

# Science Fair Students

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with a natural Pennsylvania white cotton for longer staple length. She would like to enter in the fair again next year.

Polly plans to apply to Penn State to enter a pre-vet program, eventually to move onto the University of Pennsylvania Veterinary School. Polly's adviser on the project is science instructor Patricia Wee.

## Ben's Electrical Soil Cleanup Effort

Ben Newcomer, an Ephrata High School junior, has been fascinated with ways to apply electricity to solving the problems of the environment.

Ben, 17, son of Randy and Jolene Newcomer, Ephrata, came across an article in a science magazine in 9th grade about using

electro-osmosis in soil remediation.

Ben also was fascinated by how electrical streams decreased the friction of a rotating drill bit and added to depth of penetration.

Ben wondered, could electricity be used to "move" contaminants out of the soil?

Ben's project soon was titled, "Establishing A Correlation

Between Texture and The Efficacy of Electro-osmosis In Effecting the Removal of Contaminants From Soil," which won reserve senior champion at the Lancaster County Science and Engineering Fair.

Ben obtained eight soil samples from various teachers, one from his backyard, and another from a nearby creek. He wanted to see how using electro-osmosis worked on different soil types.

He took the soil samples and

placed them in a long florescent light tube measuring about a foot long, with contacts on each end. He used alligator clips to hook wires to the tube. The wires were connected to an 8-volt generic direct current power supply. The contaminant used was tannic acid, structurally similar to the aromatics such as benzene, toluene, xylene — gas additives and potential environmental hazards.

The soil was charged six hours. Ben conducted tests at three points along the tube every two hours. He used a gradient measure to point out the contamination at each site. The tannic acid test kit used a color comparator to determine concentration of acid.

What he found was that soil types affected how the contaminants would move in surprising ways. Ben discovered that too concentrated of an amount had a "seep-back" effect that was undaunted by the current flow.

It's possible that commercial industries could use the information gathered about the use of electro-osmosis to clean up radioactive contamination of soils. Another application could be to see what affects the process has on soil nutrient load levels.

Ben had help from the USDA NRCS office to assess the aspects of soil science. He read and researched extensively on the project, of which he garnered reserve senior champion.

Ben intends to go to college to study for an environment-related career. His adviser is Patricia Wee.

## Sarah's Egg Storage, Processing Comparisons

Sarah, 16, daughter of Russell and Barbara Woodling, Landisville, continued a project begun last year on "A Comparison of European and American Egg Processing and Storage Methods: A Two-Year Study."

Sarah noted that her dad, who suggested the project, learned years ago through the Boy Scouts that a way to preserve eggs would be to boil them for about 10 seconds. Intrigued, she decided to study how egg shelf life could be extended — in a variety of ways.

So Sarah obtained 40 dozen eggs from Sauder's Eggs, including 20 dozen processed and 20 dozen unprocessed. She tried four different tests: boiling the eggs for 10 seconds, microwaving eggs for 10 seconds, refrigeration, and storage through a contained atmosphere technique.

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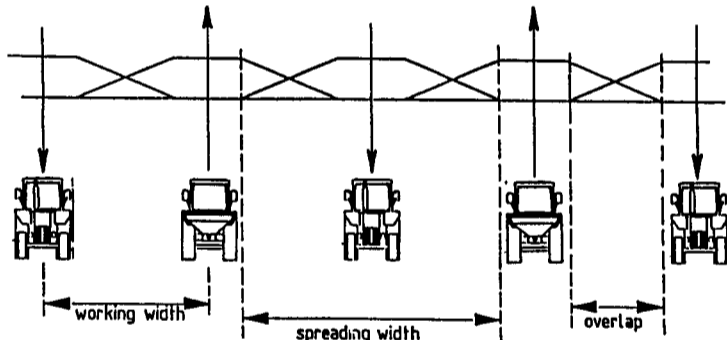
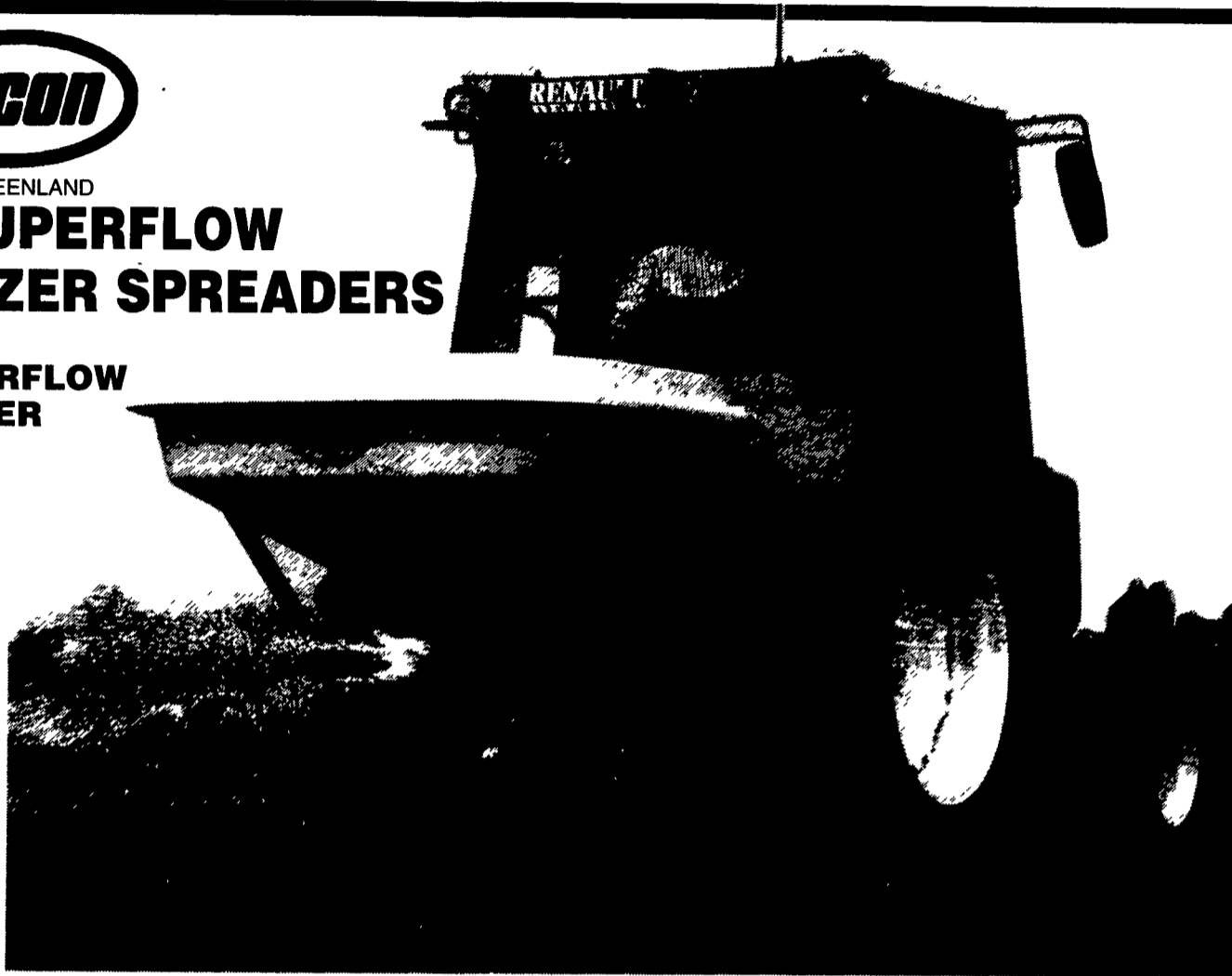


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