



Activity Kit

OUTDOOR FARM, INDOOR FARM

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About the Book

Discover how both outdoor and indoor farms sustainably grow the food we eat throughout the year in this vibrant, rhyming picture book. With energetic, enchanting verse and sunshiny, colorful illustrations, discover how the food you eat is grown both outside—and inside! Join two children as they explore the inner workings of an outdoor farm and an indoor farm. You'll see how a variety of amazing machinery like tractors and drones along with innovative farming techniques yield the wonderful food we all love to enjoy.

Ages: 3–8 years | **Grades:** pre-K–2 | **Publisher:** Astra Young Readers
ISBN: 978-1-63592-591-3 HC | eBook edition available



Photo by Anna Jackson

Meet the Author

Lindsay H. Metcalf grew up bumping along in her dad's tractor. A former journalist for the *Kansas City Star*, Lindsay also writes nonfiction and poetry books for children such as *Farmers Unite!* and *No Voice Too Small*. She lives with her family in north-central Kansas near her parents' corn, wheat, soybean, and milo farm.

Visit lindsayhmetcalf.com.



Photo by June Witzøe

Meet the Illustrator

Xin Li is an artist and writer. She grew up in China and currently lives in Norway with her husband and their daughter. She studied design and worked for software companies for more than a decade. After spending half her life living in countries outside her homeland, Xin chose to paint and write, as stories help her to make sense of a world that otherwise is often lost in translation.

Visit lixin.no.

Simple Hydroponic Garden

Materials:

- Empty plastic bottle with a cap
- Peat seed starter (such as Rapid Rooter)
- Hydroponic clay pebbles, soil, or other growing medium
- Cotton twine
- Nutrient solution (such as Dyna-Gro GROW Liquid Plant Food 7-9-5)
- Lettuce seeds
- Drill
- Scissors
- An adult to help



- 1 Cut around the bottle about two-thirds of the way up from the bottom. Ask an adult for help if you need.
- 2 Remove the cap. Ask an adult to drill a hole in the center.
- 3 Cut a piece of twine about 8 to 12 inches long—longer if you are using a big bottle.
- 4 Thread twine through the hole in the cap. Pull the twine several inches through the hole and tie a knot so it leaves a tail on both sides. This cord will wick moisture from the bottom section into the top section.
- 5 Screw the cap onto the bottle top.
- 6 Measure the nutrient solution according to directions and pour into the bottom of your cut bottle. Add several inches of water and mix.
- 7 Flip the bottle top upside-down and fit it into the bottom of the bottle. Let the wick dangle in the nutrient mixture.
- 8 Hold up the top-section wick and surround it with several clay pebbles. Set the remaining clay pebbles aside.
- 9 Drop a lettuce seed in a peat starter cube. Moisten the cube with water.
- 10 Center the peat cube on top of the wick so they touch. Place additional clay pebbles around the cube, leaving the top of the cube uncovered.
- 11 Place your hydroponic garden in window or under a grow light. Add more water and nutrients as needed. Watch your plant grow!

Source: Melissa Sikes, *Alaska Agriculture in the Classroom*.
Hydroponic farms lesson plans at fairbankssoilwater.org/akaitcindoorgardening.htm.

Name: _____

Farm Word Search

H H A Y B P N I T L
A Y J T R A C T O R
X E D C Y R S F E A
C H R R L D P Y F I
Y O S O O I R C V S
I O M O P P M O X P
E V U B I O O A N E
L F D O I L N N T E
D N B P T N W I I E
S C I E N C E L C C

aeroponic
climate
combine

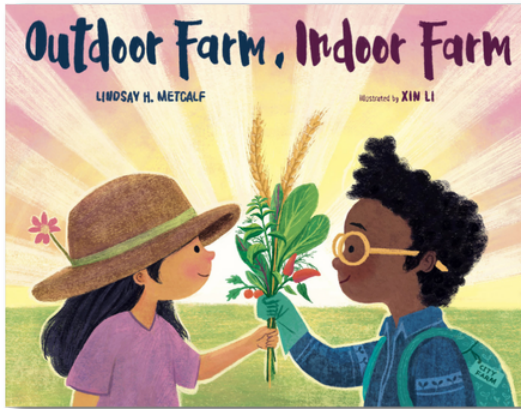
drone
hydroponic
science

soil
tractor
yield



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Book Trailer



[\(YouTube\)](#)

Resources for Outdoor Farms

[Wheat harvest on Author Lindsay Metcalf's family farm](#) (YouTube)



[Up Close Experience: Combines](#) (American Farm Bureau Foundation for Agriculture)



[Lettuce production in the Salinas Valley](#) (YouTube)



Resources for Indoor Farms



[BrightFarms virtual field trip](#) (Vimeo)



[AeroFarms 360-degree Tour](#) (YouTube)



[Up Close Experience: Flower Farming](#) (American Farm Bureau Foundation for Agriculture)

Name: _____

Match the farm vocabulary word to its definition. Circle words that apply to **indoor farms**. Draw a check mark ✓ after words that apply to **outdoor farms**. Underline words that can apply to **both indoor farms and outdoor farms**.

1. The temperature and moisture conditions in a specific area: _____
2. A term for the amount of crops collected during harvest: _____
3. Where outdoor farmers take grain after harvest: _____
4. Short for “global positioning system,” often used in tractors: _____
5. An indoor farm where plants float in pools of water: _____
6. An indoor farm where plants grow in vertical towers: _____
7. The act of collecting crops from fully grown plants: _____
8. A large machine used in outdoor farms: _____
9. Another word for dirt: _____
10. Plant food added by a farmer: _____
11. A device that weighs trucks filled with harvested grain: _____
12. The watering of plants: _____
13. The machine used to harvest outdoor crops such as grains: _____
14. A remote-controlled flying device used on outdoor farms: _____
15. Vitamins and minerals plants need to grow: _____
16. An indoor farm where fish provide nutrients for plants: _____

Word Bank

aeroponic climate drone fertilizer harvest irrigation scale tractor
aquaponic combine elevator GPS hydroponic nutrients soil yield



Name: _____

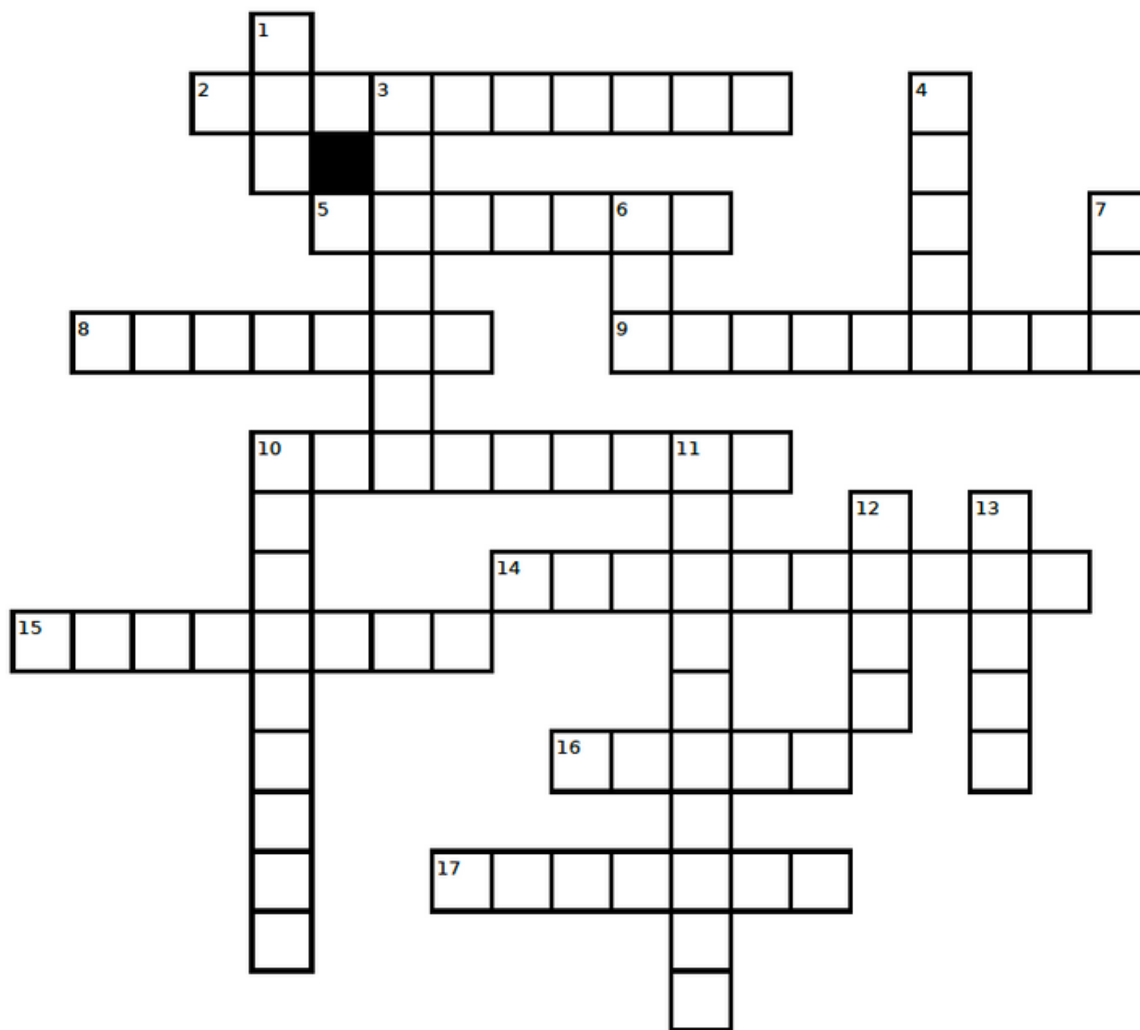
Match the farm vocabulary word to its definition. Circle words that apply to **indoor farms**. Draw a check mark ✓ after words that apply to **outdoor farms**. Underline words that can apply to **both indoor farms and outdoor farms**.

1. The temperature and moisture conditions in a specific area: climate
2. A term for the amount of crops collected during harvest: yield
3. Where outdoor farmers take grain after harvest: elevator ✓
4. Short for “global positioning system,” often used in tractors: GPS ✓
5. An indoor farm where plants float in pools of water: hydroponic
6. An indoor farm where plants grow in vertical towers: aeroponic
7. The act of collecting crops from fully grown plants: harvest
8. A large machine used in outdoor farms: tractor ✓
9. Another word for dirt: soil ✓
10. Plant food added by a farmer: fertilizer
11. A device that weighs trucks filled with harvested grain: scale ✓
12. The watering of plants: irrigation
13. The machine used to harvest outdoor crops such as grains: combine ✓
14. A remote-controlled flying device used on outdoor farms: drone ✓
15. Vitamins and minerals plants need to grow: nutrients
16. An indoor farm where fish provide nutrients for plants: aquaponic

Word Bank

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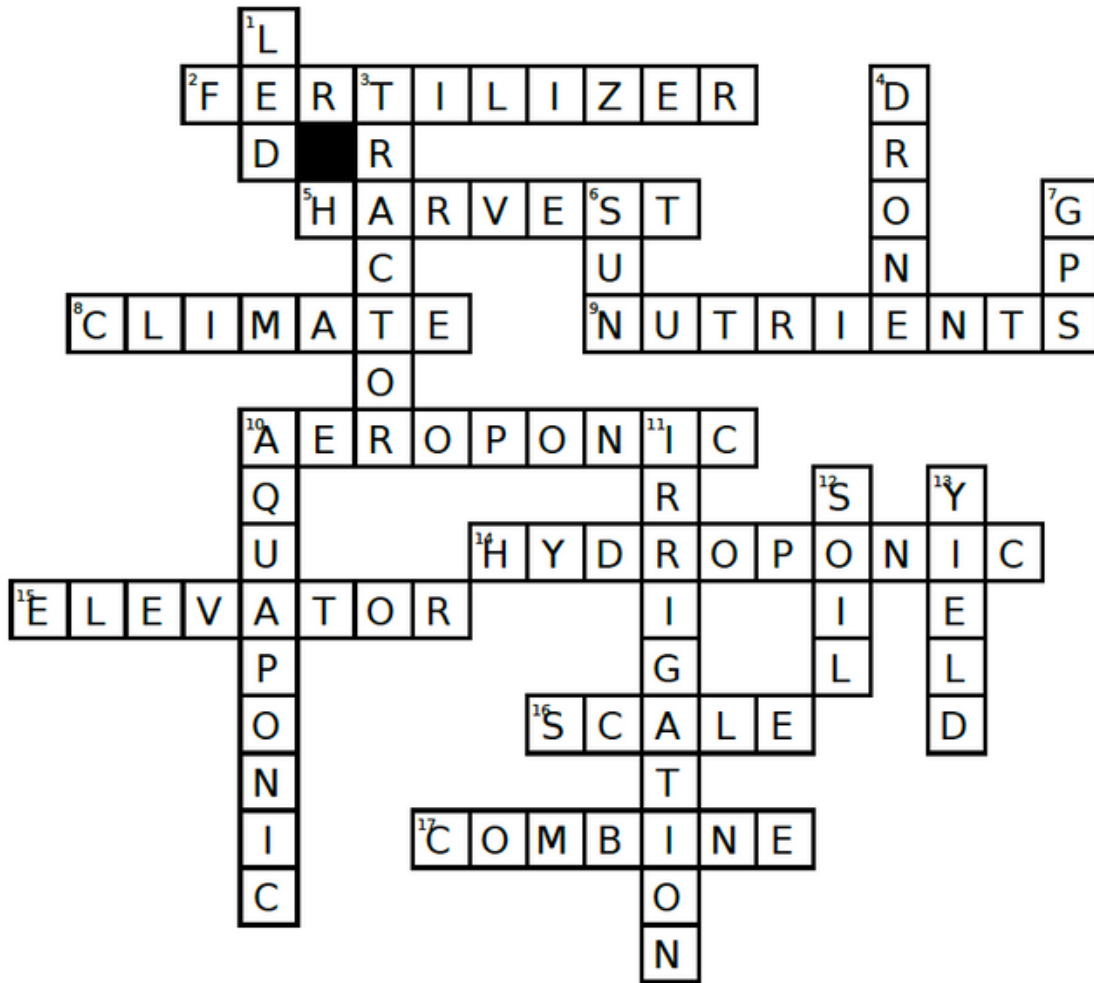
Down

1. Short for "light-emitting diodes" which are used in indoor farms
3. A large machine used in outdoor farms
4. A remote-controlled flying device outdoor farmers use to learn more about their crops
6. The light source on outdoor farms
7. Short for "global positioning system" a technology tractors use for precision farming
10. A type of indoor farm where fish provide nutrients for plants
11. The process of watering plants
12. Another word for dirt
13. The amount of crops collected during harvest

Across

2. Plant food added by the farmer
5. The act of collecting crops after they are fully grown
8. The temperature and moisture conditions in a specific area
9. The mix of vitamins and minerals that plants need to grow
10. An indoor farm where plants fill vertical towers
14. A type of indoor farm where plants float in pools of water
15. A place where outdoor farmers take their grain after harvest
16. A device that weighs trucks filled with harvested grain
17. The machine used to harvest outdoor crops

Crossword Answer Key



Down

1. Short for "light-emitting diodes" which are used in indoor farms
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2. Plant food added by the farmer
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10. An indoor farm where plants fill vertical towers
14. A type of indoor farm where plants float in pools of water
15. A place where outdoor farmers take their grain after harvest
16. A device that weighs trucks filled with harvested grain
17. The machine used to harvest outdoor crops

Pen Pal Template

In *Outdoor Farm, Indoor Farm*, Emma and Efrem are pen pals. Pen pals write letters to each other. Choose a pen pal and tell them about yourself.

(today's date)

Dear _____ ,

Your Pen Pal,

(your name)

