Short Note

9 Months Case Study To evaluate the effects of foliar spray applications of Vikalp Urja at 5 ppm concentration on the carbon sequestration potential of mangrove plants over Eight & half -month period.

Location

Vengurla – Sindhurgurg, Maharashtra.

Selected plants

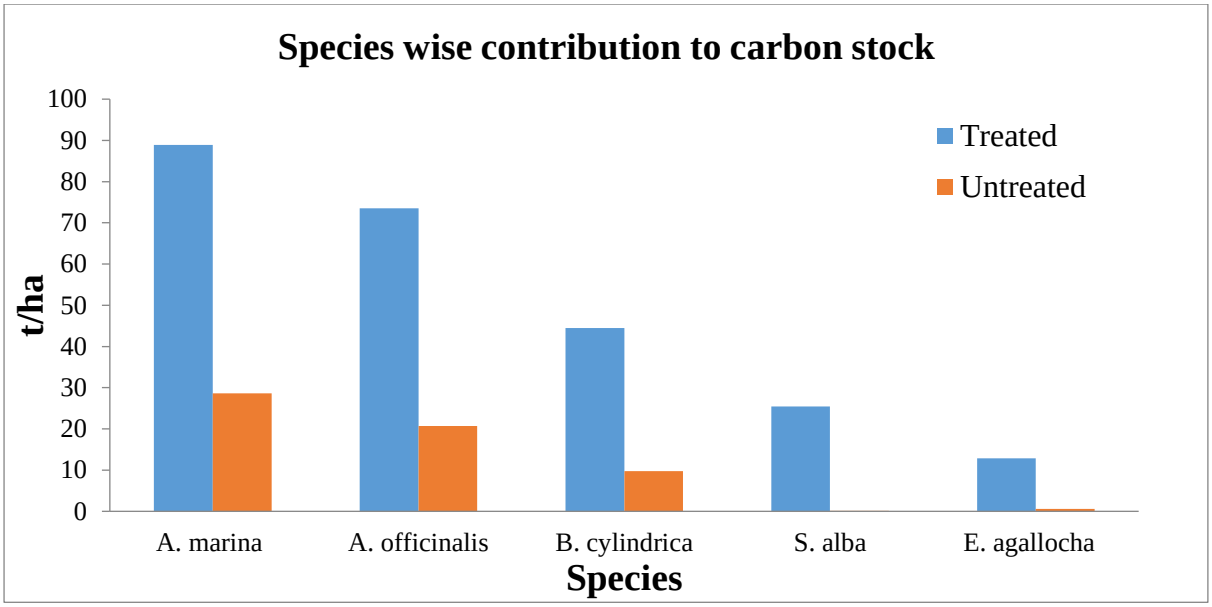
Sr. No.	Name of Plant	Approx. Age (Years)
1	*Avicennia marina*	More than 20
2	*Avicennia alba*	More than 20
3	*Sonneratia alba*	More than 20
4	*Exoecari agallocha*	More than 15
5	*Bruguiera cylindrica*	More than 15

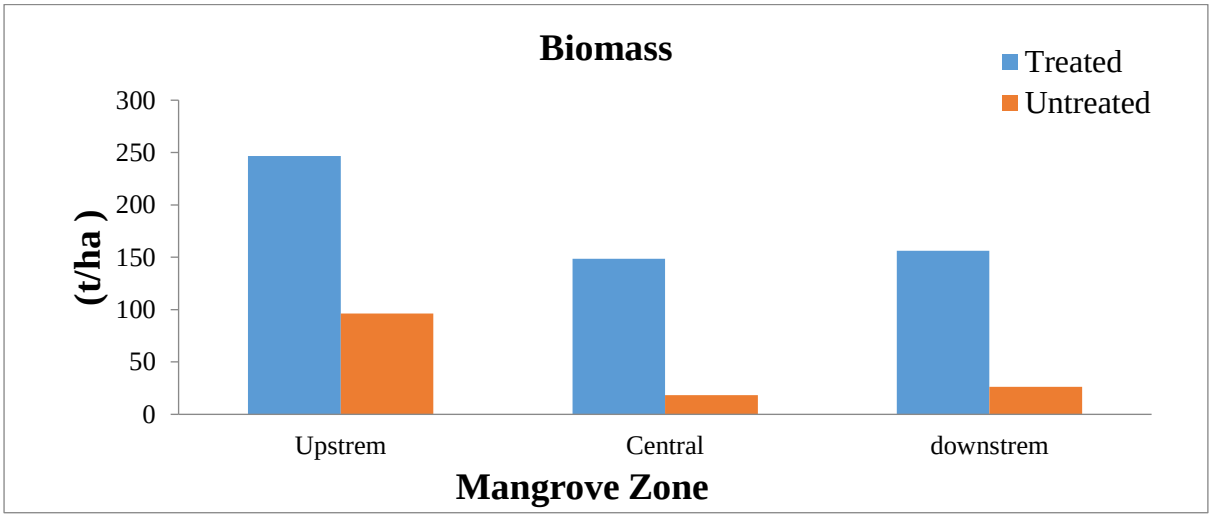
Spraying Schedule

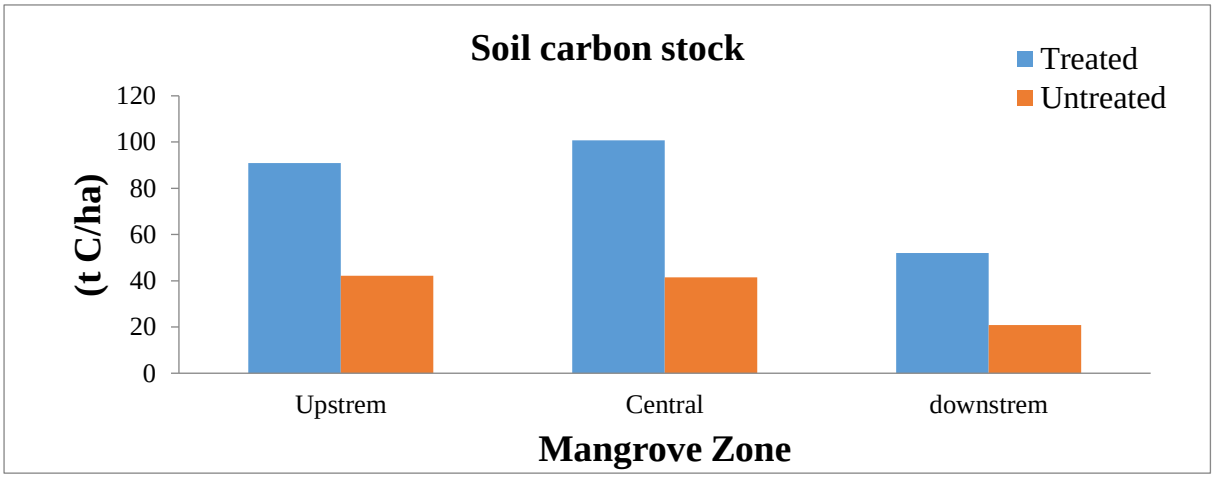
Total 36 spray application in-between 21/9/2023 to 30/05/2024

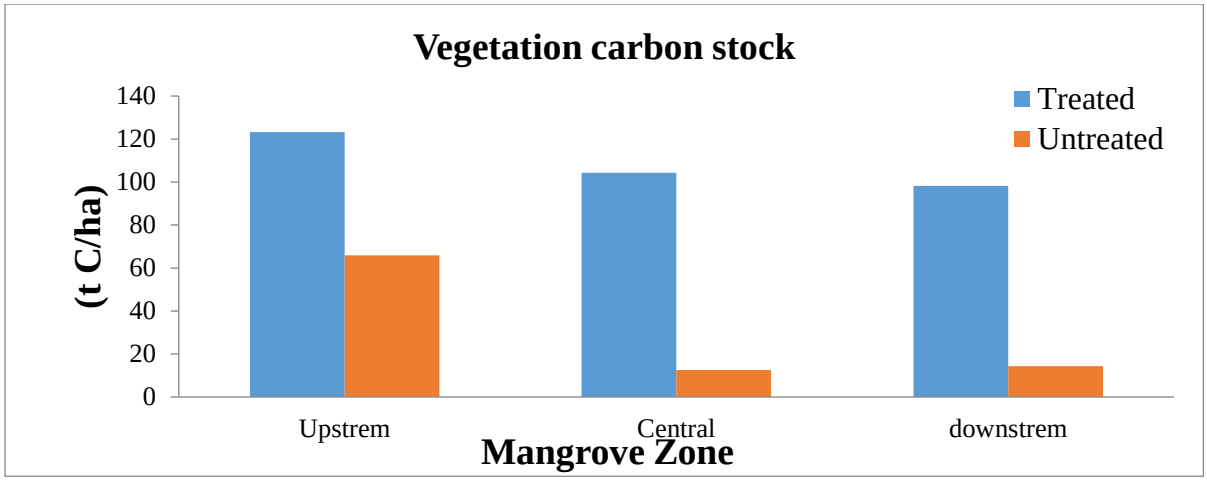
Measurements and Data Collection

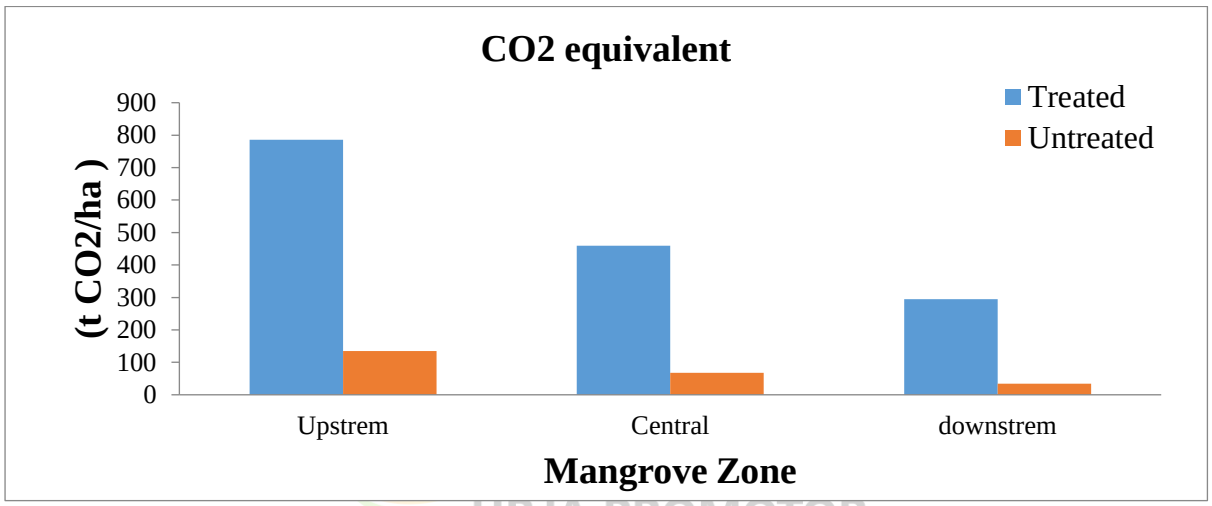
1. Carbon Sequestration Metrics:
    a. Biomass Accumulation:
    b. Carbon Content:
2. Growth Metrics:
    a. Measure plant height, stem diameter, and number of new leaves weekly.
    b. Assess overall plant health and leaf chlorophyll content using a chlorophyll meter.
3. Soil Carbon Content:
    a. Collect soil samples from the root zone of each plant at the beginning and end of the experiment.
    b. Measure soil organic carbon content using standard soil testing methods.
4. Photosynthetic Activity:
    a. Measure photosynthetic rate using a portable photosynthesis system to understand how Vikalp Urja influences photosynthesis.


Species wise contribution to carbon stock
t/ha
100
90
80
70
60
50
40
30
20
10
0
Treated
Untreated
A. marina
A. officinalis
B. cylindrica
S. alba
E. agallocha
Species


Biomass
(t/ha)
300
250
200
150
100
50
0
Treated
Untreated
Upstrem
Central
downstrem
Mangrove Zone


Soil carbon stock
(t C/ha)
120
100
80
60
40
20
0
Treated
Untreated
Upstrem
Central
downstrem
Mangrove Zone





Conclusion

A comprehensive assessment of the C stocks in the mangrove systems of vengurla, central west coast of Maharashtra of India, shows that this region has a capacity to sequester 70-80% within this specific ecosystem due to foliar application of Vikalp urja. Among the different mangrove zones, the mangroves sprayed in the downstream part was found to store relatively more carbon because of its higher tree density, soil carbon content, and biometric peculiarities (tree height and GBH). The allocation of C stock in the mangrove ecosystems of the region was 72% in vegetation and 80% in the soil pools. The findings of the present study add to the present knowledge that the Vikalp Urja can enhances growth, photosynthetic efficiency s well s C sequestration in mangrove plants.