



MINISTRY OF EDUCATION, CULTURE, RESEARCH AND  
TECHNOLOGY

UNIVERSITY OF JAMBI

Centre of Excellence for Science and Technology-Higher Education  
Land Use Transformation System (PUI-PT BLasTS)

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## TERMS OF REFERENCE (TOR)

The 2<sup>nd</sup> International Seminar International Seminar on Land-Uses  
Transformation System (ISoTranS)

Theme:

*“Bridging the Gap between Sciences and Practices on Land Uses Sustainable  
Management “*

**Conference Abstract**

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## Oil palm-based agroforestry for regenerative agriculture

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In intensive cropping systems, productivity comes at a cost: soil that is depleted or eroded, watercourses that are polluted or drying up, and a food system that produces 20–40% of greenhouse gas emissions. Agroforestry is a nature-based approach to production and land use that combines trees with crops, trees with livestock, or trees with both crops and livestock.

Regenerative agriculture describes holistic farming systems that, among other benefits, improve water and air quality, enhance ecosystem biodiversity, produce nutrient-dense food, and store carbon to help mitigate the effects of climate change. These farming systems are designed to work in harmony with nature, while also maintaining and improving economic viability.

After millennia of polyculture, intensive monoculture became the norm for most of plantation crops. The colonial model of plantation system relied on abundant arable land and docile work force. The 2015 El Niño episode demonstrated the poor climatic resilience of intensive monocrop systems. More, the COVID-19 pandemics also revealed several weaknesses (need for mechanization, labor shortages). Diversified systems are more resilient and more able to resist to price volatility (more stable income from multiple activities).

We present some of the initiatives experimented worldwide for the installation of pilot projects on oil palm-based agroforestry.

The EFForTS project is for Ecological and Socioeconomic Functions of Tropical Lowland Rainforest Transformation Systems (Sumatra, Indonesia). In the EFForTS project, more than 160 researchers from the University of Göttingen in Germany and the Indonesian universities IPB University (Bogor), UNTAD (Tadulako University, Palu) and UNJA (University of Jambi) worked for 12 years in close cooperation. A wide range of disciplines including ecology, forestry, agriculture, remote sensing, economics, human geography, and cultural anthropology.

In Brazil, the SAF Dende Project (ICRAF) established its first plantation in 2008 at low densities (81 to 99 palms/ha). Starting 2008, 6 different agroforestry systems amounting 18ha in total were established, then 18 demonstration units were planted in 2019, on 61 ha. SAF Dende was found to generate 3 times more environmental services than monoculture.

The TRAILS project coordinated by Cirad builds on a complementary partnership, linking academics, NGO, private and public stakeholders. It relies on long term expertise and multidisciplinary approaches from various science fields and deals with agronomy, forestry and conservation sciences. It aims at understanding the key characters of climatic resilience and the bioclimatic condition of the agroforestry parcels. The project assesses the ability of mixed planting at improving environmental services, such as increased biomass and photosynthetic capacity, soil health, water quality and the abundance of pollinators. TRAILS also analyses the socioeconomic impact of the transition from oil palm monospecific plantation to diversified agroforestry systems.