

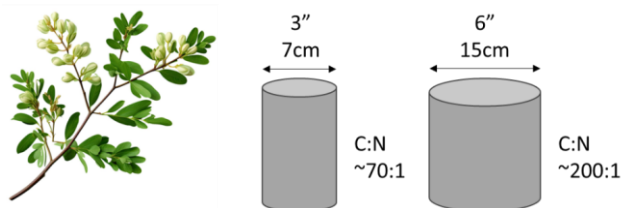
What is Ramial chipped wood (RCW)?

Woodchips produced from young, fresh-cut branches of tree/hedge species, using smaller diameter branches, typically less than 7 cm (3"). These areas of the plant are considered the most nutritionally rich, abundant in nutrients, sugar, protein, cellulose, and lignin, in comparison to bark, sawdust, trunk wood, and other wood wastes. The practice of using these woodchips originates from techniques developed in Quebec, aiming to make use of forestry waste products, an approach pioneered by Gilles Lemieux.



Why smaller younger branches?

As branches mature, changes occur in the C:N (carbon:nitrogen) ratios of the organic material. These changes influence the breakdown and degradation when these materials are applied to the soil. This applies to the incorporation of woodchips into the soil or their use as mulch, as well as in composting processes.



Higher C:N ratios lead to microorganisms needing more N to break down C rich components. Soil microorganisms then compete with plants for available N potentially leading to initial N deficiencies.

Use of Ramial woodchips

Fresh RCW is commonly tilled directly into soils, used as a mulch or composted



For tillage or compost, you may want to consider adding extra nitrogen

As a perennial mulch RCWs have been noted to work well for preventing broadleaf weeds.

To note - RCWs have been more heavily researched in arid tropical climates where they act to improve soil moisture retention enhancing crop yields with benefits to soil temperature, as with any mulch



'copy pasting forest soil into agricultural soil, minus the trees' - Gilles Lemieux

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Choosing trees

Limited information is available regarding the ideal tree species for use in RCW. Many practices rely on a combination of locally available sources. However, the following are suggested:

- High lignin species (Oak, Willow, Ash, Birch)
- Consider climax tree species (Oak, Beech)
- Collect + spread in Autumn (trees shed and helps with decomposition)
- Minimise % of conifers due to acidity + growth inhibiting impacts
- Source locally for sustainability

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Studies show that the source material of RCWs has an impact on the effects as a soil amendment or compost. However, there have been limited investigations of different species

RCW for sustainability



**BUILDING
SOIL HEALTH**

RCWs enhance fertility by serving as an excellent source of decomposition for Basidiomycetes fungi. These fungi release nutrients that benefit other components of the soil microbiome, thereby enhancing overall soil health. This process aids in the resilience and productivity of the soil, contributing to the increased sustainability of agricultural plots and market gardens.

The sourcing of RCW could impact sustainability, especially when a mulch thickness of 5-10 cm, uses a significant amount of raw material. If sourcing involves byproducts that could be used elsewhere, such as burning in combined heat and power systems to generate heat for a greenhouse or home, along with electricity produced, this becomes more complex

You can produce ramial woodchips through regular coppicing and pruning if you can establish connections with farmers, foresters, arborists, landscapers, maintain your own hedges and trees, or plan to cultivate short rotation coppices. Using a circular approach to sourcing will contribute to ramial woods overall sustainability

Compared to other composts

Ramial woodchips are suggested to play similar roles to general composts.

- They can enhance soil water retention and fix nitrogen
- Similar nutrient release (RCW potentially more gradual)
- Similar plant growth (though studies showed some improved protection to pathogens and pests by RCW)

They can also be used due to higher C content to help balance composts with particularly high N content for better overall mixed compost production



Compared to other mulches

In general, it demonstrates similar levels of success to other mulches, showing that it provides higher slowly -released nutritional value compared to other materials with higher C:N ratios, such as bark, and straw. Suggesting the potential for long -term improvements in plant growth and soil health.

Final Considerations

- Is there cost and difficulty to sourcing? Is it worth the potentially marginal improvements studies suggest?
- Best when economy of scale is feasible
- Largest impacts are in long term soil effects so best for market gardens and plots not in potted plants
- We also suggest you read the [following factsheet](#)

Reference

Fontana (2023) <https://doi.org/10.1016/j.ietl.2023.103143>
Daassi (2020) <https://doi.org/10.1016/j.indcrop.2020.112880>
Soumare (2002) <https://doi.org/10.1080/01448765.2002.9754955>
Lalande (2009) <https://doi.org/10.1017/S0889189300007815>
Lemieux & Germanin (2000) [Ramial Chipped Wood: the Clue to a Sustainable Fertile Soil](#)
Barthes (2023) <https://doi.org/10.1007/s10457-014-9743-0>
WOOF project <https://agriculture.co.uk/research-projects/woodchip-fertile-soils-woofs/>

Commented [SG7]: Loving the links for further reading

Extra information not intended for factsheet

Species information	Incorporation type	Main findings	Study
Various (5 – 10% conifer included)	Soil amendment (rototiller)	• No Yield impacts • Increased macronutrients available over time • Decreased micro-nutrients over time • Increased soil organic carbon (SOC) – 5 years • Improved soil quality and health	Fontana et al. (2023)
Various species	Soil amendments and mulching	• Similar to Fontana et al. for amended soils • Initial need to add nitrogen in first year of soil amendment to mitigate nitrogen needed for fungal breakdown • Mulch improves soil hydro-physical properties	Barthes, Manlay and Porte (2010)
Mixed hedgerows Poplar Willow Hazel	Soil amendments	• Role in increasing soil phosphorous • Some minor evidence of protection of potatoes and swede from pests and pathogens • Equivalent role to compost with some differing impacts on soil	The WOODchip for Fertile Soils (WOOFs)