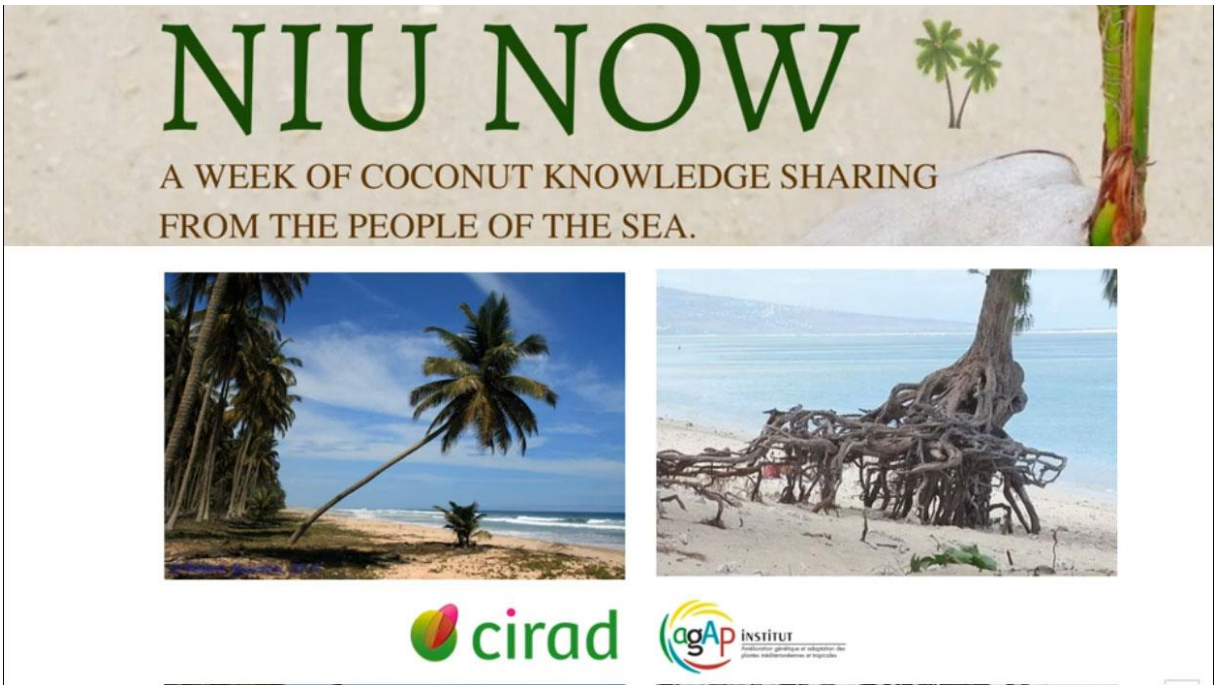

AHA Niu: International Coconut Summit.
Honoring Our Coconut Heritage. Hawaii Convention Center,
Honolulu, HI, United States. (2024, June 12–14)

Creation of optimized perennial plant barriers to mitigate coastal erosion on coral and sandy soils [Conference presentation]. By Bourdeix, R., & Cilas, C.

This presentation examines how coconut-based agroforestry systems can effectively contribute to the mitigation of coastal erosion in tropical regions, a phenomenon aggravated by climate change and sea level rise. Erosion severely affects coastal ecosystems, infrastructure and riparian communities. While conventional engineering solutions such as dikes exist, the authors here favour nature-based solutions, including the use of perennial species with complementary root systems.

This presentation is based on recent observations in Côte d'Ivoire (August 2023), where marine erosion has taken on dramatic proportions. The analysis of existing solutions based on tree plants reveals limitations: coconut palms, although useful, are often planted too far apart to effectively prevent erosion (example of the Comoros). The casuarina (Casuarina sp.), with its deep and strong roots, attenuates erosion but does not stabilize the sand well. The tropical almond tree has robust roots and promising versatility. However, none of these plants alone provides a satisfactory solution to optimize the fight against marine erosion.

Faced with these findings, the authors recommend multi-species barriers to strengthen ecological resilience. A pilot project, proposed for Côte d'Ivoire, aims to establish a plant barrier 5 to 10 meters wide and 100 km long, combining at least four complementary species: coconut palms (varieties selected for their wide trunk and powerful root system), casuarinas (providing deep stabilization), tropical almond trees (solid roots and multiple uses) and acacias (Acacia auriculiformis) for their rapid growth and nitrogen fixation capacity beneficial to the system.

In addition to stabilizing the coastline, these agroforestry systems offer several co-benefits: support for biodiversity, economic diversification for local communities, and the promotion of traditional ecological knowledge, which is still too little integrated into public policies.

The authors identify several priority areas of research: the study of root morphologies, interactions between species, and "ecosystem engineering" effects. They call for the implementation of pilot projects, the creation of incentive policies and community awareness programs to generalize these agroforestry practices.

This integrated, low-cost and environmentally friendly model is a sustainable alternative to rigid infrastructure, combining climate adaptation, ecosystem conservation and local development.

The prospects include the extension of this approach to Africa and the Pacific. The presentation concludes by highlighting the potential of these optimized plant barriers as a sustainable solution to growing coastal challenges.

APA reference: Bourdeix, R., & Cilas, C. (2024, June 12–14). Creation of optimized perennial plant barriers to mitigate coastal erosion on coral and sandy soils [Conference presentation]. AHA Niu: International Coconut Summit – Honoring Our Coconut Heritage, Hawaii Convention Center, Honolulu, HI, United States. https://youtu.be/irqrSkc_h0Y