

## **Draft Notes from the Soil Nutrient Breakout Session**

### **Post-its grouped by categories:**

#### ***Soils considerations:***

- How do we go about studying soils before/after biomass removal to better our research?
- Calcareous Sand? Consideration? Would affect nutrient budget- especially Ca. (Note: calcareous parent material might bump up the Ca available in the nutrient budgets).
- Sugar maple decline with calcium depletion and accelerated leaching due to atmospheric deposition.
- Low organic matter concern on sand – jack pine sites with biomass harvesting.
- 24” or more soil – when logging done - frozen etc. can that be changed to be done.
- Many organic map units are 16-51” of muck over mineral. How will a site be evaluated given a 24” break? (Note: 16” differentiates a group of Histosols – it would be practical to focus on Histosols only for this guideline referencing the 24” organic limitation).

#### ***Other considerations:***

- Include carbon stocks and sequestration trade-offs.
- Do exotic earthworms impact the timing and availability of nutrients? If so, should problem areas have adjusted guidelines? (Note: for example earthworms on rich hardwood sites. Possibly nutrients available in early growing season but not available thereafter).

#### ***Practical matters:***

- How does a person monitoring the guidelines determine 1/3 fine woody debris.
- Site preparation – stumps & materials should not be removed from sites? This may not be possible in all planting sites. Burning vs. biomass harvesting.

### **Comments and Discussion Items from the Small Group Breakouts:**

Nutrient Budgets seem to be a major concern for biomass harvesting.

Are there options for nutrient poor sites to modify the guidelines to allow every other rotation or leaving <1” material for the residual?

Definition – our definition of biomass includes all above ground wood. We often talk about the traditionally non-commercial <3” or <4”. Eventually there will be a legislative definition.

Are slash mats always needed? Yes they are needed in wet areas due to excess moisture and in upland areas to protect against compaction.

Slash mats – are recognized as positive management applications – with biomass considerations what happens with the mat? Do you remove the mat for biomass, retain the mat, etc.? (Note: Economics will likely drive this decision depending on the time of year. Likely the mat is not usable for biomass since it is too high in soil content!)

Are we encouraging higher stumps? High stumps might be a good source of coarse woody debris.

Do stumps and roots enter into the nutrient budget? (Note: no they are on site and will not be harvested according to the guidelines so they do not add or detract from the nutrient budget.)

Soil survey – is there detailed breakdown of nutrients by soil type? (Note: There is some detailed breakdown but it is not consistent for all soils. There is a % particle size breakdown for all soils and this allows for the % clay criteria for an indicator of cations and subsequent nutrient availability relative to calcium and other nutrients.)

Benefits of biomass harvesting – when a biomass harvest occurred on a jack pine site (whole tree chipping) this encouraged jack pine cones to open and re-seed the site.

Currently nutrient poor sites on National Forests already have limitations of harvesting whole trees – by allowing jack pine harvesting on these sites, we may be creating mixed messages.

How many tons per acre are found in the following size classes on a site with any particular forest type?

- <1” material
- <2” material
- <3” material
- <4” material

Could profitability of the residual material be used in this guideline?

Another possible practical guideline would be to just leave the tops of every 5<sup>th</sup> tree to obtain the 1/3 residual.

What is the impact of leaf fall in the guidelines? There is some discussion on leaf fall in the literature and the harvest of leaf on vs. leaf off. Generally 6% of the nutrients are in the leaves.

Trees – is there information by tree species documented for nutrient uptake? Once we define standards will the guidelines really be adaptive? Guidelines tend to become fairly formal and do not seem to change very much over time.

How will these guidelines be used by field foresters? Soil maps will hopefully be used to develop maps. We re proposing to list soil series by county where there would be limitations.

Can Kotar's habitat typing be used? Yes, especially in northern WI.

The background materials for guidelines may be complex but we should develop implementation of the guidelines to be simple.