

Forest Models 2021-2022

Homework 7

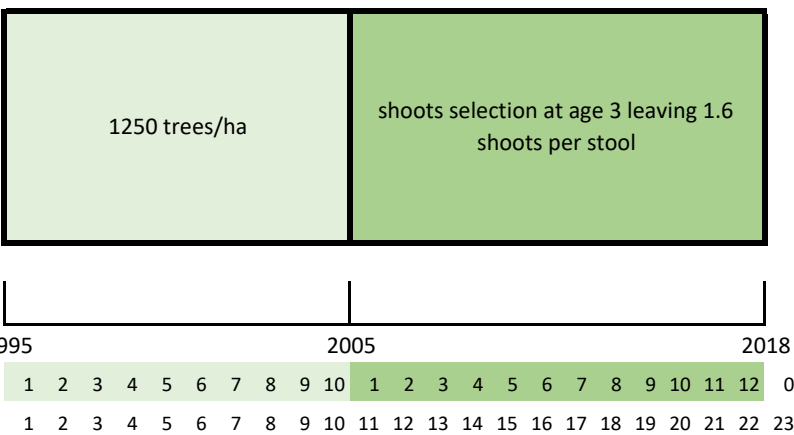
Module 7: StandsSIM.md for whole stand models (eucalypt)

A forest owner decided to lease his property of 62 ha to a pulp and paper company (PPC). The contract gave the PPC the right to plant and manage the area as they wished for a period of 23 years. This gave the PPC the right to define the management and wood extraction terms as well as setting the price paid for the wood that would be sold (the owner would receive 45% of the income resulting from the wood harvested). Unfortunately, the forest owner disrespected the contract and has been taken to trial.

Location: municipality of **Grândola**; altitude **53 m a.s.l.**

Area: 62 ha

According to the contract:

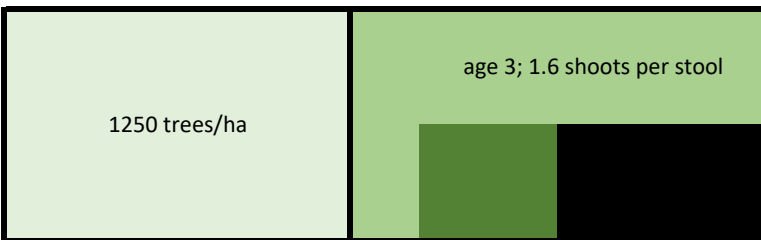


- 1995 plantation
- 2005 final cut at age 10 and transition to coppice
- 2018 coppice final cut at age 12
- 2019 end of contract

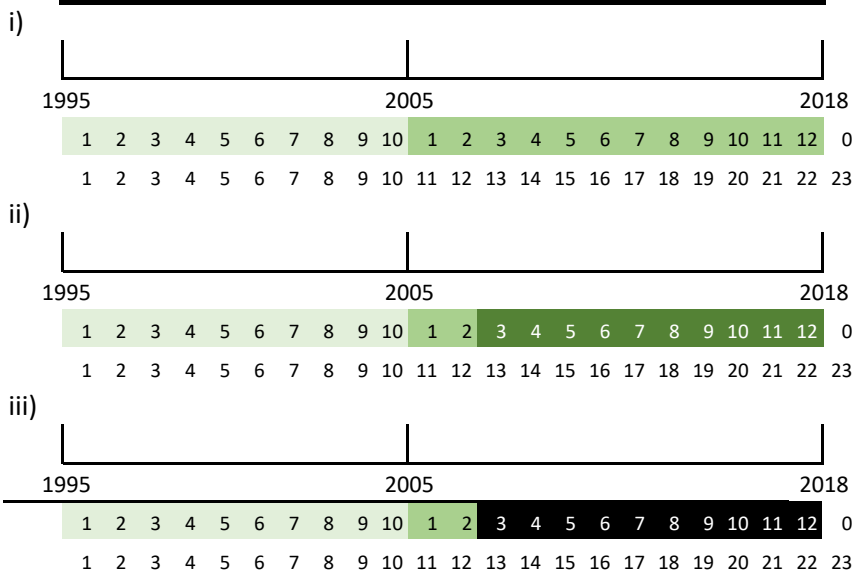
the owner would receive 45% of standing volume paid at 18.5€/m3 (consider top diameter of 5 cm)

in 2005 when the stand was harvested, a total yield of 5000 m3 was available (standing volume overbark bark without stump)

In 2007, the owner, unhappy with the pulp and paper company, decided to harvest 32 ha of the stand, performing stump destruction in 18 ha of the 32 ha leading to the following situations in his property:



- plantation
- 1st coppice
- 2nd coppice
- unforested area



= 62 ha - 32 ha

= 30 ha

= 32 ha - 18 ha

= 14 ha

= 18 ha

The pulp and paper company claims the forest owner caused them a major loss and demands a restitution of 140 thousand €

Questions:

a) to run this simulation which option of standsSIM.md would you choose?

yield table existing stand Multiple stands Justify: _____

b) you are missing site index, how could you obtain it based on the data you've been provided?

c) assume the pulp and paper company will not change the management originally defined and will manage according to the situations described in i), ii) and iii) for the 22 years. Consider a commonly used FMA for eucalypt and an interest rate of 3% and run simulations to determine if the amount the pulp and paper company claims is fair. (If you were unable to determine the site index in b) consider it = 19)

c.1) how many simulation runs do you have to make? Justify: _____

c.2) would you consider the same planning horizon for situations i), ii) and iii). Justify. _____

c.3) Say if and what you would have to change in the FMA exemple files existing in StandsSIM.md to run this simulation

<input type="checkbox"/> economics	_____
<input type="checkbox"/> consumables	_____
<input type="checkbox"/> assortments	_____

c.4) If you choose to use a previously prepared FMA, what will you have to guarantee to be able to simulate the given situation (think about the details of the operations and the list of operations to be carried out in particular for coppice in situations i), ii) and iii)

c.5) run the simulations and produce an estimate of the loss in terms of volume harvested for the total area of 62 ha comparing the forest management prescription originally planned and the present situation after the forest owner's interference.

c.6) Do you think the amount of money asked by the pulp and paper company is reasonable? Comment

d) Prepare a prescription assuming the pulp and paper company would immediately replant the area where the stumps were destroyed (assume the same harvest age originally planed)

e) what would you have to change in the previous prescription if the pulp and paper company would wish to anticipate harvest before the end of the contract?