



UNIVERSIDAD DE  
COSTA RICA

# ***Development of food security through academic exchange via international cooperation***

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UNIVERSIDAD DE  
COSTA RICA



- Founded in 1843 (Universidad de Santo Tomás)
- Closed in 1888 (political and academic reasons)
- Faculties of Law, Agronomy, Arts and Pharmacy continued operating
- Re-founded in 1940 with present name

# Location

- 1 main campus
- 5 regional campuses
- 4 additional smaller campuses teaching specific courses
- 1 Biological Research Station (7,800 hectares of tropical rain forest)





# Teaching

- 386 degree courses
- 45,000 enrolled students (some 35,000 active)
- 3484 lecturers



# Graduate programs in agricultural and food sciences

- M.Sc.
  - Biotechnology
  - Crop protection
  - Soil science
  - Animal nutrition
  - Agricultural economics
  - Food science
  - Plant production (under development)
- Ph.D.
  - Agricultural sciences





# Research in agricultural sciences

- Research centers in:
  - Agronomy (soil sciences, biotechnology, postharvest, soil microbiology)
  - Seeds and Grains
  - Animal Nutrition
  - Crop Protection
  - Agricultural Economics
  - Food Science and Technology
- Institute for Research in Agriculture
- Experimental stations
  - Fabio Baudrit (Crops)
  - Alfredo Volio (Animal Science)





## Food Security Center: Excellence Center for Education, Exchange and Development at UHOH

**Prof. Dr. Víctor M. Jiménez**  
**Universidad de Costa Rica**



## Mission of FSC

- ... to provide innovative and effective scientific contributions to achieve food security
- ... in particularly FSC is contributing towards SDG 1 *No Poverty* and SDG 2 *Zero Hunger* of the Agenda 2030 for Sustainable Development (UN), especially towards the eradication of hunger and malnutrition
- ... further goals FSC contributes to are...



# Mission of FSC

1 - 5, 12, 13, 15, 17

[http://www.bmz.de/de/was\\_wir\\_machen/ziele/ziele/2030\\_agenda/index.html](http://www.bmz.de/de/was_wir_machen/ziele/ziele/2030_agenda/index.html)



## Mission of FSC - Approaches

Multidisciplinary approach through  
**teaching**,  
**research** and  
**policy advice** in cooperation with national and  
international development organizations and HEI partners in  
the developing world

→ thematic focus on **biomass** and **food availability**,  
**food access**, **biomass** and **food use**, **food quality** and  
**safety**, giving particular concern to gender equality  
and **sustainability of agricultural production**.

→ Promotion of young scientists (PhD, Postdoc)

# Food Security Center - Partners

## Strategic Partner institutions



# Food Security Center

## Objectives

1. **Interdisciplinary teaching and training** of PhD students and post-doctoral fellows at Hohenheim und partner universities
  2. Demand-driven and impact-oriented **research**
  3. **Knowledge transfer and capacity strengthening** by international academic cooperations
  4. **Public relations work and (policy) advising** related to issues of food security at national and international levels
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# Food Security Center

## Research I

- **BiomassWeb / Globe E** (BMBF) including 1 sub-project at FSC and 4 further sub-projects at the University of Hohenheim (2013-2018):

Project objective: Improvement of food security in Africa (amongst others Ethiopia, Ghana) by increasing the productivity and efficiency in biomass supply chains



# Food Security Center

## Research & Education

- **German Ethiopian SDG Graduate School „Climate Change Effects on Food Security (CLIFOOD)“ (2016-2020, DAAD)**





## Research & Education

- **Development and implementation of insect-based products to enhance food and nutritional security in sub-Saharan Africa (*EntoNUTRI*), 2016-2019**, in close cooperation with the International Centre of Insect Physiology and Ecology (*icipe*) and the University of Bonn (ZEF)
- Development and implementation of an international partnership in training and research between the University of Hohenheim and Njala University, specifically in the field of "**Food and Nutrition Security and the Right to Food**" (**NutritionSec**), 2017-2020, (DAAD)

## Capacity Building and Education - Examples

- **Nutrition Training Workshops to Improve the Nutrition Security of Syrian Refugee Children in Lebanon (February 2017) in cooperation with the American University of Beirut (AUB)**
- **Food Security Networking Seminar related to 3<sup>rd</sup> Hidden Hunger Congress (March 2017) with 25 DAAD Alumni from 15 countries and 4 continents**



# FSC Performance

- **FSC Excellence Scholarships (long- and short term):**  
PhD's (56 long-term), Postdocs, visiting professors (6)  
→ more than 200 peer-reviewed publications
- **German-Ethiopian SDG Graduate School CLIFOOD**
- **Interdisciplinary PhD Program: „Global Food Security“**
- **> 5 Summer Schools**
- **> 50 Short Courses**
- **> 30 Regional Workshops**
- **Successful establishment of international conferences such as the Biennial Hidden Hunger Congress and the Annual World Food Day Colloquium**
- **FSC in dialogue series**

# FSC Performance in Latin America

## Short courses with lecturer from (conducted in)

- Thailand (in Costa Rica) - 2010
- Germany (in Costa Rica) – 2010
- Brazil (in Thailand) – 2011
- Costa Rica (in Malawi) – 2011
- Germany (in Costa Rica) – 2011 (x2)
- Brazil (in Thailand) – 2013
- Germany (in Cuba) – 2013
- Thailand (in Costa Rica) – 2013
- Germany (in Costa Rica) – 2014 (x3)
- Chile (in Costa Rica) – 2014
- Thailand (in Costa Rica) – 2014
- Germany (in Costa Rica) – 2015
- Costa Rica (in Thailand) – 2015
- Thailand (in Costa Rica) – 2015
- Uruguay (in Costa Rica) – 2015
- Germany (in Costa Rica) – 2016 (x3)
- Benin (in Costa Rica) – 2016
- Thailand (in Costa Rica) - 2016





# FSC Performance in Latin America

## Regional seminars with participants from (lecturer from)

- Nicaragua (3), Guatemala (3), El Salvador, Brazil (2), Argentina (3), Colombia (2), Honduras, Paraguay; lecturer from Brazil in Costa Rica **(2010)**
- Chile, Colombia (2), Argentina, Mexico (3), Venezuela; lecturer from Costa Rica in Brazil **(2011)**
- Peru, Mexico (4), Ecuador, Colombia, Brazil, Costa Rica; lecturer from Chile in Costa Rica **(2012)**
- Cuba, Uruguay, Costa Rica (2), Ecuador, Mexico, Colombia Chile, Bolivia; lecturer from Costa Rica in Argentina **(2013)**
- Panama, Uruguay, Mexico, Chile, Guatemala, Colombia, Brasil (2); lecturer from Spain in Costa Rica **(2014)**
- Colombia (3), Chile (3), Mexico, Brazil, Costa Rica (2); lecturer from Costa Rica in Uruguay **(2015)**
- Mexico (2), Brazil, Colombia (2), Chile, Uruguay, Argentina, Cuba; lecturer from Germany in Costa Rica **(2015)**
- Colombia (2), Panama, Dominican Republic, Mexico, Peru, Brazil, Chile (2); lecturer from Spain in Costa Rica **(2016)**
- Costa Rica (9), Bolivia, El Salvador in Merida, Mexico **(2017)**



# FSC Performance in Latin America

## Short-term postdoc stays from (to)

- Cuba (Costa Rica)
- Cuba (Mexico)
- Mexico (Costa Rica)



## REVISIÓN BIBLIOGRÁFICA

### SITUACIÓN DEL BOVINO CRIOLLO LECHERO TROPICAL (CLT) EN MÉXICO, NICARAGUA Y COSTA RICA

#### STATUS OF TROPICAL DAIRY CREOLE (CLT) IN MEXICO, NICARAGUA AND COSTA RICA

Vilaboa Arroniz, J.<sup>1\*</sup>, Quirós Madrigal, O.J.<sup>2</sup>, Díaz Rivera, P.<sup>1</sup> y Zetina Córdoba, P.<sup>3</sup>

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<sup>2</sup>Centro de Investigación Económica y Desarrollo Agroempresarial (CIEDA). Facultad de Ciencias Agroalimentarias. Ciudad Universitaria Rodrigo Facio. San Pedro, San José. Costa Rica.

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### LOS SISTEMAS GANADEROS CON CRIOLLO LECHERO TROPICAL (REYNA) EN COSTA RICA<sup>1</sup>

Julio Vilaboa-Arroniz<sup>2</sup>, Olman Quirós-Madrigal<sup>3</sup>, Pablo Díaz-Rivera<sup>2</sup>, Rodolfo WingChing-Jones<sup>4</sup>, Natalie Brower-Keating<sup>5</sup>, Pedro Zetina-Córdoba<sup>6</sup>



# FSC Performance in Latin America

## Project proposal in the frame of the MICITT-BMBF 2017 call:

“Non-destructive detection of microbial infestation and mycotoxins in cereals to improve food safety in Costa Rica”

UCR: Prof. Dr. Víctor M. Jiménez, Dr. Adriana Murillo, M.Sc. Catalina Acuña

UHOH: Prof. Dr. Joachim Müller, FSC-team

Aim: to develop a methodology for the rapid and non-destructive evaluation of microbial infestations and presence of mycotoxins in rice and maize grains

# FSC Performance in Latin America

## Peer-reviewed scientific publications

- >15 publications in international peer-reviewed journals (2010-2017)



Improved high-efficiency protocol for somatic embryogenesis in Peach Palm (*Bactris gasipaes* Kunth) using RITA® temporary immersion system



Angelo S. Heringer<sup>a</sup>, Douglas A. Steinmacher<sup>b,c</sup>, Hugo P.F. Fraga<sup>a</sup>, Leila N. Vieira<sup>a</sup>, Tiago Montagna<sup>a</sup>, Liliana A.P. Quinga<sup>a</sup>, Marguerite G.G. Quoirin<sup>b</sup>, Víctor M. Jiménez<sup>d</sup>, Miguel P. Guerra<sup>a,\*</sup>

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<sup>b</sup> Graduate Program in Agronomy, Federal University of Paraná, Curitiba, PR, Brazil

<sup>c</sup> ViveTech Agrociências, Marechal Cândido Rondon 85960-000, PR, Brazil

<sup>d</sup> CIGRAS, Universidad de Costa Rica, 2060 San Pedro, Costa Rica



Transcription analysis of softening-related genes during postharvest of papaya fruit (*Carica papaya* L. "Pococi" hybrid)



Dessiré Zepa-Catanho<sup>a</sup>, Patricia Esquivel<sup>b</sup>, Eric Mora-Newcomer<sup>c</sup>, Marco Vinicio Sáenz<sup>d</sup>, Raúl Herrera<sup>a</sup>, Víctor M. Jiménez<sup>a,f,\*</sup>

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<sup>e</sup> Laboratorio de Fisiología y Genética Molecular Vegetal, Instituto de Ciencias Biológicas, Universidad de Talca, Casilla 747, Talca, Chile

<sup>f</sup> Food Security Center, University of Hohenheim, 70599 Stuttgart, Germany



Occurrence and characterisation of calcium oxalate crystals in stems and fruits of *Hylocereus costaricensis* and *Selenicereus megalanthus* (Cactaceae: Hylocereeae)



María Viñas<sup>a,1</sup>, Víctor M. Jiménez<sup>a,b,\*</sup>

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Carotenoids and carotenoid esters of orange- and yellow-fleshed mamey sapote (*Pouteria sapota* (Jacq.) H.E. Moore & Stearn) fruit and their postprandial absorption in humans



Tania Chacón-Ordóñez<sup>a</sup>, Ralf M. Schweiggert<sup>a</sup>, Anja Bosy-Westphal<sup>b</sup>, Víctor M. Jiménez<sup>c,d</sup>, Reinhold Carle<sup>a,e</sup>, Patricia Esquivel<sup>f,\*</sup>

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## Recent Events 2017/2018

- **November 6-25, 2017**, University of Abomey-Calavi, Benin: 1<sup>st</sup> FSC Summer School in Africa “Food and Nutrition Security for the next 25-50 years”
- **November 20-30, 2017**, Hawassa University, Ethiopia: Block Seminar 1+2, German-Ethiopian Graduate School “Climate Change Effects on Food Security (CLIFOOD)”
- **December 3-6, 2017**, Cape Town, South Africa: 3<sup>rd</sup> International Conference on Global Food Security (oral presentation by FSC)

## Upcoming Events 2017/2018

### Save the date:

- **December 4-6, 2017**, UCR, Costa Rica: Regional Seminar "Advanced research on promissory edible plants in Latin America: tools to improve Food Security in the region", with two sub-topics: 1) "Biodiversity of edible plants in Latin America: phytochemicals and nutrients for the wellness and health" and 2) "Physiological and biotechnological approaches in the use of promising edible plants in Latin America".
- **January 18-20, 2018**, Berlin: Global Forum for Food and Agriculture "Shaping the Future of Livestock – sustainably, responsibly, efficiently"
- **October 16, 2018**, Hohenheim: World Food Day Colloquium

# Food Security Center

## Possibilities for further cooperation

- **FSC engages in research...**  
... related to your food security (FS)-relevant research themes
- **FSC can be involved...**  
... in your FS-relevant activities
- **Your institution...**  
... can be involved in FSC`s activities
- **FSC can serve your institution...**  
... as generator of research ideas and scientific service provider

## Contact

### Directorate

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### Regional Coordination in Latin America

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