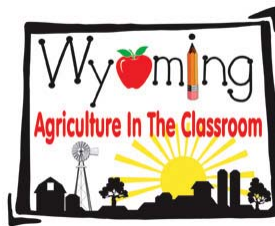




Science Fair Projects



wyomingagclassroom.org



Agriculture Is a Science...

What picture comes to your mind when you think of agriculture? Do you see some guy in overalls plowing the dirt with an old tractor, or women picking corn in a field? Maybe what you should picture is a scientist using a satellite-linked computer program to examine global climate changes or a researcher developing a new product that can absorb 1,600 times its own weight in water.



Agriculture today has gone high-tech. It had to, because keeping U.S. agriculture productive requires research that is every bit as complex as the space program. As a matter of fact, many agricultural research scientists work with the National Aeronautics and Space Administration (NASA) on a regular basis. They use satellites to examine fields for crop damage, to map soil conditions, and to look for changes in the environment that could affect farming--or be caused by farming.

Agricultural scientists may be microbiologists, chemists, veterinarians, engineers, plant pathologists, nutritionists or many other specialties. What they all have in common is that they are working out how to grow crops, raise livestock, produce renewable raw materials for industry and help preserve our environment.



Science Projects in Agriculture

You don't have to live on a farm or even have a garden to do an agricultural science project. You just have to be interested in what goes into growing plants and animals or how this affects the world around you.

So when your teacher asks you to come up with a science project for class or as part of a science fair, think agriculture. It isn't a separate category in most science fairs, but ag science is part of other fair categories, including biochemistry, botany, environmental sciences, medicine and health (nutrition), microbiology and zoology.

<http://www.ars.usda.gov/is/kids/fair/story.htm>

Animals

- Does playing music increase egg-laying in chickens? Ducks?
- What effect does increased soil acidity have on earthworms?
- How important are earthworms to soil formation and plant growth?
- What kind of life can be found in one square meter of backyard soil?
- How does a bird embryo grow in an egg?
- Can mice distinguish color?
- How do mealy worms respond to light?
- How does an earthworm react to light and darkness?
- Do different kinds of caterpillars eat different amounts of food?
- Does temperature affect the flash rate of fireflies?
- What is the effect of temperature on the activity of (mealy worms, crickets, etc.)?
- Does a student's grade level affect his/her knowledge of endangered species?
- How does earthworm population relate to soil type?

Other Science Fair Resources

Science Fair Projects - http://www.cdli.ca/science_fairs/

GEM Science Fair Projects - <http://members.ozemail.com.au/~macinnis/scifun/projects.htm>

PlanetAg Science Fairs - <http://www.florida-agriculture.com/PlanetAg/>

Ultimate Science Fair Resource - <http://www.scifair.org/dr.shawnsideabank.html>

Notes:

Tips:

- Here is an example for a book or magazine – Smith, John B., "Science Fair Fun" Experiment Time, New York: Sterling Pub. Co., May 1990, Vol. 2:10–25.
- Here is an example for a Web site – Bailey, Regina, About.com Biology Site, Mar. 9, 2000.
- Here is an example for a conversation – Martin, Clara, Telephone Conversation, Jan. 8, 2000.

Science Projects

Beginning --- Intermediate --- Advanced



BEGINNING

Plants

- In what type of soil do plants grow best?
- Do plants know which end is up?
- How much light do plants need?
- Can plants get sunburned?
- What color of light in the light spectrum causes green beans to grow the best?
- Does temperature affect the growth of plants?
- Can plants grow from the leaves?
- Do bigger seeds produce bigger plants?
- Does a plant grow bigger if watered with milk or water?

Food

- Compare the amount of starch in assorted vegetables.
- Compare the freezing time for ice cream using ice versus ice and salt.
- Will bananas brown faster on the counter or in the refrigerator?
- Do different kinds of apples have the same number of seeds?
- Which brand of popcorn pops the most kernels?
- Which brand of popcorn pops the fastest?
- Does sunlight affect the taste of milk?

Animals

- Do ants like cheese or sugar better?
- What foods do mealworms prefer?
- What seeds do birds like best?
- Do mint leaves repel ants?
- On which surface can a snail move faster, dirt or cement?
- How far does a snail travel in one minute?
- How much can a Caterpillar eat in one day?
- What color of flowers attract hummingbirds best?
- What colors attract moths and other insects at night?

INTERMEDIATE

Plants

- What happens to mushrooms grown with no light, or too much light? No moisture, or too much moisture? No fresh air?
- Do roots of a plant always grow downward?
- Compare different methods of cooking a potato and the sensory differences.
- Does adding salt to a plant's water affect its health? How much salt can a plant tolerate before it dies?
- Can plants grow without soil?
- What type of soil is in my school yard?
- How does the spray from mister bottle affect plant growth?
- Does a green plant add oxygen to its environment?
- Compare organic pesticides to commercial pesticides.
- What percentage of corn seeds in a package will germinate?
- Does a plant need some darkness to grow?
- What are the effects of chlorine on plant growth?
- Do weed killers affect house plants?
- How fast do roots grow?
- What is the effect of chlorinated water on plant growth?
- How does the number of seeds produced by different plants compare?
- Will frozen seeds sprout?
- Will plants grow better in soil or water?
- What can be done to increase the decomposing rate of plants?
- Do plants grow bigger in soil or water?
- How much weight can a growing plant lift?
- Does it matter in which direction seeds are planted?
- Do living plants give off moisture?
- Can mushrooms be grown hydroponically?
- Which plants and vegetables make the best dye?
- Does the type of water affect the growth of plants?
- Do living plants give off moisture?
- Do living plants give off oxygen?
- Does the amount of light affect the growth of plants?
- Does sugar prolong the life of cut flowers?

Food

- Do microwaved foods cool faster than baked or stove top foods?
- Which wrapping would keep sliced apples the longest in a refrigerator – foil, wax paper, plastic wrap or baggies?
- What plant foods contain starch?

Agriculture in the Classroom - Kid's Zone

Science Projects

- How much of an orange is water?
- How much of an apple is water?
- How does temperature affect the water uptake in celery plants?

Animals

- Do different species of birds prefer different types of seeds?
- Can earthworms be used to turn kitchen waste into compost?
- What products do beef cattle provide? Which body parts are not used?
- How do day-old domestic chicks behave?
- At what rate do pets drink water?
- Do mint plants repel insects?

ADVANCED

Plants

- What factors affect the rate of fruit ripening?
- Will antacids help soil polluted by acid rain?
- What is the percentage of water in various fruits and vegetables?
- How can agricultural pests be controlled without the use of insecticides?
- Does temperature affect how well an insecticide will work?
- How does centrifugal force affect the germination of corn seeds?
- How does light direction affect plant growth?
- Will vitamins affect the growth of a plant?
- What is the effect of detergent on bean seeds?
- Under what color light do plants grow best?
- In what kind of material (sand, clay, etc.) do seeds grow best?
- What is the effect of fats and cholesterol on plants?
- Can a mushroom block continue to produce new flushes of mushrooms over a longer total life span if the block is lightly fertilized? Does an organic fertilizer (e.g. something like milk, gelatin, etc.) work better, or an inorganic one (something like Miracle Grow™)?
- Do different types of soil hold different amounts of water?
- Will adding bleach to the water of a plant reduce fungus growth?
- Does the color of light spectrum affect plant growth?
- What conservation practice works best to control erosion?

Food

- Observe the influence of different cooking methods and different pHs on the appearance, flavor and texture of vegetables.
- Does sunlight affect the amount of vitamin C in orange juice?
- What effect does cooking have on a food's nutritional value?
- How do microwaves work to cook food?

How to choose a topic:

- Choose a topic that interests you.
- Choose a single aspect about your topic to investigate.
- Make sure your experiment is testable.
- Be sure to allow yourself enough time to complete your experiment.
- Be sure you are able to gather the necessary materials for your experiment.
- Choose a topic that is challenging and makes you curious about other things.

How to do a science fair project:

- Come up with an idea for a scientific experiment by observing a certain phenomenon and writing down your observations.
- Gather information about the topic you want to experiment on.
- Write a short and direct title that describes what your experiment is about.
- State the exact purpose of your experiment.
- Identify possible variables in your experiment. Variables are things that change.
- Write a hypothesis that states what you predict will happen based on changes in your variables.
- Create a step-by-step experiment that tells exactly what you intend to do.
- Gather together and list the materials needed to perform your experiment.
- Perform your experiment and record the data as you go along.
- Write down all of your observations while doing your experiment.
- Do all necessary calculations.
- Write a summary of what happened in your experiment.
- Use your data and observations to draw conclusions about your experiment.

Tips:

- *When designing your experiment try to use only one variable and include a control so that you have something to compare the changes to.*
- *If you have performed calculations, record your results on a table or graph to include with your project.*

How to do the bibliography for a science fair project:

- Write the author's last name, first name and middle name or initial.
- Write the name of the article or chapter from your source in quotes.
- Write the title of the book or source.
- Write the place where your source was published followed by a colon.
- Write the publisher name, date and volume followed by a colon and the page numbers.