

FIELD INVESTIGATION GUIDE



Will it Soak in?

INVESTIGATE HOW WATER MOVES ACROSS THE LANDSCAPE—
AND HOW SIMPLE CHOICES HELP KEEP IT CLEAN

How quickly can healthy soil absorb water?



INVESTIGATING QUESTION



BIG IDEA

- Healthy soil is full of tiny spaces created by roots, earthworms, and living organisms. These pore spaces allow rainwater to soak into the ground, reducing runoff, flooding, and erosion while storing water for plants.
- Not all soils absorb water at the same rate.
- The way we care for the land changes how the soil responds when it rains.

Have you ever wondered where a raindrop goes after it lands?



QUICK FACTS:



Investigation Time | Reset Time

• 10–15 MINUTES

• 3–5 MINUTES



Audience

GRADES 4–ADULT
FAMILIES
COMMUNITY EVENTS
PROFESSIONAL DEVELOPMENT

Group Size

UP TO 20 WHEN
WORKING IN PAIRS



Learning Goals

PARTICIPANTS WILL:

- Measure how quickly water infiltrates into soil.
- Compare infiltration between different locations or management practices.
- Discover how soil structure affects water movement.
- Understand why healthy soil reduces runoff and erosion.
- Connect infiltration to plant health, groundwater, and water quality.

Infiltration kit

EQUIPMENT CHECKLIST



- ☐ 10 Soil Infiltration Kits include:
- ☐ Single infiltration ring
- ☐ Mallet
- ☐ Plastic wrap
- ☐ Stopwatch or Timer
- ☐ Wood driving block
- ☐ Water & Cup
- ☐ Printed instruction sheet
- ☐ Towels
- ☐ Brooke QR sign



QUICK SETUP

Estimated Time: 5 minutes

1. Select an undisturbed soil surface.
2. Place the wooden block over the infiltration ring.
3. Drive the ring approximately 2 inches into the soil.
4. Place plastic wrap over the soil surface inside the ring.
5. Pour the measured amount of water onto the plastic wrap.
6. Carefully remove the plastic wrap without disturbing the soil.
7. Start the timer and observe.
8. If possible, try the infiltration experiment on different soil types or land management.

HOSTING GUIDE



OPENING CONVERSATION

When it rains, where does the water go?

After a few responses, ask:

How could we actually measure that?

Explain that scientists use infiltration tests to understand how well soil absorbs water.

DURING THE ACTIVITY



Invite visitors to:

Observe the soil surface.

Predict how quickly the water will soak in.

Discuss what might influence the results.

Measure infiltration time.

Compare observations with other locations or soil conditions.

Discuss why the results matter.

Imagine this wasn't one cup of water. Imagine it was two inches of rain falling across an entire field.

QUESTIONS TO ASK



What did you notice first?

Did the water disappear faster or slower than you expected?

What might have created spaces for the water to move through?

How would this soil behave during a heavy rainstorm?

How might roots, worms, or soil organisms change these results?

What would happen if this soil became compacted?



BROOKE'S NOTES:



How quickly can healthy soil absorb water?

BROOKE'S NOTES

"At first glance, soil looks solid. But healthy soil is actually filled with tiny spaces created by roots, fungi, earthworms, and countless other living organisms. These spaces act like tiny highways for water. Every time it rains, healthy soil quietly stores water underground instead of letting it rush across the surface. Let's see how this soil responds."

Ask Brooke!
SCAN TO LISTEN



LOOKING CLOSER

The next time it rains...

Notice:

- Does water soak into your lawn or run toward the street?
- Where do puddles form?
- Are there places where soil stays soft?
- Can you find earthworm holes?
- Do fields with living plants absorb water differently than bare soil?

Healthy soil leaves clues everywhere.

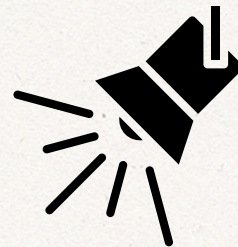


BROOKE'S FIELD NOTES:



Practice Spotlight

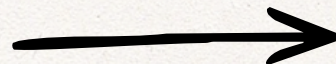
REAL WORLD SPOTLIGHT



Many farmers throughout our state are improving infiltration by planting cover crops, reducing tillage, and keeping living roots in the soil throughout more of the year. These practices help rain soak into the ground, reducing erosion while storing water for crops during dry periods.



LET'S LOOK CLOSER!



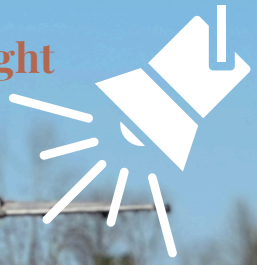


COVER CROPS

HAVE YOU EVER NOTICED GREEN FIELDS AFTER CORN OR SOYBEAN HARVEST? THOSE ARE OFTEN COVER CROPS—PLANTS GROWN TO PROTECT AND IMPROVE THE SOIL BETWEEN CASH CROPS. THEIR LIVING ROOTS HELP FEED SOIL ORGANISMS, HOLD THE SOIL IN PLACE, REDUCE EROSION, AND CREATE PATHWAYS FOR RAINWATER TO SOAK INTO THE GROUND INSTEAD OF RUNNING OFF.



Look Closer... Can you spot living plants growing after the cash crop has been harvested?



NO-TILL

IN A NO-TILL FIELD, FARMERS PLANT NEW CROPS WITH VERY LITTLE DISTURBANCE TO THE SOIL. LEAVING THE SOIL MOSTLY UNDISTURBED HELPS PROTECT EARTHWORM TUNNELS, FUNGAL NETWORKS, AND SOIL AGGREGATES. OVER TIME, THOSE UNDERGROUND PATHWAYS HELP WATER MOVE DEEPER INTO THE SOIL WHILE REDUCING EROSION.



Look Closer...How much crop residue is still covering the soil?



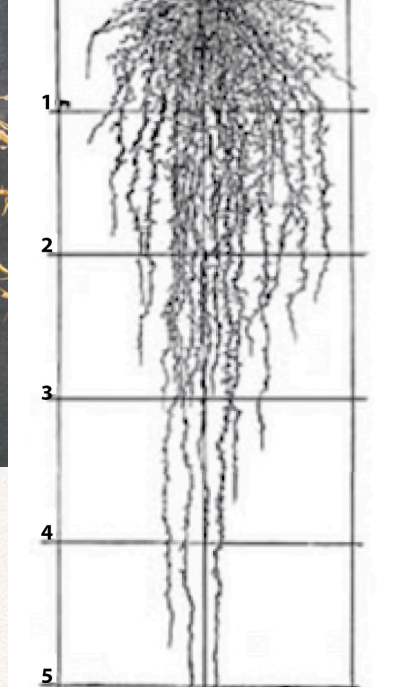
REDUCED TILLAGE

SOMETIMES FARMERS STILL WORK THE SOIL, BUT MUCH LESS THAN IN THE PAST. THAT'S CALLED REDUCED TILLAGE.

BY DISTURBING THE SOIL LESS OFTEN, MORE PLANT RESIDUE STAYS ON THE SURFACE, SOIL STRUCTURE HAS A CHANCE TO RECOVER, AND THE UNDERGROUND COMMUNITY CONTINUES BUILDING HEALTHY AGGREGATES AND PORE SPACES.



Look Closer... Can you see areas where last year's residue is helping protect the soil?



CROP ROTATION



Practice Spotlight

GROWING THE SAME CROP EVERY YEAR ISN'T THE ONLY OPTION. MANY FARMERS ROTATE CROPS LIKE CORN, SOYBEANS, SMALL GRAINS, AND ALFALFA. WHEN A COVER CROP IS GROWN TOO, THERE'S A LIVING ROOT THROUGHOUT THE ENTIRE YEAR! DIFFERENT PLANTS GROW DIFFERENT ROOT SYSTEMS AND SUPPORT DIFFERENT SOIL ORGANISMS. THAT DIVERSITY HELPS BUILD HEALTHIER SOIL OVER TIME AND CAN IMPROVE HOW WATER MOVES THROUGH THE GROUND.



Look Closer... How might different root systems change what happens beneath the surface?

RESEST CHECKLIST



- ☐ Remove infiltration ring.
- ☐ Clean ring.
- ☐ Dry wooden block.
- ☐ Return plastic wrap.
- ☐ Return timer.
- ☐ Restock supplies.



TROUBLE SHOOTING



WATER RUNS UNDERNEATH THE RING
Drive the ring slightly deeper into the soil.



RING DIFFICULT TO INSERT.
Avoid rocky or heavily compacted areas.
Use the wooden block to protect the ring.



WATER INFILTRATES ALMOST INSTANTLY
Discuss why healthy soil absorbs water rapidly.
Discuss how different soil types impact infiltration rates (Sandy Soil for example infiltrates quickly)
Compare results with another location



WATER INFILTRATES VERY SLOWLY
Discuss soil compaction
Discuss Soil type impacts on infiltration (High clay content slows infiltration)
Ask what practices might improve infiltration over time

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Infiltration kit