Forty Years of Observations
Sugaring in Vermont
Its Past, Present & Future

Presented By:
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LandVest, Inc.

• LandVest established 1968: Goal to meld forest science with the economics of sound land investment.

• National Firm with forest management in the Northeast and the Pacific coastal states. Manages over 2.5 million acres.

• Long history of providing oversight and management for sugaring enterprises.

• Services provided for sugaring clients and on lands clients lease.

• Have provided oversight on over 800,000 taps on an annual basis.

• Currently managing and overseeing sugaring operations on +/- 400,000 taps in Maine, Vermont & New York.

• FSC & SFI certified. Manage many organic certified sugarbushes
LandVest Timberland Division

- Offices serving Vermont found in:
  - Newport
    - 802-334-8402
    - 5086 US RT 5 Suite 2, Newport, VT 05855
  - West Stewartstown, NH
    - 603-246-8800
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  - Concord, NH
    - 603-228-2020
    - 1 Capital Plaza, Suite 300, Concord, NH 03301

- Staff includes 3 foresters and 3 GIS staff in Newport, 3 foresters, & a VT & NH licensed surveyor in West Stewartstown, and 2 foresters in Concord, NH
Carbo’s Personal History & Background

- BS Forestry 1977 University of Maine at Orono
- Consultant since 1978
- Involved in various capacities related to sugaring and sugarbush management since 1978. Sugared with neighbor 78, 79, & 80.
- Helped install some of the first tubing in Orleans County in 1978.
- Developed sugarbush leases and management standards for over 50 different leased bushes.
- Family 1927-Acre FSC certified Tree Farm in Glover & Greensboro. Is VLT Conserved. Sugaring is an option for the future, likely a lease.
Progression of Sugaring 40 Years of Observations

• Buckets & Horses:
  • Bushes often monocultures of sugar maple only
  • Often grazed to remove all understory and as component of agricultural use

• First attempts at developing sap infrastructure:
  • Galvanized pipes and dumping stations

• Initial Gravity Tubing Systems:
  • Black plastic “mainlines” and +/- 25 taps per lateral
  • Often a lack of layout to maximize flow

• Addition of Vacuum Systems:

• Dry and wet systems and intense tap/lateral management:
2006 Tubing Installation Northern Maine
2015 Tubing Installation Northern Vermont
Modern Industrial Sugarhouse
Silviculture and Site Quality

- Recognition that sugar maple monocultures were risky & unsustainable
- Best sites produce the most vigorous stands and highest production
- Thinning and stand preparation is advantageous
- Best Management Practices employed to protect soils and water quality
- Concerns about growth in red maple tapping
- Concerns about rush to tap
- Concerns about lack of thinning and site preparation
Site Quality Matters- Look for High Site Indicators
Tapping Stand w/ Low Site Quality & Stress
Thinning & Pre-commercial Treatments

• Tree vigor is key to sustainable production and maintaining a healthy and clear tapping zone.

• Recently more sugarbush development occurs without silvicultural preparation

• Once modern tubing systems are installed further silvicultural operations are generally limited
Overstory Thinning Practices and Challenges

• Limit damage to site and residual stand

• Opportunity to capture individual high value stems

• Retain 10-20% of non sugar and red maple species

• Select residual stems for quality as sugaring trees and lack of observed weaknesses

• Take care to protect advanced seedling and saplings for the future
Combined Thinning & Brushsaw Treatment
Thinned Stand with Tubing Installation
Un-thinned and Unprepared Installation
Tapping and Tree Vigor & Production

• Tubing allows far easier tapping and often leads to over tapping

• Tree vigor and long-term sustainability is driven by compliance with proper tapping standards

• Observing far more undersized trees tapped

• Observing more decline and mortality in bushes
Tapping Undersized Trees
Multiple Undersized Trees Tapped
Over Tapping Results in Decline & Mortality
Best Management Practices-Protect the Soil

• Larger sugaring operations now often require use of equipment year round.

• Soil damage, rutting, compaction and other negative impacts can lead to reduced site quality, root damage resulting in lose of vigor and production

• Planning of roads and trails is crucial to avoid damage.

• Compliance with best management practices to protect soil and water quality is very important.
Developments Challenging Management

These challenges have become significant and impactful:

- Insect pests such as forest tent caterpillar, saddled prominent, maple leaf cutter
- Invasives
- Over browsing by deer and/or moose
- Climate Change with short-term and longer-term impacts as weather patterns and the intensity of weather is modified.
- Economics of Forestland Ownership
- Family Dynamics
Climate Change: the Onerous Impact

• Building a resilient and diverse forest is the key for landowners to address the inevitable impacts of climate change on bushes.

• A diverse forest that is carefully managed to minimize negative impacts should be goal one.

• Climate change will be another stress, and a serious one. Minimizing the stresses you can control is the most effective strategy.

• Maintaining good tree health is the first and most effective step to building resilience.

• The second step is a forest with a diverse structure in age & species.
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Thank You for Your Attention, Questions?

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