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**NOTE - Attached to this release is a photo that is free for media use. Caption: Pictured from left, CCOVI researcher and Brock professor Gary Pickering has been working with research students Stephanie Small-Kelly and Margaret Thibodeau on projects that will help grape growers and wine makers to overcome the challenges presented to the industry by climate change.*

Wine grapes can be early predictor of climate change impacts

A Brock University scientist says wine grapes are a “canary in the coal mine” for climate change’s impact on agriculture.

New [data from NASA](#) shows Earth has just experienced the second-hottest March in the 137 years records have been kept. As climate change slowly moves the temperature higher, the agriculture sector is keeping a close watch.

Gary Pickering says the vineyards sprawling across Niagara can serve as an early warning system for how increasing warmth is affecting agriculture. Wine grapes are good monitors of climate change impacts because of the “narrow geographic and climatic range required by most wine grape varieties,” Pickering says.

“Within these bands, baseline changes to any one of the key weather factors – such as heat units during the ripening season, absolute temperatures or rainfall patterns – can significantly affect grape and wine quality and sustainability,” says Pickering, a Biological Sciences professor who is also a researcher at Brock’s Cool Climate Oenology and Viticulture Institute (CCOVI) and member of the Environmental Sustainability Research Centre at Brock.

Extreme weather events and dramatic temperature swings during the growing season can harm fruit quality, while extreme cold snaps during warmer-than-normal winters threaten the very survival of grapevines. Increased levels of CO₂ in the air have the capacity to attract new strains of disease-carrying insects.

By working closely with the research community, innovative Canadian grape growers and wine makers are identifying and working on solutions to these challenges.

CCOVI researchers are pleased the federal government has allotted \$70 million in its 2017 budget for discovery science aimed at tackling climate change challenges. That builds on the \$30 million that was earmarked for similar research in 2016.

“I’m very excited by the news,” said Pickering, who has been part of a diverse team of experts that researches early warning systems to combat damaging cold weather events, off-vine grape ripening to overcome variability in growing seasons, new types of wine and production methods, and better clone and rootstock combinations of varieties that will thrive in future conditions.

“Increased frequency of extreme weather events looks to be one of the biggest challenges to the industry and it’s important that this fund be used to help support, maintain and even grow our grape and wine industry.”

CCOVI director Debbie Inglis said the institute’s team of scientists are well-suited to lead and partner on projects that mitigate the effects of climate change on local vineyards and capitalize on new opportunities through innovate grape growing and wine making strategies.

“CCOVI has long established itself as an innovator in the grape and wine industry, including research into climate change adaptiveness,” she said. “Our VineAlert program is a key example of this innovation, saving growers millions of dollars a year from the damaging impact of extreme cold weather events, and helping to ensure a stable grape supply.”

CCOVI’s senior staff viticulturist Jim Willwerth, whose research focuses predominantly on freeze protection and improving grapevine cold hardiness, is one of the primary investigators, along with Inglis and CCOVI Professional Affiliate Kevin Ker, from the Institute’s innovative VineAlert program.

It operates like an early warning system for grape growers, offering real-time temperate information about their grape buds’ ability to survive cold temperatures over the dormant season from October to April. This crucial information helps growers determine when protective actions such as wind machines are needed to prevent cold injury to the grapevines.

The system was lauded by the Council of Ontario University’s Research Matters campaign as one of the top 50 most ‘game-changing’ research partnerships across the province.

CCOVI also had climate change opportunities and challenges at front of mind in its annual lecture series, where fellows such as climatologist Tony Shaw discussed the evolution of Canada’s wine appellations as we undergo significant shifts in climate patterns.

With more than 18,000 acres of planted grapes across the province and an economic impact of more than \$4 billion, Willwerth said it makes sense to funnel research dollars into projects that help the grape and wine industry tackle challenges associated with a warming planet.

“Environmental changes are going to impact not only grapevines, but winemaking production – the style, quality and everything that goes into that,” he said. “Understanding short-term weather events’ impact on plants will lead to innovative solutions for the future.”

A video featuring Prof. Gary Pickering commenting about his research is available and free for media use. It can be found on YouTube at youtu.be/6_Ly2ubAMA4

For more information or for assistance arranging interviews:

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