

# Towards the Sustainable Production of High Quality Rosewood Essential Oil from cultivated Young *Aniba rosaeodora* Duke

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*Aniba rosaeodora* Duke (rosewood, Lauraceae) is a slow growing evergreen tree, indigenous over Brazilian Amazon, Guyana, Suriname, French Guiana, Venezuela, Colombia and Peru. Its fragrance is essentially due to high wood content in sweet-smelling terpene linalool. Essential oil can be extracted from steam distillation of *A. rosaeodora* chipped wood. All parts of the tree are fragrant although traditionally, only the trunk wood is distilled. This essence possesses a peculiar refreshing, sweet, woody, aromatic, somewhat rosy odor, which makes it one of the most valuable ingredients in top-of-the-range perfumery. Non-sustainable exploitation led to rarefaction of this tree, which is now facing a serious risk of extinction. *A. rosaeodora* is now fully protected in French Guiana and is not exploited any more. However, rosewood oil from French Guiana still possesses an excellent reputation in perfumery. It is

especially renowned for its high relative proportion of *leavo*-linalool. In fact, both enantiomers of linalool may be found in rosewood in variable relative proportions. Oil containing more than 50% of (-)-linalool is most appreciated by perfumers. Today, a new thought about rosewood culture and sustainable exploitation is pertinent.



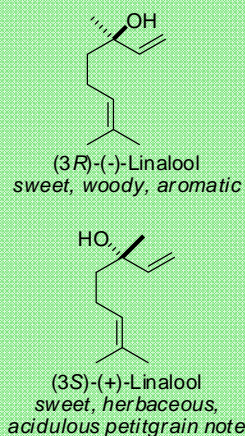
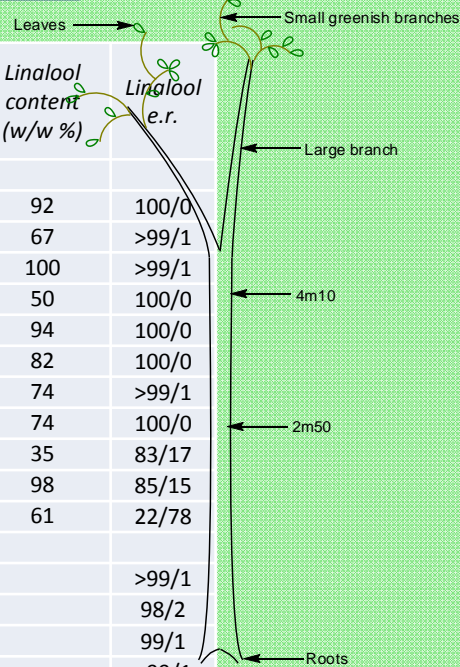
Agelas plantation, Roura, French Guiana



Rosewood tree nursery, French Guiana

Will understanding linalool distribution and enantiomeric ratio in different parts of the tree contribute to rationalize the methods of cultivation and harvest?

Entry	Tree organ	Distillation Yield (%)	Organ relative humidity (w/w %)	Linalool content (w/w %)	Linalool e.r.
<b>Young <i>A. rosaeodora</i></b>					
1	Roots	0.28	100	92	100/0
2	2m50 – Inner wood	1.29	40	67	>99/1
3	2m50 – Outer wood	0.94	42	100	>99/1
4	2m50 – Bark	0.54	78	50	100/0
5	4m10 – wood	0.96	51	94	100/0
6	4m10 – Bark	0.67	77	82	100/0
7	Large branch – Wood	1.22	44	74	>99/1
8	Large branch – Bark	0.81	61	74	100/0
9	Small branches – Wood	0.76	38	35	83/17
10	Small Branches – Bark	1.14	53	98	85/15
11	Leaves	0.30	88	61	22/78
<b>Old <i>A. rosaeodora</i></b>					
12	Bark				>99/1
13	Sapwood				98/2
14	Outer heartwood				99/1
15	Intermediate heartwood				>99/1
16	Inner heartwood				98/2



- ✓ Distillation yield correlates to plant part humidity. Oil level is therefore constant if compared to dry vegetal matter.
- ✓ Linalool is the major constituent in all tree organs except small greenish branches.
- ✓ (-)-Linalool always accounts for nearly 100% of essential oil linalool, apart from small greenish branches and leaves oil in Young *A. rosaeodora*.

**Conclusion** : Many questions remain on the possible selection of genotypes on the linalool yield and on the optimum age of harvest for coppice shouts to have the best combination of quality and yield. However, it seems that Agelas genotype young *A. rosaeodora* can produce high quality rosewood essential oil in good yield provided that chlorophyllous parts be removed prior to distillation. Therefore, such trees may be used for coppiced trees cultivation and sustainable oil production, allowing for a short-rotation of trees in plantations.