**HOW TO UTILIZE THE SITE SUITABILITY RATING EXCEL SHEET**

Deven Teisl, University of Maine

The Site Suitability Rating Calculator is an Excel worksheet that can be used by maple syrup producers, both beginner and experienced, in order to help them facilitate their decision in choosing where to establish sugarbushes. It might be used when identifying property to purchase, and choosing between multiple woodlots. It might also be used to compare two areas within a property a producer already owns. The Site Suitability Rating Calculator will provide a woodlots total potential productivity if it were to be transitioned into a sugarbush based on eight characteristics: tapping density, tree health, canopy health, soil quality, aspect of the woodlot, slope of the woodlot, access to and within the woodlot, and site index. These characteristics were identified through both the reading of current available research and a survey conducted of members of the Maine Maple Producers Association.

This document will help guide you through how to use the Site Suitability Rating Calculator on the provided Excel worksheet. The guide will cover how to collect the necessary data and then how to input your results into the Excel worksheet. If you have any questions, please feel free to reach out to me via email at [deven.teisl@maine.edu](mailto:deven.teisl@maine.edu).

**HOW TO COLLECT YOUR DATA**

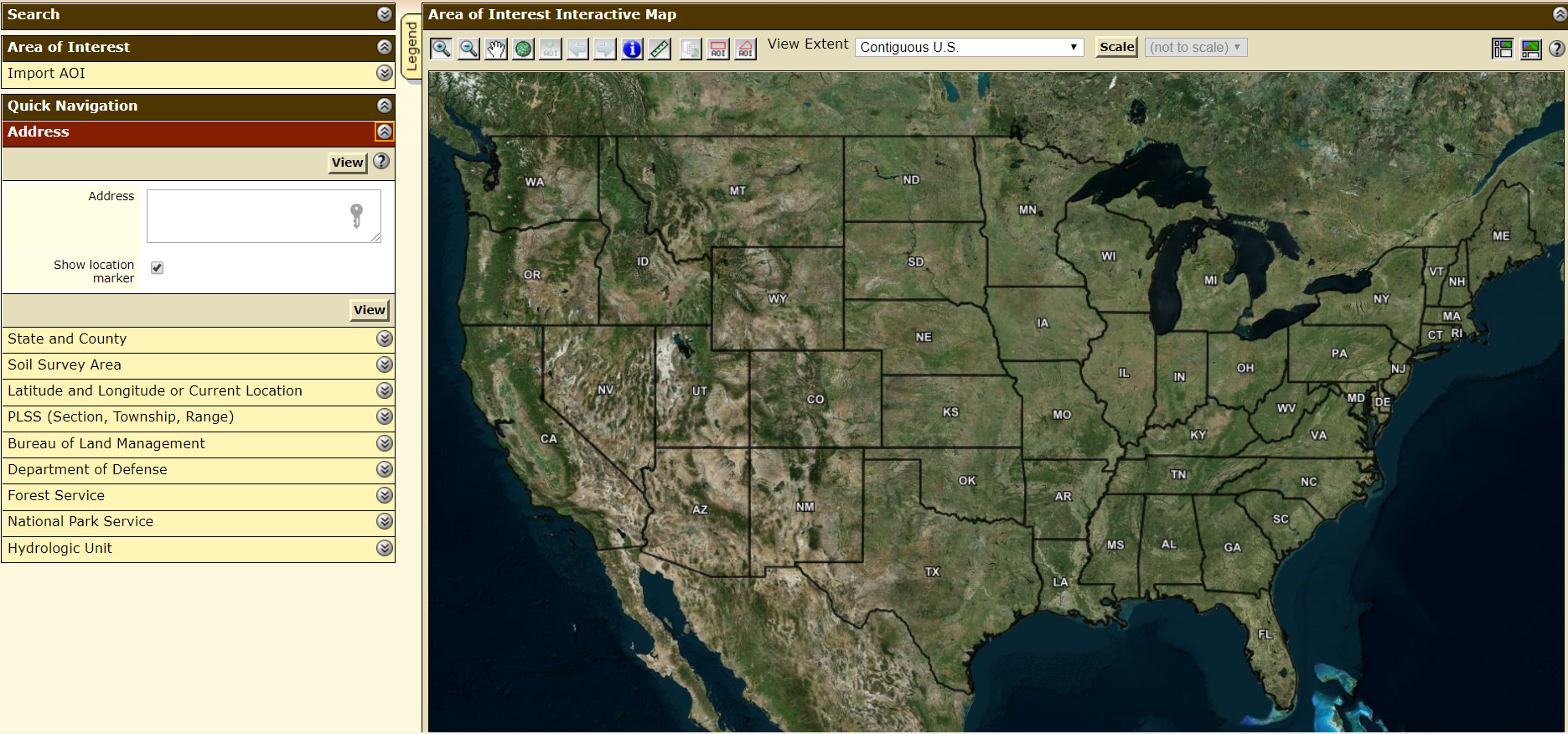
To start, this section will briefly cover how to collect the data that will be needed to use the calculator.

1. **Calculating your Tapping Density**

To determine how many taps per acre your woodlot, you can utilize the following method:

1. In your woodlot, measure out a 37.2 foot radius plot (or 1/10 of an acre) at a random location.
2. In your new plot, count the number of both red and sugar maples with a diameter of AT LEAST 10”. Any smaller, you risk damaging the tree beyond repair. Be sure to note the diameter of each tree you count, as well. To measure the diameter of the tree, measure the tree around the trunk at 4.5 feet above the ground, or around chest height to make it easier.
3. You can collect on as many plots as you like, but it is recommended you do 10 total plots in order to have accurate data.
4. Using your number of trees, input your results onto the tap calculator on PAGE 2 of the Excel worksheet. Only edit COLUMN B on the tapping density calculator, unless you sampled on less than 10 plots. If you measured on less than 10 plots, edit block D17 to the total number of plots you did.
5. **The Excel worksheet will generate an average number of taps in block D19. Take note of this number as you will need it for using the site suitability rating calculator.**
6. **Soil Quality**

To determine the quality of your soil, you will use the NRCS Web Soil Survey, an online tool used by natural resource managers to calculate a variety of soil data. Here are the basic steps on how to use the Web Soil Survey (WSS).

1. Go to: <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>
2. In the left column, select ADDRESS, which will allow you to zoom to your woodlot if you have a current address for it. If you do not have an address for your woodlot, you can either use the Latitude / Longitude portion, or simply find your woodlot by moving around and zooming in on the map.
3. Once you are at your woodlot, select either Area of Interest (AOI) button on the top border on the map, pictured below. The square AOI button allows you to draw a square area on the map, whereas the triangle AOI button allows you to free draw an area on the map.
4. Using your selected AOI tool, draw the approximate area where your woodlot is on the map. 
5. Once your AOI is drawn, click on the Soil Data Explorer tab.
6. From there, click on the Soil Properties and Qualities tab.
7. Under the Soil Properties and Qualities tab, click the drop down arrow under Soil Qualities and Features, and then again on the Drainage Class tab.
8. Once you are under the Drainage Class tab, click on View Rating.
9. **Take note what percentage of your soils are either Moderately Well-Drained or Well-Drained. These two Drainage Classes must make up a MAJORITY (50% +) of your woodlot in order to have productive maple growth.**
10. Don’t exit out of the WSS or delete your AOI! You will need it for the next step.

**3. Site Index**

Site Index is a measurement that professionals in the Forestry industry use to determine a site's potential future productivity. Here is how to calculate it using the WSS from the step before.

1. Continuing from the Drainage Class tab, click on the Suitability’s and Limitations for Use tab near the top.
2. Click the drop-down arrow under Vegetation Productivity tab, and then click on Forest Productivity (Tree Site Index).
3. Under Basic Options, click on the drop-down menu and select Sugar Maple. **IF SUGAR MAPLE IS NOT AVAILABLE, YOU CAN EITHER USE SELECT RED MAPLE OR OMIT SITE INDEX FROM YOUR SITE SUITABILITY RATING.**
4. Click View Rating.
5. **Under Rating (feet), take note if the rating is GREATER THAN 60 FOR A MAJORITY OF YOUR WOODLOT (50% +).**

**4. Tree Health**

Tree health is determined through a simple visual inspection of the trees, specifically the maples, on your woodlot. If your maples are generally free from the list below, tree health will not be a major concern.

1. Pests
2. Disease
3. Dead / Dying Trees
4. Damaged Roots

**5. Canopy Health**

Similar to tree health, canopy health is done by a visual inspection of your maples crown and leafy growth. It is best to do the canopy inspection in the late spring or summer so you can see how full the crown is when fully grown, but can be done in the fall or winter as well. Tree crowns and canopy should be free from:

1. Pests
2. Disease
3. Dieback

For a simple guide on how to inspect you tree and tree crown health, along with what to look out for, here is a helpful blog post: <https://www.bioadvanced.com/articles/how-inspect-your-trees-are-they-safe>

**6. Slope of your Woodlot**

Slope is important to take note of if you are interested in setting up a tubing system on your woodlot. Too low of a slope and you will have to rely more on vacuum pumps, rather than letting gravity take charge. Too high and you might find it impossible to move around and even get the tubing set up! Optimal slope for your woodlot should fall between 2% and 6%, and should be relatively constant throughout the woodlot. To measure the slope of your woodlot, follow the steps in this helpful blog post: <https://homeguides.sfgate.com/calculate-slope-landscaping-33521.html>

**7. Aspect of your Woodlot**

Aspect of your woodlot is the cardinal direction that your woodlot is primarily orientated to. For sugaring, you want a southern or eastern orientation in order to facilitate tree growth and influence the duration and intensity of your sugaring season. To determine your aspect, you can use a compass. With a compass, all you need to do is, while on your woodlot (preferably at your sampling locations for collecting tapping density), align yourself with the slope and check to see the cardinal direction you are facing. If you are primarily aligned south or east for a majority of your woodlot, check yes on the Excel worksheet under aspect.

**8. Access to and within your Woodlot**

Access to and within your woodlot is the easiest, most subjective characteristic to calculate. When you are walking to and within your woodlot, here are some things to take note of:

1. Am I able to get to the woodlot easily? Is there reliable access (improved roads, etc.) nearby?
2. Am I able to get a vehicle near a majority of the maples?
3. Would I be able to set up a collection point and/or sugar shack with relative ease?
4. Would I be able to set up a tapping system easily? Is there too much growth on the site? Not enough?
5. If you are interested in having people come to your sugaring site (i.e. Maine Maple Sunday), is it safe for them? Are there areas for parking nearby?

If you feel that you are able to get to and move around your woodlot with relative ease, give yourself points under the Access section of the Suit Suitability Rating calculator.

**HOW TO USE THE SITE SUITABILITY RATING CALCULATOR**

After you have collected all the necessary data needed, you are ready to use the site suitability rating calculator. The purpose of this calculator is to provide you a rating that signifies the potential of the woodlot’s abilities to transition into a productive, commercial-sized sugarbush. Having this rating will allow you to compare multiple woodlots with ease, ensuring that you choose the correct site to set up your sugaring operation on.

Using the site suitability rating calculator is easy! To use it, all you must do is input a **“1”** into the **YES c**olumn if you collected data answers the question in Column B. For example, if you calculated that your woodlot has an average of 63 taps per acre, you would input a “1” into the YES column next question. However, if you only have 42 taps per acre, you would simply leave the column blank. The calculator comes with areas to compare to sites and will produce a rating in three different measurements. Block D14/D18 will show the rating with the weights rounded to the nearest whole number and block E14/E18 will show the rating with the raw data from gathered from the survey. If you personally feel as if the ratings are incorrect, column F will allow you to input your own ratings! Simply enter the rating that you feel is correct into the proper block and the rating will be displayed in block F14/F18.

As a bonus, here are the ranges that must be met in order to answer the question as YES in the Excel worksheet:

1. Tapping Density - You must have an average tapping density of at least 60 taps per acre.
2. Soil Quality - The soils on your woodlot must be dominated by moderately well-drained or well-drained soils (greater than 50% of the woodlot between the two).
3. Site Index - Your site must have a rating of at least 60 feet on a majority (50% or greater) of your woodlot.
4. Tree Health - The trees on your woodlot must generally be in good health.
5. Canopy Health - Tree crowns and overall canopy must generally be in good health.
6. Slope - Your woodlot must have a generally uniform slope of between 2 - 6%.
7. Aspect - Your woodlot must be primarily orientated either Southern or Eastern.
8. Access to and within - You must be able to get to and move around the woodlot with relatively ease, but this characteristic is also dependent on personal opinion.

While many sites can be nurtured into being a productive sugarbush, this tool is especially helpful in making a comparative evaluation between two potential sites.