the days leading up to your Tollgate visit.











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