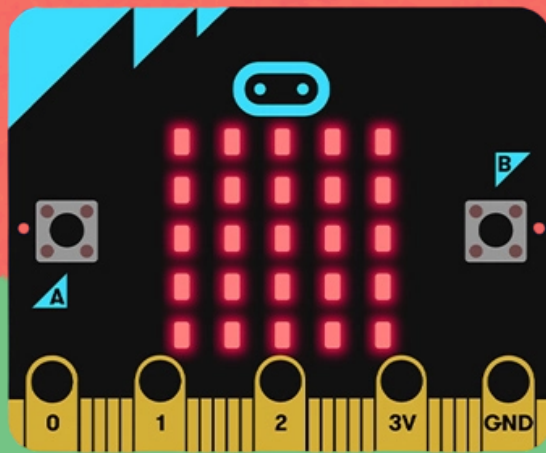


# Coding on the Farm

Agriculture Activities for the  
micro:bit



## What's inside?

### + micro:bit projects with an ag connection

Digital Ear Tag.....	pg. 1
Animal Roundup.....	pg. 2
Gate Alarm.....	pg. 4
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Farm Planning.....	pg. 6

### + Activities and lessons from IAITC to explore your micro:bit projects further

## What will you need?

Each micro:bit project requires you to have:

- 1 micro:bit, 1 micro USB cable, and 1 battery pack
- a device to access [microbit.org](http://microbit.org) and the MakeCode editor (computer or Chromebook recommended)

Some projects require additional materials listed on the corresponding project page.

Access all micro:bit coding instructions and purchasing options by going to [www.microbit.org](http://www.microbit.org) and clicking on the “projects” or “buy” tabs.

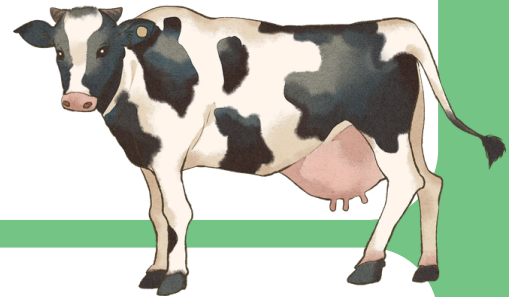
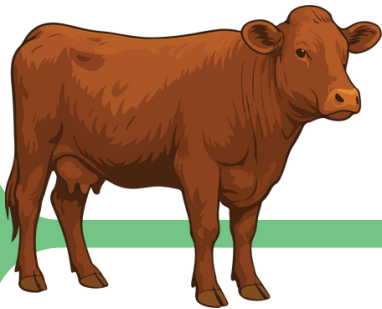
# Digital Ear Tag

## Code It!

Use the project **Name badge** from [microbit.org](https://microbit.org). Instead of entering your name, come up with a system for numbering your herd of cattle.

A herd is usually a mix of cows, heifers, calves, steers, and bulls.

- Cows – Mature females that have had at least one calf.
- Heifers – Young females that have not yet calved.
- Calves – Young animals (bull calves or heifer calves) born to cows.
- Steers – Castrated males raised for beef.
- Bulls – Males used for natural breeding or artificial insemination. They are usually kept in small numbers and may be rotated in or out of the herd



## Explore It!



Use the information from [cattletags.com](https://cattletags.com) for recommendations on how to set up your cattle numbering system. [https://iaitc.co/eartag\\_](https://iaitc.co/eartag_)



Watch our **Awesome Agriculture: Dairy** video to see how one dairy operation uses high tech monitoring and ID systems to manage their herd.

<https://iaitc.co/awesomeag-dairy>

# Animal Roundup

## Code It!

Use the project **Species counter** from [microbit.org](https://microbit.org). Instead of counting different species of animals, use it to keep track of breeds of cattle, chickens, or pigs in a busy barnyard.

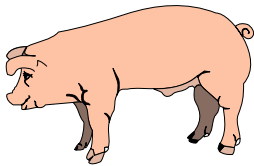
In addition to the micro:bit and accessories, you will need:

- coloring utensils
- pig coloring collage (next page of booklet)

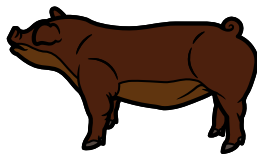
### Pigs

Out of the hundreds of pig breeds, there are eight commonly raised in the United States. These breeds are Berkshire, Chester White, Duroc, Hampshire, Landrace, Poland China, Spotted, and Yorkshire. Each breed has different physical characteristics and qualities that are beneficial for pork production. Things like fast and efficient growth, production of more offspring, muscle leanness and quality, and mothering ability are a few examples. Farmers choose to raise breeds that best fit the needs of their farm. The top four breeds raised in the US are below.

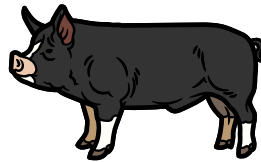
## Explore It!



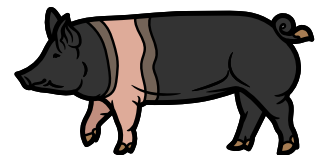
**Yorkshire**



**Duroc**

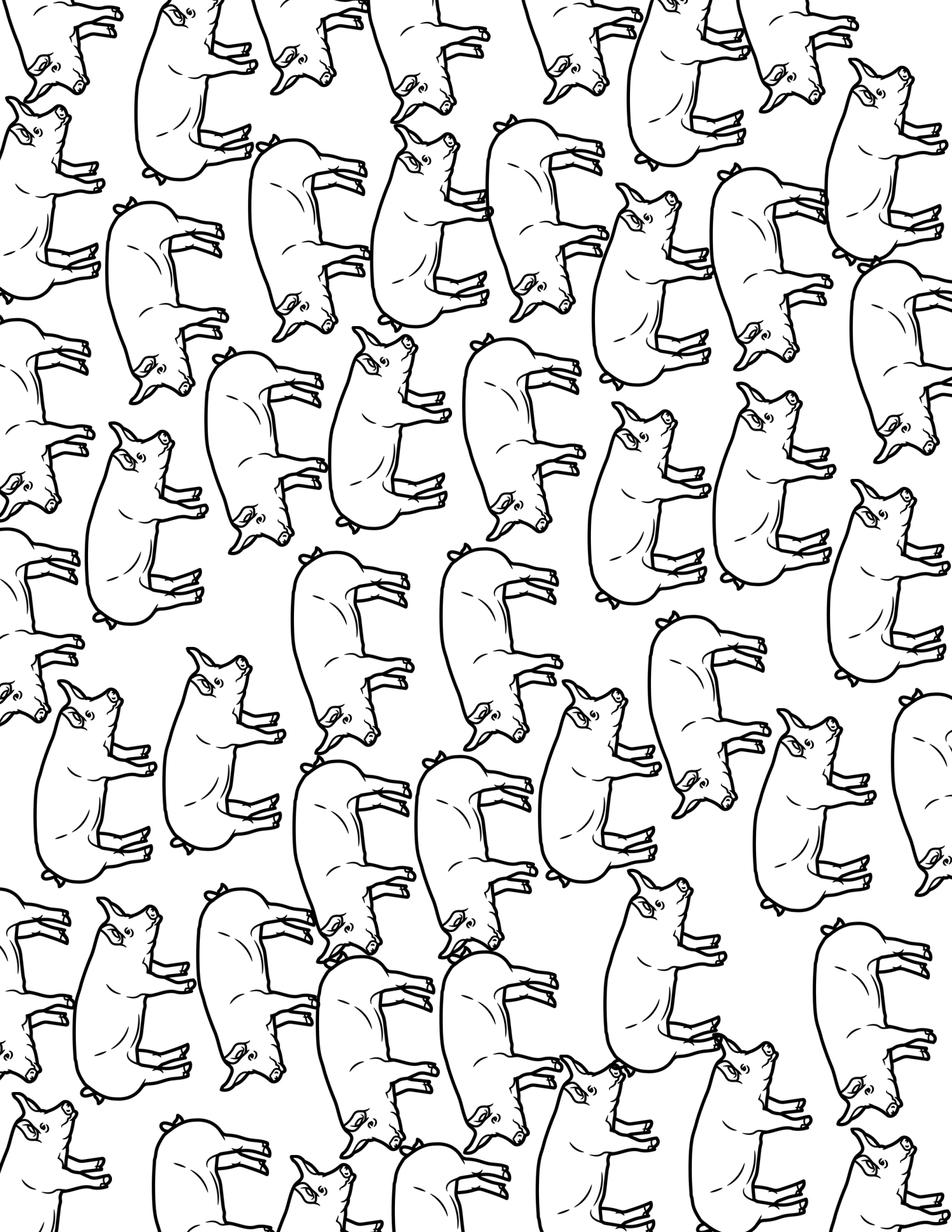


**Berkshire**



**Hampshire**

Pick **two** of these breeds and color random pigs on the next page with their pattern. Make sure you color them well enough to tell the breeds apart. Next, use your **micro:bit breed counter** to keep track of how many of each breed are in your picture. Finally, trade pictures with someone else in your class and use your counter to figure out how many of two different breeds of pigs are in their picture.



# Gate Alarm

## Code It!



Use the project **Simple door alarm** from [microbit.org](https://microbit.org). Instead of attaching the alarm to a bedroom door, attach it to a livestock gate so you never need to worry if the gate has been shut properly.

In addition to the micro:bit and accessories, you will need:

- a magnet
- a barn door or livestock gate (classroom doors, cabinet doors, or toy versions may be used in place of these)
- a way to secure the micro:bit, magnet, and batteries to the door/gate. We recommend sticky tack.

## Pigs in Barns

Here in Illinois, we can have very extreme weather. Keeping the pigs in barns keeps them out of these varied conditions and away from predators and harmful infections and diseases. Pig barns are kept at constant comfortable temperature and humidity.

## Explore It!



Watch our **Awesome Agriculture: Pork** video to see why it is so important to know if the gate or barn door has been left open when it comes to raising pigs.

<https://iaitc.co/awesomeag-pork>



What about keeping goats contained? Extend learning with our lesson **Great Goat Escape**. Allow students to test their construction skills to build a goat pen that will keep those pesky goats contained!

<https://iaitc.co/great-goat-escape>

# Monitor Soil Moisture

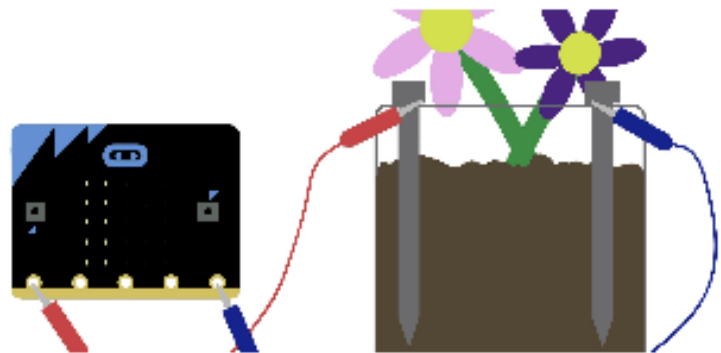
## Code It!

Use the project **Soil Moisture** from [makecode.microbit.org](https://makecode.microbit.org). **Note:** this is a slightly more advanced coding project. You may want to practice coding skills with the other projects in this booklet first. Step by step instructions are provided and make the project easily manageable.

In addition to the micro:bit and accessories, you will need:

- 2 long nails or screws
- 2 crocodile clips
- a pen and paper

**Modification:** Use the project by following the steps “Make” and “Code”, stopping after step 2 for simplification. You may choose to go on to “Connect” if you have a second micro:bit.



Soil Moisture

## Explore It!



Use this new soil moisture monitoring system you created with the micro:bit to enhance other experiments. Use the lesson **Plant Experiments** from our website to help students explore the scientific method by designing mini experiments within a whole class experiment.

<https://iaitc.co/plant-experiments>

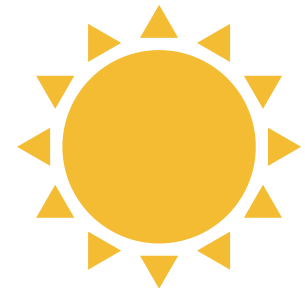
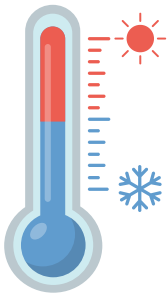
# Farm Planning

## Code It!

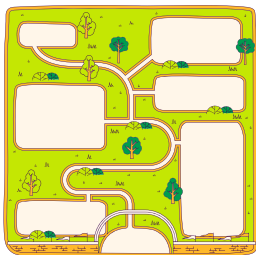
Use the project **Environment exploration** from [microbit.org](https://microbit.org). Use the different sensors on the micro:bit to study the conditions of different locations to help you decide where to set up different parts of your farm. Perhaps you need to know the best place to set up your germination station. You might need a location for new specialty crop beds. This project will help you collect all the necessary data to make the best decision.

In addition to the micro:bit and accessories, you will need:

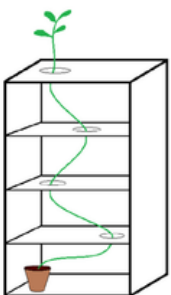
- a micro:bit Environmental Study data table sheet (next page of booklet)
- a writing utensil



## Explore It!



Pair this micro:bit activity with our lesson **Plot-A-Lot** and help students strengthen their math skills by plotting shapes and calculating area and perimeter as they plan a farm layout. <https://iaitc.co/plot-a-lot>







Help students learn more about how light affects plant growth with our lesson **Plant Maze**. Use the micro:bit light, temperature, and sound sensors to test more variables for growing plants. <https://iaitc.co/plant-maze>

# MICRO:BIT

## ENVIRONMENTAL STUDY

Find the perfect location for your garden, chicken coop, or livestock by taking some measurements using your programmed micro:bit.

			
Location	Temperature (Button A)	Sound Level (Button B)	Light Level (Buttons A & B)
Average			
Average			
Average			

# Notes

# Notes

# Illinois AGRICULTURE in the Classroom<sup>SM</sup>

Find all of these activities and links on the SAI page of our website at <https://iaitc.co/SAI>



micro:bit

