INTERNATIONAL SCHOOL
ESALQ • USP

2024 · 2025

MESSAGE FROM THE **DEAN**

Dear candidates

The International School experience brings a multidisciplinary vision to the students within the theme of **Food and Nutritional Security in Tropical Production Systems**. At the end of the program, those selected must present a written innovation proposal for discussion with the other participants. It can be seen that the regions chosen, the geo-political problems, objectives, and resources to be used are very well thought out and the results can be easily used for case studies by Universities and Organizations as a reference for mature approaches discussed in the academic and scientific spheres.

The interaction between countries with different cultures provides a systematic reference for how different perspectives contribute to more realistic goals set by different players on the world stage.

Thus, the students who arrived timidly, after the jet lag of the trip, were able to absorb the themes presented by the coordinating professors of the program, share experiences with students from other geographies and mature the idea of a corporate scientific system that can contribute to their careers within post-graduation or post-doc programs, with a holistic and systematic vision of the focus theme of the International School that Esalq offers.

Thais Vieira
Dean of Esalq/USP

About the Program

Our **International School**, a **Special Program in Tropical Biobased Production Systems**, formerly the Summer School, is an academic program that takes place, in person at the Luiz de Queiroz College of Agriculture (Esalq) - University of São Paulo (USP), Piracicaba, SP, Brazil, in July.

9th edition - July 14th to 25th, 2025
Piracicaba, SP
en.esalq.usp.br/international-school
is.esalq@usp.br

This program was developed considering the most relevant topics related to tropical biobased production systems with the purpose of offering a comprehensive view of Brazilian agricultural production, including economic, technical and social aspects.

The interaction presents an overview of technologies, economics and environmental scenario of Brazilian agriculture, forestry and livestock farming in theoretical classes and technical visits. The participation of foreign and Brazilian students encourages their interaction and exchange of experiences.

• The course is conducted entirely in English.

• The International School is recommended for Senior Undergraduate and MSc students.

TOPICS

• Biodiversity in agricultural regions of Brazil;
• Animal production in the tropics;
• Natural resources;
• Biomass and bioenergy production systems;
• Management of agricultural landscapes;
• Water management on biomass production;
• Food technology in tropical plants;
• Biotechnology applied to biomass production;
• Social issues in rural environment; and
• Tropical biobased economy.

The International School is free of charge and fees. Students will receive a transcript of records with an academic load of 60 hours of activities.

TROPICAL BIOBASED PRODUCTION SYSTEMS

2025 Edition, July 14th - 25th

en.esalq.usp.br/international-school

ESALQ USP

LEARN MORE ABOUT THE
INTERNATIONAL SCHOOL PROGRAM IN 2024

The 2024 edition of the International School had the following schedule of classes, as well as external technical visits and periods for preparing the final project:

- **Opening Class: Overview of Brazilian Agriculture**
  Prof. Rafael Munhoz Pedroso (Department of Crop Science)

- **Milk production in the tropics**
  Prof. Carla Maris Bittar (Department of Animal Science)

- **Challenges for Integrated Pest Management**
  Prof. João Roberto Spotti Lopes (Department of Entomology and Acarology), with the support of others professors and graduate students

- **Tropical Planted Forest Management**
  Prof. Rodrigo Eiji Hakamada (Department of Forest Science)

- **An outlook for food and agriculture in the next decades**
  Prof. Fábio Marin (Department of Biosystems Engineering)

- **Remote sensing applied to agricultural monitoring**
  Prof. Ana Cláudia dos Santos Luciano (Department of Biosystems Engineering)

- **Harnessing Synergy: How Integrated Agriculture-Aquaculture Feeds the Future Sustainably**
  Prof. Brunno da Silva Cerozi (Department of Animal Science)

- **Past, Present, and Future of Arabica Coffee Genetics: From Domestication to the Challenge of Climate Change**
  Prof. Douglas Silva Domingues (Department of Genetics)

- **Theobroma cacao: How tropical pathogens threaten the world chocolate supply**
  Prof. Paulo Teixeira (Department of Biological Sciences)

- **Economics and Natural Resource Use in Brazilian Agriculture**
  Prof. Joaquim Bento de Souza Ferreira Filho (Department of Economics, Administration and Sociology)

- **Irrigated agriculture for supporting the world food security**
  Prof. Durval Dourado Neto (Department of Crop Science)

- **Harnessing the power of plant-microbe interaction for sustainable agriculture**
  Prof. Lucas William Mendes (Cena/USP)

- **Center for Carbon Research in Tropical Agriculture**
  Prof. Carlos Pellegrino Eduardo Cerri (Department of Soil Science)

• **Soil health and Carbon sink**
Prof. Mauricio Roberto Cherubin (Department of Soil Science)

• **Marginal Soils: Unveiling New Horizons through Strategic Use and Management**
Prof. Tiago Ferreira (Department of Soil Science)

• **Pedology and soil properties in Northern and Sub-Saharan Africa: challenges and opportunities for sustainable agriculture**
Prof. Adnane Beniaich (UM6P)

• **Challenges in nutrient use efficiency in coffee**
Prof. Tiago Tezotto (Department of Soil Science)

• **Biomass Production for Bioenergy**
Prof. Thiago Liborio Romanelli (Department of Biosystems Engineering)

• **Potassic Clays as alternative source of potassium for agriculture**
Prof. Antonio Carlos de Azevedo (Department of Soil Science)

• **Phosphate mining and fertilizer production**
Prof. Abdellatif El Ghazi (UM6P)

• **Phosphate fertilizer management in Brazilian agriculture**
Prof. Paulo Pavinato (Department of Soil Science)

• **Phosphate fertilizer management in African agriculture**
Prof. Leonardus Vergutz (UM6P)

• **In field X-ray spectrometry: fast & clean diagnose of soil & plant nutritional status**
Prof. Hudson Carvalho (UM6P)

• **Eucalyptus pulp production in Brazil**
Prof. Francides Gomes da Silva Junior (Department of Forest Sciences)

• **Data science: general concepts and some applications in Agriculture**
Prof. Clarice G.B.Demétrio, Cristian M.V.Lobos e Marcelo A.da Silva (Department of Math, Chemistry and Statistics)

• **"Cachaça" Science, Technology and Art**
Prof. André Alcarde (Department of Food Science and Technology)

WORKS PRESENTED

During the course, students will be encouraged to work on creating an innovative project whose theme will be Food and Nutritional Security in Tropical Production Systems. At the end of the course, students will present their projects to the Esalq community and guests, and the best projects may be presented at global meetings in which A5 participates. Below, we present a selection of highlights from the presentations that caught our attention.

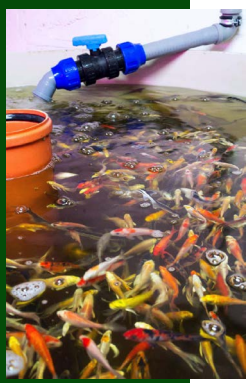
GROUP 1

UNIVERSITY OF SÃO PAULO
TROPICAL BIO-BASED PRODUCTION SYSTEMS

ADAPTING TO CLIMATE CHANGE AND DEFORESTATION:

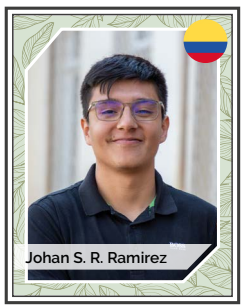
PROMOTING THE RIVERSIDE COMMUNITY OF THE TAPAJÓS RIVER LIVELIHOODS

GROUP 1 Amália Balaminute (Brazil); Alejandro de Jesus Rojas (US); Johan Smith Rivera Ramirez (Colombia); Paula Sofia Catalán Rojas (Chile)



10 CONCLUSION

The project's success hinges on effective implementation, ongoing monitoring, and community involvement. With a comprehensive plan covering construction, training, and evaluation, the project has a strong foundation for achieving its goals. Support from public and private sectors, NGOs, and international organizations is crucial for expansion and replication in other regions. The aquaponic system offers an innovative solution to issues like droughts affecting water supply and food security in Tapajós River communities. By combining traditional knowledge with modern technology, it provides a sustainable path towards food security and environmental resilience amid climate change.



GROUP 2

Drought Mitigation in the Brazilian Northeast

Group 2: Ana Júlia, Alex, and Julia

Results & Benefits

- Less dependence on government cash transfer programs
- More resilient crops!
- Additional crop production capacity during the dry season in non-drought years

GROUP 3

Supporting Indigenous Agroforestry in the Brazilian Amazon

Clara Fernandes, Kate Keresztes, Andres Navio

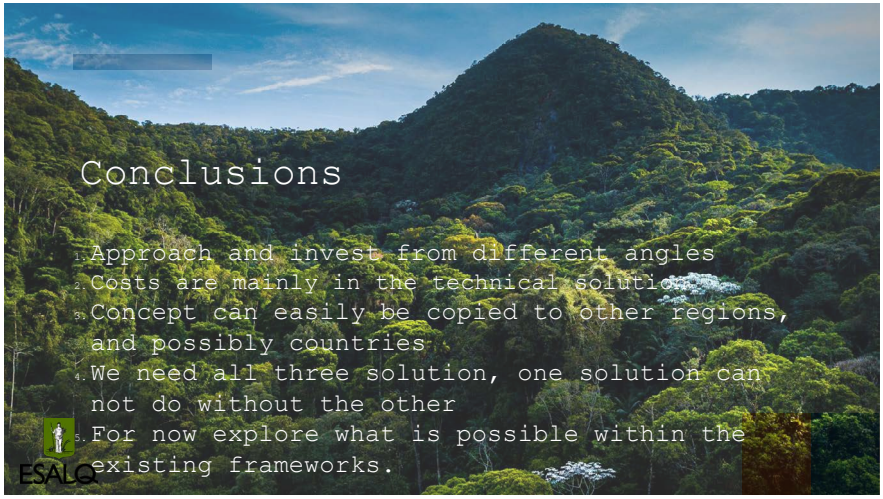
Food security:

"all people at all times have physical, societal, and economic access to **sufficient, safe and nutritious food** which meets their **dietary needs and food preferences** for an active and healthy life"

1

GROUP 4


HOW DOES SLASH AND BURN AGRICULTURE AFFECT CLIMATE CHANGE AND FOOD SECURITY ON BRAZILIAN "CENTRO OESTE"
International Summer School for Tropical Biobased Production Systems
Andille Banelle, Gustavo de Angelo Luca, Mats Bours, Nicholas Hockensmith
ESALQ
WAGENINGEN UNIVERSITY & RESEARCH
KENTUCKY


Conclusions
1. Approach and invest from different angles
2. Costs are mainly in the technical solution
3. Concept can easily be copied to other regions, and possibly countries
4. We need all three solution, one solution can not do without the other
5. For now explore what is possible within the existing frameworks.
ESALQ


Banele Andile Malefo


Gustavo de A. Luca


Mats Bours


Nicholas Hockensmith

GROUP 5

ENHANCING POSTHARVEST QUALITY OF SWEETPOTATOES IN KENYA

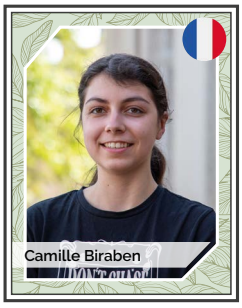
GROUP 5
Camille Biraben
Lerato Alexandria Botha
Marina Cunha Bernardes
Paige Elizabeth Seibert

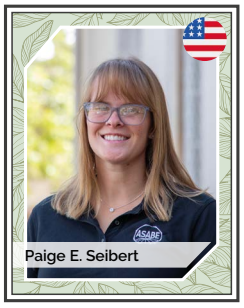
University of Sao Paulo
VII International School
011225 - Tropical Biobased Production Systems
"Food and Nutritional Security in Tropical Production Systems"

CHALLENGES TO FOOD AND NUTRITIONAL SECURITY

Social economic and demographic factors

Agricultural factors





GROUP 6

VIII International School Program

Driving Development in Eastern Africa: A focus on Small Farmers

Chuqing Zhao

Lindiwe Benedine Mahlangu

Otávio César Martins Ferreira

Solutions

1. **Identify Struggling Farmers**
   Call out to farmers who are struggling to make a profit.
2. **Group by Needs**
   Group the farmers according to their problems and needs.
3. **Adopt and Pilot**
   Get an expert to adopt a specific group and pilot a project.
4. **Analyze and Scale**
   Analyze the success or failure of the pilot and scale up the successful initiatives.

GROUP 7

Bali, Indonesia

SUSTAINABLE AGRICULTURE IN THE FACE OF CLIMATE CHANGE AND OVER-TOURISM

BY: Florence Cheung, Zhenghao Chen, Marios Lebepe, Pedro Silviera

Our project will bolster local food networks by collaborating with farmers, neighborhood markets, and consumers, increasing their resilience to environmental challenges.

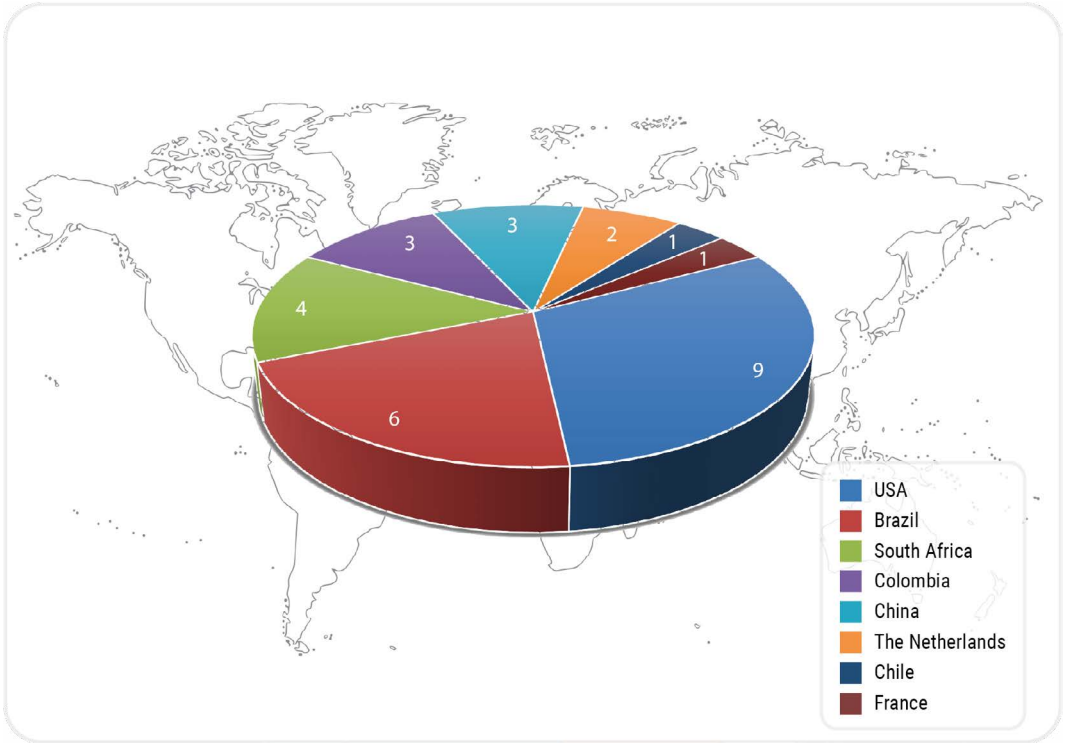
GROUP 8

Conclusion

- Teaching and implementing sustainable agriculture to the local community
- 20 ㎢/ 20 hectares of the Amazon rainforest will be restored
- Other companies will be encouraged to sponsor local agroforestry projects

The United Nations defines sustainable development as ***"meeting the needs of the present without compromising the ability of future generations to meet their own needs."***

COUNTRIES **PARTICIPATION IN 2024**



COORDINATION INTERNATIONAL SCHOOL

Prof. José Belasque Junior
President International Relations Commitee

Prof. Aline Silva Mello Cesar
Department of Food Science and Technology

Prof. Brunno da Silva Cerozzi
Department of Animal Science

Prof. Rafael Munhoz Pedroso
Department of Crop Science

GRADUATE STUDENT TUTOR
International School 2024

Ana Julia Bernardi de Souza
PPGI - Integrated Food Systems

NATIONAL AND INTERNATIONAL COOPERATION OFFICE SUPPORT – INTERNATIONAL SCHOOL

Carmen Pilotto
Administrative Technician

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Administrative Analyst

Luciana Joia
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Administrative Assistant

This booklet was created by the staff of the National and International Cooperation Office with images from the Communication Division, exclusively for the promotion of the International School, and layout by the Esalq/USP Graphic Productions Service.

April, 2025

Carlos Gilberto Carlotti Junior
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Vice-Rector

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