

Managing for Windfirmness: Part 2

Bulletin Synopsis November 2014

Silvicultural Techniques for Windfirmness

The best way to promote wind firmness is to *reduce stocking* levels. Thinning is a better tool for building wind firmness in young stands, but it is possible to increase windfirmness in older stands if done very carefully.

Thinning Young Stands – *sapling (conifers) to small pole (hardwoods)*

This develops more drought resistant trees and increases economic value of residual trees (more swaying leads to better trunk growth). There is a good chance of developing windfirmness in younger stands, so it is beneficial to start new cohorts of trees across the ownership. Consider the following:

- **Soil Moisture** – little chance for windfirmness on shallow rooted or frequently saturated sites
- **Crown Class** – remove suppressed or intermediate trees in the same age cohort as overstory trees; maintain high crown ratios (50% range is now preferred)
- **Spacing** – space residual trees so crowns have room to sway (which will increase trunk growth), but also have support from neighboring trees near the likely limit of “sway stability.” This science is still evolving so specific spacing guides are not available. It will vary by species and site.

Thinning Intermediate or Multi-aged Stands

Forests that have been managed are better candidates for windfirmness development than unmanaged, middle-aged forests. However, they often have a variety of age classes and you must treat each cohort appropriately (crown shape and bark character are good ways to identify age).

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| Keep | { | <ul style="list-style-type: none"> • Trees growing at the edge of a forest • The stand edge perpendicular to the prevailing wind • Well-formed dominant/co-dominant trees (crown ratio >40, balanced crown, straight) • Suppressed and intermediate trees under chosen crop trees – they do not compete significantly for resources and they prune and protect the preferred tree • Patches of trees between chosen crop trees that are not competing with crop tree crowns |
| Take | { | <ul style="list-style-type: none"> • Trees likely to fail due to: <u>poor or susceptible form</u> (co-dominant stems, branches with bark in the joint, heaved roots, height:diameter ratios over 80, taller than surrounding trees) or <u>poor health</u> (stem or root decay, large dead branches) • Species either prone to develop internal decay or blow down • Trees competing with crowns of chosen crop trees |

Note: see full bulletin for a [list](#) of northern and southern U.S. tree species in order of relative windfirmness.

Acclimation Period of Increased Risk

- It takes time (generally 5-10 yrs) for residual trees to develop extended root systems and stronger, more tapered stems needed to withstand the increased motion caused by more wind within the stand.
- Recently thinned stands also have a more irregular crown surface that generates more turbulence. This leads to high wind load on individual trees and more swaying, which can cause trunk breakage and windthrow.

Other Methods for Reducing Risk of Wind/Ice/Snow Damage

- **Get Insurance** against loss from wind, fire and possibly other threats. Insurance is available from Outdoor Underwriters, Inc. of Columbia SC – each insured property is evaluated based on location, a questionnaire, and assessment of the management plan.
- **Put equipment on site** at key locations if you know a big storm is coming. Winds coming from abnormal directions are particularly damaging