

CWSF 2013 - Lethbridge, Alberta



Nathan Kuehne

Biochar Optimization for Plant Growth

Challenge: Resources

Category: Intermediate

Region: Vancouver Island

City: Victoria, BC

School: Glenlyon Norfolk School

Abstract: Radishes, lettuce and peas were grown in varying proportions of biochar amended soil (0%, 10%, 30%, 50%) in order to determine the best growing conditions. Results indicated that radishes, lettuce and peas prefer 30%, 10% and 0% biochar, respectively. These results show that plant growth is dependent on pH, related to phosphorous availability in the soil. Implications for agricultural practice and commercialization are given.

Biography

I live in Victoria, British Columbia, and have attended Glenlyon Norfolk School since kindergarten. My interests include piano, Ukrainian dance, languages, tennis and basketball. I have received awards for academic achievement, public speaking and dance. My life-long interest is space and engineering, and I have attended summer camps in Europe, the United States and Canada that focused on language development and space. The inspiration for my project came from a conversation with my parents, both of whom are avid gardeners. Our family has used charcoal to amend soil used for growing fruits and vegetables, but with mixed results because the optimal proportions were unknown. Curious about this question, I pursued the scientific literature, and found no clear answer, so I decided to do my own study on the topic! I would definitely enjoy doing another science fair project to either expand on the findings of this experiment, or pursue another scientific unknown. My advice to students thinking about doing a project is: absolutely, go for it! Although it can be great deal of work, once you are done, and you have the opportunity to present your work, it is all worthwhile and you will have learned so much!

| Awards | Value |
|--|---------|
| Excellence Award - Intermediate - Silver Medal | \$300 |
| Sponsor: Youth Science Canada | |
| Western University Scholarship | \$2 000 |
| Silver Medallist - \$2000 Entrance Scholarship | |
| Sponsor: Western University | |
| Total | \$2 300 |

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 416-341-0040

CWSF 2013 - Lethbridge, Alberta



Lisa McQuarrie

Does Armouring Protect or Harm Our Beaches?

Challenge: Environment

Category: Intermediate

Region: Vancouver Island

City: Victoria, BC

School: St Margaret's

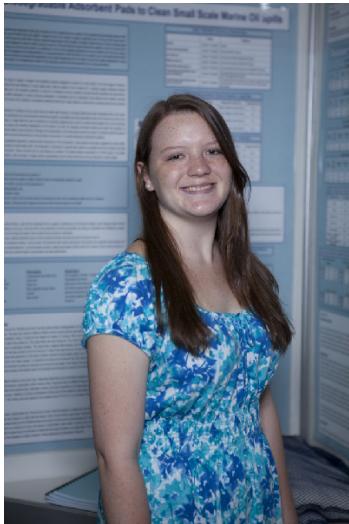
Abstract: Both a controlled model beach experiment and a full-scale beach experiment were conducted to determine the impacts of foreshore armouring on a sandy beach near Victoria. The results show that foreshore erosion is a critical component of natural beach processes. Armouring the foreshore can remove the sand source and increase beach erosion. When coupled with climate change, implications on foreshore development can be severe.

Biography

My name is Lisa McQuarrie. I attend St. Margaret's School in Victoria, and after graduation plan to study physical sciences or engineering. I enjoy running, cycling, soccer and field hockey. One of the most memorable experiences I have from last year is the week I spent with my school becoming a certified scuba diver, which was very challenging but still an amazing undertaking. For Science Fair, I wanted to do a project regarding the effects of climate change. Living on the coast of BC, rising sea levels could have a significant impact on our communities. I have worked on this project for two years, monitoring a popular Victoria beach with dynamic processes. Future investigations could be expanded to include other beaches to determine if results are similar. I would advise other students to start their projects early, in order to gather more results. Also, ensure your topic is something you are passionate about.

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Vicki Kleu

Fully Biodegradable Adsorbent Pads to Clean Small Scale Marine Oil Spills

Challenge: Innovation

Category: Senior

Region: Vancouver Island

City: Victoria, BC

School: Lambrick Park Secondary

Abstract: A reusable and fully biodegradable pad was built to adsorb spilled outboard motor oil in our harbors. The pad, currently being patented, adsorbs nearly fifty times its weight in motor oil and 90 to 95% of this oil can be easily wrung out. An additional 3 to 5% of the oil could be washed out of the pad using a canola oil rinse.

Biography

My name is Vicki Kleu. I am a grade 11 student from Victoria, BC. I've lived in Canada for six years. My South African accent, though still present, is now mingled with a Canadian drawl. This is my fifth year participating in science fair and my third time attending the CWSF. I now spend more waking hours in a lab during science fair season than in my own house. When not in the lab, I can be found actively engaged in leadership projects or in the dance studio. Though my career choices are pointing me toward oncology or cardiology, I am also passionate about the health of our oceans. This year I successfully produced a reusable and fully biodegradable pad capable of adsorbing fifty times its weight in spilled outboard motor oil. Currently I am patenting my work and hoping to make the pads readily available to marinas throughout the world.

| Awards | Value |
|--|---------|
| Excellence Award - Senior - Silver Medal | \$300 |
| Sponsor: Youth Science Canada | |
| Dalhousie University Faculty of Science Entrance Scholarship | \$2 500 |
| Senior Silver Medallist - \$2500 Entrance Scholarship | |
| Sponsor: Dalhousie University, Faculty of Science | |
| UBC Science (Vancouver) Entrance Award | \$2 000 |
| Senior Silver Medallist - \$2000 Entrance Scholarship | |
| Sponsor: The University of British Columbia (Vancouver) | |
| University of Ottawa Entrance Scholarship | \$2 000 |
| Senior Silver Medallist - \$2000 Entrance Scholarship | |
| Sponsor: University of Ottawa | |
| Western University Scholarship | \$2 000 |
| Silver Medallist - \$2000 Entrance Scholarship | |
| Sponsor: Western University | |
| Total | \$8 800 |

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Lauren Ebata

Oil in the Undergrowth

Challenge: Environment

Category: Junior

Region: Vancouver Island

City: Victoria, BC

School: St Margaret's

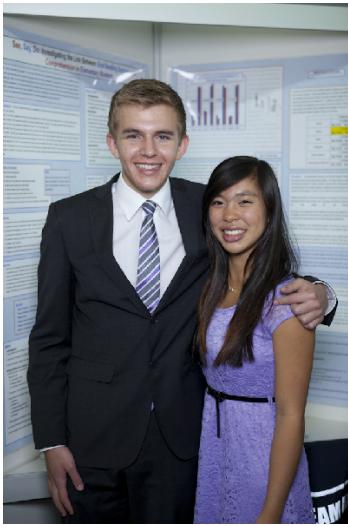
Abstract: Motor oil, kerosene, gasoline and a mix of all three were placed on trays containing moss, fern and grass and monitored over a 2 week period and compared to an untreated control. The reaction to the treatments varied by plant species. These results suggest that the reaction by different plants to a range of oil distillates is variable.

Biography

I'm a 12 year old girl from Victoria B.C. I go to Saint Margaret's School and some classes I really enjoy at school are science, sewing and social studies. I enjoy playing tennis, badminton, soccer and doing archery. I play fiddle, and I play alto saxophone in school for band class. I love to draw, paint and write in my free time, as well as play Minecraft, watch the TV shows "Elementary", "Arrow" and "How it's Made" and take photographs. I'm a really environmentally oriented person and I love to inspire others to learn to love the Earth. I got the inspiration for my project from the news when it was announced that an oil pipeline was proposed to be built from Alberta to B.C.'s northern coast. In further investigations, I would like to discover ways to help people with busy lives reduce their ecological footprint and environmental impact by using new inventions and technology. In the future I would like to become an ecological engineer. For others that are thinking about doing a project, I advise them to do a project relating to what they are passionate about, because loving what you do is key to being confident.

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Andrea Chan, Matt Treble

See, Say, Do - A Plan to Improve Reading Comprehension in Young Readers

Challenge: Discovery

Category: Intermediate

Region: Vancouver Island

City: Victoria, BC

School: Lambrick Park Secondary

Abstract: Stories were written at the grades 1, 3, and 5 levels. All stories had ten comprehension questions associated with them. The grades 3 and 5 stories had manipulatives including an introduction read to the students, photographs or models. Percent oral reading success was compared with comprehension. We are currently checking to see if hearing the story prior to reading it aloud improves comprehension.

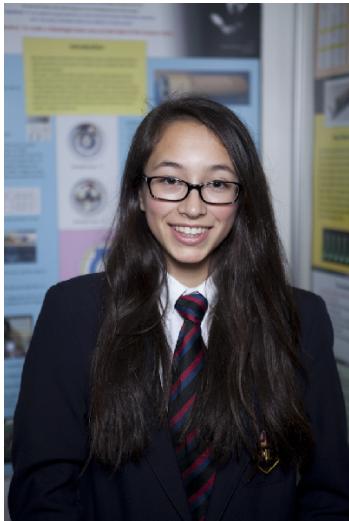
Biographies

Andrea - My name is Andrea Chan and I am a grade 10 student at Lambrick Park Secondary School. I love science fair. This is my second time attending the Canada Wide Science Fair and I am so excited to be going again. This year's project is a continuation of last year's project. My partner Matt and I are trying to improve the link between fluency and comprehension in early readers. Even though primary age students have high oral reading success they don't understand retain the information or possibly don't understand what they have read. I am not a total nerd. I am a competitive rower. This is my second year rowing and I absolutely love it. I also love... Matt - My name is Matt Treble, and I am a grade 10 student at Lambrick Park Secondary School. My partner, Andrea Chan, and I have done an expansion on our last year project, "Big or Small; Narrow or Wide", and this year we were looking at ways to improve reading comprehension in elementary readers, while investigating the relation between reading fluency and comprehension! Other than spending most of my time being nerds with Andrea, I play the piano and guitar. Also, I like to run and swim, and have been training to be a lifeguard and recently got my NLS. I volunteer at a local library helping kids read in a program called "Reading Buddies", while a...

| Awards | Value |
|--|---------|
| Excellence Award - Intermediate - Gold Medal | \$700 |
| Sponsor: Youth Science Canada | |
| Western University Scholarship | \$4 000 |
| Gold Medallist - \$4000 Entrance Scholarship | |
| Sponsor: Western University | |
| Total | \$4 700 |

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Ann Makosinski

The Hollow Flashlight

Challenge: Energy

Category: Intermediate

Region: Vancouver Island

City: Victoria, BC

School: St Michaels University School - Senior

Abstract: Using four Peltier tiles and the temperature difference between the palm of the hand and ambient air, I designed a flashlight that provides bright light without batteries or moving parts. My design is ergonomic, thermodynamically efficient, and only needs a five degree temperature difference to work.

Biography

Hi, my name is Ann Makosinski. I go to St Michaels in Victoria, and am in grade 10. I got the inspiration for my project when I found out humans are actually like 100 watt walking light bulbs. We have so much thermal energy in us, so why aren't we using it? For further investigations, I plan to make my flashlight smaller, brighter, and more efficient. My advice to future Science Fair participants would be to try to think of something original, because you usually get the most out of it, as you have to learn everything from scratch. Other than experimenting with electronics, I enjoy reading, acting, doing English accents, telling puns, eating cheese, field hockey, and editing and directing movies/plays. I have gotten second place in my category in grade 6 for the Vancouver Island Regional Science Fair, first place in grade 7, third place overall in grade 9, and this year I placed 2nd place overall. I also have won numerous awards (and cash!). My notable experiences in my short life so far have been meeting Joshua Bell, eating mealworms, and of course, discovering the world of innovation.

| Awards | Value |
|--|---------|
| Challenge Award - Energy - Intermediate | \$750 |
| Sponsor: Youth Science Canada | |
| Excellence Award - Intermediate - Gold Medal | \$700 |
| Sponsor: Youth Science Canada | |
| Western University Scholarship | \$4 000 |
| Gold Medallist - \$4000 Entrance Scholarship | |
| Sponsor: Western University | |
| Total | \$5 450 |

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science is serious fun

Youth Science Month
Mois des jeunes scientifiques

MARCH 2013

Celebrate Canada's Young Scientists!

Every fall, Youth Science Canada calls on students across the country to take up the challenge of doing a science project. More than half a million will do a project this school year and about 25,000 of these will compete in one of 100 regional science fairs held across Canada this winter and spring.

The Canada-Wide Youth Science Challenges target seven issues that matter to Canadian youth, the future of our country and the world – Discovery, Energy, Environment, Health, Information, Innovation, and Resources. Young Canadians are making the world a better place by doing a project.

Along the way, they tell us, they learn a lot, make friends, challenge themselves, and have fun as they “do real science.” And with nearly \$1M in awards, prizes, trips, and scholarships available, it’s serious fun!

Youth Science Canada has proclaimed March as Youth Science Month. At press time, Youth Science Month has also been proclaimed or endorsed by British Columbia, Manitoba, Northwest Territories, Prince Edward Island, and Saskatchewan.

We invite schools, teachers, students, and families to join us in celebrating the imagination, initiative and innovation of Canada’s young scientists by visiting their local science fair. To find the fair closest to where you live, see the back of the enclosed poster, or visit youthscience.ca and click on **Find Your Fair**.



Youth Science Canada
Sciences jeunesse Canada

MARCH is
YOUTH SCIENCE
MONTH

Proclamation

Youth Science Month in Canada

Whereas over 500,000 children and youth across Canada will be participating in local and regional science and technology fairs in every part of the country in March, and

The very best of these participants will earn the right to compete in the Canada-Wide Science Fair, our annual national championships, under the auspices of Youth Science Canada, and

All of these young scientists have worked diligently to produce projects that demonstrate Innovation, Initiative and Imagination, and

It is in the best interests of young people to acquire knowledge and skills in science and technology in order to better understand the world and to further their education and future career prospects, and

It is in the best interests of our society and our economy to support the creation of an innovation culture and the nurturing of a generation of scientifically literate young people who will push forward the boundaries of our knowledge and improve the quality of our lives in the future, and

All Canadians should be supporting and celebrating our young scientists.

Therefore, Youth Science Canada proclaims that March 2013 is

Youth Science Month in Canada

So proclaimed March 1st, 2013 by
Youth Science Canada
Len Reimer, BEd, MEd
Chair

Are your students learning Smarter Science?

Your students could be *DOING* science, not just talking about it!

Smarter Science is a framework for K-12 science teaching and learning, and for developing the skills of inquiry, creativity, and innovation in any curriculum unit. Students in Smarter Science classrooms learn to DO science – not just talk about it – by questioning, and investigating. Smarter Science is used by thousands of teachers – in every grade – who are engaging their students in real science.

Smarter Science workshops prepare teachers to successfully implement scientific inquiry in their classroom. Our team has trained teachers from coast to coast – in English and French. We currently offer three full-day workshops:

1. Introduction to Smarter Science
2. Assessment and Evaluation of Inquiry
3. Innovation and Creativity through Inquiry

continued overleaf

In this mailing

Please post or share this newsletter and the contents of this mailing with your science colleagues and students:

Eureka! Canada poster: Canadian Institutes of Health Research's Eureka! Canada Facebook page highlights Canadian health researchers.

Youth Science Month poster: Youth Science Canada's invitation to submit a project, sign up as a volunteer or judge, or visit your local science fair, lists over 100 regional fairs from coast to coast to coast

Canada-Wide Youth Science Challenges

Youth Science Canada wants to engage youth in inquiry and critical thinking through science by answering a question or solving a problem that focuses on issues that are important to them, Canada's future and the world.

Discovery

Create new fundamental knowledge based on your curiosity by asking a question and using the techniques of scientific inquiry to develop an answer.

Energy

Improve our use of current energy sources, enable the transition to alternative energy sources, or reduce our energy footprint.

Environment

Reduce our impact on, improve our understanding, and ensure the quality of water, air, soil, and the diversity of living things.

Health

Increase our understanding of the human body, or apply science and technology to improve health, control disease, or support an aging population.

Information

Enhance communication and our use of information using digital and networking technologies, or applications of new media.

Innovation

Combine scientific principles with your creativity to develop a new material, structure, device, or system to solve a problem or improve an existing solution.

Resources

Develop better ways to use our natural resources that provide sustainable sources of food, products, or prosperity.

Canada-Wide Science Fair 2012 Platinum Award Winners

A week-long national event each May, the Canada-Wide Science Fair (CWSF) brings together 500 top young scientists from grades 7-12 (Sécondaire I-V and Cégep in Québec) from across the country to compete for \$1 million in cash, scholarships and exclusive science opportunities. These finalists are selected at the 100 regional science fairs across the country, mostly in March and April, leading up to the national competition.

Below are profiles of the three Platinum Award winners at CWSF 2012 held in Charlottetown, Prince Edward Island.

For information on CWSF 2013 in Lethbridge, Alberta, May 11-18, visit cwsf.youthscience.ca.

La quête de l'ombre jovienne

Everyone knows that the sun casts a shadow during the day. At night, you might have noticed that the moon and Venus are bright enough to cast shadows, but Laurent Joli-Cœur (15) of Montreal wondered whether Jupiter, the next brightest object in the night sky, could also be shown to do this. The challenge brought together his two passions – astronomy and photography – in a quest to be the first ever to demonstrate this phenomenon.

Over the course of eight months he designed, built, and tested a device – like a sundial combined with a digital camera – that he could accurately aim at Jupiter. When it was finally ready, he took a series of time exposures over the course of a long, sleepless, and

frosty November night in the Mont-Mégantic International Dark Sky Reserve east of Sherbrooke.

It worked, but to be sure, he rotated the apparatus slightly, and the shadow moved, demonstrating that the light was coming from a single point. He also pointed it away from Jupiter and found no shadow, eliminating the possibility that the shadow was caused by the overall glow of the night sky.

Laurent won a total of five awards at CWSF 2012, including the Discovery Challenge Award (Intermediate), Platinum Award for Best Intermediate Project, and the Best Project Award, presented by BlackBerry.



Laurent Joli-Cœur
Secondary 3 (Grade 9)
Collège Jean-de-Brebeuf
Westmount, QC

Computational Methods for the Screening of Novel Neuraminidase Inhibitors



Eric LeGresley
Grade 11
St. John Brebeuf School
Chilliwack, BC

Eric LeGresley (15) of Chilliwack, BC first became interested in anti-virals following the 2009 H1N1 flu outbreak. Influenza viruses cause illness ranging from "the flu" to deadly pandemics, but as these viruses become more resistant to current antivirals, new ones need to be developed.

The traditional lab-based approach to identifying and testing antivirals is slow, tedious, and expensive, so increasingly researchers are turning to computers to design and test candidate drugs. As part of a concurrent studies program between his high school and Simon Fraser University, LeGresley developed a computational chemistry algorithm to assess how well a potential antiviral will prevent an influenza virus from proliferating. His algorithm reduces the screening time from six months to a half-day.

In addition to the Platinum Award for Best Senior Project, presented by BlackBerry, the 15 year-old grade 11 student won the Innovation Challenge Award (Senior), a Manning Young Canadian Innovation Award, and entrance scholarships to five Canadian universities. He notes, "This kind of research is exciting because you can see its significance for the real world. My two pieces of advice for other students pursuing research are: work hard and have fun."



Maya Burhanpurkar
Grade 8
Codrington Public School
Shanty Bay, ON

When 13 year-old Maya Burhanpurkar's grandfather passed away after years of suffering from Alzheimer's disease, the grade 8 student decided to learn more about the disease and potential cures. She read that Alpha Lipoic Acid and Melatonin, both non-prescription supplements, had recently been shown to slow the formation of fibrils in the brain that are characteristic of Alzheimer's disease, but wondered whether these substances might aggravate heart or digestive problems that also affect elderly populations.

As there were no published studies on the cardiac or gastrointestinal effects of the two substances, she set out to design two experiments that could be done at home. She tested cardiac safety using water fleas (*Daphnia*) and gastrointestinal safety using *Lactobacillus acidophilus*, bacteria found in the human gut – and commonly used to make yogurt.

She found that both substances appear to be safe for the heart, Melatonin appears safe for the digestive system, but Alpha Lipoic Acid would likely cause gastrointestinal issues.

Maya won the Platinum Award for Best Junior Project, presented by BlackBerry, as well as the Discovery Challenge Award (Junior), The Actuarial Foundation of Canada Award, and a Western University entrance scholarship.

Are your students... continued

Get started with Smarter Science:

- Book a professional development workshop for your school or school board at competitive rates;
- Order classroom-ready framework posters, Steps to Inquiry poster sets, and the 54-page teacher resource booklet, *Introducing the Framework at smarterscience.ca*;
- Download free PDF versions of the framework poster, *Steps to Inquiry* poster sets and *Introducing the Framework* at smarterscience.ca;

- Join the Smarter Science online community of educators who share inquiry-based teaching/learning experiences and resources;
- Invite us to your provincial science teacher conference;
- Participate in our annual summer institute.

All resources and workshops are available in English and French.

For more information, visit smarterscience.ca

To book a workshop, call our toll-free number: 866-341-0040.



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CIHR IRSC

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is published each March by Youth Science Canada for Canadian educators.

Youth Science Canada exists so Canadian youth are engaged through science in inquiry and critical thinking. To learn more about our programs, visit youthscience.ca.



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CWSF **ESPC**
Canada-Wide Science Fair Expo-sciences panquébécoises

May 11-18, 2013
Lethbridge, Alberta

Youth Science Canada's
52nd annual
Canada-Wide Science Fair

University of Lethbridge
1st Choice Savings Centre
Lethbridge Alberta

School groups* and public welcome:

Sunday May 12 - 2:00pm-4:30pm

Monday May 13 - 9:00am-12:00pm

Thursday May 16 - 9:00am-12:00pm

Friday May 17 - 9:00am-12:00pm

*(Mon. & Thu. - advance booking required)

cwsf.youthscience.ca

Photo credits: John Hasyn, André Van Vugt/Giant Vision