



AB0091



Increasing Agripharmatech Graduates through Partnership Building with Hiilaniwai and High School Programs

Ingelia White Ph.D. (Coordinator, Agripharmatech Program)

Hongwei Li Ph.D.

Teena Michael Ph.D.

Charlene Akina (Coordinator, Hiilaniwai Foodservice Innovation Training)

Windward Community College

Plant-Food Production and Technology

Certificate of Competence



The field of plant-food technology offers numerous career options. Besides employing people for research and development, the industry also covers a variety of other agricultural biotech-related fields including high-tech farming, in vitro and in vivo plant propagation, food processing, and post-harvest technology. Occupations related to agricultural plant-microbiotechnology are expected to increase 10%-12% by 2018 (DHL Research and Analytics Office, 2016). The average professional growth for Precision Agricultural Technicians from 2012 to 2022 is from 1% to 14%, with employment of 64,000 employees and a median annual salary of \$130 in 2012 (O-NET Occupational Demand Report, 2011).

In order to attract a new generation of skilled agricultural-food technicians, Windward Community College offers a Certificate of Competence in Plant-Food Production and Technology (CO PFPaT). The CO PFPaT serves as a leading pathway certificate toward the Certificate of Achievement (CA) in Agripharmatech, and/or Certificate of Completion (CC) in Agricultural Technology, as well as prepares students for immediate employment.

CO PFPaT is a credit certification program requiring a total of 9 credits. Select three of the following classes:

- BOT 102 (Ethnobotany, 3 credits) *or*
- BOT 190 (Plants in Hawaiian Environment, 4 credits) *or*
- BOT 180 (Identification of Tropical Plants, 3 credits) *or*
- BOT 166 (Independent Study, 2-3 credits) *or*
- AG 120 (Plant Science, 3 credits) *or*
- AG 140 (Plant Propagation, 3 credits) *or*
- AG 132 (Orchid Culture, 3 credits) *or*
- FSNR 110 (Plant Nutrition, 3 credits)

Students will be trained in plant identification, in vitro and in situ plant propagation, plant growth and culture, medicinal/medicinal uses of plants, as well as practical training in the labs, medicinal gardens and greenhouses. The CO graduates will participate in mentoring programs where they work in local companies to gain experience before entering the workforce.

Contact Information:
 Ingrid White, Ph.D.
 Professor, Botany & Microbiology
 Coordinator, Agripharmatech Program
 Windward Community College
 808-933-4923
 ingrid@windward.edu

Visit us at windward.hawaii.edu

Agripharmatech

Certificate of Achievement

Ethnopharmacognosy & Plant Biotechnology



There are 2,296 agriculture farms on O'ahu, 250 of which are certified plant/orchid nurseries, including three culture labs. In addition, over 40 large biotechnology companies are operating in Hawaii, providing 1,760 jobs. Plant biotechnology businesses offer higher wages and benefits to their highly skilled employees. Plant biotech/nutritional-related jobs project a total of 41,000 additional employees by 2016 nationwide. The market for herb and herbal products sales in the U.S. reached a peak in 1998 of \$700 million. Nutritional product development could provide a positive impact on our state economy.

To ensure Hawaii is a participant in this advanced science and technology, starting in Fall 2012, Windward Community College offers a Certificate of Achievement in Agripharmatech with two specializations (Ethnopharmacognosy and Plant Biotechnology). This Agripharmatech program will create a highly skilled workforce for the many organic plant-based product labs and plant biotech businesses throughout our islands.

Agripharmatech Program Objectives

- Provide a skilled workforce in plant biotechnology and plant-based products manufacturing through education, research/training
- Facilitate student transfer to higher degree institutions majoring in biochemistry (plant/microbial biotechnology, plant molecular phylogenetics, bioinformatics, ethnobotany, horticulture, nutraceuticals, botanical, and green pharmacy)
- Promote agriculture-biotechnology entrepreneurship

Workforce in Ethnopharmacognosy Specialization

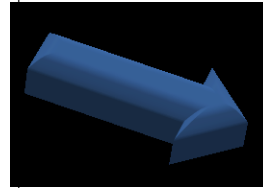
Students will secure jobs as plant-based product technicians, pharmacognosy research technicians, nutraceutical specialists, plant biology teachers, plant nursery managers, organic farmers, ethnobotanists, food product managers/inspectors, and dietitians/nutrition specialists.

Workforce in Plant Biotechnology Specialization

Students will secure jobs as plant biotechnicians, microbial biotechnicians, tissue culturists, animal researchers in plant biological sciences, microbial molecular phylogenetic technicians, orchid hybridizers, plant nursery managers, plant conservationists, horticulturalists, and agricultural inspectors.

Contact Information:
 Ingrid White, Ph.D.
 Professor, Botany & Microbiology
 Coordinator, Agripharmatech Program
 Windward Community College
 808-933-4923
 ingrid@windward.edu

Visit us at windward.hawaii.edu



- The Certificate of Competence in Plant-Food Production and Technology (CO PFPaT), 9 credits pathway certificate toward the Certificate of Achievement (CA) in Agripharmatech (30 – 31 credits).
- Industry internships for CO graduates, workforce ready and transferable to CA

Nutraceutical Products – Big Hits



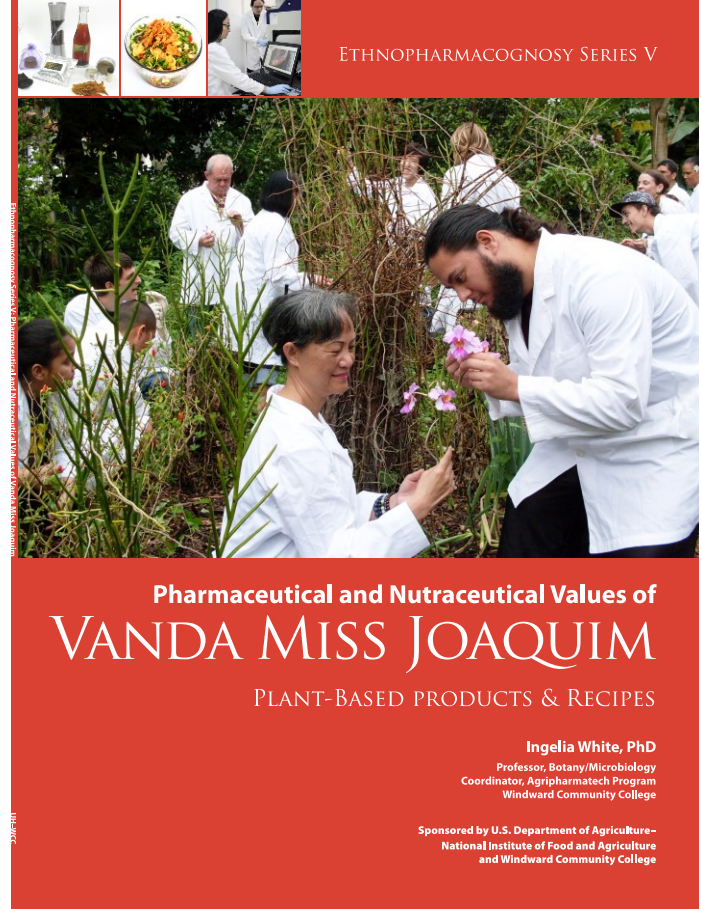
Testimonial:

“ I bought some tooth powder from you, which I have been using regularly and have been getting outstanding feedback on the condition of my gums from my dental hygienist, Jan Chun” *(Adele Wilson)*



Testimonial:

“I gave your sweet potato leaf teas to my friends and they really liked it” *(Thomas Doi)*



Testimonial:

“I have been using your Vanda and Kinehe soaps in the shower. My rash and itch are gone” (*Cammie M*)

\$4,000 was generated from the sales of nutraceutical products for the UHF – Agripharmatech Fund for student scholarship

Ethnopharmacognosy Series V – Pharmaceutical and Nutraceutical Values of *Vanda* Miss Joaquim is in publication

Partnership with Hiilaniwai Foodservice and Innovation Training Program

Agripharmatech resources and facility:

- Bioprocessing Medicinal Garden Complex
- Ethnopharmacognostical research
- Food Pharmacy

Hiilaniwai resources and facility:

- 450 hr. Food Service & Culinary Training
- Food Safety & Sanitation Certification
- Food Innovation Social Enterprise
- Food Production Training



“Food Service Beyond Education”



WINDWARD COMMUNITY COLLEGE
HILANIWAI
FOODSERVICE INNOVATIONS



Uala Leaf Cafe
AT WINDWARD COMMUNITY COLLEGE



Agripharmatech & HiFIT Certificate of Competence in Plant-Food Production and Technology (9 credits)

- ServSafe Certification
- NRA Manage First Nutrition Certification
- BOT 105 Ethnobotany **and**
- BOT 160 Identification of Tropical Plants **or**
- BOT 130 Plants in Hawaiian Environment



Partnership with Kailua High School to offer dual credits leading to CO PFPaT (Perkins grant)



Hands-on demonstrations in advanced agribiosciences – Student Ambassador and staff participation



87% of student attendees indicated interest and would consider taking advanced agribiosciences at WCC.

Hands-on demonstrations in advanced agribiosciences – faculty participation





19 CA in Agripharmatech diplomas were awarded to 14 graduates. The number of CA Agripharmatech diplomas awarded increased by 73%.

17 CO in Plant-Food Production and Technology graduates. The number increased by more than 100%.

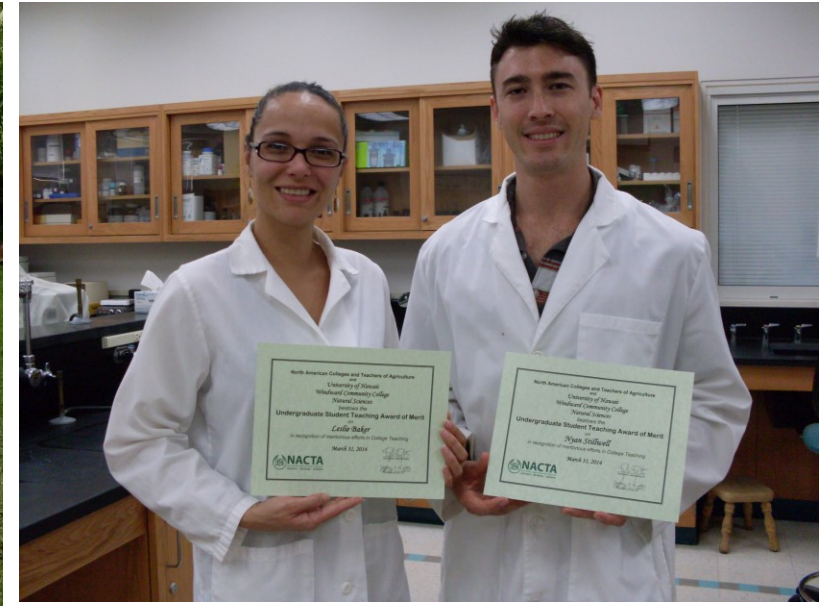
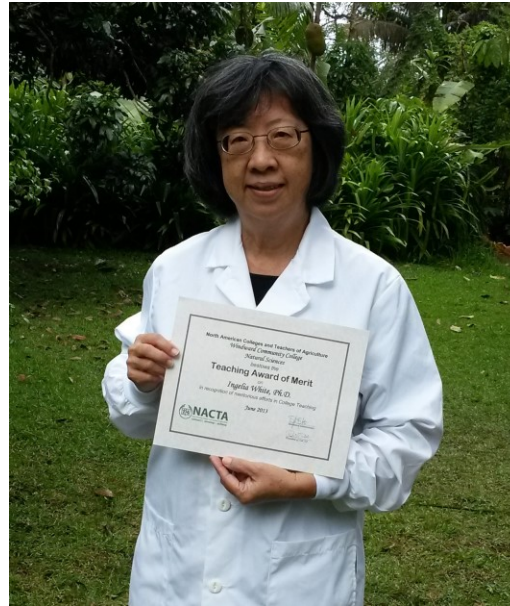
NACTA Teaching Award of Merit Recipients at WCC 2013 - 2016

2013 recipient (Dr. Ingelia White,
Prof. Botany & Microbiology)

2014 recipient (students Leslie Baker
& Nyan Stillwell)

2015 recipient (Clayton Akatsuka,
Prof. Mathematics, students Michael
Denis & Jarnell Haukoloa)

2016 recipient (Dr. Hongwei Li, Prof.
Microbiology & Dr. Teena Michael,
lecturer Botany, students Lia Kim,
Masami Deschamps & Michael
Broady)



Acknowledgement

This University of Hawaii Agribusiness Education, Training and Incubator (AETI) consortium project at Windward Community College was supported by “Alaska Native/Native Hawaiian - Serving Educational Institutions” Competitive Grant no. 2012-38426-19624 from **the USDA-National Institute of Food and Agriculture**. This project is also partially supported through **Perkins** grant FY 2016 - 2017. We thank our collaborators Hi’ ilaniwai Foodservice and Innovation Training Program, and Kailua High School – Natural Science Department.