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Carbon Dioxide Used To Increase Orchard Yields

(BACKGROUNDER: During a recent conversation, James Warren a loyal subscriber, from New Prospect, referred to the following article he read in a California based farm publication. He then got his daughter Tanya, Amherst to send the article and accompanying photo. We realized many of our readers would like to learn how CO2 is being captured in California).

Can you double or even triple yields by swamping orchard crops with CO2? Brian Kolodji may have the way to do it. He floods orchards with diluted CO2, several times higher than that in ambient air, and keeps it there for extended periods.

Researchers and greenhouse growers have long shown high levels of CO2 can boost yields, sequester carbon and improve water use efficiency in crops by 10 percent. Kolodji's simple process lowers costs by a factor of 20.

In addition to reduced costs, Kolodji hopes to match or exceed results from a previous 17-year FACE study with CO2 in citrus. It demonstrated a 70 percent increase in yield on average. "If you took out the first 6 years when the new trees were maturing, the yield increase was 100 to 200 percent," says Kolodji.

He notes that the citrus research was at a low level of enrichment, only 550 parts per million (ppm) versus CO2 levels in ambient air of 400 ppm. He has delivered as much as 1,500 ppm for 8 hrs. in multiple trees. "We've proven it can be done and more cost-effectively than ever before," says Kolodji. "Our process brings the cost down to less than \$1,000 per acre, compared to the \$2 to \$3 million an acre cost in the citrus study. Eventually, I expect to lower it to less than \$500."

Kolodji has multiple patents on the process, but his prototype system installed in a California almond orchard is seemingly sim-

ple. Exhaust from a propane generator and several vehicles is collected and fans funnel it through a system of ducts. The cooling system uses water from a children's pool, a

pump, a sprinkler and a condenser. Flexible tubes distribute the CO2 into the tree canopy. Passing the CO2 through the water vapor cools the hot exhaust gas down to 80 degrees. The condensation process also takes water out of the flue gas. This raises the molecular weight of CO2 above that of air. When

distributed around trees, the heavier CO2 displaces the air, and the multiple distribution points reduce the velocity of the gas.

"The trees act as baffles, reducing air movement, and the distribution reduces the velocity of the gas," says Kolodji. "We point it into the trees where it hovers and then slumps to the ground for extended periods." While the system has been shown to work, application of the CO2 has not been consistent enough to prove yields. The next step is to utilize flue gas from a refinery across the street from the orchard. Currently, the refinery sends up to 200,000 tons of CO2 up its stacks each year.

"We propose to use the flue gas in the orchard," says Kolodji. "We could use it to feed CO2 to 1,000 acres." Initial work on the project was financed in part with a \$100,000 grant from the state of California. Kolodji is seeking additional funding to access the refinery's exhaust and prove increased yields with his system.

"If we could get CO2 from refineries, we could swamp our orchards," he says.

Contact: FARM SHOW Followup, Brian Kolodji, 8200 N. Laurel Glen Blvd. #1408, Bakersfield, Calif. 93311 (ph 713-907-8742; bkolodji@sbcglobal.net)

Community Development – Special Projects

By Paul Smith

Active Communities / Special Projects

- The Multisport Program has been successful with a strong group of young leaders providing assistance. A few sports needed to be adjusted due to ice time issues in the evenings, but other facilities have stepped up to assist.
- The Department will be lending snowshoes to community groups, individuals, and families.
- The Mayors Challenge Curling Event will be back after a hiatus with COVID. The event will be held on Saturday, February 18th at the Brookfield Curling Club.
- The Facility Access Program is operating again this year and more schools are taking advantage to engage youth into various recreation facilities during the school year. The Recreation Department has received external funding to

help offset costs of this Program.

- The Department is finishing a funding application to the Province for an MPAL position (3-year term) in Tatamagouche, intended to establish a recreation position with the Village of Tatamagouche. The committee has met with the Village who have approved the physical activity strategy and advancing local recreational needs.
- The Recreation Department will be partnering with organizations to host several events in the new year such as the annual Easter Egg Hunt, Along the Shore Winter Carnival, Long John Festival, Step into Spring, and holiday skates at various arenas.
- The Sport Hub was successfully launched on April 1, 2022, with fifteen organizations now hosted on the site as well as an online payment option for

Colchester Recreation. Over the winter, plans will be made to encourage broader use with other organizations (www.mysporthub.ca).

- Funding for the Afterschool program has been approved again this year. Each partner (Town of Truro, Village of Bible Hill, Millbrook, Town of Stewiacke, and Municipality of East Hants) are working towards having individual programs up and running in the new year.
- Fundy Connect (Recreation Data Base) and NS Connect have been working to make the sites more accessible and user friendly. The Committee has been updating records as efforts are being made to revamp the system with a view to being more consistent with the Sport Hub data base.

The Shoreline Journal Tid-Bits

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Making Homes in Mi'kmaw Communities Energy Efficient

Additional funding from the Province and federal government will ensure all homes in Nova Scotia Mi'kmaw communities can get free energy efficiency upgrades. This will be the second phase of the Mi'kmaw Home Energy Efficiency Project, with \$12 million invested so more than 1,000 more homes can be upgraded. In Phase 1, an estimated 1,200 homes were upgraded with \$14 million in provincial and federal funding.

"With this additional investment, we're making homes in Mi'kmaw communities more energy efficient so residents can save money and help fight climate change," said Tory Rushton, Minister of Natural Resources and Renewables. "We have had great success with the first phase working in partnership with Mi'kmaw communities and our aim with this second phase is to reach all the remaining homes by 2027."

Efficiency Nova Scotia delivers the project for privately owned and band-owned homes in all 13 Mi'kmaw communities across the province. Participants get an assessment and energy-saving upgrades installed at no cost. Upgrades include draft-proofing, insulation and heat pumps. The project helps cut home energy bills, improves the comfort and resilience of homes, reduces greenhouse gas emissions and creates local, green jobs.

RCMP Charge Youth in School Threat Investigation

Colchester County District RCMP has charged a youth relating to a threats investigation involving the Bible Hill Junior High School in Bible Hill. On November 21, 2022, at approximately 11:45 a.m., Colchester County District RCMP received a report of a threat being made towards the Bible Hill Junior High School in Bible Hill. The threat indicated violence would occur on November 23 at the school.

On November 22, Colchester County District RCMP executed a search warrant at a home on Brookside Rd. in Valley. RCMP officers safely arrested a 14-year-old youth, who was held in custody. During the search, RCMP officers located and seized documents and electronic devices.

The youth has been charged with Uttering Threats and has appeared in Truro Youth Justice Court. The investigation is ongoing.

Mass Casualty Commission Update- December 8, 2022

This update includes information about a document that has been added to the Commission website.

This week, we signed an order to mark an exhibit outside of public proceedings. A letter from the Transition House Association of Nova Scotia (THANS), written in response to a letter from the Department of Justice (Canada), is now available on the Commission website as part of the public record. You can access this document in the Source Materials library by filtering your search using keywords of your choosing, or by searching for the COMM number below:

COMM0065782: Letter sent to the Commission on behalf of the Transition House Association of Nova Scotia (THANS) in response to September 14, 2022 Remarks of Emily Stew-

art (COMM0065584).

We are making progress on preparing our final report, and are on track to share it publicly by March 31, 2023. We will continue to keep you updated as we make progress on our work, and / or if documents are added to our website.

You can sign up to receive these updates by visiting the home page of our website. A reminder that if you or someone you know needs help, please make use of the wellness support resources listed on our website. We thank everyone for their continued commitment and interest in the work of the Commission.

Sincerely, The Mass Casualty Commission: Hon. J. Michael MacDonald, Chair; Leanne J. Fitch (Ret. Police Chief, M.O.M. and Dr. Kim Stanton

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JD MacLean & ASSOCIATES jmaclean@eastlink.ca
128 Oakwood Drive Truro, NS B6L 1N4
902-893-3466

Print Layout/Correction
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