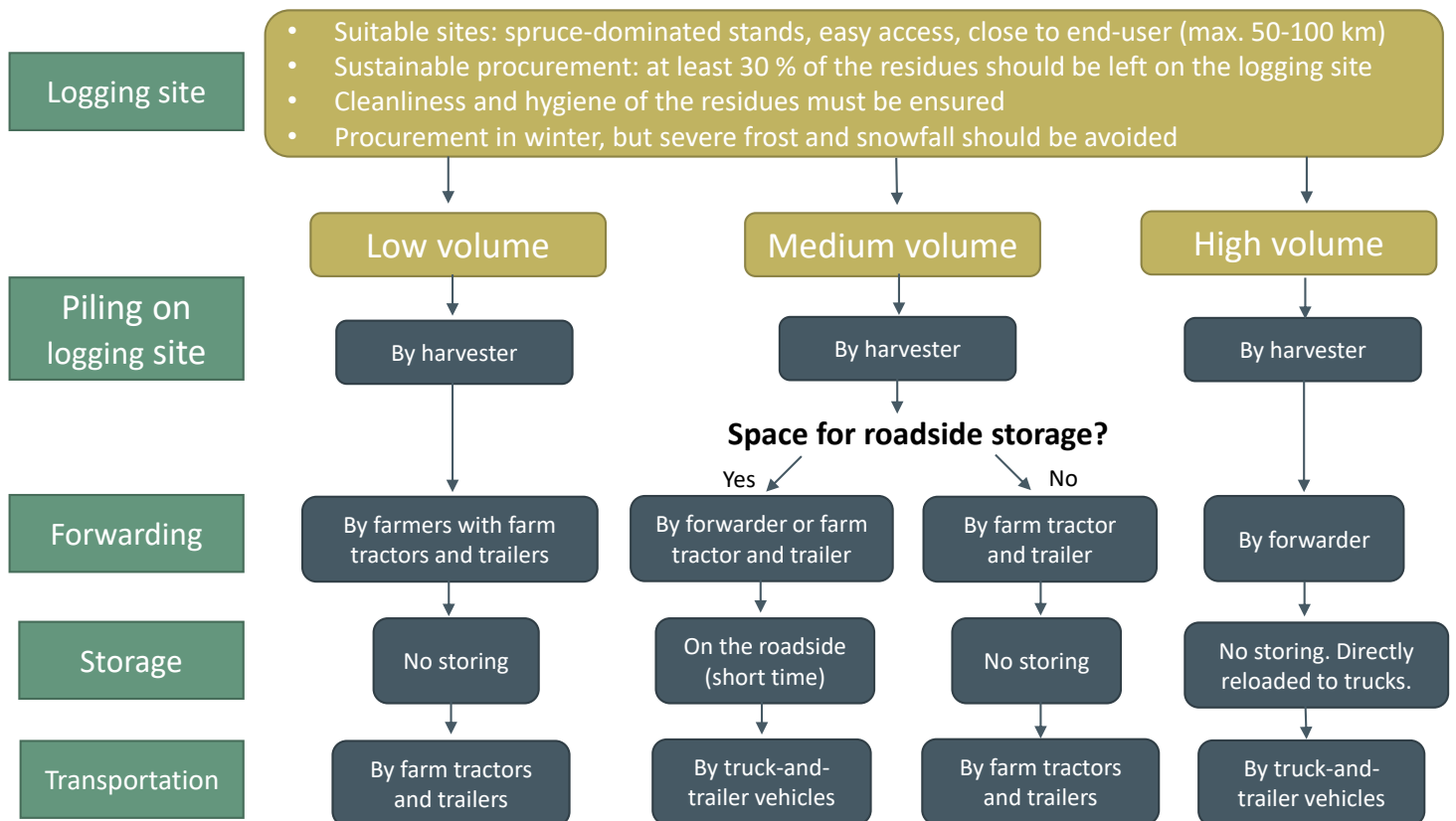


Guidelines for the procurement of fresh logging residues

The guidelines for the procurement of fresh logging residues presented here are written based on interviews with eight forestry operators. Small volumes of fresh logging residues can be procured using the existing methods and machines. The greater the demand for fresh logging residues is, the greater the changes needed to the current practices are. Therefore, the regional operating scheme for the procurement of fresh logging residues would consist of different operating options that could be used to procure residues depending on the demand or volumes of fresh logging residues.



Different operating methods

SMALL VOLUMES WITH FARM TRACTORS

If the demand for fresh logging residues is low (some hundreds of cubic metres), procurement could be carried out by farmers. In this case, it is not necessary to purchase separate equipment, as farmers could handle the procurement with farm tractors and trailers. The benefit of the farm tractor-based harvesting chains is that the tractor can be used for other purposes by the farmer. The farmers could collect the logging residues from the site as soon as the roundwood has been collected and transport the residues directly to the end-user without storage. The operating distances are short (<50 km) and the capacity is limited, but this should not be a major problem since transportation distances are today quite short and in a situation with low demand the logging sites closest to the end user will most likely be prioritized for extraction of logging residues.



MEDIUM VOLUMES AND ROADSIDE STORAGE

If the demand and volumes for logging residues were higher (some thousands of cubic metres), the harvesting of fresh logging residues could be carried out in the winter by the same contractors who are currently handling logging residues during the summer. Harvesting fresh logging residues during the winter could allow contractors to specialize in the procurement of logging residues and to be able to work all year round with that assortment. However, the challenge during the winter is that there is not enough storage space on the roadside for logging residues. It would be possible to operate in the sites with enough storage space, so that after forwarding the roundwood, the forwarder also takes the fresh logging residues to the roadside. Then the logging residues should be transported to the end-user by large truck-and-trailer vehicles as soon as possible.

No storage available

If there is not enough storage space next to the logging site, farm tractors with trailers could take fresh logging residues further (100-400 meters) to the roadside where logging residues could have their own storage. They could be transported from there to the end-user with large trucks.

The advantage of farm tractors is that they are faster than forwarders and they would not break the roads. One option would be to avoid storage of the logging residues by the roadside and to procure the logging residues, for example, with a special machine like a HavuHukka-trailer. The specialty of the trailer is the hydraulically sealing sides of the load space that enable the continued short-distance transport of the logging residues directly from the site to the end-user. In this case, a roadside storage is not required.

HIGH VOLUMES ADD RESOURCES

If the demand for fresh logging residues becomes high (tens of thousands of cubic metres) logistics can be reorganized to harvest fresh logging residues and it would be possible to invest in additional resources. Immediately after forwarding roundwood, fresh logging residues would be forwarded to the roadside and the loose residues would be loaded directly to the truck for transportation to the end-user. This would increase waiting times for either the forwarder or the truck, which would increase transportation costs. In both cases, the forwarding of the logging residues can be handled either by the same forwarder which handles the roundwood or by a different contractor, which only handles the logging residues.

SUITABLE SITES

A suitable site for harvesting logging residues is spruce-dominant (more than 50% of spruce) and the size of the logging site is at least 2 hectares. Nevertheless, even a smaller site could be suitable, if it is close to the road or to another site, where the logging residues are harvested from. When forwarding loose material, the forwarding distance from the site to the roadside storage should be less than 300 metres (Best Practices for Sustainable Forest Management, 2022). Based on the interviews, the long-distance transport of loose logging residues should not exceed 80 km, but on average transport distances should be shorter, about 40-50 km.

QUALITY OF THE LOGGING RESIDUES HAS TO BE CONSIDERED

When logging residues are utilized for purposes other than wood energy, the cleanliness and hygiene of the residues must be ensured during transportation and storage. New practices in procurement of logging residues require additional training for forwarder drivers. According to the interviewees, the quality of needles changes rapidly during the summer so fresh logging residues could probably only be harvested in winter. If possible, the procurement of fresh logging residues should not be done during severe frost and snowfall when the needles easily break or will be covered in snow.



ECOLOGICAL SUSTAINABILITY

When harvesting fresh logging residues, more nutrients are removed from the site because the logging residues are harvested with needles. This nutrient depletion may affect the growth of future tree generation. Currently, it is recommended to harvest logging residues in a way that as many of the needles as possible remain in the forest to maintain the nutrients of the soil and stands (Best Practices for Sustainable Forest Management, 2022).

Logging residues should not be harvested at all from poor soils. If the fresh logging residues are harvested and the needles do not have time to fall on the site, the ecological sustainability of the logging residue procurement must be ensured.

Currently, there are recommendations for harvesting fresh logging residues, and these recommendations should be followed in the future as well (Best Practices for Sustainable Forest Management, 2022):

- It is recommended that at least 30% of the total amount of logging residues are left at site, so that the residues are distributed as evenly as possible over the entire harvesting area.
- Outside the frost periods, the number of logging residues should be ensured by pruning approximately every fifth of the conifers outside the residue heaps. In addition, there are always some small-diameter trees, the bottoms of logging residue heaps and broken branches and tree-tops left in the felling area.
- When the trees have been felled during severe frost, the amount of logging residues that remain at the site is usually sufficient.

Currently, the harvesting of fresh logging residues is not very common. If it would be done to a greater extent, probably a more detailed examination would be required to estimate what is enough logging residues should be left at the site.

REFERENCES:

[Best Practices for Sustainable Forest Management in Finland](#) // Metsänhoidon suositukset, Tapio 2022. Hakkuutähteen korjuu uudistushakkuualoilta.

Read more:

[Regional operating scheme for the procurement of fresh logging residue](#)

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September 2022

