APICI Project

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

By Phy PHEART-Siem Reap-Cambodia 24th March 2024
Project Objective:

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

Target area:

1 province (Siem Reap), 4 districts (Sotr Nikom and Prasat Bakong, Chickreang, Svalier), 54 villages, and 10 ACs.
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 resources on crop protection by video making.
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
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

<table>
<thead>
<tr>
<th>Kind of Plant</th>
<th>Quantity of Plant</th>
<th>Water</th>
<th>Time to Soak</th>
<th>Solution of bio-pesticide</th>
<th>Add water</th>
<th>Add Soap</th>
<th>Time Application</th>
<th>Pest/ Diseases target effective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Papaya Leaves I</td>
<td>0.5Kg/cute/crush</td>
<td>1Liter</td>
<td>1night</td>
<td>1week</td>
<td>1Liter</td>
<td>20 Liters</td>
<td>100 cc/1 time</td>
<td>Morning or evening</td>
</tr>
<tr>
<td>Lemongrass</td>
<td>0.5Kg/cute/crush</td>
<td>20 Liters</td>
<td>2-3 hours</td>
<td>1week</td>
<td>20 Liters</td>
<td>0 Liters</td>
<td>100 cc/1 time</td>
<td>Morning or evening</td>
</tr>
<tr>
<td>Thai Basil</td>
<td>0.5Kg/cute/crush</td>
<td>20 Liters</td>
<td>1night</td>
<td>1week</td>
<td>20 Liters</td>
<td>0 Liters</td>
<td>100 cc/1 time</td>
<td>Morning or evening</td>
</tr>
<tr>
<td>Papaya Leaves II</td>
<td>1Kg/cute/crush</td>
<td>10 Liters</td>
<td>2nights</td>
<td>1week</td>
<td>10 Liters</td>
<td>0 Liters</td>
<td>50 cc/1 time</td>
<td>Spray Control every week</td>
</tr>
<tr>
<td>• Lemongrass</td>
<td>5 Kg</td>
<td>10 Liters</td>
<td>2 weeks</td>
<td>1week</td>
<td>1 Liters</td>
<td>2-3 Liters</td>
<td>100 cc/1 time</td>
<td>Control spraying every week</td>
</tr>
<tr>
<td>• Chromolaena</td>
<td>1 Kg</td>
<td>100 g</td>
<td>1-2 Literes (cute/crush)</td>
<td>1 week</td>
<td>2-3 Liters</td>
<td>100 cc/1 time</td>
<td>Control spraying every week</td>
<td>Caterpillars, beetle larva, leaf-miner flies, crickets and leafhoppers</td>
</tr>
<tr>
<td>• Chilies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Cow urine</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(If available)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neem Leaves</td>
<td>1 Kg/cute/crush</td>
<td>3 Liters</td>
<td>6-12 hours</td>
<td>1week</td>
<td>3 Liters</td>
<td>10 Liters</td>
<td>50 cc/1 time</td>
<td>Control spraying every week</td>
</tr>
</tbody>
</table>

Document produce by: Vegetable Technician of GRET Mr. SOK Sovchon

References from: Mr. Stephane Favon

---

GRET

Hauts de Seine LE DEPARTMENT

[Image of people using a hand pump to fill jugs with liquid, and another image of a person holding a large bowl with vegetables covered in blue cloth]
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...
Thank you for your attention!!!