Addressing Cocoa Pod Borer (CPB) in Indonesia through Integrated Pest Management (IPM)

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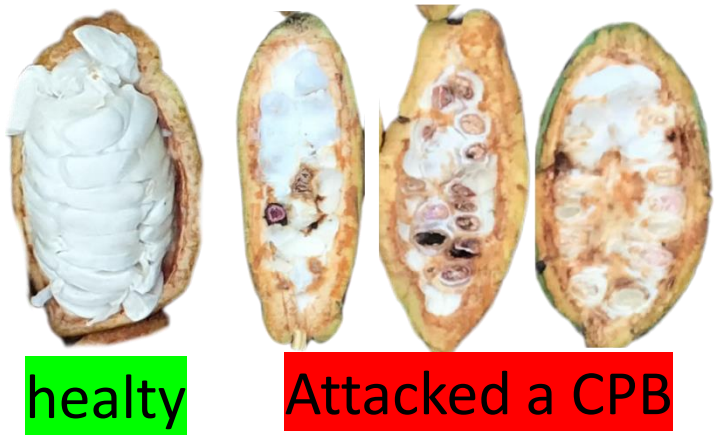
The Challenge of Cocoa Pod Borer as a major cocoa pest In Indonesia



- **Major Pest in Southeast Asia**: The cocoa pod borer (CPB), *Conopomorpha cramerella*, is a significant pest affecting cocoa crops, leading to substantial economic losses in the region .
- **High Crop Losses**: Infestations by CPB can result in crop losses exceeding 50%, highlighting the critical need for effective pest management strategies .
- **Population Density and Management**: Despite low population densities, a single CPB eggs can cause significant damage one cocoa pod, necessitating strategic management approaches, especially during peak seasons.
- **Overuse of chemical pesticides** poses risks to farmer health, environmental sustainability, and economic stability

Registered pesticides for CPB in Indonesia

No.	Active Ingredient	IRAC Category
1	Eugenol + Azadirachtin	18 (Botanical insecticide)
2	Fipronil	2B (Phenylpyrazole)
3	Chlorpyrifos + Cypermethrin	1B + 3A (Organophosphate + Pyrethroid)
4	Lambda-cyhalothrin	3A (Pyrethroid)
5	Cypermethrin	3A (Pyrethroid)
6	Permethrin	3A (Pyrethroid)
7	Methoxyfenozide	18 (Insect Growth Regulator)
8	Hexadecatrienyl Acetate (Pheromone Trap)	Not applicable
9	Methomyl	1A (Carbamate)

Case study: Cultivation practice and crop protection in One Health Implementation: Impact on Cocoa Farming and Health in West Sulawesi (Arsyad, D S et al 2019)

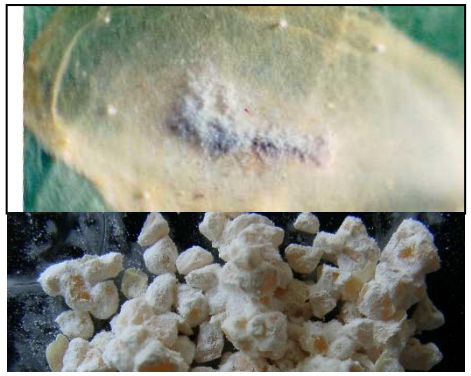
- **Cocoa Productivity**: The average cocoa production per household was 275 kg/year, with a wide range (5 kg to 2304 kg), highlighting the influence of pest and disease management.
- **Health Issues Among Farmers**: 33.3% of men and 28.5% of women reported joint pain, and 33.3% of men had blurry vision, which may be made worse by poor pest control.
- **Impact of Pest and Disease Management**: The failure to use good agricultural practices (GAP) and the lack of extension services made pest control harder, leading to lower yields and worse health.
- **Food Security**: 58% of households were concerned about food availability, and 63% had limited food variety, which was linked to poor agricultural practices and pest management

Integrated Pest Management (IPM) as a Solution

Farmer education programs through field schools

Cultural practices

- Use Good Agricultural Practices protocol in Indonesia
- Best plant material and pruning
- Purwaningsih, et al 2014: The intensity of CPB attacks in habitat-managed is reduced by approximately 40.7% compared to conventional



Entomopathogen *Beauveria bassiana*

- Beauvericin as a natural toxins for CPB
- Nurhangga et al, 2024: *Beauveria bassiana* can reduce until 77% compare to normal

Pesticides application

- The last strategy after reach
- Economic treshold
- Rotate minimum tree IRAG group per insect window

Tackling Cocoa Pod Borer: Key Challenges, Outcomes, and Strategies for IPM Success

Challenges:

- Shifting farmers to IPM from chemicals.
- High costs and labor-intensive practices.
- Limited access to biocontrol agents.
- Regulatory barriers in biocontrol registration.

Key Successes:

- Reduced pesticide use.
- Adoption of biopesticides and GAP.
- Improved cocoa quality and yield.
- Higher cocoa market prices.

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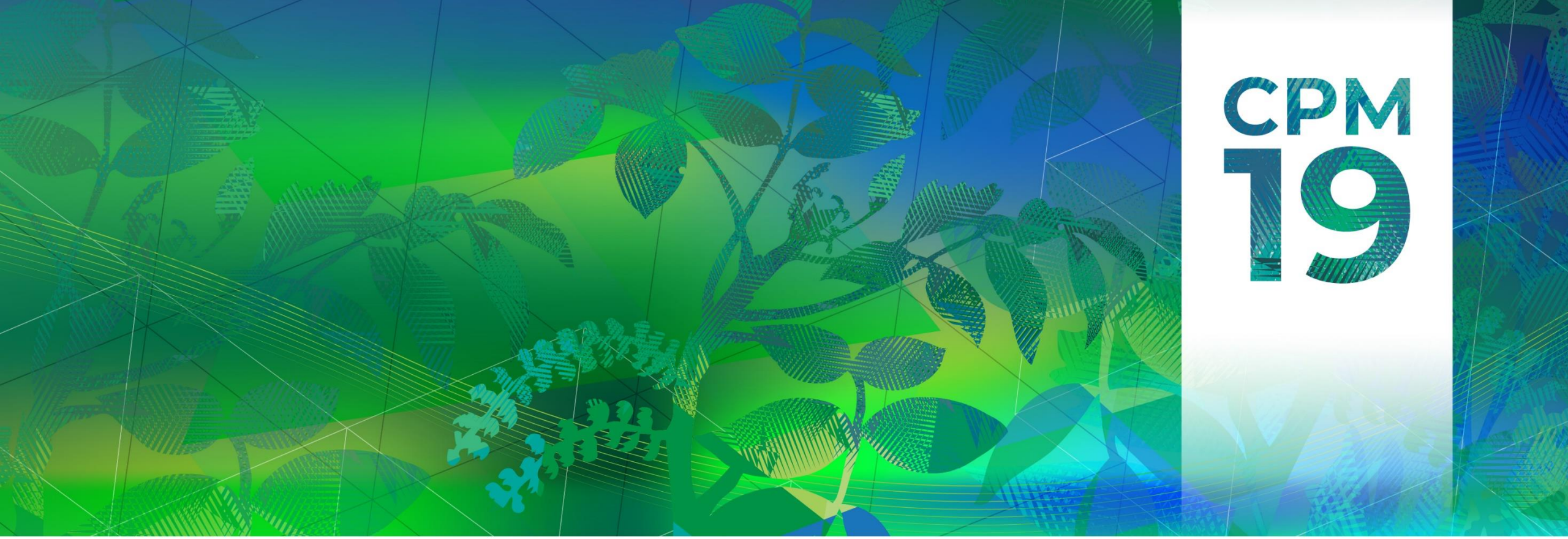
Guiding Principles:

- Sustainable, eco-friendly pest management.
- Farmer education and community involvement.
- Easier biopesticide registration.



Thank you