



Taste it, enjoy it. it's olive oil.

| 24

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ICEX

#alimentosdespaña

**EL PAÍS
MÁS RICO DEL
MUNDO**

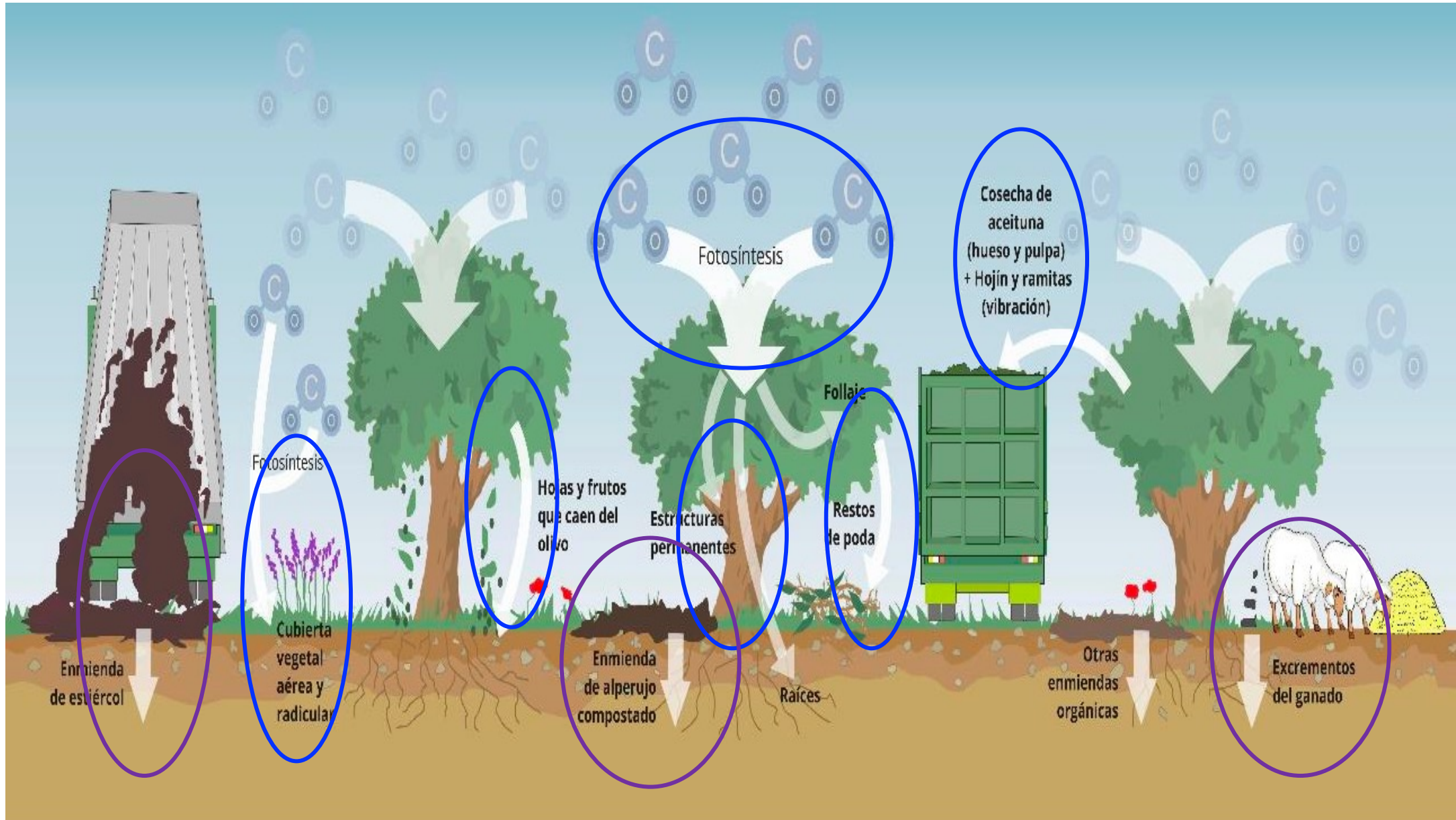


Carbon balance in olive orchards

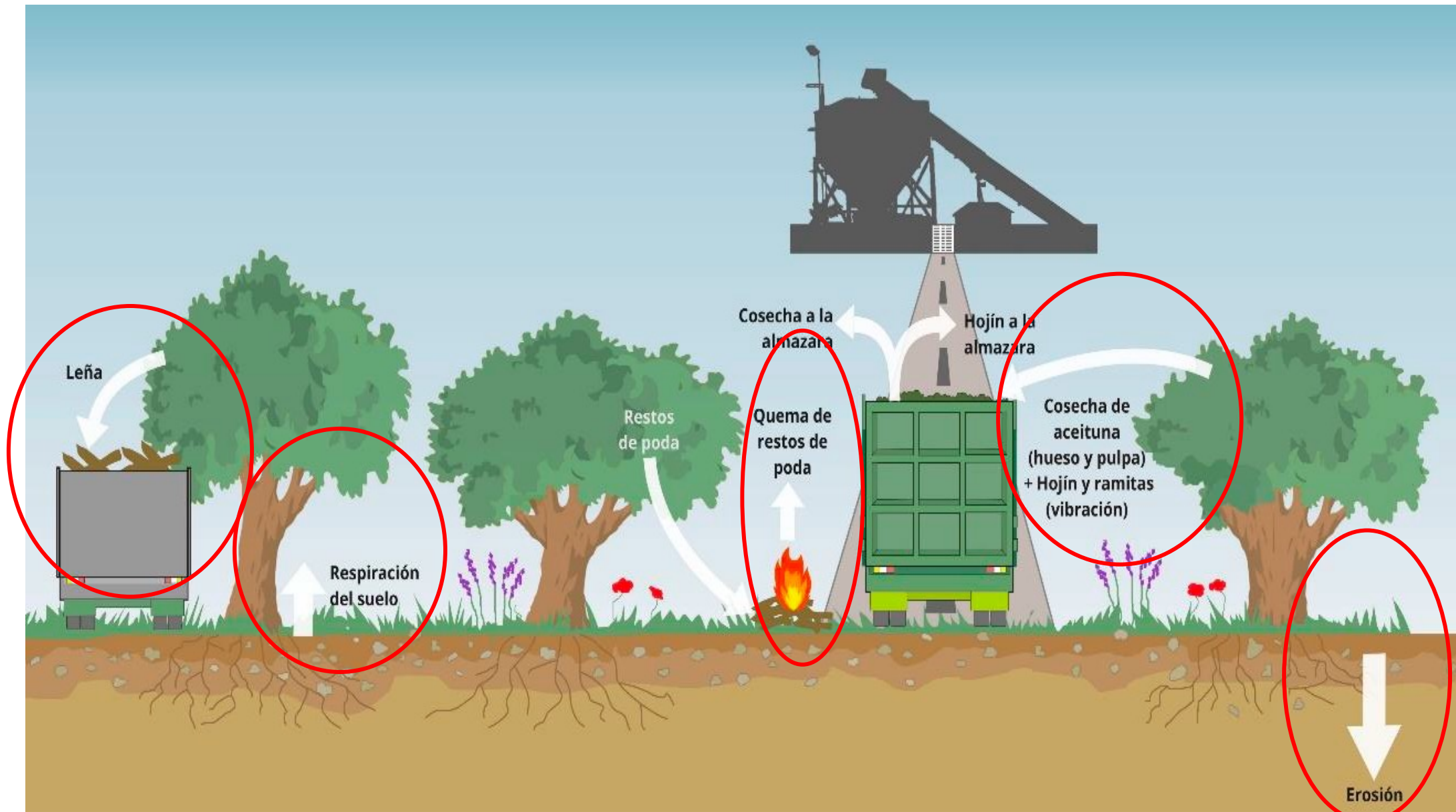
Roberto García Ruiz
(University Institute of Research on Olive groves and Olive oils)
(rgarcia@ujaen.es)



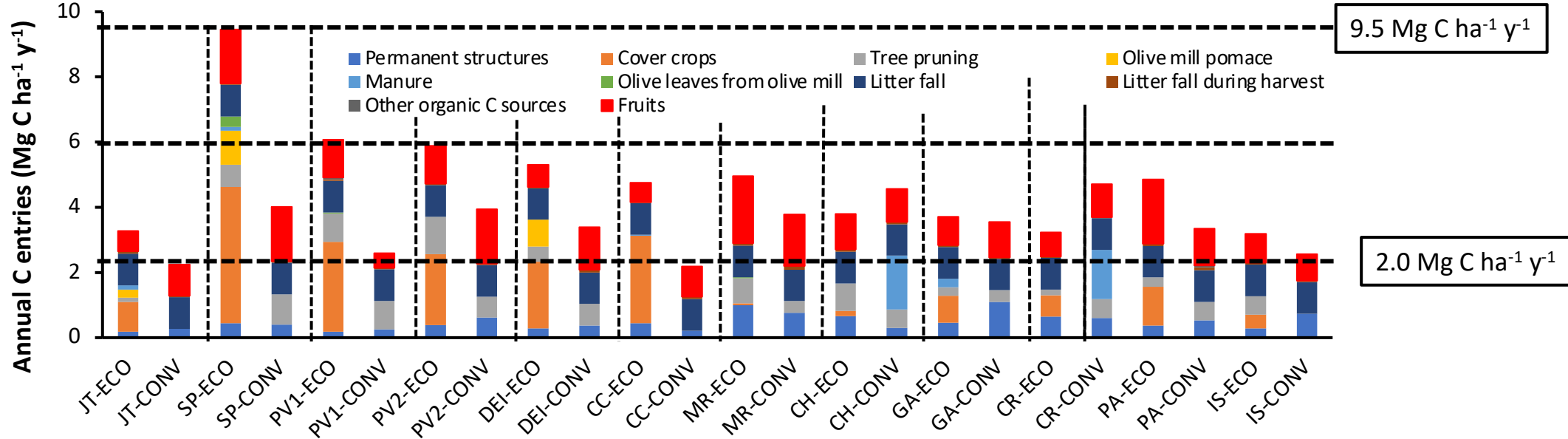
C entries to consider in a C balance in olive orchard



C outputs to consider in a C balance in olive orchard



Main C entries in olive orchard

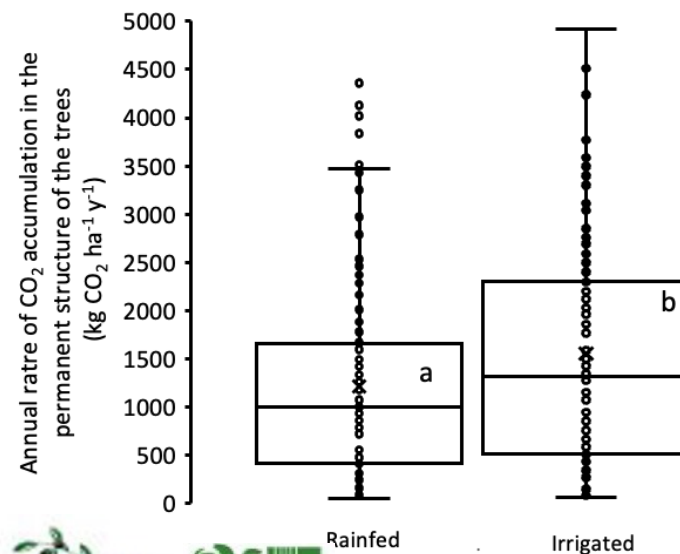
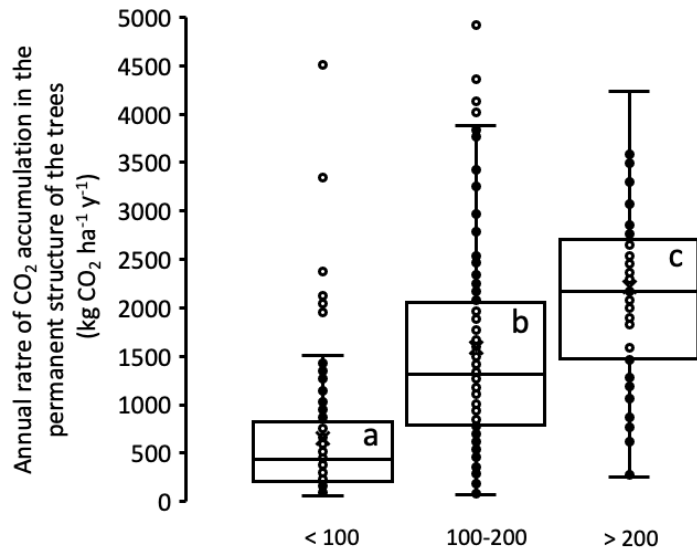
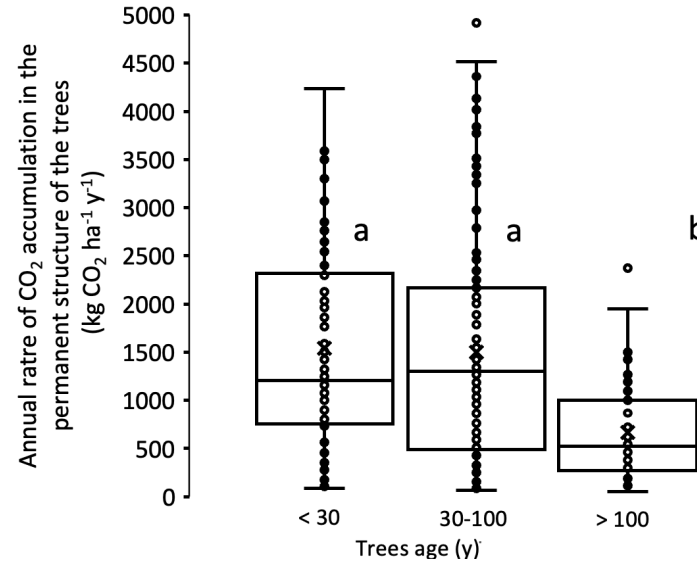
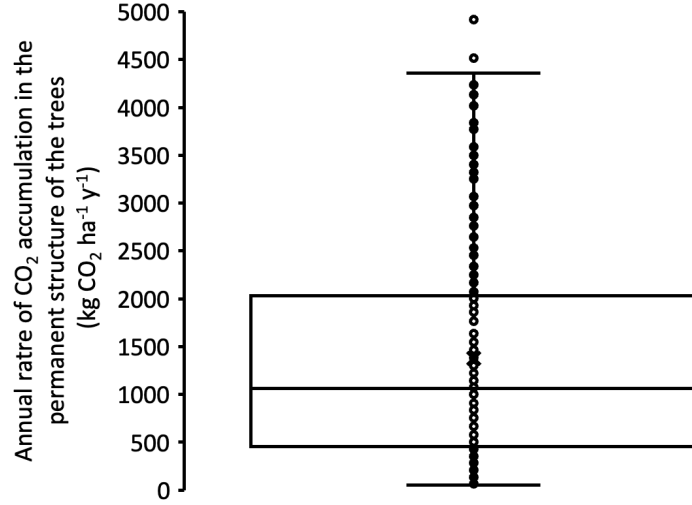


The vast majority of the carbon entries come from atmospheric CO₂, which is converted into organic carbon in the olive fruits, olive leaves, and tree pruning. The carbon in olive fruits is exported out of the orchard, whereas the carbon in olive leaves and tree pruning reaches the soil.

Temporarily spontaneous cover crops, when implemented, increase the carbon entries by an average of 25%. This carbon will reach the soil when controlled.

The atmospheric CO₂ that accumulates annually in the permanent structure of the tree is an important input of C that remains on the farm for hundreds of years (in traditional olive groves).

The atmospheric CO₂ that accumulates annually in the permanent structure of the tree is an important input of C



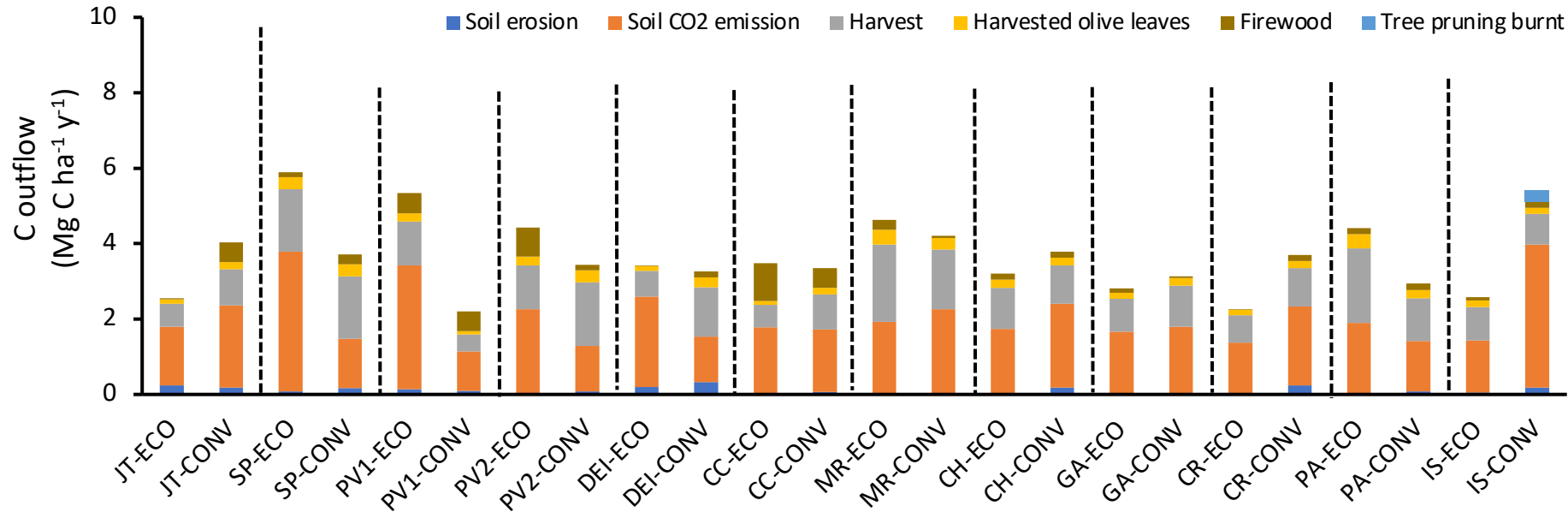
The annual rate depends on the age of the trees, tree density and irrigation regime

This annual accumulation is an advantage compared to other annual oil-producing crops

It remains relatively constant at the landscape scale if new plantations replace old ones.

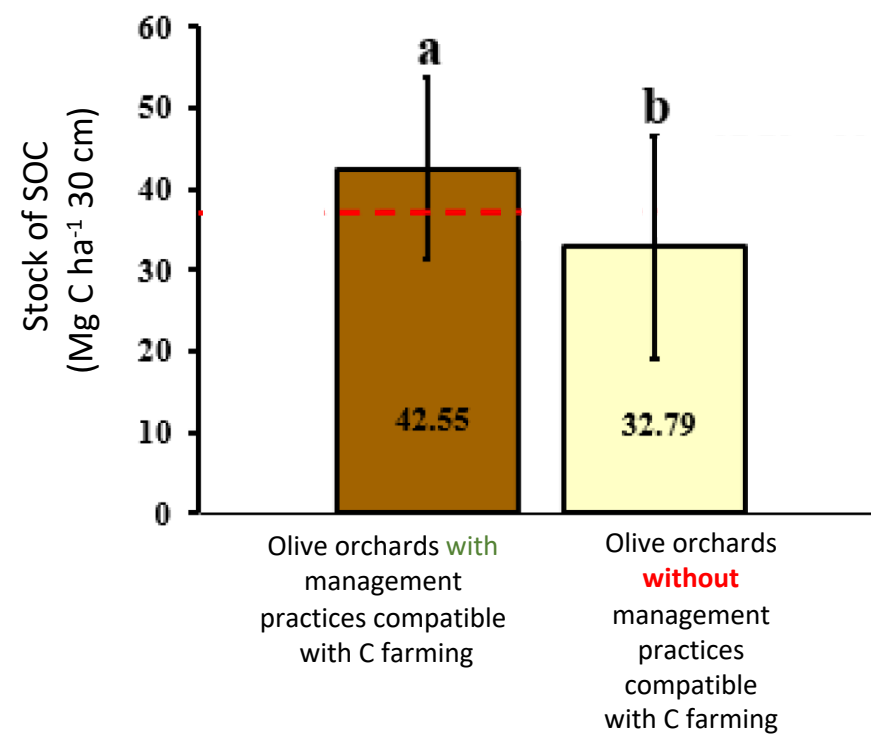
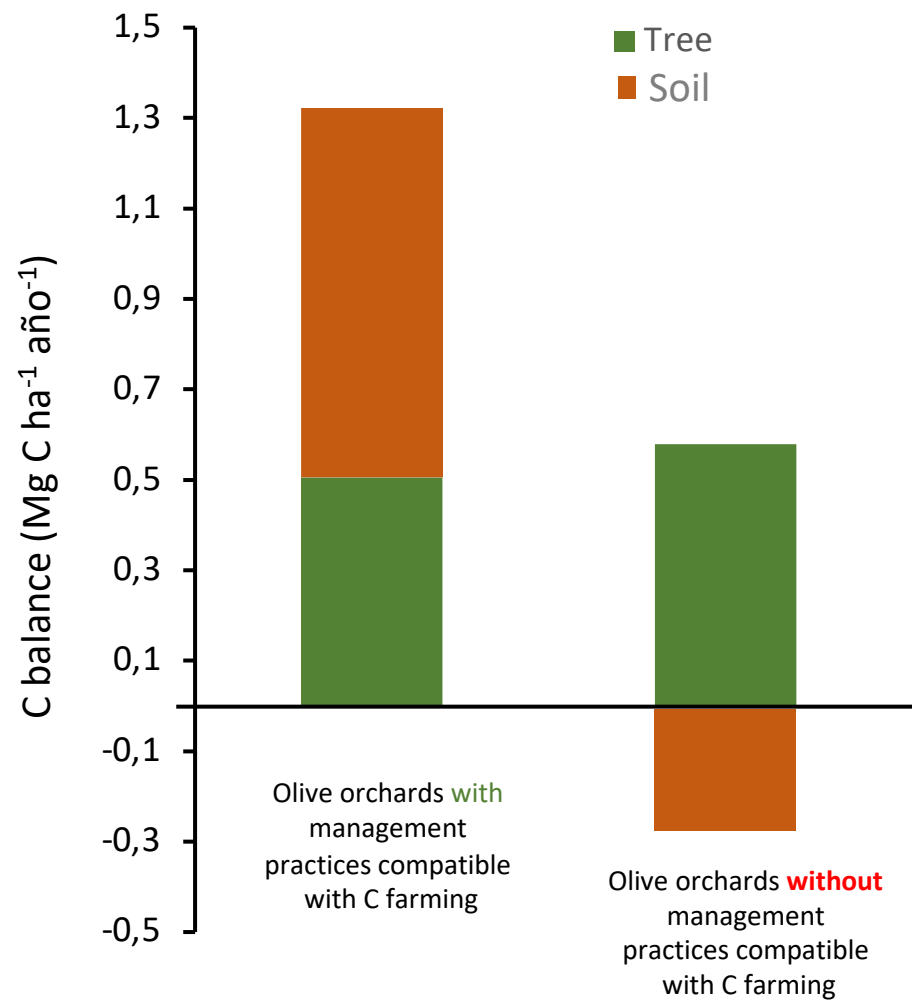
In any case, on average, the permanent tree biomass of a 150-year-old olive grove of one hectare prevents the emission of between 50-55 Mg CO₂ when burned, which represents an annual avoidance of around 350 kg CO₂ ha⁻¹ y⁻¹.

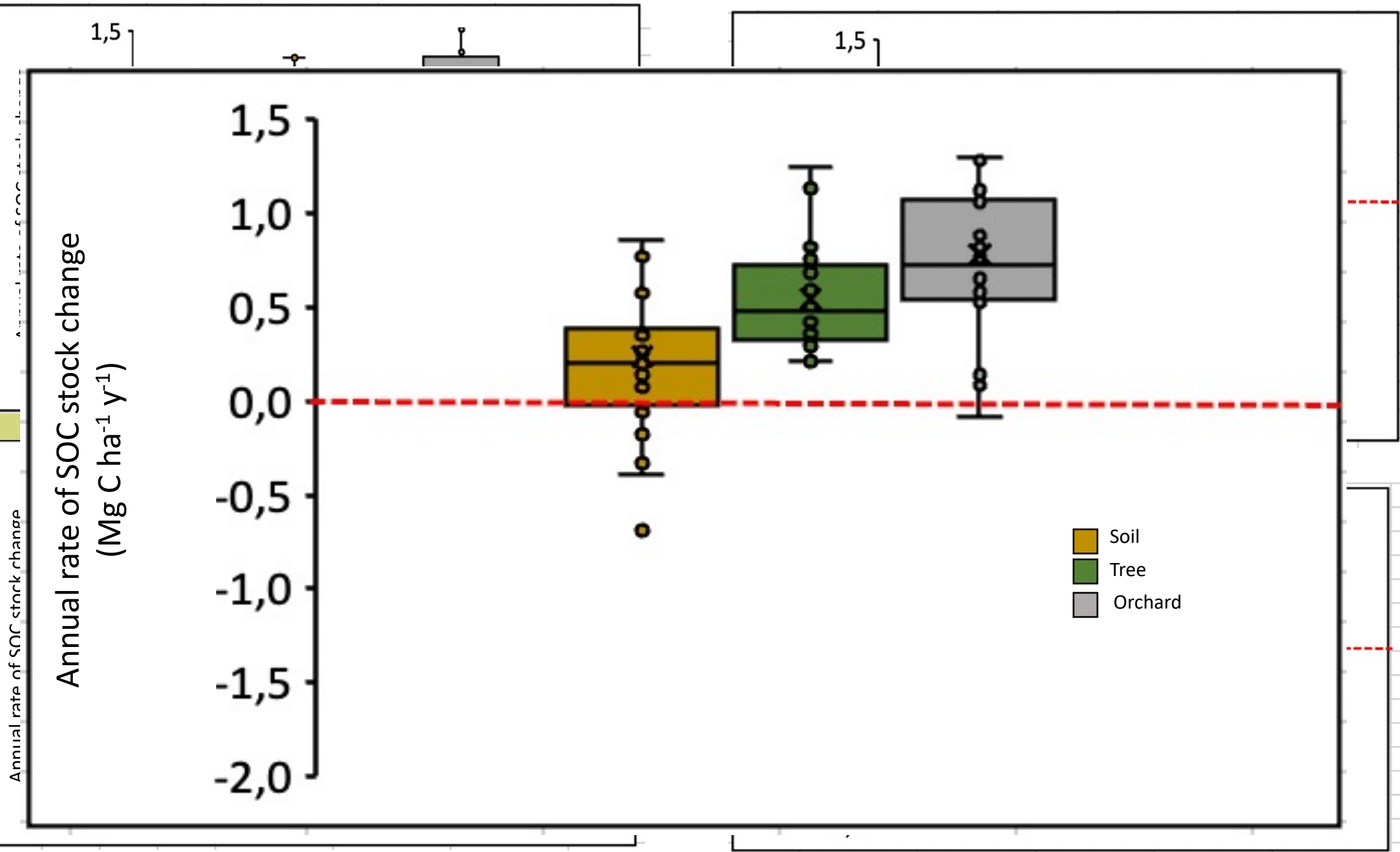
Main C outflow in olive orchard



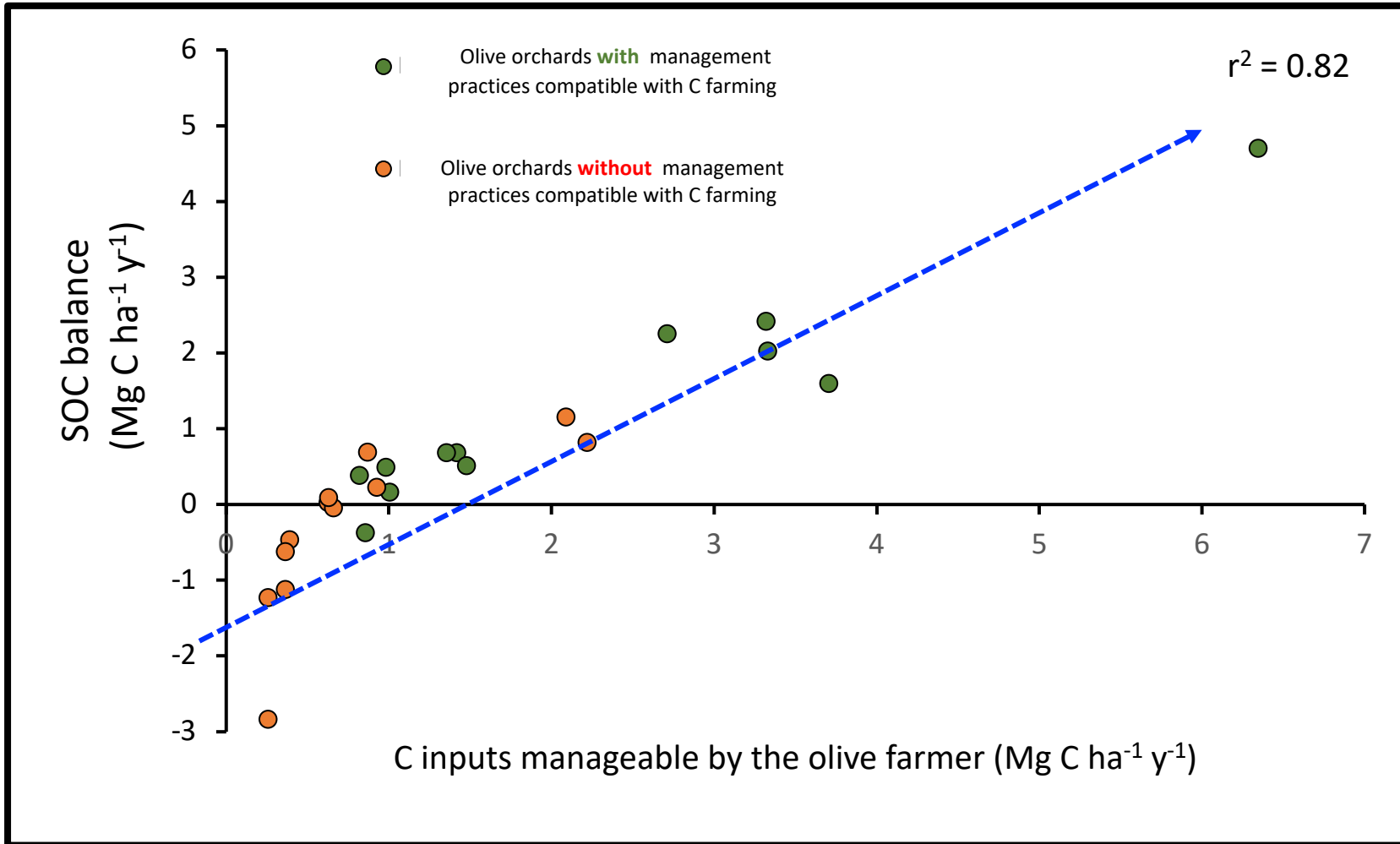
The main C output was soil CO₂ emissions this flux has been largely ignored in other C balances, and if not taken into account, the C balance can be greatly overestimated

Although soil erosion is important in terms of other ecosystem services, its contribution to the carbon balance is relatively low compared to the significant fluxes from other sources such as harvest and soil CO₂ emissions





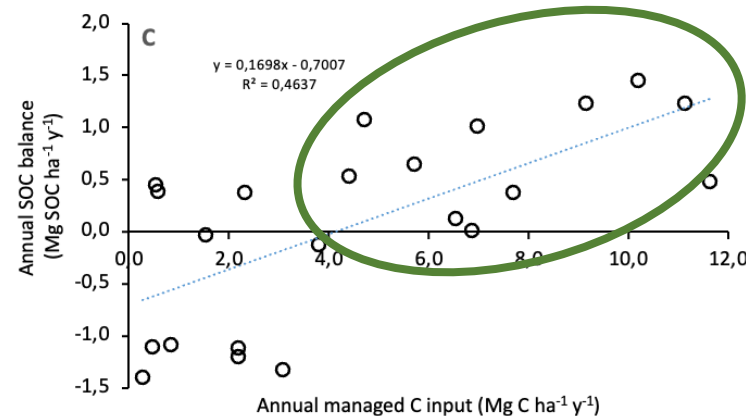
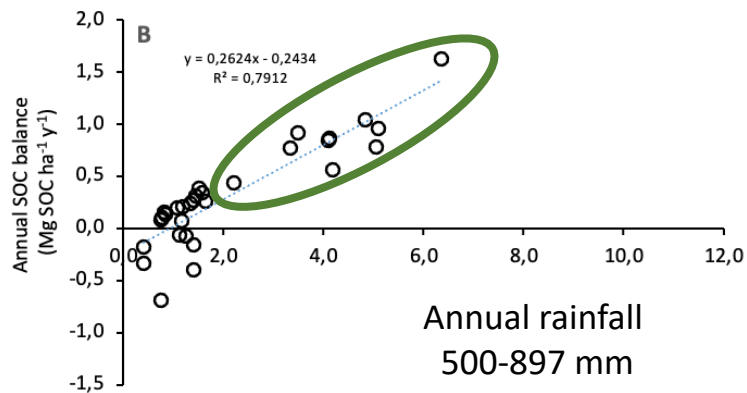
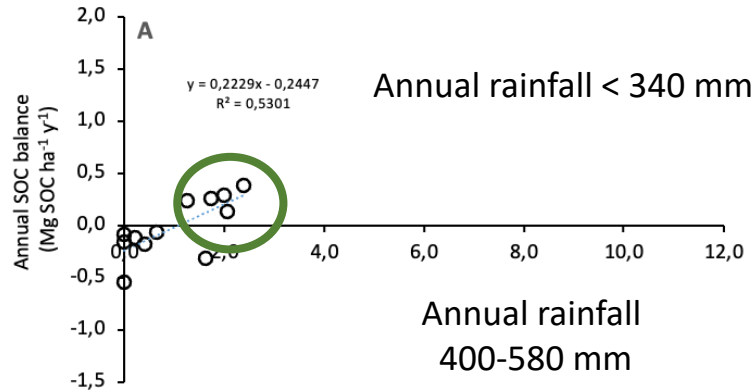
The higher the annual inputs, the more positive the balance



No doubt: the higher is the amount of organic carbon (residues of the cover crops+tree pruning+composted olive mill pomace and or manure) the more positive (C sequestration) is the SOC balance

This indicates the potential to create CO₂ credit projects

The higher the annual inputs, the more positive the balance



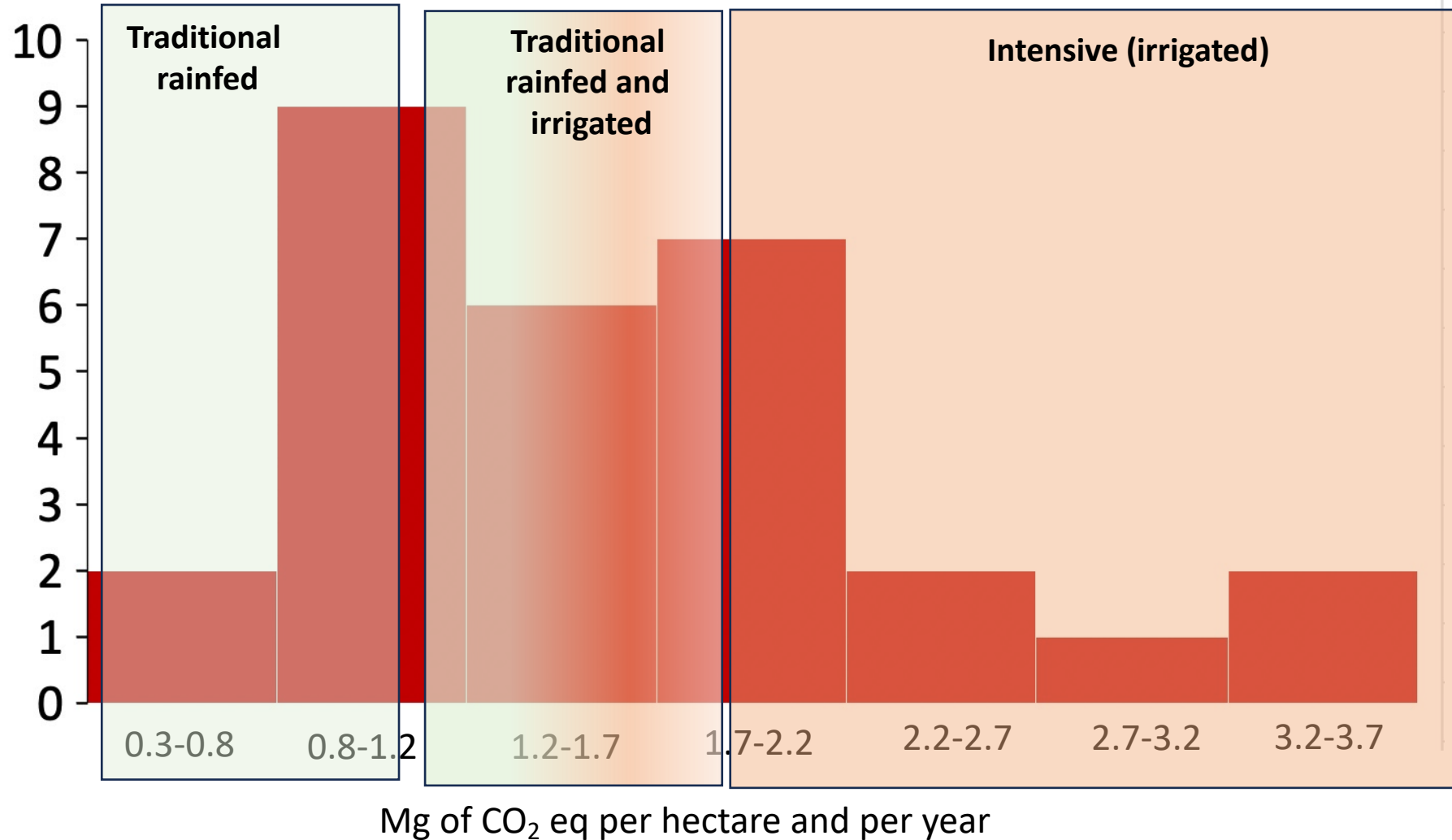
Temporarily spontaneous
cover crops

Tree pruning

Composted olive mill
pomace/manure

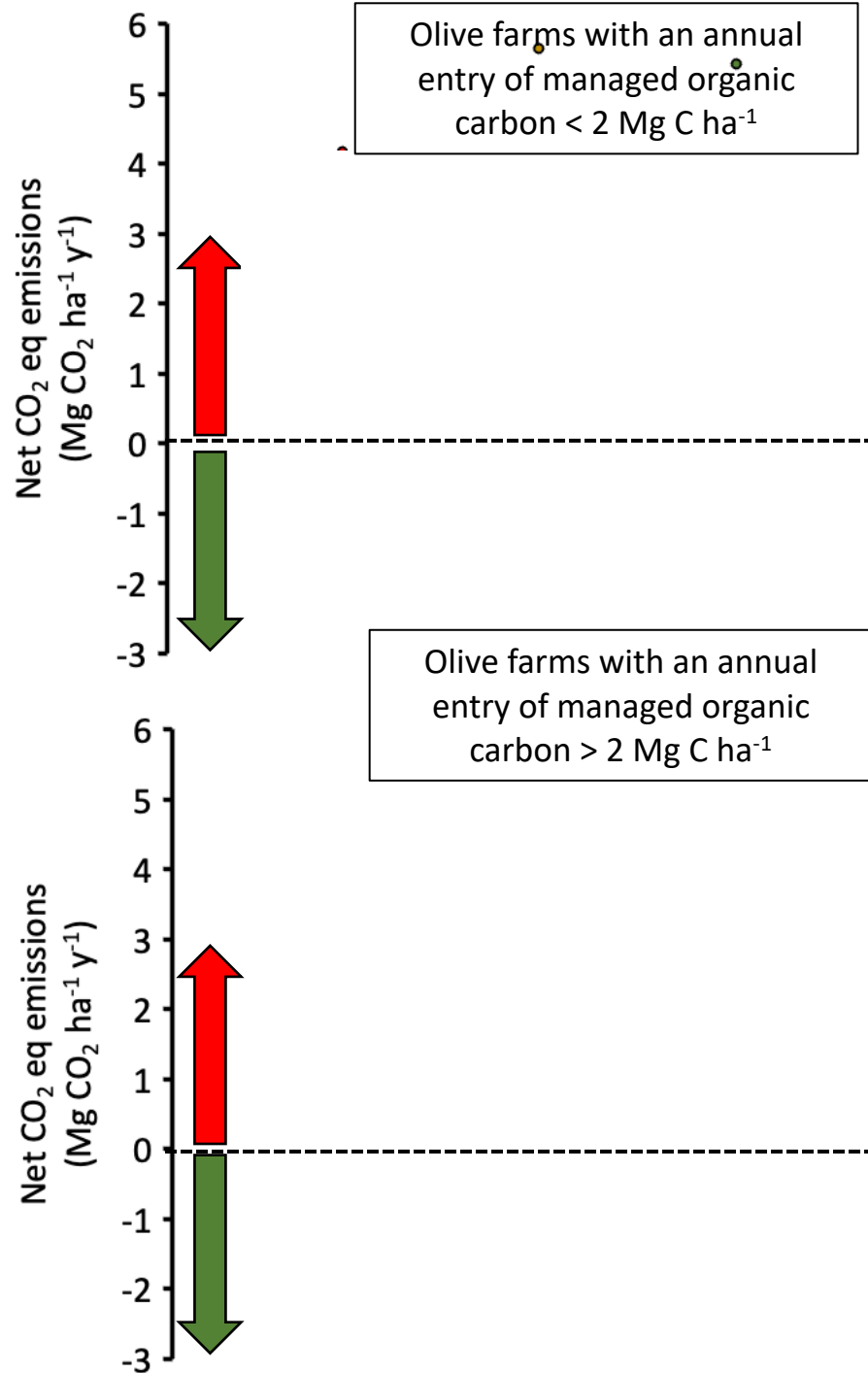
Olive farming operations emit CO₂

Number of olive orchards



Data from
UNIRC; Anna
Irene,
Giacomo,
Nathalie, &
Emanuele,
THANKS!!

Do the annual changes in the stock of SOC and tree C overcome the CO₂ eq emissions due to farm operations?





*Taste it, enjoy it.
it's olive oil.*

Thank you!

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