

Hemlock drying update: 2016/17

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Background

The problem of second-growth western hemlock (*Tsuga heterophylla*) sinking when watered continues to plague the coastal logging industry of British Columbia (B.C.). A study conducted by FPInnovations in 2015-16 concluded that felled hemlock (Hw) logs took two distinct trajectories in their drying patterns through time, depending on whether they were felled before or after May (Friesen, 2018).

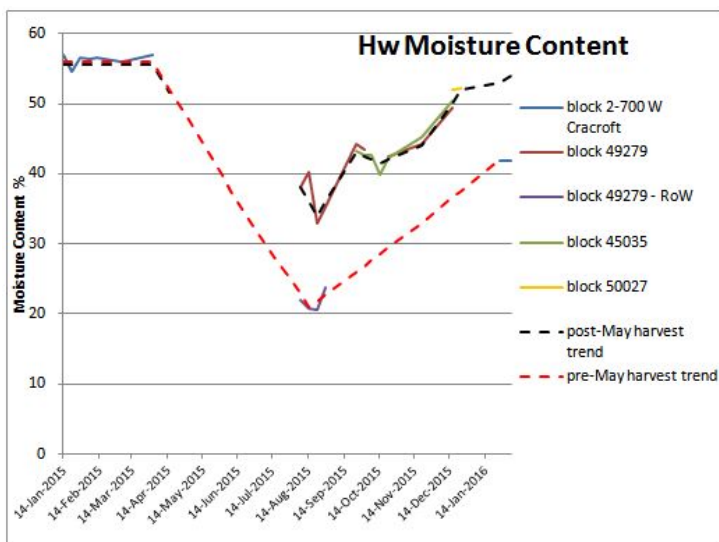


Figure 1. Hw drying regimes (Friesen, 2018).

In Figure 1, the hemlock logs felled before May follow the drying trajectory of the red dotted line. Logs felled after May follow the black dotted line. There is a 15-20% decrease in moisture content (MC) – wet basis – for logs felled before May compared to those felled after May. This difference can be critical for whether or not logs float when watered.

The two projected trajectories were based in part on 1950's data from eastern Canada. The eastern data was then projected to match conditions for the west coast, as shown in Figure 2.

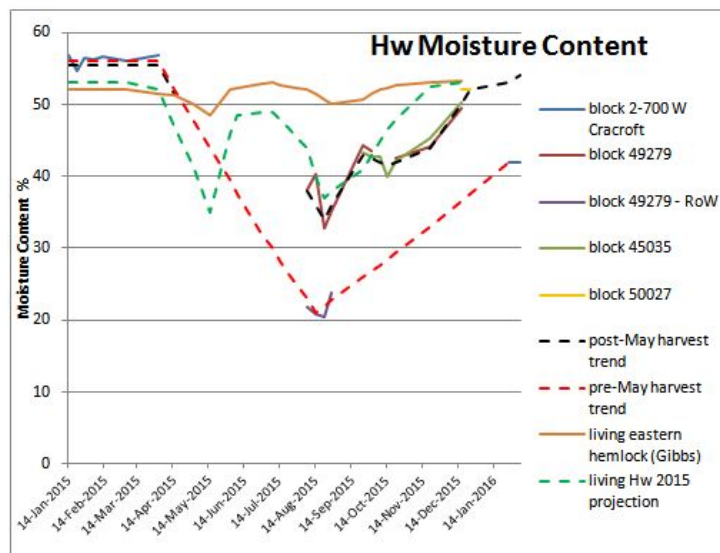


Figure 2. MC projection for live Hw (Friesen, 2018).

The brown line is the data from 1950's eastern Canada live hemlock. The green dotted line is the projected MC for live Hw for the drier summer conditions of the west coast. The red line follows the green line until May, and the black line follows the green line after May. The 'bump' in the green line between the red and black lines corresponds to the trees recharging with water during the spring growing season. Trees cut after this recharge have the higher moisture content of the black line. Other than the spring recharge, MCs are thought to largely follow ambient environmental conditions.

While the projections explained the two different drying regimes observed, uncertainty over whether the projections were valid remained. There were significant gaps in the data for felled trees from April to June, and for live Hw trees throughout the year. The 2016-17 project sought to fill the gaps for felled Hw from April to June.

Data collection and analysis

Samples were collected in June and July 2016 from Hw logs felled near Shoal Harbour, not far from the sites of the previous studies on West Cracroft Island and Lower Adams/Southeast Bay on Vancouver Island. Logs were divided into those felled before May and those felled after May. Samples were bagged and sealed on site and then analysed for MC in the FPInnovations laboratory.

Results

The 2016 pre-May harvest and 2016 post-May harvest logs showed two distinct drying trajectories, as expected, shown in Figure 3.

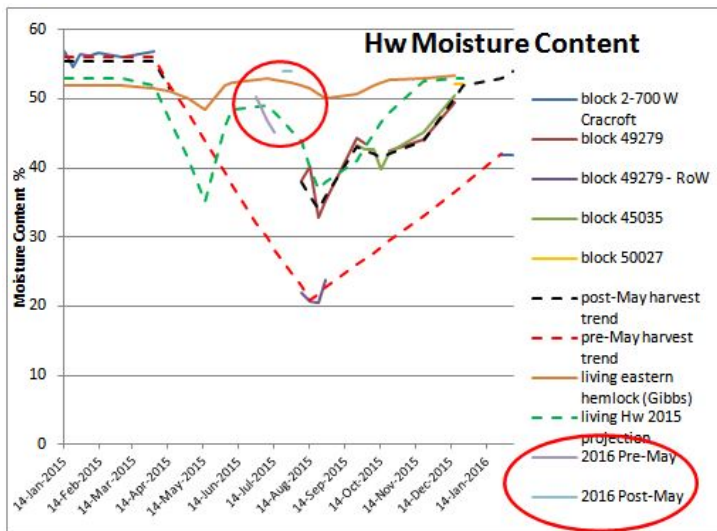


Figure 3. Hw MC data from 2016.

The new data is circled in red on the chart and in the legend. The dataset was not large, and it is difficult to make firm conclusions based on it.

Discussion

Although there are two distinct trajectories for the new data, the divergence point seems to be delayed approximately one month (or more), based on the expectations of the previous year's graph (Note that the 2016 data was projected onto a 2015 graph). The one month lag could be due to a variety of factors:

- Spring of 2016 may have been later than the spring of 2015.
- The slightly different geographical location of the sample collection may have different ecological and soil moisture conditions than last year's sample.
- Since last year's study projected the critical date from eastern data, perhaps the critical date for falling in coastal BC is closer to June than May.

Whatever the cause of the discrepancy, more data is needed to establish the critical felling date for hemlock on the coast to minimize moisture content. The fact that there were two apparent trajectories in the 2016 data is encouraging and seems to affirm that the 2015/16 study was headed in the right direction with its projections, although the timing suggested may need to be adjusted.

Building on the recommendations of the earlier study (Friesen, 2018), the data analysis for the 2016 study suggests that Hw felled after June will need to sit through a June before it can be safely watered, unless it has been felled for at least two months and the moisture content is below 51% at time of watering.

References

Friesen, C. (2018). *Hemlock Drying in Coastal BC:2015-2016*, Technical Report No. 14. Vancouver, BC: FPInnovations.

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