Stumping- Potential and Perceived Problems

Stump and Large Root Removal to Control Root Disease

- https://www.for.gov.bc.ca/ftp/hfp/external/!publish/Forest_Health/

Stumping Issues

1) Questions about efficacy
2) Over prescribing
3) Poor stumping techniques (leaving stumps behind)
4) Claiming stumpage allowance for un-stumped areas

Questions around efficacy and whether it's a cost effective treatment

- Contributing factors

1) Stumping is not a cure
2) Not all trials show benefits
3) The same species of root rot can behave much differently on different hosts and different sites
4) It can take a long time (20-40 years) to determine whether a treatment was effective
5) Need proper controls (no treatment areas) with similar levels of root disease as treatment areas
6) Need continuous re-measurement of trials and need to analyze and publish results in order to assess the effectiveness of the stumping program

Skimikin Trial – 40 year results

- Longest running trial on effects of stumping
- Originally set up to study Laminated root rot but Armillaria turned out to be the biggest cause of mortality. Don't know what the original levels of Armillaria were in treatment and control areas and no replication.
- 14% less mortality (all host species and mortality agents) and 1.3 times higher basal area at age 40 all species
- Some of increased basal area due to mixing of soil layers (assart effect)
- Armillaria 1.7% stumped vs. 12.6% unstumped all species (4.6% vs. 22.6% Fd)
- Laminated 0.2% stumped vs. 18.1% unstumped
- Based on Skimikin results, economic analysis indicated that stumping is probably only cost effective on moderate to good sites

Michael Murray 13 stumping trials

- ½ as many Armillaria infected trees in stumped and 63% more basal area compared to unstumped (unpublished data)

Literature Reviews of Stumping

- Vasaitis et al. 2008

- 15 of 18 trials showed a reduction in Armillaria root disease

- 9 out of 10 showed a reduction in Laminated root rot

Is stumping over prescribed?

- Perception that licensees using stumping to offset their site prep costs
- Perception that stumping allowance over estimates the cost of stumping

Personal Experience

- Instances in Merritt of appraisal submissions where there is no evidence of root rot mortality in the block or entire block is stumped when only a portion needed to be
- Merritt blocks with some isolated laminated root rot pockets - entire block stumped, left root rot fringes around the edge of the block, and planted back to lodgepole pine (for laminated root rot stumping is not necessary if regenerating to Pl)
- Also instances of the opposite in Cariboo (no stumping and left infected advance Fd regen)

Contributing Factors

- Lack of surveys and documenting evidence of root rot (appraisal manual just says it needs to be specified in the site plan)
- Root rot can be difficult and expensive to survey for
- Many people don't or can't distinguish between laminated and armillaria root rot
- In recent years the harvest has focused on mountain pine beetle salvage
- Laminated root rot and armillaria often occur together
- Requires trained, experienced people with the right aptitude to do root rot assessments
- The cost of stumping can vary widely depending on the site

Other factors

- In certain high risk ICH BECs an argument can be made that there is no need to survey because of how widespread root disease is and the risk of armillaria inoculum buildup in stumps after harvesting – risk that even sites with fairly low levels of root disease could become high risk in the future if stumping not carried out
- Some evidence for this in the literature and anecdotal evidence in areas where there is a history of partial or repeated harvesting (some power line right of ways are a good example of this)

Possible solutions

- BEC specific reporting requirements in the appraisal manual
- Better training and education
- Better monitoring and enforcement

Poor Stumping Practices

- examples of poor stumping practices and leaving stumps behind in the Okanagan District

Contributing Factors 1 - Planning

- Stumping requires careful planning and a modification to standard harvesting practices such as leaving behind dispersed retention or small dispersed wildlife tree patches, seed trees, stubs, retention of deciduous trees, and areas of advance regeneration
- Trying to stump in areas where other resource values take precedence over root rot control
- Including areas above steep road cuts or areas where the average slope is close to the safe operating limit (if the average is close to the limit there will be areas that exceed the limit)
- Not adequately stratifying out areas not suitable for stumping (eg. wet areas)
- Leaving the decision of what to stump and not to stump up to the operator in order to avoid layout costs
- Lack of standards and post stumping survey checks
- For some reason leaving stumps over 55cm has become standard practice in order to avoid excessive soil disturbance

Contributing Factors 1 - Operational

- Inexperienced operators
- It is not possible to remove 100% of stumps all the time even in well planned stumping operations and experienced operators
- Stumping in blocks with lots of fresh slash or dense vegetation growth or sprouting deciduous stumps
- Stumping is generally carried out before slash piles are burned which results in stumps being left behind
- Lack of standards and post stumping survey checks
- Large roots often break off (especially on large stumps) and need to be grubbed out separately

Possible Solutions

- Set minimum stumping standards and best practices for stumping
- Require post stumping survey checks -recommend 10% transect surveys and basal area of left stumps over 17.5 cm (12.5cm for pine) should not exceed 7% of the appraisal basal area
- Use experienced operators and large excavators with a thumb and claw attachment
- Better layout and planning in areas where stumping is prescribed
- Be more selective in where to stump and don't be afraid to prescribe alternate species in potential problem areas
- More use of GPS in excavators to track where stumping takes place