



Maple Risk and Adaptation Case Study 1: ICE STORM EVENT

SIDELANDS SUGARBUSH PUTNEY, VT

Dana Ruppert, Extension Outreach Professional



Managing risk and creating strategies to mitigate it involves identifying what some of the prospective risks to a business are. There are five key **RISK MANAGEMENT AREAS OR RISK TYPES: PRODUCTION, MARKETING, FINANCIAL, LEGAL, AND HUMAN** that are considered the primary sources of risk. This case study looks at the risk to production and the related implications of a severe weather event. Production risks include: weather or climate issues, pests, disease, and equipment efficiency.

More information about risk management can be found in this resource: <https://www.rma.usda.gov/about-crop-insurance/managing-your-farm-risk>

BUSINESS BACKGROUND

Dan Crocker has been sugaring for over 40 years, and started Sidelands Sugarbush in Putney, VT in 1982. He operates on 303 acres which are owned, and an additional 22 acres leased from neighbors and family members in a handshake arrangement. The sugarbush has extensive, well-maintained road access and power on-site, at the sugarhouse, which is located a short drive into the property from a main roadway. The business is certified organic.

Sidelands Sugarbush is currently at 21,600 taps, having dropped down from a high of over 24,000 taps through forest stand thinning and transitioning to newer tapping guidelines which suggest utilizing a single tap per tree. Dan believes these production strategies and the adoption of newer monitoring technologies in his operation have helped him maintain over 7 lbs/tap over the last three years (up from an average of around 4 lbs/tap about five years ago).

In addition to himself, Dan has one other year-round employee and brings in a locally-hired crew for a few months to begin tapping out each season. That work begins in December each year.

MARKET CHANNELS

Sidelands Sugarbush sells primarily in bulk to maple outfits in OH, NY and NH, and to a local VT restaurant. The companies' buyers pick up drums of syrup in their own trucks, so Dan doesn't have to contend with the logistics of hauling sap himself. He makes a few syrup deliveries to the local restaurant, which is his only other wholesale channel, and has no retail component to the business.

According to Dan, demand for syrup remains steady, so that the price set by the Quebec Maple Syrup Producers (QMSP) and adjusted for USD-CAD exchange rates remains good, and most packers will pay the same price.



Dan Crocker in an area of his sugarbush that was damaged in the 2008 ice storm

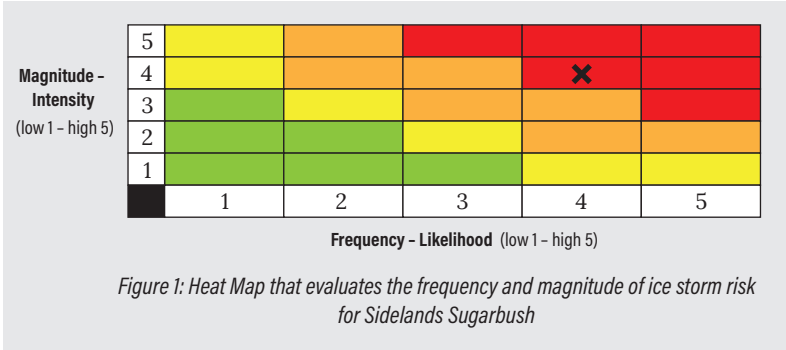
RESOURCE OVERVIEW

Sidelands Sugarbush primarily faces East and Northeast, with some acreage slightly North facing in aspect. Some maple stands at higher elevations are more mature than lower stands, with many large-diameter trees. Overall, this is a high quality, healthy sugarbush with limited invasive pressure.

Four pump stations deliver sap to the sugarhouse, so there is no hauling of sap within the sugarbush. All sap is concentrated using reverse osmosis (RO). All mainlines are equipped with remote vacuum level monitors, to detect leaks.

The arch setup is high-pressure steam with an oil-fired boiler. The business utilizes a 75 kW diesel generator for backup operation in the sugarhouse, ensuring that sap can be pumped and syrup produced in the event of a power outage.

The following Heat Map chart indicates this producers’ estimation of the likelihood and magnitude of another event taking place.



ASSESSMENT, ESTIMATION OF LOSSES AND RECOVERY

Dan estimates the cost to clean up was somewhere in the \$3,000 – \$4,000 range (paying \$18/hour to a chainsaw crew in 2008; now the going rate is about \$30/hour).

He called in a crew of five people to begin cleanup work immediately after the storm. He made the decision to respond quickly as there were several snowstorms forecasted, and he was concerned about being able to get the job of recovery done. This decision benefited him, as he was able to get the sugarbush cleaned up — downed tree limbs cleared, tubing picked up and re-installed, trees re-tapped before successive storms dropped almost two feet of new snow.

According to Dan, cleanup would have been more costly and taken significantly more time and labor to repair, had he not acted quickly. Other area sugarmakers who waited to begin cleanup were faced with a tangle of debris and infrastructure buried under considerable snow. Dan relayed that some sugarmakers had to purchase new tubing to get into operation, because they simply couldn’t access theirs under so much snow and debris.

The business also received a small amount of financial assistance through the Environmental Conservation Program (ECP) which is administered by the USDA Farm Service Agency (FSA), and is available after a natural disaster to help producers mitigate the impacts and get back into operation. Dan applied to the program for help in offsetting the clean-up and recovery costs from the ice storm.



Section of mainline in sugarbush

THE DISRUPTIVE EVENT: ICE STORM

One of the worst ice storms to hit the New England region in decades was the December 2008 ice storm that caused widespread damage and power outages throughout the region. It occurred at the beginning of the sugaring season, when many maple producers were in the process of tapping out their sugarbushes.

The areas that sustained the most damage at Sidelands Sugarbush were in the 1,100–1,350 elevation range. In Dan’s experience, this is the case in most ice storms, where more extensive freezing and ice buildup is likely to occur at higher elevations.

During this event, an estimated 80% of trees lost some branches. The biggest, most mature trees saw the most damage, with about a dozen maples being uprooted.

According to Dan, ice storm events have a high likelihood of occurring again, and he’s experienced a few more since the major 2008 storm. The impact can be particularly problematic if ice events are followed by significant amounts of snow, as downed limbs and equipment can get buried, making clean up and recovery even more challenging. In addition, the operation has faced other weather events that result in similar damage, like a late-spring snowstorm in 2023 that deposited over three feet of wet, heavy snow across much of Vermont.



Dan pointing out debris and downed maple trees in damaged sugarbush

ADAPTATION TO NEW SYSTEMS OR REDUCED RISK MOVING FORWARD

Dan says ice storms have changed the way he runs his mainlines, because of the many broken mainlines experienced during the 2008 event and the frequency of unpredictable weather. He now takes more time to install his mainlines and has designed the system so that it can be repaired — and repaired quickly — when time is essential and there is potential to lose production. For example, he is using bigger wire on his mainlines and anchoring it differently, and installing it so that the ends can be loosened or tightened. Ease and speed of repair is the most important factor. This approach has a slightly higher up-front installation cost but yields savings in labor and lost production when damage occurs. Dan has also expanded his use of remote vacuum level monitors, which are now installed throughout the sugarbush, so that the operation knows in real time where any vacuum issues occur and they can be quickly addressed.

Monitor software allows for sugarbush sections and individual lines to be viewed on a map layer, for easy identification and repair planning. A large screen is mounted in the sugarhouse, where there is power and internet access, so they can keep a close eye on the system. Dan spent about \$60,000 on monitors at \$280 each, but says it's already saved him over \$200,000 in what would have been lost production, in addition to the extra time and effort previously expended chasing vacuum leaks.



Monitors throughout the sugarbush identify the location of vacuum leaks



Remnants of sugar maples toppled in the ice storm

Sidelands Sugarbush also maintains a diesel generator in the sugarhouse for backup power, so that sap collection and syrup processing can occur without disruption in the event of power loss, which is another major consideration for the operation.

Dan doesn't have insurance for his maple trees and would like to, however that is not something currently available in the insurance market. Federal programs offer insurance coverage for maple sap including coverage through the USDA FSA-administered Noninsured Crop Disaster Assistance Program (NAP) (catastrophic level only) or through revenue insurance programs like the Whole Farm Revenue Protection Program (WFRP) or the Micro Farm Program for smaller operations, both administered by the USDA Risk Management Agency.

Commercial insurance is available for maple syrup inventory, equipment, taps and lines if damaged, and other business-related infrastructure but usually not for clean-up costs after a weather event and not for damage to or loss of the trees themselves. 🍁

Find videos of Dan Crocker talking about Sidelands Sugarbush at the UVM Extension Maple YouTube channel at: <https://www.youtube.com/@uvmextensionmaple> or by using this QR code. Visit www.maplemanager.org for more maple resources.

