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JJSF Fellow

*FINARCH, Rafatro Tsiambanavalona
Masters Graduate, Petroleum Engineering
Polytechnique D'Antananarivo
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Abstract

The University of Antananarivo, initially known as the University of Madagascar, was established in 1961 in the Ankatso district, approximately 2 km from the city. This campus houses various plots of land that serve as experimental fields for students in tropical agriculture and sustainable development at Ecole Supérieure des Sciences Agronomiques (ESSA). Currently, these students are focusing on implementing innovative techniques such as PAPRiz and P-Dipping, originating from the Fy Vary project, funded by the Japanese government. These techniques are implemented in collaboration with the Ministry of Agriculture and Livestock. In addition to educational activities, the surrounding agricultural lands are also utilized by local farmers. These lands are irrigated from two main sources: the region's groundwater reserves and runoff water, particularly during the summer season. Specially designed channels channel runoff water to the rice fields, significantly contributing to crop irrigation.

The surroundings also include ponds for aquaculture, green leaves and cassava fields. The layout and organization of all these agricultural areas are clearly depicted in a series of provided photos, providing a better understanding of the structure and management of farmland near the university.

Introduction

The University of Antananarivo stands at the forefront of agricultural innovation and sustainability in Madagascar. Beyond its academic pursuits, the university's campus serves as a dynamic hub where theory meets practice, particularly in the realm of agricultural cultivation. The integration of surrounding agricultural lands into its educational framework not only provides students with invaluable hands-on experience but also fosters collaboration with local farmers and government agencies. In this introduction, we delve into the rich tapestry of agricultural activities occurring within and around the university, exploring how these endeavors contribute to both academic excellence and community development.



Photo Credit: Canva Pro Stock

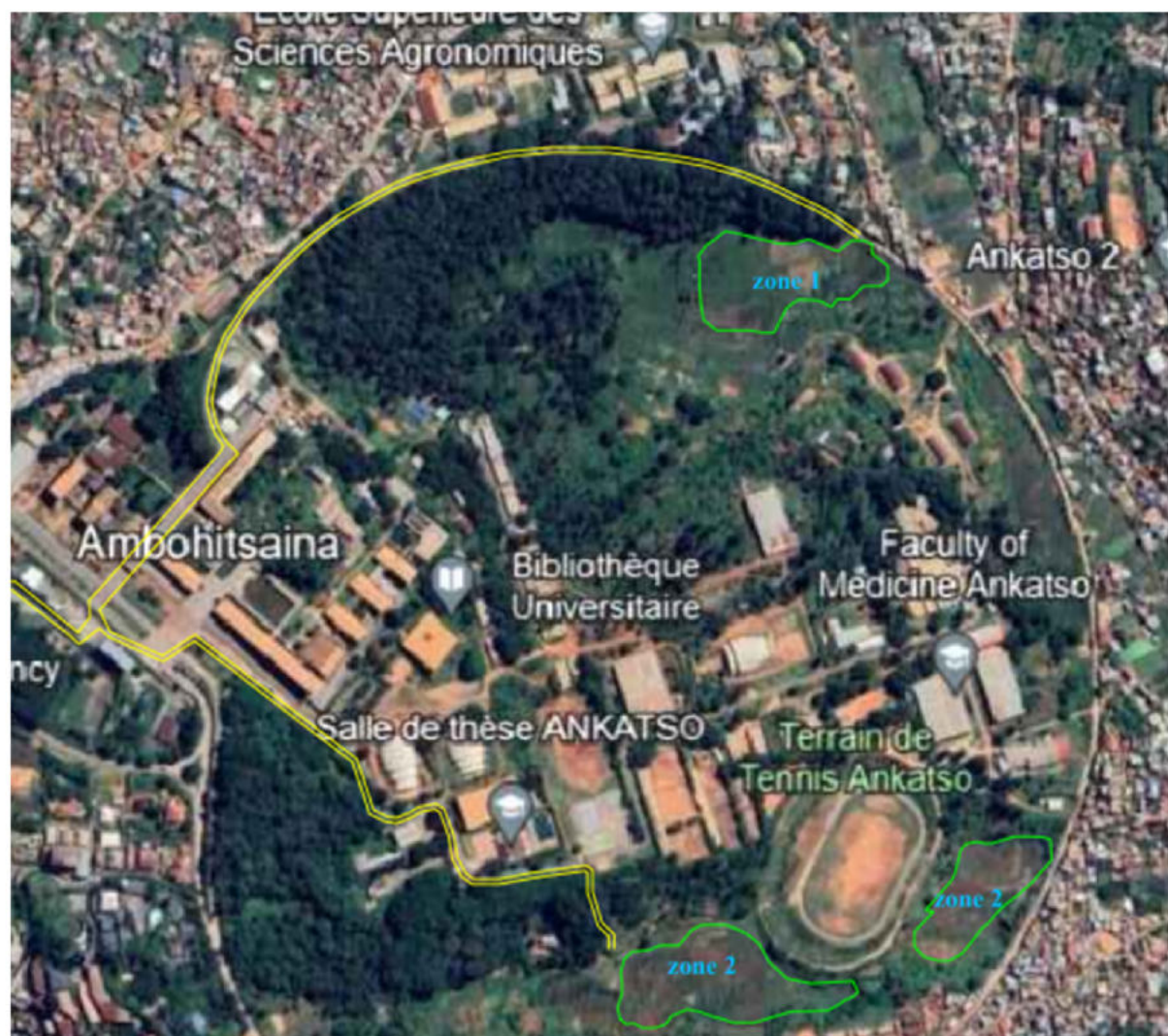
I. Study Area

The University of Antananarivo was founded in 1961, originally known as the University of Madagascar. It is located approximately 2 km from the city, in a district called Ankatso. (RAZAFIMAHATRATRA, ANDRIANTSIFERANA, 2024) This is where there are plots of land divided into two sections: one is just south of the Higher School of Agronomic Sciences, and the other is near the Ankatso football field. If you want to see how to get there, take a look at Figure 1; it shows the map and the path to access these study areas.

I.1 Cultivation plot near Ecole Supérieure des Sciences Agronomiques

I.1.1 Existing studies

In the plots of land near the Ecole Supérieure des Sciences Agronomiques (ESSA), students specializing in Tropical Agriculture and Sustainable Development are engaged in experiments. They are currently testing a combination of techniques called PAPRiz and P-Dipping, derived from the Fy Vary project. This project, funded by the Japanese government through international cooperation agencies, is implemented in collaboration with the Ministry of Agriculture and Livestock. Students thus have the opportunity to put these techniques into practice on five varieties of rice, including FOFIFA 160, X265, and the new Fy Vary 32 and 85 varieties. (Navalona, 2024) Figure 2 illustrates the rice fields of these rice varieties.



MAP OF ANKATSO UNIVERSITY



Source : Satellite Image
Date of conception : April 30, 2024



Legends	
	Path to the study area
	Study area

Figure 1: Map of the University of Antananarivo / Compiled Credit: FINARCH - assistance from Google Earth



Figure 2: Research Rice Laboratory Field at ESSA
Photo Credit: FINARCH, Rafatro Tsiambanavalona

1.1.2 Crop Plot near ESSA

The other rice fields and vegetable cultivation fields are operated by local farmers. All these fields are irrigated using groundwater reserves from the region. It only requires digging about a meter to access these reserves, as the ground level is quite low. An example of this type of digging can be seen in Figure 3, carried out by one of the farmers.



Figure 3: Readily available Water in the Rice Fields.
Photo Credit: FINARCH

During the summer, runoff water plays a significant role in irrigating the rice fields. Two canals have been specially constructed for this purpose. Rainwater, transformed into runoff water, is drained to a large area, from where it is directed into these two canals. You can see these canals in Figure 4.



Figure 4: Stormwater Runoff being routed to the Rice Fields (Zone 1)
Photo Credit: FINARCH

To the east of the rice fields, there are some ponds (see Figure 5) where other farmers practice aquaculture. Additionally, there are cassava fields next to the rice fields, which you can see in Figure 6.



Figure 5: Existing Lagoons in the Rice Fields
Photo Credit: FINARCH



Figure 6: Cassava Production near the Rice Fields
Photo Credit: FINARCH

"Zone 1 - The Crop Plots near ESSA"

Absolutely, let's take a look at the plan in Figure 7 to get an overview of all the mentioned crops so far. This will help us better understand the layout of the area.



Figure 7: Zone 1 - Plan of cultivated plot near ESSA
Compiled Credit: FINARCH - assistance from Google Earth

I.2 Agricultural lands near the Ankatso football field (Zone 2)

There are two areas of agricultural land located southwest and east of the Ankatso football field. You can spot them in Figure 8.



Legends

 Rice paddy  Arable land  Pond

Figure 8: Zone 2 - Cultivated plots near the Ankatso football field
Compiled Credit: FINARCH - assistance from Google Earth

I.3 Depth to Water in Zone 2

The cultivation plots to the southwest (Zone 2) are irrigated solely from water points to maintain the irrigation system in place. An example of these shallow water source is illustrated in Figure 9.



Figure 9: Zone 2 depth to water
Photo Credit: FINARCH

I.4 Zone 2B Stormwater Drainage into the Rice Field

On the other hand, the cultivation plots to the east of the field are supplied both by runoff water and water points.

Stormwater Runoff water is drained through large underground drainpipes, which you can observe in Figure 10.



Figure 10: Stormwater drainage channel releasing into Zone 2
Photo Credit: FINARCH



Figure 12: Surface Water in Zone 1
Photo Credit: FINARCH,

II.1 Further Photodocumentary of the Lagoon Zone 1

The following photos provide further insight into the defined Rice Lagoon Zones.



Figure 11: Formal Rice Research in Zone 1 (Note the Field Markers)
Photo Credit: FINARCH



Figure 13: Zone 1 - Long Shot
Photo Credit: FINARCH



Figure 14: Zone 1 "Very Wet Farming"
Photo Credit: FINARCH



Figure 15: Zone 1 - A lone tree at the edge of the Wetland
Photo Credit: FINARCH



Figure 16: Constructed Water Channels in Zone 1 / Photo Credit: FINARCH

II.2 Further Photodocumentary of Lagoon Zone 2 (near the Ankatso football field)



Figure 17: Tropical Wetlands of Zone 2 / Photo Credit: FINARCH



Figure 18: Acres of Tropical Wetlands in the middle of the Capitol City's University / Photo Credit: FINARCH



Figure 19: Zone 2 - Wet, productive farmland with extensive, visible surface water / Photo Credit: FINARCH



Figure 20: Zone 2 - Surface water lagoons / Photo Credit: FINARCH



Figure 21: Zone 2 - Acres of surface water lagoons / Photo Credit: FINARCH



Figure 22: Zone 2 - Acres of surface water lagoons / Photo Credit: FINARCH



Figure 25: Zone 2 - Acres of surface water lagoons / Photo Credit: FINARCH



Figure 23: Zone 2 - Acres of surface water lagoons / Photo Credit: FINARCH



Figure 26: Zone 2 - Acres of surface water lagoons / Photo Credit: FINARCH



Figure 24: Zone 2 - Acres of surface water lagoons / Photo Credit: FINARCH



Figure 27: Zone 2 - Acres of surface water lagoons / Photo Credit: FINARCH

III. CONCLUSION

In conclusion, the University of Antananarivo emerges as a true living laboratory for tropical agriculture and sustainable development. By incorporating the surrounding agricultural lands into its campus and utilizing them as experimental grounds for agriculture students, it fosters hands-on and practical learning. Furthermore, collaboration with local farmers for crop maintenance and irrigation demonstrates a commitment to the local community and an integrated approach to agricultural development. The implementation of innovative techniques such as PAPRiz and P-Dipping, supported by government partnerships and research projects, strengthens the university's role as a driver of progress in the agricultural field. Lastly, the visual representation of the layout and management of agricultural lands provides enhanced transparency and understanding of these practices, paving the way for continued collaboration and future initiatives towards more sustainable and resilient agriculture.

IV. BIBLIOGRAPHY:

Navalona, R., 2024. Technique PAPRiz : Des expériences menées sur le site de l'ESSA. Midi Madagascar.
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