

Household Insect Control by Chemical Free Formulations



Presented by

Smriti Kala

Scientist (Formulation)

*Institute of Pesticide Formulation Technology
Sector 20, Udyog Vihar Gurgram (Haryana), India
e-mail : smriti.kala@ipft.gov.in*

Insects-Pest associated with Humans

Vector / Disease Carriers



Mosquitoes



Cockroaches



House flies



Rodents

Economic Losses



Postharvest Pests



Termites

Annoying Pests



Bugs



Ants

Prime Household Pests - *Facts & Figures*

Mosquitoes

**SMALL BITE
BIG IMPACT**

- ✓ Mortality & 228 million morbidity cases (WHO)
- ✓ Dengue has epidemic potential

- ✓ Economic burden
- ✓ Socioeconomic impact, Poverty
Illness and impeding
economic development

**NEGLECTED TROPICAL
DISEASES**

- ✓ No Vaccines
& Medicines

GLOBAL BURDEN

Stored Grain Pests

- ✓ Total Post harvest losses = 10%
- ✓ Stored pests = 2- 4.2% Loss of Rs. 1300
Cores
A portion can feed one-third of Indian population

Source:

Control of Household Pests

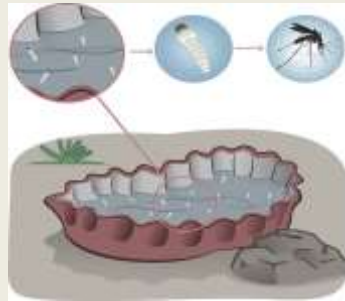
Management of Clean Environment

✓ Hygiene & Public Cleanliness

* Cleaning of garbage



* Removal of breeding sites



✓ Sanitation & Cleaning

* Sun drying of grains before storage



* Proper cleaning of containers before Storage



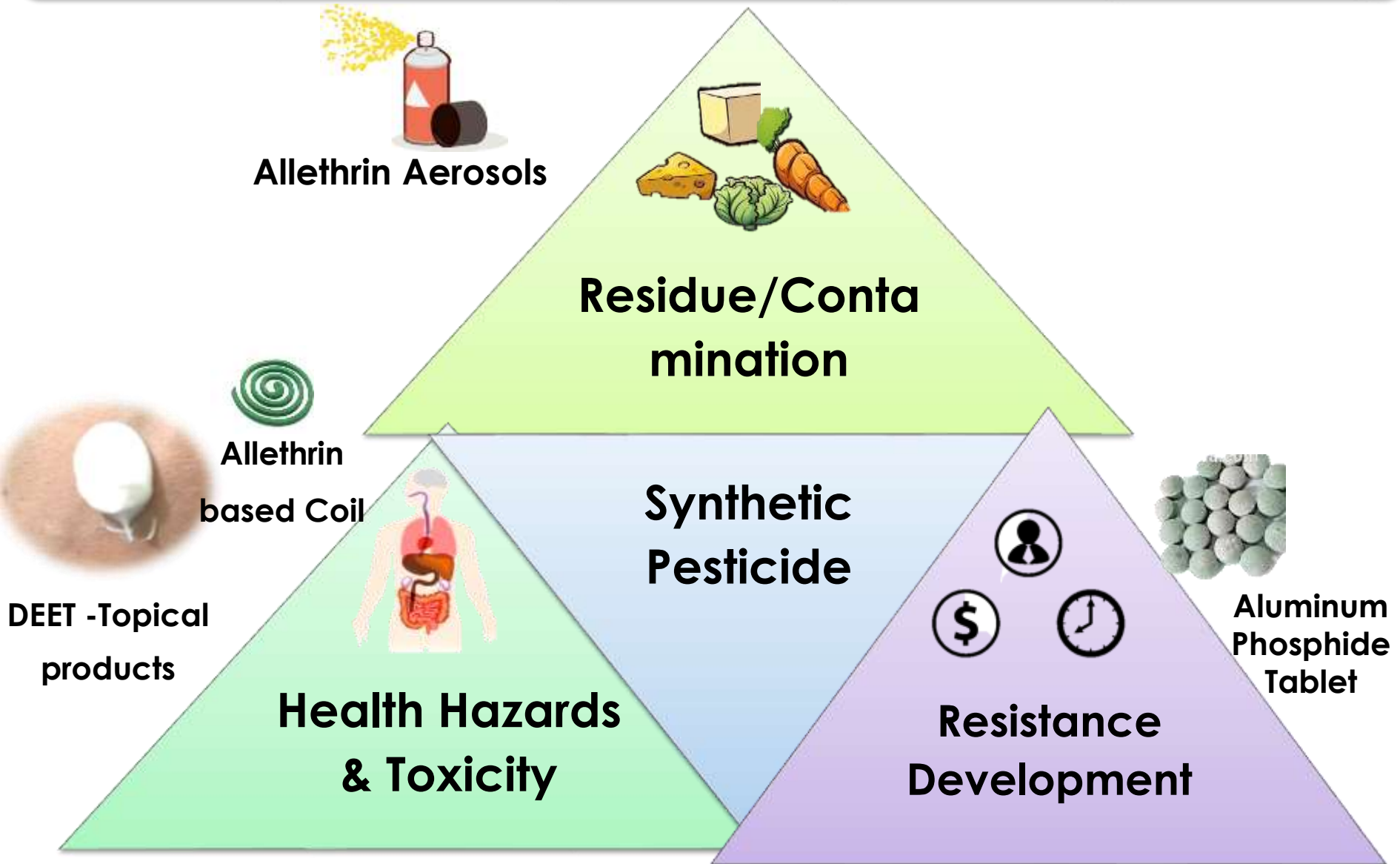
Alternative



Use of Pesticides

• Effective & Cheap

House-Pests control using Synthetic Insecticides



Plant derived Pesticides: Alternative to Synthetic Chemicals



Plants represent one of the *most* accessible resources available for household pest control

- ✓ Environment friendly
- ✓ Biodegradable and safer
- ✓ Non-persistent
- ✓ Sources of various phyto-compounds
- ✓.Phytocompound act independently or in combination
- ✓ Toxicant against the adult as repellent and larvicidal
and interfere the growth and development of pest



Home made blends from Plants for Pest control



Cockroaches



Used tea
leafs



Orange
peel
powder



Apply the powder
in infested areas



Postharvest Pests



Seed
cake



Neem leaf



Put sufficient
Powder in potli
Place in infested
grains



Common Pests



Essential oils
Lemongrass



Citronella

Diluted in Soap solution



Spray solution

Natural Pest Repellents...



Diffuser based on Camphor and Neem oil

3-4 tablet of camphor + Few drops of neem oil works as multipurpose pest repellent.

Marigold Plant

Aqueous extract of repels pests
Plant grown in pots provides relief from pests



Drawbacks of using Plants in raw state

- **Short-term effectiveness:** Degradation and volatilization of bioactive compounds reduce the efficiency of plant-based products
- **Formulating** bioactive plant products using *emulsifiers, polymers, plasticizers and stabilizers*.

IPFT initiatives for Efficacious Pest Control

- ✓ Ensure the stability of product & safety to user & environment
- ✓ Better efficacy
- ✓ Ease in handling

Cashewnut Shell Liquid- Nanoemulsion: Mosquito Larvicide



Cashew nut fruit



Cashew nut shell liquid
Waste No added value



Usage as
pesticide

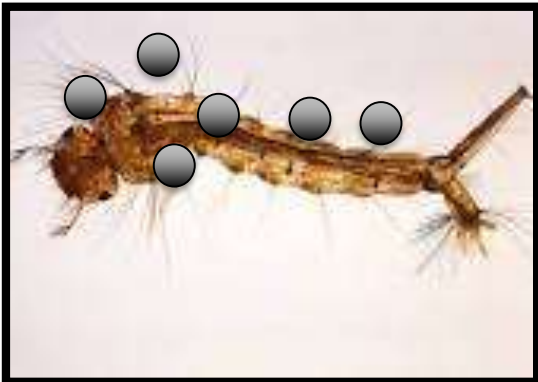


Cost effective

Reduce load of
synthetic
pesticide



Conversion to nano scale



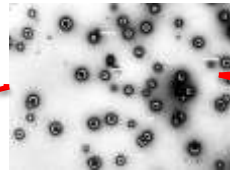
✓ *Improved efficacy*
- *better targeting*
✓ *Dose Reduction*

Pectin- Cedarwood Nanoencapsulated Bag:

(RTU for direct placing in mosquito breeding sites)



Cedar -wood loaded Pectin
Nanocapusles



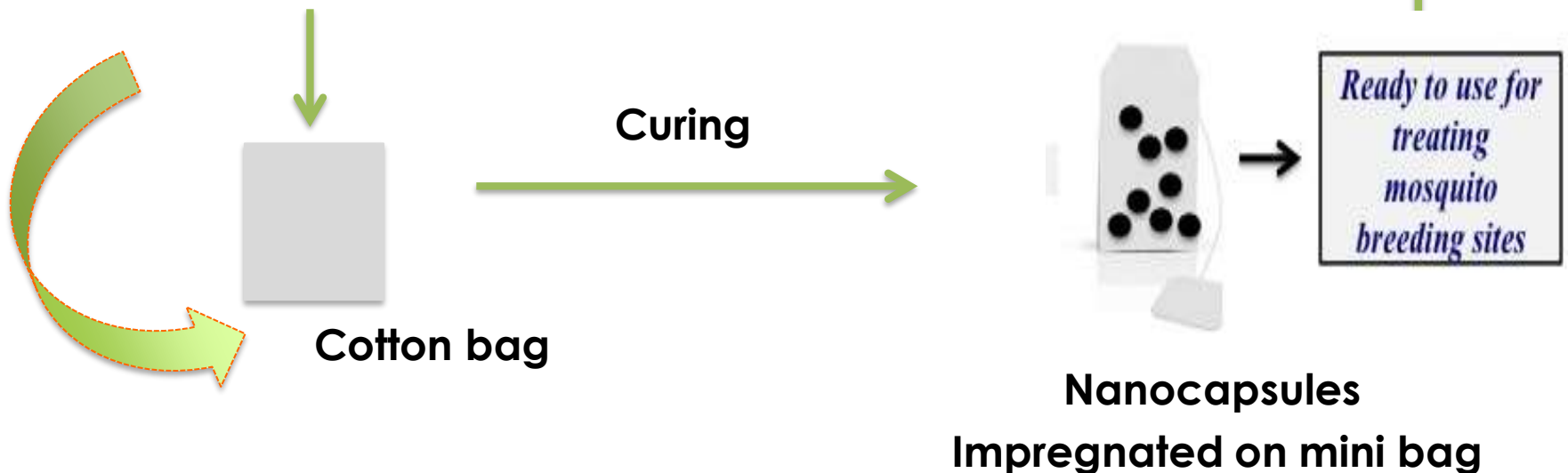
200nm



Larvae treated with
impregnated bag



Dead larvae



Lemongrass Nanogel for durable antimosquito finishing

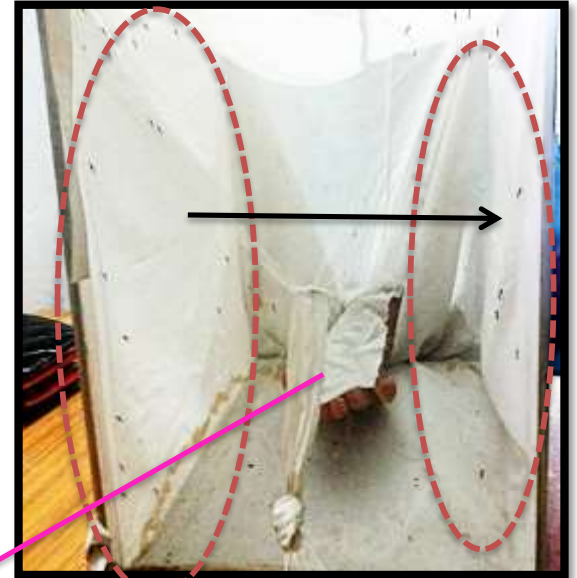


Mosquito repellent fabric



Nano encapsulated gel

Human arm covered with treated fabric- No mosquito landing



WHO Arm in cage test



✓ Wash Durable

✓ Safe no Signs of Dermal toxicity

Attractant Gel Trap



Mosquitoes stick on gel after landing



- ✓ Free from any category of pesticide either synthetic or botanical.
- ✓ The composition of the invention is more or less similar to artificial human scent for attracting mosquitoes



Gel trap



Control

Trap for fixing the mosquitoes

Botanical Pesticide Based Tablet Formulation



Botanical Tablet



Bio-efficacy of Tablet

Biofumigant for Stored Grain Pests



Bio-fumigant Tablet



Aqueous plant filtrate based Emulsion



SUMMARY

- ✓ Pest management through botanicals is the safe & effective way.
- ✓ Right formulation choice is the key component to achieve safe and economical pest management

***Hygiene Practices are also crucial
in pest control.....***



Thank You