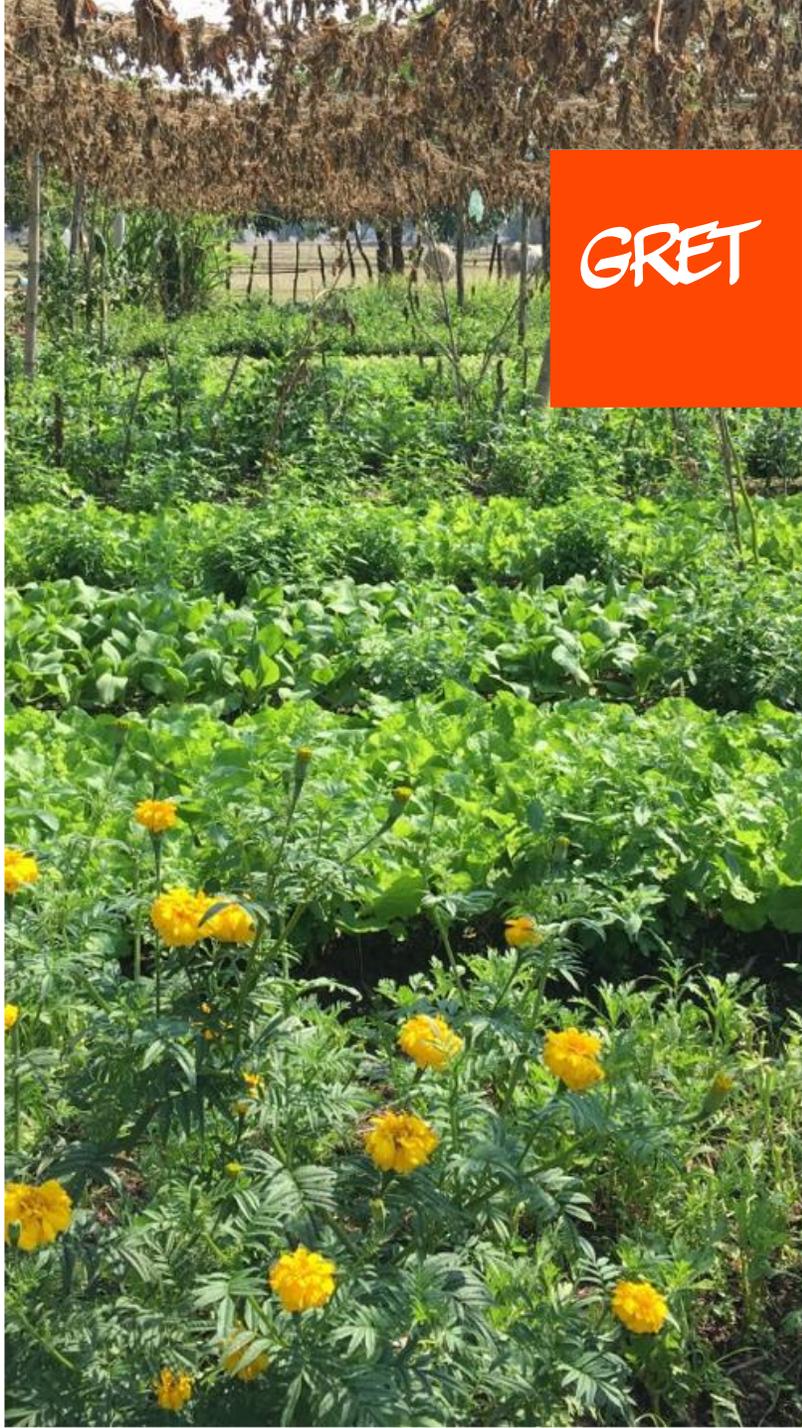




GRET

APICI Project

Developing sustainable
agriculture by and for farmers
in Siem Reap Province,
Cambodia



By Phy PHEART-Siem Reap-Cambodia 24th March 2024

DEVELOPING SUSTAINABLE AGRICULTURE BY AND FOR FARMERS IN SIEM REAP PROVINCE, CAMBODIA”

Project Objective:

increase incomes and improve the livelihood of small householder farmers by developing sustainable agriculture based on low agricultural input usage and diversification of products.

Key components

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AGRICULTURAL COMPONENT

- Agriculture
- Vegetable gardens
- Livestock raising
- Rice production

SAVING GROUPS

- Facilitate access to capital
- Encourage monthly savings
- Supporting legal entities for SVGs

IRRIGATION

- Improving access to water
- Efficient use of resource

LINKS TO MARKET

- Setting up Farmer's groups
- Farmer - local collectors
- Setting up ACo
- Organize established weekly farmers' market

NUTRITION

- Nutrition Sensitive Actions
- Improving the malnutrition situation

nutrition
the right balance of real foods

GREEN WASTE MANAGEMENT

syctom

- Collect waste from the local market
- vermicompost
- waste management

Target area:

1 province (Siem Reap), 4 districts (Sotr Nikom and Prasat Bakong, Chickreang, Svailer), 54 villages, and 10 ACs.

Partners:



Donors:



THE MAIN ACTIVITIES OF THE PROJECT ENCOMPASS THE IMPLEMENTATION OF CROP PROTECTION MEASURES.

- **Training and Capacity Building:** provide training sessions, and workshops to key farmers (37 key farmers), members from 3 ACs, and the target beneficiaries (around 2000 families) on integrated pest management (IPM) techniques.
- **Exchange visit/field day:** farmers in a field setting to learn and exchange knowledge about crop protection practices. 1 or 2 times per year for each component.
- **Demonstration Plots:** established demonstration plots in each target area and each AC to showcase AE and sustainable crop protection practices. Follow up on pilot farmers in knowledge sharing among farmers every month.
- **Access to Information and Resources:** provide easy access to information and

Intercropping



Mix cropping



Crop rotation



Family Crop Rotation



THE MAIN ACTIVITIES OF THE PROJECT ENCOMPASS THE IMPLEMENTATION OF CROP PROTECTION MEASURES (CONT.)

Compost

When organic waste is composted and added to the soil, it enriches it with essential nutrients, improves water retention, and promotes beneficial microbial activity

- Solid and liquid compost
- Cow bedding compost
- Vermicompost



PGS



Seed saving



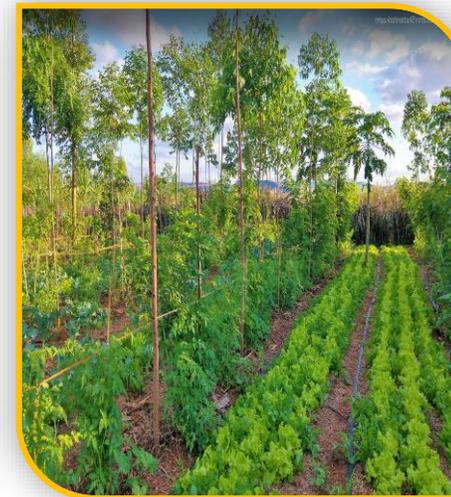
Cover cropping



Intercropping



Agroforestry



WHY DOES CROP PROTECTION BENEFIT FARMERS?

- **Enhanced Resilience:** improves the resilience of farming systems by reducing the risk of crop failure due to pests, diseases, extreme weather events, or market fluctuations.
- **Natural Pest Control:** promotes natural pest control by attracting beneficial insects, predators, and pollinators. Tend to organize farming.
- **Improved Soil Health and Nutrient Cycling:** contributes to improved soil health, nutrient cycling, and reduced reliance on synthetic fertilizers
- **Market Opportunities and Risk Mitigation:** opens up market opportunities and reduces the risk of relying on a single crop. AC farmers supply to the market demand (some clients in PP, SR, Siem Reap farmers market...)



Biological Control



SUMMARY OF BIO-PESTICIDE TECHNIQUES MAKE AND USE FOR VEGETABLE GROWING

Kind of Plant	Solution Preparation				How to Use Bio-Pesticide				Pest/ Diseases target effective
	Quantity of plant	Water	Time to Soak	Time to Store	Solution of bio-pesticide	Add water	Add Soap	Time Application	
Papaya Leaves I	0.5Kg/cute/crush	1Liter	1night	1week	1Liter	20 Liters	100 cc/ 1 time	Morning or evening	Leafy caterpillars, Coffee rust, Leaf rust, Mosaic virus, Powdery mildew
Lemongrass	0.5Kg/cute/crush	20 Liters	2-3 hours	1week	20 Liters	0 Liters	100 cc/ 1 time	Morning or evening	Leaf blight and bactericide and fungicide
Thai Basil	0.5Kg/cute/crush	20 Liters	1night	1week	20 Liters	0 Liters	100 cc/ 1 time	Morning or evening	Caterpillars, Fruit flies, Red, spider/mites, Red scales, Spotted leaf/beetles, Fungal diseases, Nematodes
Papaya Leaves II	1Kg/cute/crush	10 Liters	2nights	1week	10 Liters	0 Liters	50 cc/ 1 time	Spray Control every week	Grasshoppers, 1White grub
<ul style="list-style-type: none"> ▪ Lemongrass ▪ Chromolaena ▪ Chillies ▪ Cow urine (if available) 	<ul style="list-style-type: none"> ▪ 3 Kg ▪ 1 Kg ▪ 100g ▪ 1-2 Liters (cute/crush) 	10 Liters	2 weeks	1week	1 Liters	2-3 Liters	100 cc/ 1 time	Control spraying every week	Stem borers, grass hopper, moth, DBM, aphid
Neem Leaves	1 Kg/cute/crush	3 Liters	6-12 hours	1week	3 Liters	10 Liters	50 cc/ 1time	Control spraying every week	Caterpillars, beetle larva, leaf-miner flies, crickets and leafhoppers

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References from [Mr. Stephane Favon](#)



FARMERS PRACTICE ON BEES KEEPING AND POLLINATION



- In 2021 APICI started the pilot project on a small scale bees keeping to 4 farmers (2 farmers stopped and 2 others still continue)
- 2-phase training (colony organization, colony inspection...)
- Documentation of the local bees' forage by self-observing
- Raise awareness to the farmers in the village
- The beekeeper is interested in sharing the biopesticides among their villagers to convince them to stop chemical



BEES FOR CROP POLLINATION

- Design the training tool for PF
- 10 PF are invited for ToT on crop pollination and stingless bee budding techniques (3 times ToT)
- The members of the vegetable producer group from 4 ACs have been trained.
- 4 farmers are successful in stingless bee budding and they can share the successful experience with others.
- Raise awareness among the farmers on pollinator agents and bee conservation as stingless bee budding techniques.
- Pollinator habitat restoration
- Farmer engagement and collaboration (stop eating and harvesting bees)



Colony budding techniques

- Colony budding is a form of hive propagation particularly suited to nests located in inaccessible structures, such as walls or trees.
- To bud a colony, you need:
- An empty hive with an observation window to monitor the proceeding inside and an additional entrance hole at the back,
 - A pipe to connect the wild nest to the hive,
 - A little bit of propolis.
 - As the parent colony is not removed from its original location this technique can be repeated every year on the same wild colony, provided it is strong enough.



CHALLENGE

- **Pest and Disease Management:** Bio-pesticides, although effective, have a limited duration of effectiveness in a short time.
- **Nutrition management:** remain certain nutrients in the soil for the farmer who grows on concrete veg bed
- **Access to Resources:** difficult to access the raw material for making biopesticides and compost.
- **Chemical pesticides** are still used by non-AC members and affect the bees and other pollinator agents
- **Deforestation** (no forage for bees keeping during the year) loss of pollinator agents)
- **Climate change** can significantly impact crop protection (drought, flood..)
- **Inadequate knowledge** of crop protection for farmers.



FUTURE PERSPECTIVE

- **Research and Development:** invest in an internship in research and development to explore innovative and sustainable approaches to crop protection.
- **Education and Awareness:** continues sharing knowledge on crop protection and bees for pollination techniques in the 10 ACs.
- **Promote the business for the ACs:** to promote and sell the high-quality product of biopesticides to AC members and beyond.
- **Collaboration and Partnerships:** Foster collaboration with other NGOs, universities, and the network to access expertise and resources: (ALISEA..)
- **Encourage stingless beekeeping practices:** include in the AC business for pollinators service.

- **Digital Media and Online Platforms:** produce promotional tools on crop

A rural landscape featuring three tall palm trees in the foreground. The background consists of a green field with scattered trees and a cloudy sky. The text "Thank you for your attention!!!" is overlaid on the right side of the image.

**Thank you for your
attention!!!**