

Managed Forest Property Tax Incentive Program – November Up Date

There is no new information to report regarding the assessment of managed forest (MF) properties. As outlined in the article Managed Forest Property Assessment Issues – August Update, that appeared in the last edition of the S&W Report, managed forest properties are now being assessed based on market value (sales comparison approach). Farmland valuations will no longer be used. These new procedures will be applied to all MF properties in establishing the updated June 30, 2003, property assessments, which will be forwarded to landowners in November 2003, and used by the municipalities to determine property taxes in 2004.

The association will continue to advocate on behalf of its members for the reinstatement of farmland values with the new Liberal government. Need more information about the MFTIP program? Call Rhonda at the OWA at 1-888-791-1103 ext. #221.

Management Options for Small-Scale Sugar Bush Operations

Part I - Planning and Management Options

By Mark Richardson

This is the first article in a four-part series about how to manage smaller-scale sugar bush operations. Part I focuses on traditional management activities like planning, determining sugar bush-appropriate stocking levels and management operations. Part II introduces sugar bush health issues, which may have an impact on management operations, including a discussion on the Asian longhorned beetle. Part III will focus on those activities associated with collecting sap in the spring: tapping practices, collection techniques and ensuring that syrup is lead free. Part III will also discuss sugar bush safety and liability, an important part of operating a sugar bush. Part IV will introduce some general facts about maple trees which may be of interest to all landowners: Why does sap flow from maple trees and not others? How is syrup graded? What makes syrup taste so good? Why do maple trees dominate this part of North America?

The Small-Scale Sugar Bush

A well-respected syrup producer once said, “Making syrup is a hobby and a lot of fun when you have less than 500 taps. From 500 to 1,000 taps, it becomes more work than hobby. Above a thousand it becomes a business and your friends stop showing up to help.” For the purposes of these articles, small scale is going to be defined as any hobby operation under 1,000 taps. If your operation is larger (or could be larger), the information in this series should be of interest to you. However, it is recommended that you seek additional advice when making management decisions.

The scale implications of managing a 1,000-tap operation are vastly different from managing a 10,000-tap operation. Perhaps the greatest difference is in the ability to plan for tomorrow’s forest. In the larger operation, planning for regeneration is relatively easy; the syrup producer can thin the woodlot to encourage new growth without losing too many taps. For smaller

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ASH	FAS*	4/4	640	640	640	640	640
ASH	1C	4/4	500	480	480	470	490
ASH	2A	4/4	360	330	330	300	295
BASSWOOD	FAS*	4/4	785	785	775	765	765
BASSWOOD	1C	4/4	425	410	400	395	385
BASSWOOD	2A	4/4	225	220	220	220	220
YELLOW BIRCH	FAS*	4/4	1165	1150	1110	1045	1030
YELLOW BIRCH	1C	4/4	705	680	655	615	615
YELLOW BIRCH	2A	4/4	480	450	440	420	425
HARD MAPLE **	FAS*	4/4	1475	1475	1475	1475	1530
HARD MAPLE **	1C	4/4	1005	1005	1005	1005	990
HARD MAPLE **	2A	4/4	605	580	580	590	625
RED OAK	FAS*	4/4	1365	1355	1335	1335	1335
RED OAK	1C	4/4	960	935	935	895	900
RED OAK	2A Alone	4/4	710	675	675	610	600
RED OAK	2A Flg. Oak	4/4	690	640	640	590	585

* FAS plus Premium

** Unselected for Color

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operations where the number of taps is often limited either by property boundaries or stand area, promoting new sugar maple crop trees through thinning is sometimes difficult to justify because traditional management methods could mean the loss of taps and a decrease in syrup production. As a result, many smaller woodlots have not received the management needed to help them grow to their maximum potential.

Management Objectives

There is no forest product that is more sustainable than maple syrup, and proper management should help keep a woodlot producing sap for many generations. Some maple operations in Ontario for instance, have been in continuous production since the 1800s. For small-scale operations, difficulties in promoting growth of younger maples, while at the same time maintaining a high number of taps, offer challenges to the long-term viability of individual sugar bushes. There is simply not enough space to plan for the replacement of overmature trees if the landowner wants to maintain the optimum number of taps. As a result, the management objectives for the small-scale maple operation should differ (if only slightly) from larger ones by focusing on promoting the growth of healthy trees. Manipulation of the forest using traditional methods may be inappropriate.

Managing for improved tree health and vigour has its benefits and is one of the primary objectives for the small-scale operator. Figure 1 shows two tree sections; Tree A comes from a well-managed woodlot while Tree B comes from an unmanaged woodlot. The big difference in these two maples is their age – Tree A is 50 years old which is large enough to tap; Tree B is 75 years old and is still too small to tap. It stands to reason that Tree A was a healthier, more productive tree.

Improved growth is one of the primary benefits from management – if a tree grows faster (Tree A, Figure 1), it will produce syrup sooner. The results of improved growth can be dramatic. Consider two maples both of which are 12.5 cm (5 in.) in diameter; one maple is

growing in a well-managed sugar bush, the other is growing in a woodlot that is not managed but still in production. If there is only a 1 mm average annual growth difference between the two trees, the managed tree could grow to be tapped as much as 10 years sooner than the unmanaged tree. Over 100 years this could add up to as much as \$600 difference in syrup production. That is \$600 dollars per tree – multiply this by the number of crop trees in your sugar bush and the number becomes quite large. Of course this is just an example based on a number of assumptions but it comes from growth data from an actual maple management study.

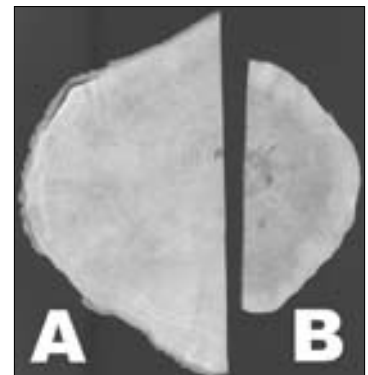


Figure 1: Tree sections from a managed (Tree A) and unmanaged (Tree B) sugar bush.

The Management Cycle

Think of your approach to management as a series of steps (Figure 2) that are repeated about every 20 years. In the early years, activities are focused around planning and inventory. Later on, depending on your objectives and the inventory, you may decide to thin your woodlot. After this period of activity you will probably need to do nothing more than monitor your sugar bush for a number of years to see how well it is doing. These planning steps are common to most forest operations regardless of scale.



Figure 2: The Management Cycle

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An Introduction to Sugar Bush Management 101

The following sections briefly describe one approach to managing the small-scale sugar bush. As an owner, it is important that you seek out the best possible information and advice. Mistakes are hard to correct so take the time to research all aspects of management. If you aren't comfortable with doing it yourself, hire somebody with experience in managing a sugar bush. The money you spend now to get an expert opinion may well save you thousands of dollars later. Don't be afraid to ask for help.

Does Your Sugar Bush Need Thinning?

The inventory tells you what you have. This is critical whether you own one acre or 100 acres because you cannot make informed decisions without first knowing what you have and what kind of condition it is in. For the purposes of small-scale sugar bush management, you only really need to know three pieces of information: the number, size and species present in your sugar bush. Information on the general condition of the trees is also collected and provides an indication of what there is to work with. Good or bad, you are stuck with what you have, but keep in mind, improved health is one of the main reasons you manage your sugar bush in the first place. The better quality trees will be left to grow while

the poorer quality ones will be identified and marked for removal.

Management decisions are made by comparing what you have to what is recommended. Table 1 shows a stocking chart for maple syrup bushes. It is a guideline for determining the recommended number of crop trees per unit area. In this case, numbers are shown in has and centimetres; an imperial stocking guide in inches and acres is available from the author (see contact information at the end of this article). Crop tree selection is discussed later in this article.

For example, if you are tapping two ha (about 5 acres) of land and your inventory shows an average tree diameter of 26 cm, the stocking guide indicates that the recommended number of crop trees is between 150 and 209 per ha. However, because the diameter is closer to the smaller diameter (25 cm) in the range, the number of trees should be closer to the upper limit recommended (about 200). Therefore, for this two ha sugar bush, the stocking chart would recommend approximately 400 trees.

If your inventory indicates that you have more than 200 trees/ha, your sugar bush is overstocked and thinning is recommended. If your sugar bush has less than 200 trees/ha it is understocked and thinning is not advised. An inventory of 250 trees per ha would indicate that about 100 trees ($250 - 200 \times 2$) should be removed from the sugar bush.

From the table it is also possible to determine the recommended number of taps per ha. A pure stand of maple two ha in size, with an average diameter of 26 cm, should have about 400 taps (26 cm is in the 1 tap single tap 25-37 cm diameter class). However, this value may be high because other species in the sugar bush (e.g., beech, ash and hemlock) are counted in the inventory. In other words, the recommended 200 trees per ha could be a mixture of species, the bulk of which would be maple. It is seldom possible to achieve the

Table 1: Sugar Bush Stocking Recommendations (metric)

Average Diameter (cm)	Number of Taps	Recommended Trees per Ha	Number of Taps per Ha
< 10	0	> 680	0
10 to 25	0	210 to 680	0
25 to 37	1	150 to 209	150 to 209
37 to 50	2	100 to 149	200 to 298
50 to 63	3	66 to 99	198 to 297
> 63	4	< 66	< 264

recommended number of taps per ha when dealing with small-scale sugar bushes.

This may seem complicated, but it really isn't. Simply determine the average diameter of your forest and the average number of trees per ha. Assume that all the trees are maple and use the stocking chart to determine if you are overstocked or understocked.

If your sugar bush is overstocked thinning is recommended. Walk through the forest, first marking the crop trees that will not be harvested (see next section). In this example, about 400 trees should be marked. Next, mark the trees (about 100) that will be harvested (using a different colour of paint). Once both the crop and removal trees are marked, cutting operations can be conducted.

Harvesting cautions:

- Never harvest more than 1/3 of the stand at any one time – that is leave 2 trees and take 1. In the example given, about 1/4 of the trees are going to be removed.
- Poor harvesting operations can ruin a woodlot – get advice on when and how to harvest properly. Be especially careful of the identified crop trees and work safely.
- Not every tree will be marked as either a crop tree or a removal tree – many trees often smaller in diameter will be left to grow. Generally, ignore trees that are growing in the understory – if the tree isn't interfering with a crop tree then it can be left alone.

How Do You Choose a Crop Tree?

Crop trees are those that will be favoured through management over the next few decades and even though they may not be tapable when the woodlot is thinned, they represent an investment in the future of the sugar bush. If crop trees are a reflection of the future, it is important to choose the better quality trees in the woodlot because they will probably be a long-term source of sap. The following list of characteristics can be used to identify crop trees in the sugar bush.


- Crop trees tend to be maple although other species may be identified as well – pure stands of maple are not generally recommended. Non-maple crop trees will probably reduce the overall number of taps, but keep in mind your primary objective is to grow a healthy forest (think forest health first and sap production second). Foresters always recommend a diversity of species, even in a sugar bush.
- Crop trees have larger crowns. Crown size is important for maple sap production – larger crowned trees tend to produce more sap.
- Crop trees tend to have good form with no obvious signs of decay or damage. Favour straight trees with no major forks, which may break under heavy snow or wind. Remove trees with obvious cankers or decay.
- Crop trees should have well-rounded crowns. Crowns that are on one side of the tree only will never grow to their potential.

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Art Shannon
Head Teamster

- Crop trees are dominant or codominant in the canopy – a crop tree should not be suppressed by its neighbour. Smaller than average trees may be chosen as crop trees as long as you recognize that tapping may not occur for a number of years.

How Do You Choose a Removal Tree?

After the crop trees have been identified, it is necessary to mark the trees that will be removed during a harvesting operation. This is usually done with two paint marks, one on the main stem and another down near the base of the tree. In the example provided, about 100 trees need to be removed from the two ha sugar bush. Keep in mind the number of trees suggested is determined using the inventory and the stocking guidelines. Do not be alarmed if less than the recommended number of trees are actually marked for removal – this is just a recommendation that may be impractical for the sugar bush in question. Trees are never evenly spaced nor are they uniform in size, and as a result some interpretation of the guidelines is necessary. Harvested trees should be those that interfere (or will interfere in a few years) with crop trees.

There are a number of methods of determining which trees need to be removed. The first called the Tree Spacing Method uses a table to determine how much space a crop tree needs around it.

Table 2: Tree Spacing Method for Determining Crop Tree Distances (m)

Diameter (cm)	15	20	25	30	35	40
15	5.8					
20	6.1	6.4				
25	6.4	6.7	7.0			
30	6.7	7.0	7.3	7.9		
35	7.0	7.3	7.6	8.2	8.5	
40	7.3	7.9	8.2	8.5	8.8	9.4

Table 2 lists the recommended distances in metres between trees of varying diameters and their nearest competing neighbour. For example, if a 20-cm non-crop tree were 5 m away from a 30-cm crop tree, it would be a good idea to mark it for removal. The recommended distance between a 20- and 30-cm tree is 7 m. If that tree were greater than 7 m away from the crop tree, it would not be necessary to remove it because of spacing considerations.

Another method of determining what trees need to be removed is called the Crown Release Method. Using this method, a tree is removed if its crown comes within a specified distance from the crown of a crop tree. Freeing space around the crop tree allows for future crown growth between thinnings. Generally, a distance of between 2 and 3 m is recommended between crowns for trees greater than 8 cm in diameter. For many producers the crown release method is easiest to apply in the sugar bush.

Regardless of the method by which removal trees are identified in the sugar bush, it is important to keep track of the trees that have been marked. Using a clipboard and a tape measure, the diameters of all the marked trees can be recorded. This information validates the work done to date – were too many or too few trees marked? The marking tally allows you to check and adjust your marking before the trees are cut in the woodlot.

Planning For the Next Generation of Maple Trees

As mentioned it is more difficult to manage for regeneration in the small-scale sugar bush. If you are fortunate enough to own a woodlot with a range of diameters and ages, then the next generation of trees may well be taken care of already. If however, your sugar bush is roughly all the same age, and most of the trees are around the same diameter, then growing new trees can be a problem. Harvesting will open the crown up enough to promote the growth of young maple saplings but it will be almost impossible to get

a range of diameters and ages. If this is the case – do not worry.

It is important to look at the bigger landscape – is your sugar bush part of a much larger forest? If so, is the larger forest more representative of the ideal? Foresters promote diversity and as a result tend to frown on stands consisting of one single species. Diversity is a good thing but less diversity in the small-scale sugar bush is not necessarily a bad thing. Think back to the beginning of this article – your objective is to grow the healthiest trees possible. Future articles in this series will cover other aspects of growing and operating a healthy sugar bush.

Mark Richardson is a forester working for the Eastern Ontario Model Forest. He invites comments and questions on sugar bush management and can be reached in Kemptonville at (613) 258-8416 or by e-mail at <mrichardson@eomf.on.ca>.



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Play a Bigger Role in the OWA!

Help us meet the challenges of a growing organization and consider adding your voice to the OWA's board of directors. Elections will be held for seven positions on the provincial board at our February AGM in Belleville. These seven positions are in addition to the chapter representatives who are appointed to the provincial board by local OWA chapters.

Roles and Responsibilities of an OWA Director:

- Available to attend four or five evening meetings a year (a conference call is possible);
- The positions of president and vice-president are elected by the provincial board of directors (from the seven board members elected at the AGM);
- Review of information provided by the executive director between meetings; and
- Provide input into the general supervision of OWA's affairs and make recommendations to the general membership.

If you or someone you know is interested, please call Wade Knight at the OWA office, or a member of the nomination committee. Nominations will be accepted up until the election.

Your OWA Nomination Committee

Victor Roland (519) 335-3944
or fax (519) 335-3914

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