

Why mixed polycyclic plantations in the Mediterranean?

Paolo Mori

Compagnia delle Foreste



...because we need...

... regular and frequent incomes for tree farmers

... less trade risk for the little tree farmers

... more continuity of ecosystem services for the society

... less environmental impact of wood productions

in other words ... wood and environment

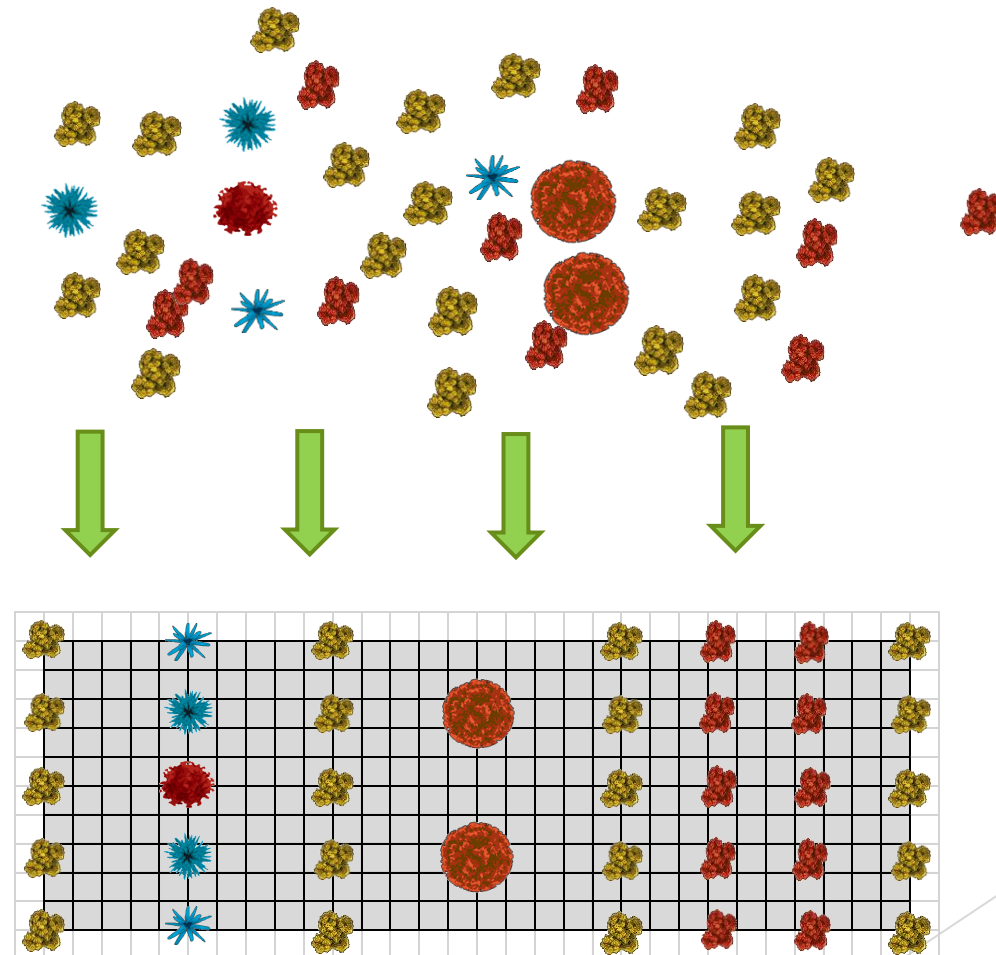
What strategy for these objectives?

Take inspiration from mixed and uneven-aged forests to design and manage well ordered mixed and uneven-aged tree plantations

Natural
mixed and
uneven-aged
forest



Permanent
Polycyclic
Plantation (or
3P Plantation)



What tactics to design a polycyclic plantation

Tactic 1 - We plant in the same plot of land:

- trees and shrubs
- Species with different growing speed
- Species that we can do different regeneration strategies (plantation or agamic regeneration)


What tactics to design a polycyclic plantation

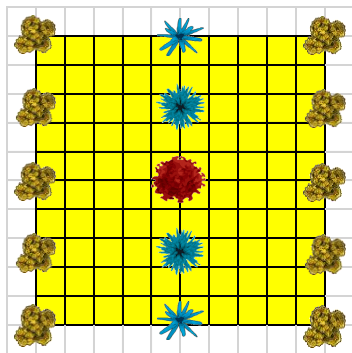
Tactic 2 - We give to each plant the gross production surface needed to obtain the assigned objectives without negative competition with other trees until the objective is reached


Tactic 3 - We establish a hierarchy among the trees and among trees and shrubs

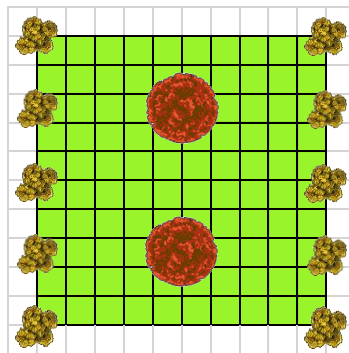
What tactics to design a polycyclic plantation


Thanks to the Tactics 1, 2 and 3 - We can design many types of blocks namely the elementary parts of plantation scheme

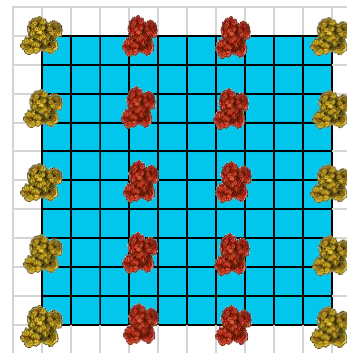
Block with long cycle
main tree 
(20-25 Years)



Block of short cycle
main trees 
(8-12 Years)

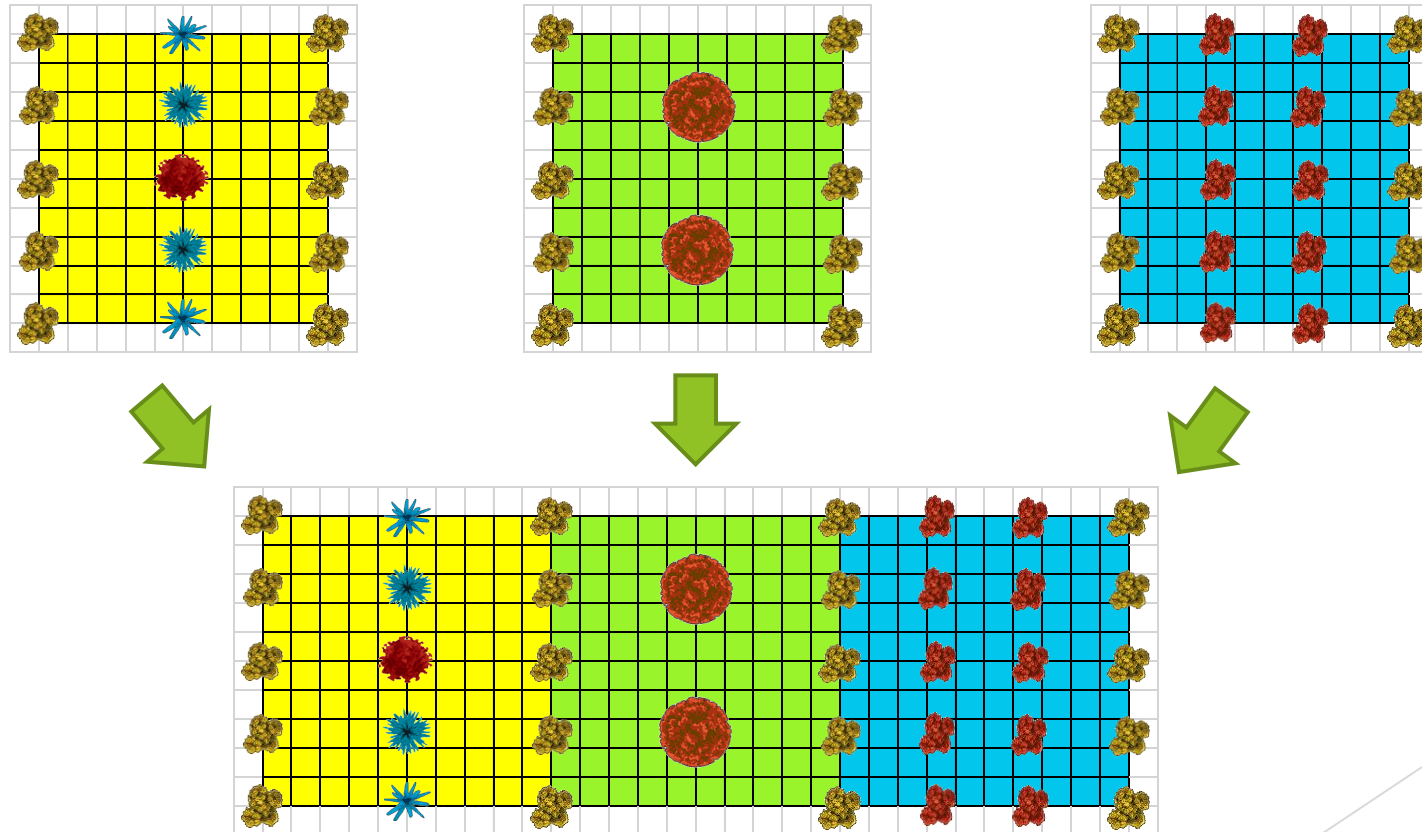


Block of very short
cycle main trees 
(5-7 Years)

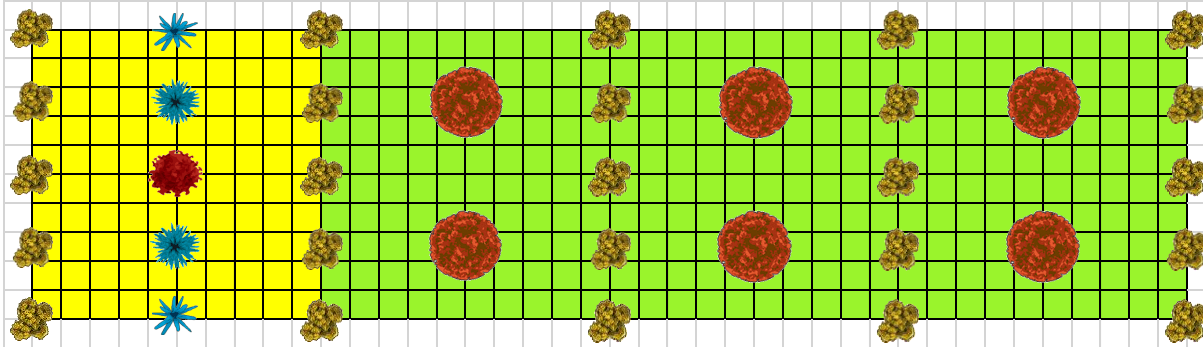


What tactics to design a polycyclic plantation

When we designed all the useful blocks to obtain the objective, we joint the blocks to form the plantation scheme...

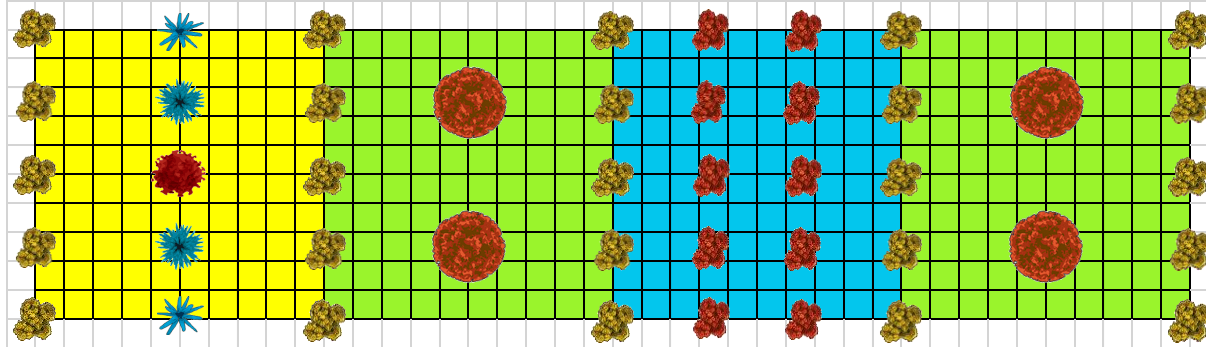


The blocks can be joined like LEGO Blocks to obtain the desired percentage of wood production ... for example...



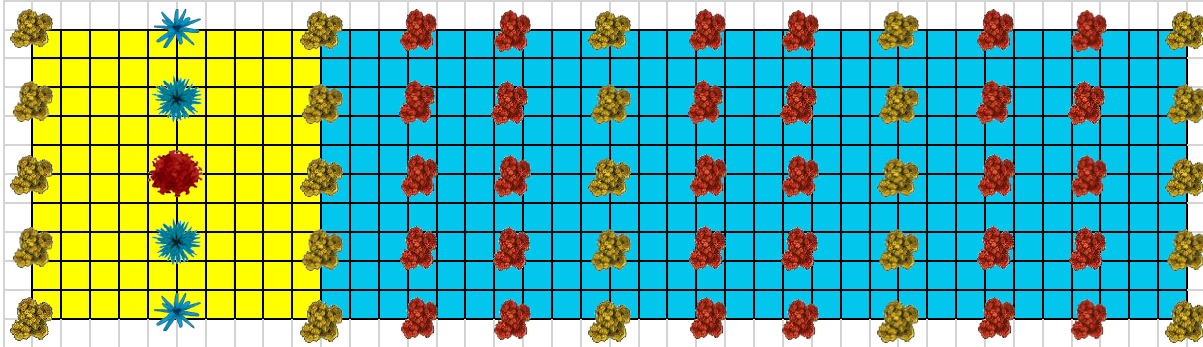
25% of long cycle oaks - 75% of short cycle poplar

The blocks can be joined like LEGO Blocks to obtain the desired percentage of wood production ... for example...



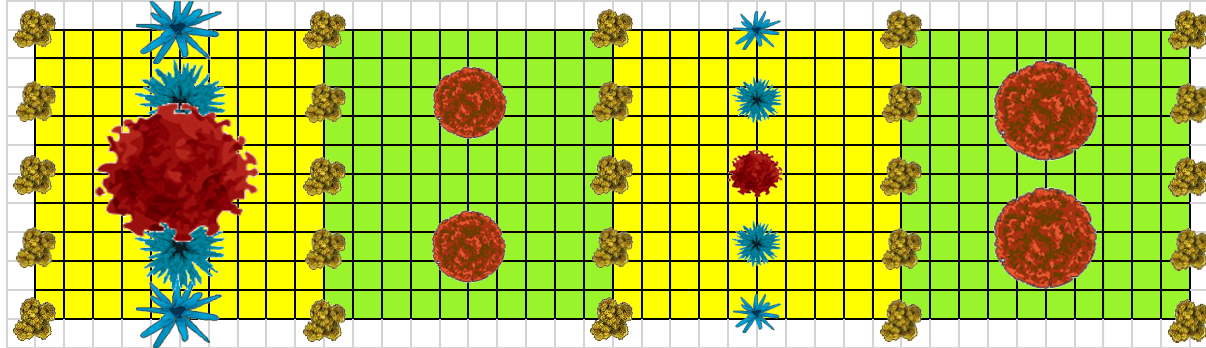
25% of long cycle - 50% of short cycle - 25% very short cycle

The blocks can be joined like LEGO Blocks to obtain the desired percentage of wood production ... for example...



25% of long cycle - 75% very short cycle

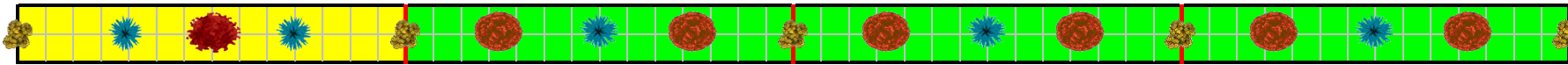
The blocks can be joined like LEGO Blocks to obtain the desired percentage of wood production ... for example...



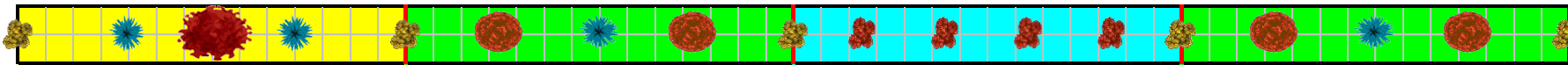
50% of long cycle - 50% of short cycle (with 5 different ages)

A similar design strategy can be used also for linear polycyclic plantations...

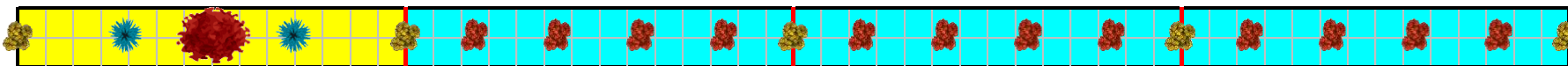
1CML_3CB



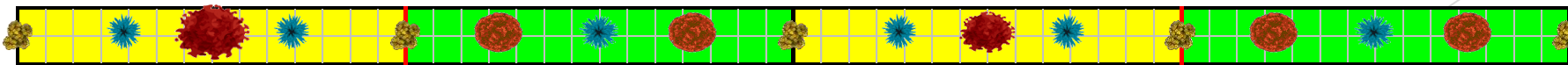
1CML.2CB-1CBB

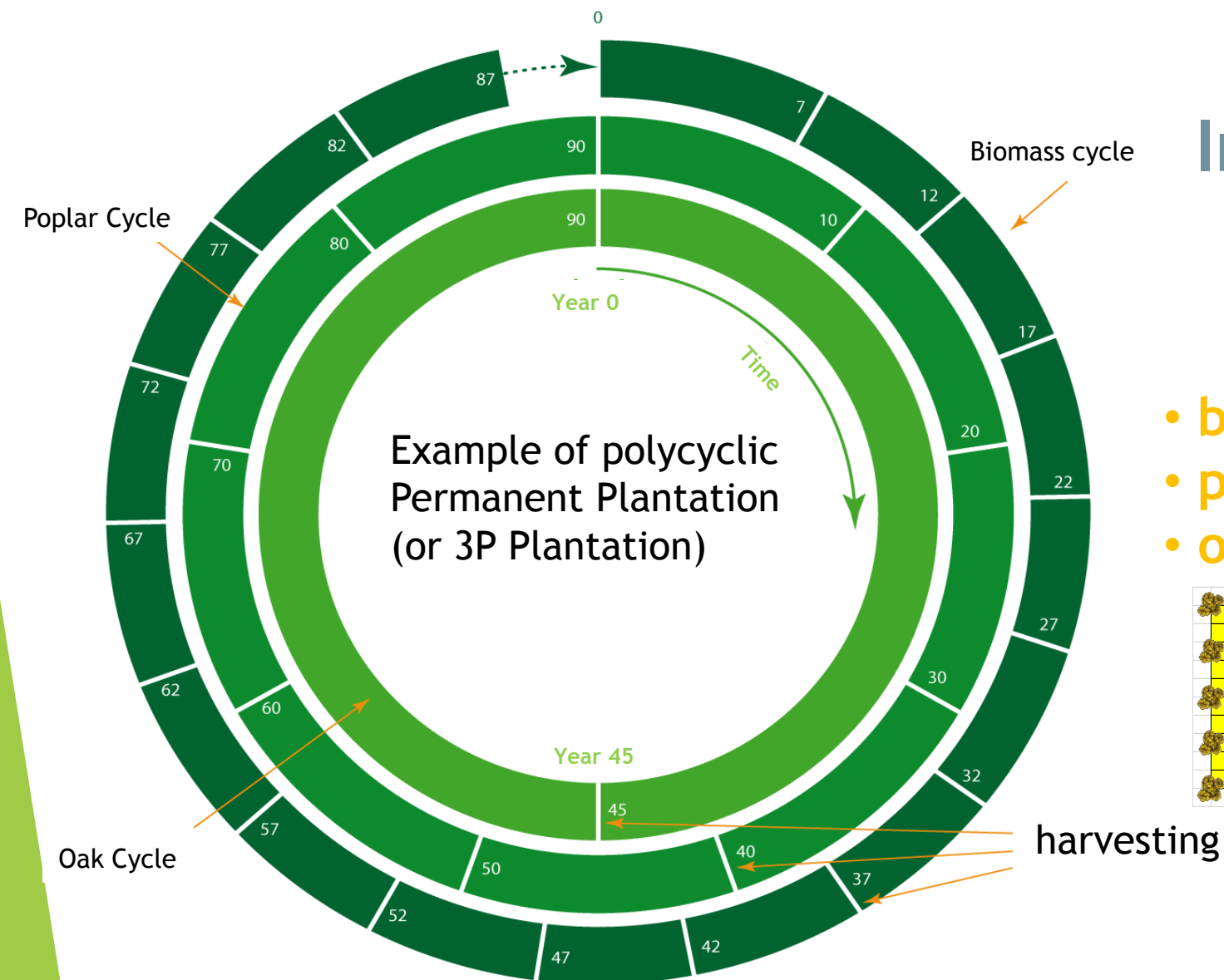


1CML-3CBB



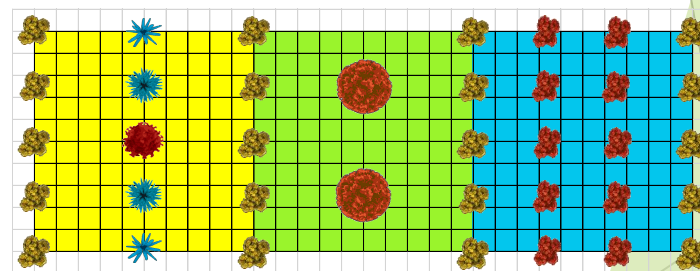
1CML-1CB





Income every
3-4 years
(in average)

- biomass every 5 years
- poplars every 10 years
- oaks every 40-45 years



245 ha of experimental polycyclic plantations



What are the results in the first 20 years of experimentation?

Production: several wood productions in the same plot of land (even if it is a small plot of land)



What are the results in the first 20 years of experimentation?

Reduction of management costs in term of:

- Less soil tilling
- Less irrigation water
- Less disease treatment
- Less fertilization (use of nitrogen fixing species)
- Less thinning and more harvesting (thanks to polycyclic design strategy)

All this was done with the same or greater current annual increment of each main tree in comparison to traditional monocyclic, monospecific and even-aged tree farming

What are the results in the first 20 years of experimentation?

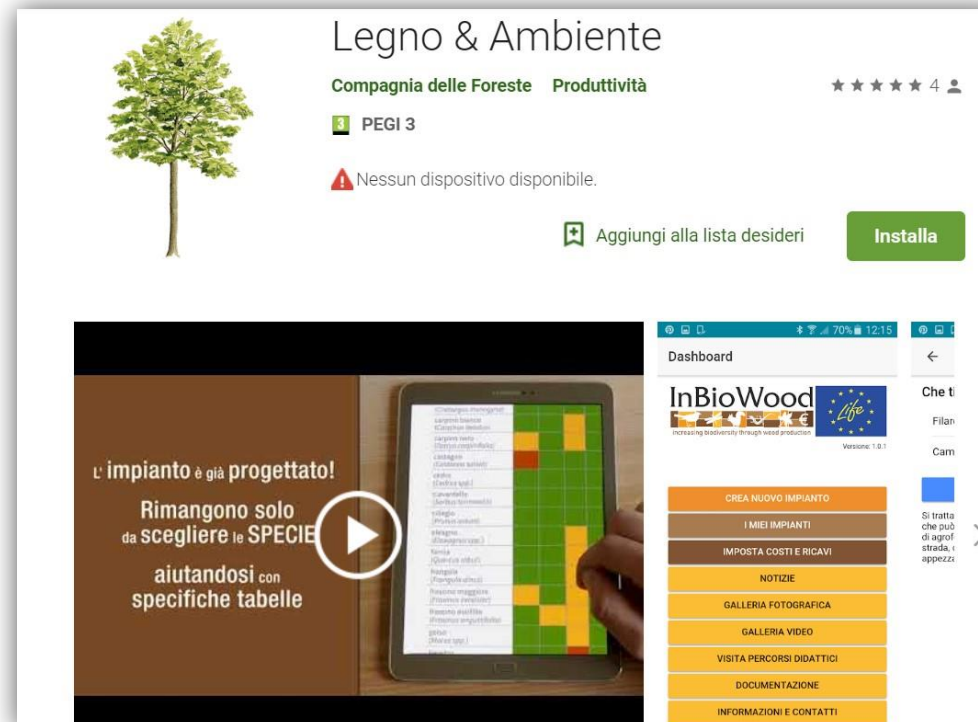
Environmental benefits in term of:

- Less CO2 emissions (because less soil tilling, water irrigations, chemical treatment and fertilizarion)
- Greater and lasting storage of CO2 in the soil
- Less use of water
- Less use of chemicals for disease treatments
- Greater lasting of habitats and landscapes
- Greater biodiversity

The design of polycyclic plantations is not always easy, but for the beginners, with the LIFE+ InBioWood we made:

- 25 ha (in field) + 45 km (in row along the rivers) as demonstration of 3P Plantations
- 1 APP with 5 questions. The 5 answers allow to find a solution among 116 projects and financial orientative evaluations about permanent polycyclic plantations

The name of the APP is
“Legno & Ambiente”
(for the moment only in Italian)



Thank you for your attention



paolomori@compagniadelleforeste.it