



THE UNIVERSITY OF ARIZONA
COLLEGE OF AGRICULTURE & LIFE SCIENCES

Cooperative Extension



CLOVER COMMUNICATOR YAVAPAI COUNTY 4-H NEWS JULY 2021

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You may view a color copy of this
newsletter online at:

[http://extension.arizona.edu/4-H/
yavapai](http://extension.arizona.edu/4-H/yavapai)

Stacy DeVeau
4-H/STEM
Program Coordinator, Sr.

Administrative Associate

- | | |
|-----------------------------|---|
| July 1 | 4-H Ag at Home Animal Projects-Beef Cattle (EPDs)
Register for 7/1 |
| July 4 - 8 | MoYava Camp - James 4-H Camp |
| July 6 - 30 | 4-H STEM Youniversity |
| July 12- 16 | J.O.L.T. - James 4-H Camp |
| July 19 - 23 | Arizona 4-H Military Teen Adventure Camp Session 2-Tucson
https://extension.arizona.edu/2021-az-4-h-military-teen-adventure-camp-mtac |
| July 28 - 31 | Arizona 4-H Military Teen Adventure Camp Session 3-Flagstaff
https://extension.arizona.edu/2021-az-4-h-military-teen-adventure-camp-mtac |
| August 2 -
October 15 | Greenhouse Sustainable Energy Engineering Design (SEED)
Hybrid Camp Greenhouse SEED Project Website |
| August 5 | 4-H Ag at Home Animal Projects - Working Dogs (Special Edition)
Register for 8/5 |
| October 18 -
December 17 | AR/VR Floating Farm Hybrid Camp |



Follow 4-H

State Instagram: [uarizona4h](#)
County Instagram: [yavapaicounty4h](#)
State Facebook: <https://www.facebook.com/arizona4h>
County Facebook: <https://www.facebook.com/YavapaiCo4H>

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Jeffrey C. Silvertooth, Associate Dean & Director, Extension & Economic Development, Division of Agriculture, Life and Veterinary Sciences, and Cooperative Extension, The University of Arizona. The University of Arizona is an equal opportunity, affirmative action institution. The University does not discriminate on the basis of race, color, religion, sex, national origin, age, disability, veteran status, sexual orientation, gender identity, or genetic information in its programs and activities.

RESOURCES & ACTIVITIES

It is with regret that we are saying goodbye to Shirley. Please join me in wishing her the best in the next leg of her life's journey! 4-H is in a period of transition; not only are we saying a goodbye, but we are anticipating rolling out the welcome mat! We are currently conducting a search to fill the Yavapai County 4-H Agent position. This has been long-awaited, and we are excited about what the future could potentially have in store! During this period, I will be stepping up as the Interim 4-H Program Coordinator, fulfilling Shirley's duties. While my experience has been primarily serving non-traditional 4-H youth through outreach programming, I will do my best to serve our volunteers and members as we swim these waters together. I may not always have an immediate answer, but I will find one! Please don't hesitate to reach out to me if you need anything in relation to 4-H.

~Stacy



Webinar Series - AZ 4-H Ag at Home: Animal Projects

July 1, 2021 6:00 pm MST AZ 4-H Ag at Home: Animal Projects - Beef

Cattle (EPDs) [Register for 7/1](#)

August 5, 2021 6:00 pm MST AZ 4-H Ag at Home: Animal Projects - Working Dogs (Special Edition!) [Register for 8/5](#)

Recordings of past seminars on rabbits, swine basics, horses, chickens, beef, sheep, turkeys, goats, cavies, carcass judging, and beef cattle, and horse judging are available for viewing at <https://extension.arizona.edu/az-4-h-ag-home>. Using the same link, you can also view videos on past webinar recordings.



RESOURCES & ACTIVITIES

Arizona Cooperative Extension has developed a plan to bring back in-person programming in phases. The phases are dependent on several health-related factors with regard to COVID-19 infection and transmission. The plan has been vetted and approved by University of Arizona leadership and began execution on Monday, August 17th, 2020.

Yavapai County is currently in Phase 3

Phase	Extension workforce	Indoor programming	Outdoor programming	Face coverings	Social distancing	Facilities
Phase 3 (Optimized)	Optimized workforce and telework	No size restrictions	No size restrictions	Follow UArizona policy and guidelines	Maintain 6-foot is strongly recommended. Maintain hand hygiene, sneeze and cough etiquette.	Increased cleaning and disinfecting. Common areas open.

HAPPY BIRTHDAY TO OUR 4-H VOLUNTEERS

Auben Winters

July 31

Shamrock Hustlers 4-H Club



**HAPPY BIRTHDAY
TO YOU!**

ACTIVITIES & EVENTS

4-H STEM YOUiversity STEM Projects

Greenhouse Sustainable Energy Engineering Design (SEED) Hybrid Camp August 2nd - October 15, 2021

- Participants must be in grades: 6th to 12th
- **\$50 registration fee, need based scholarships available**
- Teachers, Educators and 4-H Volunteers receive Professional Development Hours for your participation
- Participants receive certificates of completion
- Limited seats available, one team per county and FRTEP program with up to 4 youth
- Participants will meet at their County Cooperative Extension office (CEO) and participate on the virtual meeting and work together on their teams Greenhouse SEED Project
- Participants will share a team video, present their projects and will be recognized at the Closing Ceremony October 15, 2021

To learn more about our Greenhouse SEED Program, past camps visit our [Greenhouse SEED Project Website](#)

Registration Closes TBD. Register at Eventbrite



AR/VR Floating Farm Hybrid Camp October 18 - December 17, 2021

- Participants must be in grades: 5th to 12th
- **\$50 registration fee, need based scholarships available**
- Teachers, Educators and 4-H Volunteers receive Professional Development Hours for your participation
- Participants receive certificates of completion
- Participants will meet at their County Cooperative Extension office (CEO) and participate on the virtual meeting and work together on their AR/VR Floating Farm Projects
- Participants will share a county team video, present their individual projects and will be recognized at the Closing Ceremony December 17, 2021

To learn more about our AR/VR Floating Farm Program, past camps visit our AR/VR [Floating Farm Project Website](#)

Registration closes TBD. Register at Eventbrite



OUR SUMMER 2021 PROGRAMS

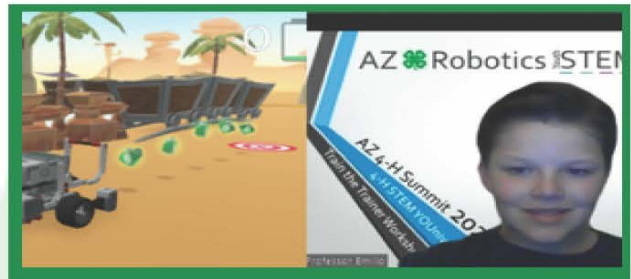
To register go to our Eventpage at:

<https://extension.arizona.edu/events/2021-07-06/4-h-stem-youiversity-summer-camp-2021>



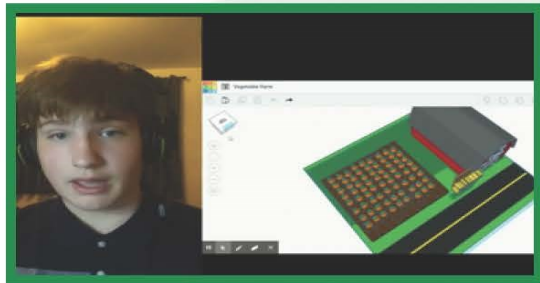
Sustainable Energy Engineering Design (SEED) Camp

DATE July 6th-30th 2021
TIME 1:00 - 4:00pm
Monday - Friday



Robotics Camp

DATE July 6th-30th 2021
TIME 2:00 - 4:00pm
Monday Wednesdays and Fridays



Augmented Reality (AR)/Virtual Reality (VR) Floating Farm Camp

DATE July 6th-30th 2021
TIME 1:00 - 4:00pm
Tuesdays and Thursdays



Underwater Robotics Remotely Operated Vehicles (ROVs)

This program will be offered the following year

18 U.S.C. 707

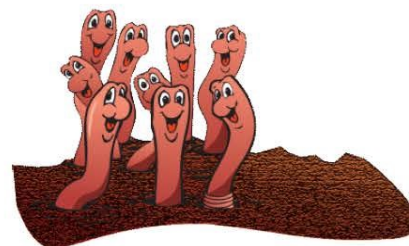


The Wonderful World of Worms

By Ronda Williams, Extension Educator, 4-H Youth Development/CED, Darke County (OSU Extension)

Objectives

- Increase awareness of the natural environment
- Become aware of the role earthworms play in plant and soil health
- Learn about the behavior characteristics of worms
- Learn the basics of composting with red wiggler worms



Group Size

6-8 children per adult volunteer

Time Frame

This lesson is designed for a group meeting between 30 and 60 minutes. It can be used with youth or adults in a variety of settings.

Background

There are over 2,000 species of earthworms worldwide. They can live in the water or in the soil. Earthworms play a vital role in the environment by helping to improve soil conditions.

Soil-dwelling nightcrawlers burrow extensively in the ground and perform many useful functions. They aerate the soil by making tunnels. This loosening of the soil allows room for plant roots to grow. Worm tunnels permit water to flow more freely throughout the soil, enhancing plant growth. Nightcrawlers move organic materials (leaves, plant matter) deeper into the soil which helps to fertilize the soil. While nightcrawlers thrive in the outdoor environment, they are not suitable for worm bins or composting.

For purposes of this lesson, we use red wigglers. Red wigglers are readily available through the mail or you may find them at your local bait shop. In addition, check in your area to see if there is a "worm farmer" who raises red wigglers and would be willing to donate a pound or so to your group.

Composting with Worms

The best type of worms to use in a composting bin is the red wiggler (*Eisenia foetida*). Red wigglers like to live in small, compact areas and do not burrow deeply into the ground. They do not mind being handled and will tolerate a variety of living conditions. Red wigglers eat about half of their body weight each day and will consume a variety of organic materials.

Your worm bin can be a simple plastic bin or something more elaborate. You can create a bin by drilling holes in a plastic bin and covering it with dark paper or fabric or putting it in a box. Drill very tiny holes along the sides to allow for air circulation. Or, you can purchase a specially made commercial worm bin.



CLOVERBUD ACTIVITIES...continued

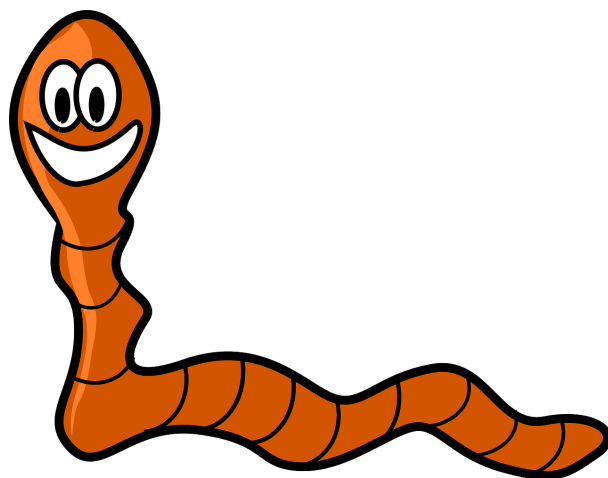
The bedding in your worm bin should be organic material, such as shredded newspaper (not the “slick” ad paper with different color inks), soil, shredded cardboard, aged manure, etc. Be sure that the newspaper or cardboard are in narrow strips as it will break down faster in the bin. It is important that the bedding material be moist, but not soaking wet. Worms need moisture or their skin dries out, but too much moisture will cause them to drown.

Red wigglers will survive in a temperature between 40°F and 85°F, but prefer 70°F – 75°F. They should be in a dark location, free from drafts.

Worms will eat a variety of organic materials. They prefer plant matter (vegetable peels, lettuce), coffee grounds, crushed eggshells, etc. They do not like dairy products, meat, bones, or oily substances. See the list of preferred foods included with this handout.

As the worms break down the plant matter, they leave behind worm castings (worm poop). Castings are an excellent source of fertilizer for your plants and gardens. Your worm bedding must be changed every one or two months as plant matter is broken down, because the worms cannot exist in a bin that consists of only worm castings. Empty your bin onto a plastic tarp to separate the worms from their castings. Castings appear as a fine black grainy substance. Once you have separated the worms from their castings, return your worms to your bin with new bedding. Use the castings as fertilizer for your garden or houseplants.

Worms lay eggs, called cocoons, and will readily reproduce if their bin environment is favorable. Each cocoon contains five or six baby worms. Baby worms are small and white when hatched. If your worms are actively reproducing, then you know that the living conditions in your worm bin are ideal.



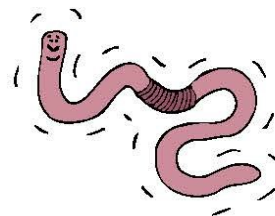
Resources You Can Use

Appelhof, Mary (1997). *Worms Eat My Garbage*. Kalamazoo, MI: Flower Press
Cronin, Doreen (2003). *Diary of a Worm*. New York, NY: Scholastic, Inc.
Ross, Michael Elson (1996). *Wormology*. Minneapolis, MN: Carolrhoda Books, Inc.

A great website for kids

The Adventures of Herman the Worm: <http://urbanext.illinois.edu/worms/>

Ohio State University Extension, Click It Print It, Do It, The Wonderful World of Worms



Worm Experiments

You will need

- Red Wiggler Worms
- Flashlights (one per group)
- Sandpaper (one small square per group)
- Paper Towels (one damp paper towel per group; one dry paper towel per group)
- Vinegar (a small amount)
- Spray bottle filled with water
- Hand wipes (one per participant)

Before conducting the worm experiments with your group, go over some basic worm facts (see document included with this handout). This will help them to understand some basic worm behaviors.

Distribute the Worm Observation Chart and ask each participant to make their predictions as to what the worms will do during each experiment. After each experiment is conducted, ask the participants to record what the worms actually did during the experiment. Were the participants' predictions correct?

For best results, divide your group into teams of four or five participants. Give each group two worms on a damp paper towel. Announce that members do not have to touch the worms if they do not want to. Worms should be handled gently and participants should not "pound" on the table or talk in loud voices as the worms are extremely sensitive to vibrations.

Experiment #1 – Which texture appeals to worms?

Give each group a piece of sandpaper. Instruct them to position their worms so that they are half on the sandpaper and half on the paper towel. Watch what happens. (1) Did the worms stay on the sandpaper or did they move to the wet paper towel? (2) Ask participants if they know how they can easily tell a worm's head from its tail.

Answer: (1) Worms will typically move towards the wet paper towel. Their skin is extremely sensitive and the rough texture of the sandpaper makes them uncomfortable. They also require a damp surface so that their skin does not dry out. (2) When a worm moves, it leads with its head. Therefore, the head end is the direction in which the worm is moving.

Experiment #2 – How do worms react to light?

Instruct each group to place their worms back on to the wet paper towel. Collect the sandpaper and give each group a flashlight. Have the participants turn on the flashlight and hold it so that it is approximately one inch above the worms. How do the worms react? Do they stay still or move around?

Answer: Worms will typically move around to try to escape the light. Remind participants that worms live in a dark environment so they are sensitive to bright lights. Also, the heat from the light dries out their skin. Worms require a moist, dark environment in order to survive.

CLOVERBUD ACTIVITIES...continued

Experiment #3 – Which surface will worms prefer?

Collect the flashlights and give each group a dry paper towel. Instruct them to place their worms so that they are half on the wet surface and half on the dry surface. Watch what happens. Do the worms move towards the wet surface or the dry surface?

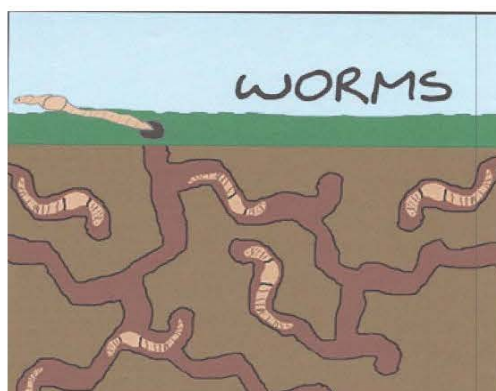
Answer: Worms will typically move towards the wet surface. It feels more comfortable on their skin and they require moisture so that their skin does not dry out.

Experiment #4 – What happens when a worm is exposed to vinegar?

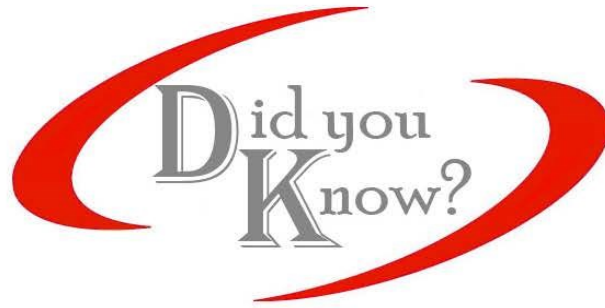
Instruct each group to place their worms on the wet paper towel. Visit each group and put a small amount of vinegar on the dry paper towel. Instruct participants to place their worms on the vinegar and watch what happens. Once they observe how the worms react, they should very quickly and gently return the worms to the wet paper towel. What happens when the worms are placed on the paper towel with vinegar? Do they stay still or do they move around?

Answer: The worms will begin to move around very quickly when they are placed on the vinegar. How do worms breathe? They breathe through their skin and the vinegar interferes with their ability to breathe. Explain to the participants that if they use a lot of chemicals or pesticides in their gardens, they will most likely not have many worms. Chemicals irritate the worms and they do not thrive in an environment which contains lots of chemicals. An abundance of worms in the soil typically means the soil is healthy and fairly free of chemical irritants.

Collect all of the worms and return them to your worm bin. Dispose of any paper towels and other trash. Give each participant a hand wipe so that they can clean their hands after handling the worms.



Worm Facts



- Worms are soil engineers.
 - They move rocks and debris, and tunnel through the soil. Loosening the soil incorporates air and allows plants to grow healthy and strong.
- Worms are recyclers.
 - They turn rotten leaves and plant matter into soil.
- Worms are magicians.
 - They swallow dirt and it comes out as worm castings (fertilizer for the soil).
- Worms do not have arms, legs, or eyes.
 - They have tiny bristles (called "setae") on their underneath which allows them to dig and move.
 - Worms are sensitive to light, even though they do not have eyes.
- Worms have a mouth, but no teeth.
 - Their mouth is on their head (anterior) end.
 - Their tail is called their posterior.
- Worms live where there is food, moisture, oxygen, and a favorable temperature.
- Worms are cold-blooded animals.
- Worms breathe through their skin.
- Worms eat their weight in food every day.
- Too much water will drown a worm.
 - However, they need to have some moisture or they will die.
- Worms are invertebrates. They do not have any bones.
 - They have five hearts.
 - They have a digestive system, reproductive system, and muscle system.

CLOVERBUD ACTIVITIES...continued

What Worms Like to Eat



(Cut or tear food into small pieces as the worms do not have teeth.)

- Peels: potato, carrot, apple, banana
- Lettuce
- Cabbage
- Celery
- Cornmeal
- Oatmeal
- Crushed eggshells
- Coffee grounds
- Paper –newspaper (not slick magazine paper or inserts from newspapers with colored ink)
- Leaves

What Worms Do Not Like to Eat



- Meat
- Dairy foods, cheese, butter
- Oily foods (salad dressings)
- Onions
- Chocolate

Ohio State University Extension, Click It Print It, Do It, The Wonderful World of Worms

CLOVERBUD ACTIVITIES...continued

Worm Observation Chart

Name _____



	Prediction		Observation	
Sandpaper	Stay	Move	Stay	Move
Light	Stay	Move	Stay	Move
Wet/Dry Surface	Stay	Move	Stay	Move
Vinegar	Stay	Move	Stay	Move