

Virtual Farm Circle Teacher Materials

Thank you for choosing to participate in Whatcom Family Farmers' Virtual Farm Circle!

The materials and content in the Virtual Farm Circle were designed to align with NGSS third grade science standards. However, the material is suitable for any elementary student, although the worksheets may not be an appropriate level of difficulty for other grade levels.

As with all online content, we recommend that students are supervised while completing the Virtual Farm Circle. While there is not any unsafe or inappropriate material on the Whatcom Family Farmers website, there are external links on some pages, including links to social media.

Accessibility

Closed captions have been added to all videos for hearing-impaired students. To enable closed captions in a video, click the "CC" button in the bottom control bar of a pop-up video after clicking play. Unfortunately, closed captions are only available in English at this time.

For visually-impaired students who are unable to navigate the interactive maps, the full series of videos is available as a playlist at

https://www.youtube.com/playlist?list=PLMuhl3AxDVnEZNH-UPbw_LrpSXZpDBfmd

We would appreciate your feedback and encouragement! Please send any comments to Gavin Willis, our Outreach Director, at gwillis@whatcomfamilyfarmers.org.

The Virtual Farm Circle is a creation of Whatcom Family Farmers – Education, a 501(c)(3) non-profit organization. If you would like to make a tax-deductible donation to support our education work, please send an email to info@whatcomfamilyfarmers.org

Curriculum and Further Discussions

The following NGSS 3rd grade performance expectations are explicitly discussed in the Virtual Farm Circle videos:

Standard	Topic	Content
3-LS1-1	Dairy	Growth and development of calves on a dairy farm
	Raspberry	Unique life cycle of raspberry plants, including new cane growth
	Potato	Life cycle of potato plants
3-LS2-1	Dairy	Cows are herd animals that prefer to be in groups, group formation is part of calf development
3-LS3-1	Raspberry	Different varieties of raspberries will exhibit different traits in the fruit (color, size, flavor)
	Potato	Different varieties of potatoes will exhibit different traits in the plant (flower color, tuber size and color); farmers select plant varieties in the lab based on desirable traits, and plants grown from potatoes will have the same characteristics as the parent
3-LS4-3	Potato	Potato plantlets are grown in the lab and greenhouse where they are protected from conditions that would otherwise prevent their survival
	Salmon	Salmon survive best in stream conditions that are favorable (clean, clear, cool water)
3-ESS3-1	Salmon	Farmers plant riparian buffers to prevent erosion and flooding, and install fencing to prevent manure run-off

For further discussion in the classroom or at home after completing the Virtual Farm Circle, we recommend the following topics aligning with NGSS 3rd grade performance expectations:

Standard	Topic	Content
3-LS3-2	Raspberry	What might happen to raspberry plants if farmers didn't install water tubes when first planting the season?
	Dairy	How would two crop fields look different if farmers spread organic manure fertilizer on one of them but not the other?
3-LS4-4	Raspberry/ Potato	If farmers were no longer allowed to use water to irrigate their crops, what would happen to farmland? What problems would this cause?
3-ESS2-1	Raspberry	Whatcom County receives on average 42 inches of rain a year. How does this rainfall vary by month? Can you show the variation in a graph?

Worksheet Answers

Below are the answers to the student worksheets. Some answers may vary, and are intended to be the starting point for a discussion about plant and animal needs.

Dairy Worksheet

If you were a cow in a free-stall barn, what would be your favorite thing to do? (**answers vary, may include eating, drinking, sleeping, playing with friends**)

Don't let your cows escape! Draw a fence to keep them close to the barn. Make sure to keep your cows away from the stream, and don't forget to draw some riparian plants beside the stream! (**Fencing should not go right next to the stream, and students should draw riparian plants between the fencing and the stream to act as a buffer**)

How much milk does a 14-day old calf drink in a day? (**2 gallons**)

How long does it take for a cow to get milked? (**10 minutes**)

Why do farmers pasteurize milk? (**To make it safe to drink**)

What do the farmers do with the liquid part of the manure? (**spread it on the fields to help the crops grow**)

Raspberry Worksheet

What watershed do you live in? Another way to look at it - what creek or river does the rain that lands in your yard end up in? (**answers vary, but may include the Nooksack River, Whatcom Creek, or any other local creek**) For more Whatcom County watershed info, visit <http://bluewatergis.maps.arcgis.com/apps/MapJournal/index.html?appid=5f1e62621fbb4241b1b58424f7040399>

How long does it take after a raspberry plant is planted before you can pick raspberries off of it? (**1 year**)

How does the harvester get the raspberries off of the plant? (**it shakes the plant so that the berries fall off, then catches them**)

What are the main stems of a raspberry plant called? (**canes**)

How do farmers make sure that the raspberries don't stick together when they are freezing them? (**they blast them with air jets**)

Potato Worksheet

How many new potatoes can grow underground from one potato plant? (**up to 30**)

What do farmers do before going into the lab to make sure that they don't get the plants sick? (**wear lab coats, wash their hands, wash all the equipment, sometimes wear masks**)

Before they harvest the potato, farmers use a special spray to kill the vines and leaves. What is the spray made from? (**oranges**)

The storage sheds that the potatoes are kept in are cool, dry, and dark. Why do you think that is? (**if it is warm, wet, or bright then the potatoes will begin to sprout**)

Can you name the 5 types of Pacific salmon? There is one for each finger on your hand! (**chum (thumb), sockeye (index), king/Chinook (middle), silver (ring), pink (pinky)**)