Managing Aging Sugar Maple Trees

Old sugar maple trees are under stress for a lot of different reasons but there are steps you can take to stabilize them – at least the strongest ones. Some may be too far-gone but managing a whole stand will be easier than trying to figure out which ones will survive and which won't. The trees themselves will tell you in a couple of years after the work starts. If you're dealing with a single tree, focus on the area 2' to either side of the tree's dripline…

The big stressors are compaction, competition, salt/acid leaching and flood/drought pulses. Sounds like a lot but the whole batch can be handled at once so that helps.

First – a brief description of each stressor so that they become understandable

Compaction: In a nutshell this means that there is limited air or water movement in the soil. It happens due to many factors but the roots themselves can fill up the soil profile so tight that nothing can move easily – can also be caused by snow weight, vehicular traffic, flooding or a combination of all. No air and water movement means that there's little nutrient movement, the soil is exhausted and that salts cannot leach easily away (compounding the problem). The soil microbes around the root system weaken and die and the tree goes with them.

Competition: It's only in the human world that grasses and trees grow together – and not comfortably for either plant community. Humans like the look of the "open parkland" but it doesn't exist for long in natural settings. The local ecology produces either grasses (think the prairies) or forests (think everywhere else). There are microbes specific to each ecology and they don't play well together. If one group weakens (the trees for example) then the grasses will strengthen (and vice versa). One of the best techniques is to remove whichever system is the least desired. In this case – preserving aging sugar maples – removing the grasses is the first critical step. These can be weed wacked to the ground and covered with a thick layer of compost – at least 4" grading to 0" at the trunk. If you think of healthy trees in a woodlot – that's what you're trying to get to. Make the circle around the tree as wide as you can manage either for time or aesthetics.

Salt: Road salt is a dehydrator. Think about using salt for preserving food. It works by pulling water out of the cells and making them less prone to rot –great for preserving food but not so great for a healthy root system based on liquid exchanges between cells and the soil. The more road salt the worse the damage. Bad winters can be REALLY bad.

Acid leaching: This is an older tale but there are still issues around this. Remember acid rain? Well – it really had a negative effect on sugar maples and was one of the reasons that there was enough push back from the eastern states to get stack scrubbers on the mid-west coal fired power plants (that are now all converted to natural gas). The damage was done however and still needs remedy if you want the trees to respond. Acid rain – on top of New England's naturally high rain fall amounts that also leach – has caused a serious drop in calcium in the soil around the maples.

Flood/drought pulses: This is part of our new climate realities. We're getting wider oscillations of rain and dry. Unlike grass and perennial roots that renew annually, woody roots have a much harder time adjusting to these pulses. Drought in the fall is especially damaging since that's the biologically appropriate time for trees to build/rebuild their roots systems.

So – now you know the causes of the problem – what are the solutions??

Step 1: Remove all competing plants from around the roots for as far as you can manage. Tree roots extend well beyond the canopy edge but that edge is a useful guide and will provide a lot of buffer.

Step 2: Apply gypsum, greensand, humalite or leonardite, azomite and alfalfa meal in a " heavy cat's paw" amount around that cleaned area. Cat's paw means that there's enough material to make a cat's paw print visible –think cat's paw snow. This can be a lot of material so may need to be parceled out over several years so expenses can be managed. Use the most that you can afford in a given year up to that cat's paw amount – any is better than none. Scratch in to the best of your ability and that won't be very far because of the compaction/competition issues but any solid contact with the earth is a step in the right direction. I blend these all together on a tarp and then spread with a shovel. You could use a broadcast spreader but I find it faster with a shovel in the tight areas around trees.

Now what are these amendments????
Gypsum – calcium sulfate. This reacts with any sodium chloride (salt) and allows the sodium molecules to leach out of the soil leaving that essential calcium in place. If more calcium is needed then a much lighter application of calcite can be added in a year or so.
Ground Leonardite or humalite – a soft brown coal that converts to humic and fulvic acids in a living soil and again acts as a huge energy store for the system – acts as an activated charcoal to help "clean" up the system.
Jersey Greensand- a raw mineral potassium iron silicate that really helps the plants integrity and helps to fight against plant stress (both the potassium and the silicate work here). Helps to both hold water and break up clay soils. The iron helps with the greening up of the leaf itself.
Azomite – another raw mined mineral that has a wide complex of minerals and has an alternate magnetic property that helps the plants to bring the minerals up the plant stem. This has been know to stabilize weakened trees without any other additions – although works much better in combination with carbons (like soil activator and compost).
Alfalfa meal – one of the most useful products you'll ever use around plants of any kind. This provides carbon, calcium, and slow nitrogen (from alfalfa protein) but it's best claim to fame is that it "grows" all kinds of soil microbes and trees have an obligate relationship to fungi around their roots (called microrhizae).

Step 3: Apply a layer of woody/leafy compost at least 3" and up to 4" thick for as far as you've cleaned back the ground. The more broken down the compost is in this first application the better. After this first application – apply a heavy leaf layer every fall (think woods again) and get the trees to start feeding on their chosen food source – leaves. Leaves ground up with a little grass are excellent but too much grass clippings is not a good idea.

The first year after this above approach might or might not have much of an effect depending on the level of weakness in the tree itself and when the work is done. If done in the fall then the roots will start the healing process before the next year begins and you WILL see results that first summer. If done in the spring then the real work of healing the root system won't happen until that coming fall so it might be the following spring before there's a solid response from the tree. This is all about healing and strengthening the root system – not growing more green leaves – that's just a happy after effect ☺

Ongoing work: Keep the leaves going in to the mulched area as the best food source but plan to rework the minerals and compost every three-five years or so for the first ten years and then the work can be stretched to every five years. The trees themselves will tell you when they need it. Listen to them!