COLLEGE OF ARTS AND SCIENCES
UNIVERSITY OF THE PHILIPPINES LOS BAÑOS

R.B. Espino Wing, L.B. Uichangco Hall, UPLB, College, Laguna 4031
+63 49 536 2893 | ibsdo.uplb@up.edu.ph | ibs.cas.uplb@up.edu.ph

National Center of Excellence
INSTITUTE OF BIOLOGICAL SCIENCES

27 September 2022

Dr. Ir. Sukendah, M.Sc.
University of Pembangunan Nasional
'Veteran' Jawa Timur, Jl.
Raya Rungkut Madya Gunung Anyar
60294, Surabaya East Java, Indonesia

Dear **Dr. Sukendah**:

Greetings!

On behalf of the organizing team of the Botany Graduate Seminar's ***2022 Weekly Webinar Series in Plant Biology***, Institute of Biological Sciences, College of Arts and Sciences, University of the Philippines Los Baños, I wish to cordially invite you as the Resource Speaker for the topic, "Kopyor Coconut Mutant from Nature to Market".

The Botany Graduate Seminar is a venue for experts and students to share their research curiosities, perspectives, and discoveries in the study of the science and applications of plant biology.

The event is scheduled on the 6th of October, 4:00 PM onwards through Zoom. With this, we are also requesting you to send us a 30-minute recording of your presentation, your current CV and of course your presence during the event.

Thank you very much and we are looking forward to learning more about the advances and applications of botany from you.

Sincerely yours,

INOCENCIO E. BUOT, JR.
Professor

EPISODE 4

Institute of Biological Sciences
College of Arts and Sciences
University of the Philippines Los Baños

BOTANY 299 SECTION Y

presents

2022 Weekly Webinar Series in Plant Biology

on

"Kopyor Coconut Mutant from Nature to Market"

Speaker:

Dr. Ir. Sukendah, MSc
University of Pembangunan Nasional
Veteran Jawa Timur,
Surabaya East Java, Indonesia

Scan here to register:

Or through this link:
https://bit.ly/3dM6CBW

4:00-5:00 PM PST | October 6, 2022, Thursday | via zoom

KOPYOR COCONUT MUTANT FROM NATURE TO MARKET

Dr.Ir. Sukendah, MSc.

October 6, 2022

KOPYOR COCONUT MUTANT

Kopyor coconut is the result of a natural mutation expressed in the coconut endosperm

Kopyor character is controlled by a single mutation in the alpha-d Galactosidase gene (recessive gene)

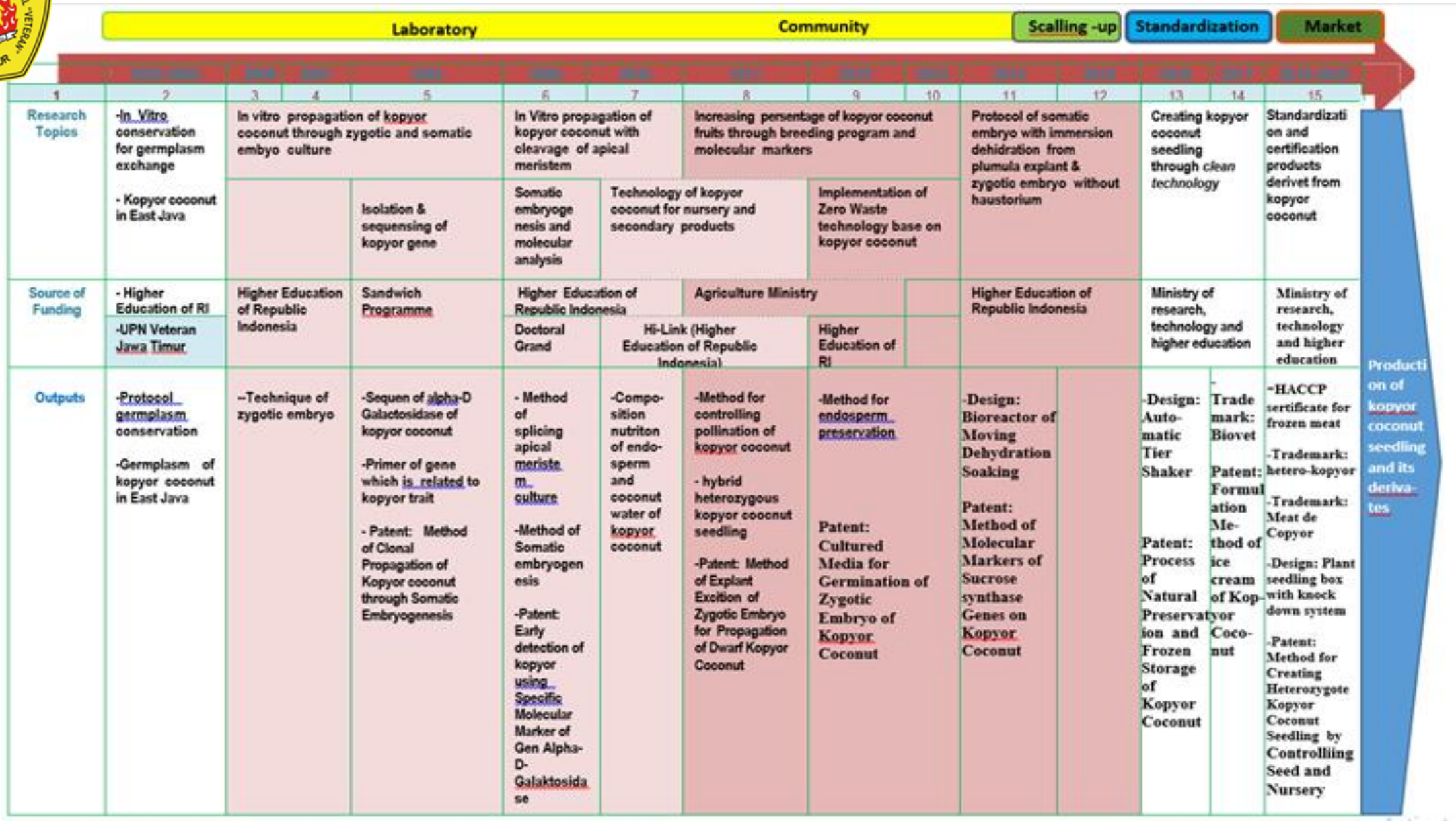
Male (Kk) / Female (Kk)	Male sperm nucleus	
Female germ cell	K	k
K	KK (Homozygous Normal Coconut)	Kk (Heterozygous Normal Coconut)
k	Kk (Heterozygous Normal Coconut)	kk (Homozygous Kopyor Coconut)

1. **Genotype : KK will produce 100 % normal fruits**
2. **Genotype : Kk will produce Normal and Kopyor fruits in one bunch**
3. **Genotype : kk will produces 100% kopyor fruits but the embryo fail to germinate**

KOPYOR COCONUT GERMPLASM IN INDONESIA

Research Planning

01	RESEARCH ROADMAP	✓ Starting Point ✓ Timeline ✓ Goal
02	MATERIAL - GERMPLASM	✓ Raw Material ✓ Superior character
03	Technology Development PROTOCOL-PROTOTYPE	✓ Technology Readiness Level ✓ Own Protocol ✓ Intelectual Property Right
04	PROTOTYPE TEST PRODUCT STANDARDIZATION AND CERTIFICATION	✓ Product Implementation ✓ Product Quality
05	SCALLING UP-PARTNERSHIP PRODUCTION FOR THE MARKET	✓ Production ✓ Collaboration


Laboratory
Community
Scalling -up
Standardization
Market
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
Research Topics
-In Vitro conservation for germplasm exchange
- Kopyor coconut in East Java
In vitro propagation of kopyor coconut through zygotic and somatic embyo culture
Isolation & sequensing of kopyor gene
In Vitro propagation of kopyor coconut with cleavage of apical meristem
Somatic embryoge nesis and molecular analysis
Technology of kopyor coconut for nursery and secondary products
Increasing persentage of kopyor coconut fruits through breeding program and molecular markers
Implementation of Zero Waste technology base on kopyor coconut
Protocol of somatic embryo with immersion dehidration from plumula explant & zygotic embryo without haustorium
Creating kopyor coconut seedling through clean technology
Standardizati on and certification products derivet from kopyor coconut
Source of Funding
- Higher Education of RI
-UPN Veteran Jawa Timur
Higher Education of Republic Indonesia
Sandwich Programme
Higher Education of Republic Indonesia
Doctoral Grand
Agriculture Ministry
Hi-Link (Higher Education of Republic Indonesia)
Higher Education of RI
Higher Education of Republic Indonesia
Ministry of research, technology and higher education
Ministry of research, technology and higher education
Outputs
-Protocol germplasm conservation
-Germplasm of kopyor coconut in East Java
--Technique of zygotic embryo
-Sequen of alpha-D Galactosidase of kopyor coconut
-Primer of gene which is related to kopyor trait
- Patent: Method of Clonal Propagation of Kopyor coconut through Somatic Embryogenesis
- Method of splicing apical meriste m culture
-Method of Somatic embryogen esis
-Patent: Early detection of kopyor using Specific Molecular Marker of Gen Alpha-D-Galaktosida se
-Compo-sition nutriton of endo-sperm and coconut water of kopyor coconut
-Method for controlling pollination of kopyor coconut
- hybrid heterozygous kopyor cooconut seedling
-Patent: Method of Explant Excition of Zygotic Embryo for Propagation of Dwarf Kopyor Cocoonut
-Method for endosperm preservation
Patent: Cultured Media for Germination of Zygotic Embryo of Kopyor Coconut
-Design: Bioreactor of Moving Dehydration Soaking
Patent: Method of Molecular Markers of Sucrose synthase Genes on Kopyor Coconut
-Design: Auto-matic Tier Shaker
Patent: Process of Natural Preservation and Frozen Storage of Kopyor Coconut
- Trade mark: Biovet
Patent: Formulation Me-thod of ice cream of Kop-yor Coco-nut
-HACCP sertificate for frozen meat
-Trademark: hetero-kopyor
-Trademark: Meat de Copyor
-Design: Plant seedling box with knock down system
-Patent: Method for Creating Heterozygote Kopyor Coconut Seedling by Controlliing Seed and Nursery
Producti on of kopyor coconut seedling and its deriva-tes

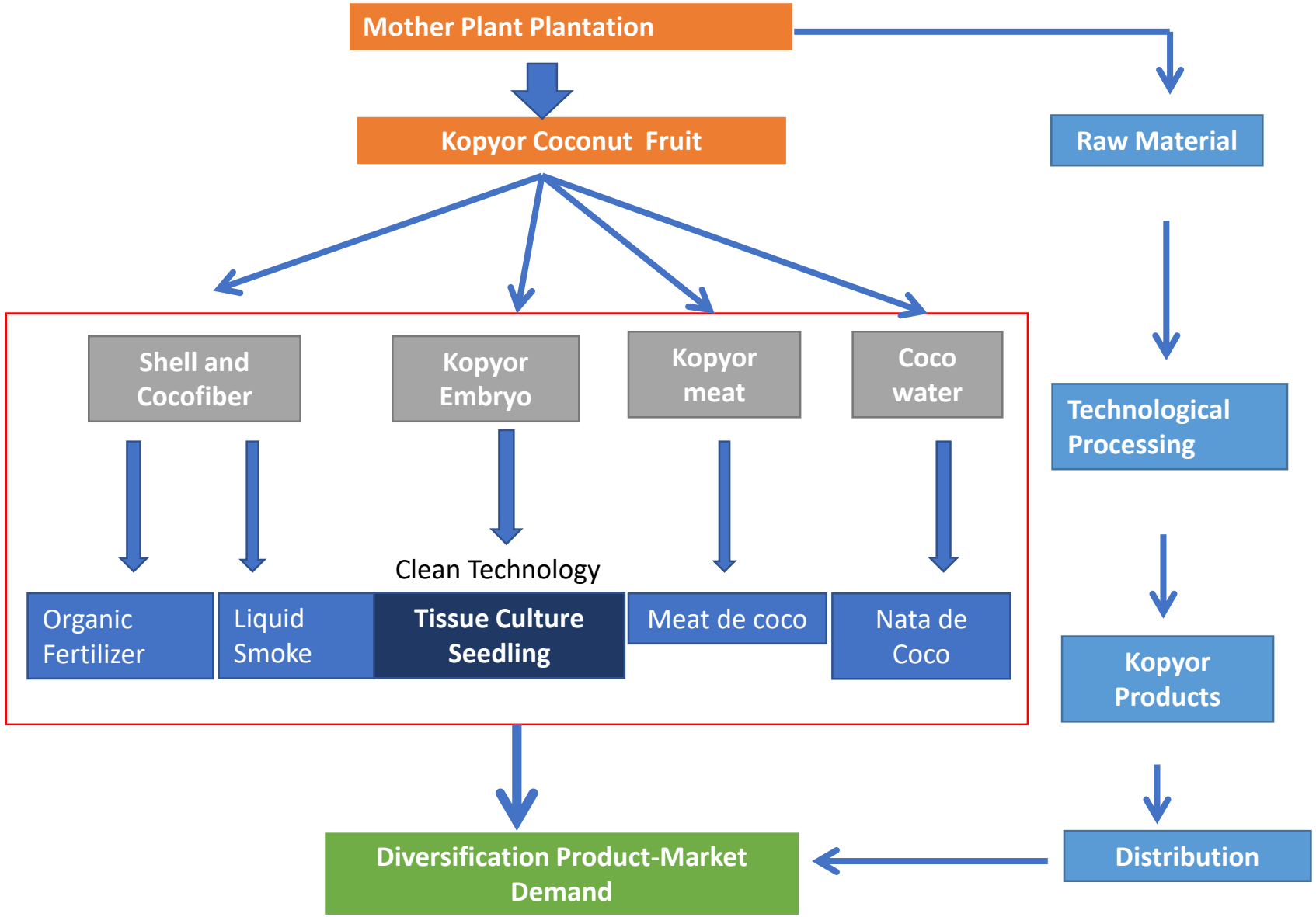
Source of Material Kopyor Coconut




1. Pati-Central Java (47.261 trees)
2. Sumenep-East Java (10.000 trees)
3. Jember-East Java (1.000 trees)
4. Kalianda-Lampung (5.215 trees)

1. Green, brown, red and yellow tall and dwarf
2. Green, brown, red tall
3. Green, brown, red tall
4. Green, brown tall

DEVELOPMENT OF KOPYOR IN-VITRO TECHNOLOGY



IPR of Kopyor Coconut

No.	IPR	Total	Product
1.	Patent	8	Technology of Kopyor Coconut Processing
2.	Industrial Design	6	Bioreactor, Shaker, Kopyor Coconut Nursery Box, and Kopyor Coconut Packaging Box
3.	Trade Mark	3	Biovet, Heterokopyor, Meat de Copyor
No	**Product Certification**	**Total**	**Product**
5.	Halal	3	Frozen Meat
6.	HACCP	1	

IDENTIFICATION OF KOPYOR COCONUT PRODUCTS THAT HAVE MARKET VALUE

Four Steps for Commercialization Kopyor Coconut Products:

1. Product business feasibility,
2. Scaling-up of selected product
3. Standardization or/and certification
4. Partnership

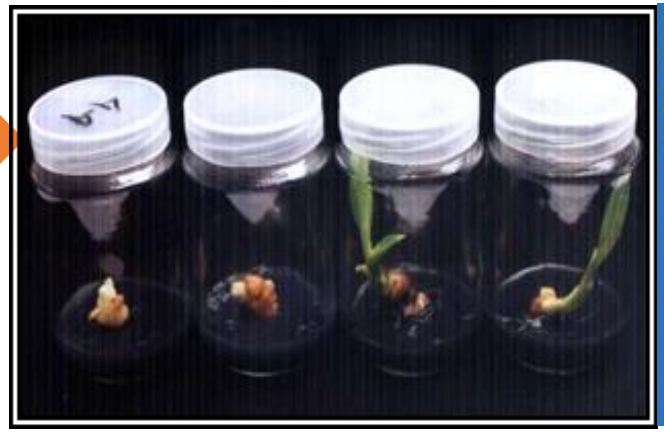
Scalling up the Kopyor Coconut Seedling

01

Kopyor Coconut Heterozygote

02

Kopyor Coconut Homozygote



Distribution Kopyor Coconut Seedling to the Customer

THANK YOU

THANK YOU

THANK YOU

University of the Philippines
LOS BAÑOS

Certificate of Appreciation

is awarded to

Dr. Ir. Sukendah, MSc

for serving as ***Resource Speaker*** with the topic
"Kopyor Coconut Mutant from Nature to Market"
during the **2022 Weekly Webinar Series in Plant Biology**
held on 06 October 2022 via Zoom.

INOCENCIO E. BUOT, JR., Ph.D.
Professor and Organizer