Corn Clubs – the start of it all

The 4-H program has been engaged in science and technology since its beginning more than 100 years ago. At a time when adult corn producers in the country were averaging only 17 bushels per acre, 4-H members in a corn project—using newly introduced hybrid corn seed—were averaging 65 bushels per acre. Many 4-H youth were averaging 150-220 bushels per acre.

The transfer of this technology to the general corn producing sector of agriculture was made possible by first introducing the hybrid seed to 4-Hers. This was the first noted success story in a long line of many in which the 4-H program was the conduit for the education and transfer of technology to the general public.

Marius Malgreen (a 4-H member from Hickory, Virginia) sits on a pile of corn in this 1912 photograph that represents the 200 bushel per acre yield of his corn club project.

Moffat ...............................(970) 824-9180
Montezuma .............................(970) 565-3123
Montrose ..............................(970) 249-3935
Morgan .................................(970) 542-3540
Otero .................................(719) 254-7608
Park ....................................(719) 836-4293
Phillips .................................(970) 854-3616
Prowers .................................(719) 336-7734
Pueblo .................................(719) 583-6566
Rio Blanco ............................(970) 878-9490
Routt .................................(970) 879-0825
San Miguel ............................(970) 327-4393
Sedgwick ...............................(970) 474-3479
San Luis Valley Area Office: Alamosa, Conejos, Costilla, Mineral, and Rio Grande- Saguache counties ........................................(719) 852-7381
Summit .................................(970) 668-3595
Teller .................................(719) 689-2552
Washington ............................(970) 345-2287
Weld ....................................(970) 304-6535
Yuma ....................................(970) 332-4151

Colorado State 4-H Office Fort Collins, CO 80523-4040 ...............................970-491-1152
www.Colorado4h.org


Produced by CSU Extension Communications
A workforce strong in science, technology, engineering and math is essential for Colorado to compete in the national and global economy. When they participate in community engagement and service projects with caring adults, thousands of Colorado youth benefit from the 4-H mission to empower young people to reach their full potential.

4-H’s Science, Technology, Engineering and Math (STEM) initiative reaches more than five million youth nationwide with hands-on learning experiences that encourage discovery, develop young minds and fill the pipeline of young leaders proficient in science. Only 32 percent of current U.S. college graduates are earning degrees in these fields, compared to 66 percent in Japan and 59 percent in China.

4-H is strategically positioned with CSU Extension’s direct connection to the cutting-edge research and resources of Colorado State University and the nation’s 106 land-grant universities and colleges. Nationally, 4-H has set a goal of preparing one million new young people to excel in science, technology, engineering and math by 2013.

Today, 4-H out-of-school opportunities focus on agricultural science, electricity, mechanics, natural sciences, rocketry, robotics, biofuels, renewable energy and computer science. These projects also foster the 4-H goals of learning, mastering skills, and demonstrating generosity.

**Science and Technology in the Traditional 4-H Project**

**Animal and Veterinary Science**

New and emerging technologies in animal and veterinary science mean that this popular 4-H project area continues to include cutting-edge research. Rich in science and technology, projects include:

- Animal identification technologies such as radio frequency ear tags, retinal scanning and DNA analysis;
- Emerging disease awareness, prevention and control;
- Food safety through control of microbiological contaminants in the food supply;
- Advances in nutrition efficiencies in food-producing animals.

**Computerized Record Keeping System**

Record keeping has always been one of the most valuable life skills mastered through the 4-H program. In 2005 the Colorado 4-H program made the shift to electronic 4-H records. As a result 4-H members (and their parents) have learned more about practical uses for their home computer while becoming proficient in basic software programs in use today.

**Computer Project**

This project is designed for 4-H members who are interested in gaining experience in computer building and repair and data networking. A variety of extended learning opportunities take place through computer science activities, community service projects and collaboration with adult volunteers. Topics include open source software development and instruction in programming languages. Some of the objectives for the series are:

- Identification of internal computer components, operating systems and their processes;
- Understanding of data networking and how it is accomplished;
- Collaboration with adults and peers to build a functioning network;
- Working with peers, adults and community partners to develop service-related computer goals.

**Rocketry**

Model rocketry is a popular Colorado 4-H project allowing young people to learn about launch trajectory, basic aerospace principles, aerial photography and rocketronics.

An impressive conclusion to the 4-H model rocketeer’s 4-H year, the rocket fly day at the Colorado State Fair has 4-H members gauge wind velocity, wind direction, altitude, and canopy size to try and land as close as possible to a launch pad. Patience and attention to detail are just two of the important life skills developed as 4-H members design and construct their rockets.

**Electricity**

Electrical circuits, electron flow and simple construction of electric motors are just a few of the basics that 4-H members in the electricity project learn. More advanced levels teach them about electrical codes, electricity safety and electronics.

Many 4-H members in the electricity project have expanded the 4-H curriculum to develop advanced electrical systems. One example: a Boulder County 4-H member constructed a Savonius wind turbine that powers an electrical battery charging system. His future plans include construction of solar panels and a complete weather station designed to run on renewable energy.

**Robotics**

4-H members learn what a robot is, how to build one and how to program the robot to use sensors to interact with its environment. Working collaboratively, 4-H team members make decisions and organize information to complete the activities. Robotics is an ideal way to introduce science, math, engineering and technology while teaching life skills to youth ages eight through 18.

Robotics teaches 4-Hers programming concepts using the ROBOLAB® language. Robotics also teaches 4-Hers more advanced topics in both programming and mechanics. Youth advance their programming techniques, use subroutines and variables to achieve more precise movements of their robots and build their own custom functions while they practice and develop creative thinking, decision making and leadership skills.

**Lightning Photography**

In this pilot activity, 4-H members will learn:

- Lightning safety;
- The science and physics of lightning;
- The science and physics of film photography versus digital photography.

4-H members from across the state will submit their best lightning photographs for display at the Colorado State Fair and the Denver Museum of Nature and Science.

**4-H Power of Wind Curriculum**

This new addition to state-supported curriculum includes activities that involve young people in the engineering design process as they learn about wind and its uses. Youth work with members of a team to design, create, build and test a wind-powered device which must solve a problem. It also requires the designers to balance options and requirements.

Utilizing life skills such as teamwork, learning from others, planning, organizing and following through on a project, participants are guided to make adjustments and retest until the vehicle or machine solves the original problem. They learn about transfer of energy and using machines to simplify tasks. Some activities ask youth to use their research and analytical skills to examine national, state, and local issues surrounding wind power.

**Exploring Your Environment Curriculum**

This soon to be released project focuses on global issues such as how clean (or dirty) the air is and how to turn waste into something valuable. The project also addresses the impact of food production on the environment and how consumer choices can affect food and fiber practices. Using the scientific method of discovery, 4-H members participate in several activities such as:

- What plants need;
- How the elements of life interact;
- Where organisms fit in the food chain;
- How to measure the weather;
- Construction of a compost pile;
- How to clean an oil spill.

**Future 4-H Projects**

- **New and Emerging Science-Related 4-H Projects**
  - Lightning Photography
  - 4-H Power of Wind Curriculum
  - Exploring Your Environment Curriculum