CROWN RELEASE EQUALS MORE AND SWEETER SAP

By: Keith Ruble

Have you ever wondered why open grown trees produce more and sweeter sap than the ones growing close to each other? To answer these questions, I would like to share with you from my 37 years of experience in forest management.

Most of my work has been focused on managing trees to create quality timber for recreation and for harvest. To do this, over the years I've been involved with activities diverse as planting trees, weed control in forests, Timber Stand Improvement (TSI), pruning, timber appraisals, inventorying timber and marking timber for closed bid sales. Of these, TSI has been my primary concentration. The purpose of TSI is to thin the woodland by killing undesirable trees whose crowns interfere with those of the desirable species of crop trees. Cutting or girdling with a chain saw is a useful way to remove such undesirable "weed" trees.

In timber tracts grown primarily for timber production, 1-2 sides of the crop tree's crown are released from the crowns of competing trees.

Management of maple trees for sap production begins by thinning out competing trees that interfere with the maple tree's crown. Thinning exposes the crowns to more sunlight. However, maple trees over 16" in diameter at breast height (DBH), will show little response to thinning.

Thinning for sap production should be done in all four compass directions and should be done gradually over several years. Ignore trees that are below the canopy or are not competing with the crowns of the trees you wish to release from competition. This is called cosmetic thinning. Once a competing tree's branch touches or over tops the crown of the crop tree, the weed tree should be girdled or cut down.

If the woods is too young to tap, you can cut or double girdle the weed trees. Cut a complete girdle at least 1" in depth around the complete circumference and a second 6-8" above or below the first cut. The second girdle is for insurance if one fails to kill the tree. If the woods is being tapped, do not girdle since girdled trees could fall and damage you or your tubing and other equipment. Spraying herbicide on girdled or cut trees should only be done when the woods is young and not ready to tap. I recommend using a 50/50 mix of water and concentrated glyphosate (*Round-Up*) to which a marker dye is added to treat stumps and girdles just inside the bark area. This should be done right after they are cut. *Round-up* is a very safe herbicide and has no soil activity. Over a few years all competitive trees will be dead. If there are grape or other vines growing in your sugar bush, cut and treat them. They will break the tops out of your trees. It is important not to create overly large openings in the woods as this will result in the growth of unwanted wild berry bushes, vines, etc.

Sprouting from dormant buds under the bark (epicormic sprouting) occurs when the maple tree is exposed to additional light. More limbs from these sprouts means more leaves to

produce additional food reserves. A good maple sap tree should have a short log or "bole" and a wide, well-formed crown. Maple trees that are managed to produce large crowns produce and accumulate more food energy reserves in the summer months. During the sugaring season, these large crowns will produce much more sap. The amount of direct sunlight received to the tree crown also influences sap sweetness. Trees that grow in an open environment have a higher sap-to-sugar content than similar trees in a dense forest.

Also, it is important to not create a monoculture of only maple trees. The law of ecology states that tree and plant diversity somehow keeps the forest community healthy. It is good to let better quality hardwood species, like walnut, cherry and oak, coexist with your maple trees.

During planning and development of a maple sugar bush, potential crop trees can be selected from smaller pole size trees. If available, a sap refractometer should be used to test the sugar content of potential crop trees. If a tree's sap is sweet or sweeter than other maple trees around it, make it a crop tree. If you do not have a refractometer, select the tallest maple trees with the widest crowns. Choose the trees with the fewest crown or stem injuries or other deformities. Do not select trees with forked tree crowns as they may be genetically inferior and the weaker forks will eventually break out.

I have noticed in most maple bushes being tapped that there are a substantial number of trees that should be cut because they are competing with the crowns of trees being tapped.

Likewise, in many maple bushes, trees with small, spindly tops are being tapped. Such trees should be removed to allow more sunlight to adjacent trees that have greater potential as crop trees. I have found that many owners of maple sugar bushes are like owners of walnut plantations. They cannot bear to cut a maple or walnut even when the trees are overcrowded.

The next time you walk in your sugar bush, look up. Take notice of the crowns of all your trees. If you see maple or other tree species with thin, narrow or poorly formed browns competing with the crowns of the trees you are presently taping or plan to tap in the future, you should consider removing them to improve the health of the remaining crop trees. These "weed" trees will never improve due to the stressed condition in which they grow, and they will prevent the crop trees from receiving adequate sunlight for crown expansion.

Additional sunlight to the crowns and moisture to the roots are important. The ultimate goal of sugar bush management is to enable maple trees to produce large crowns. This, in turn, will provide good yields of sugar-rich sap for many years. Use a spray can with orange or a brightly colored paint to put a dot on two sides to the trees that need to be cut.

When you do go out to cut, be sure at least one other person is with you as a safety partner, and always wear a hard hat, chainsaw chaps and other safety equipment. As you consistently thin each year, the crowns of your maple trees will enlarge and you will enjoy a greater abundance of sweeter sap.