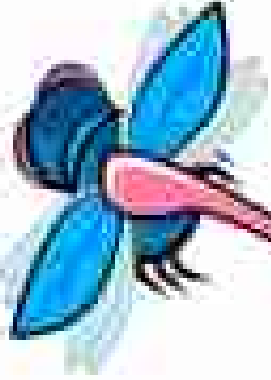


TECHNIQUES IN APPLICATION OF

HERBAL REPELLENT



I. INTRODUCTION

ADVERSE EFFECTS OF PESTICIDES



- Eliminates natural enemies and induces pest resurgence.
- Leaves residue in food stuff and cause acute and chronic diseases.
- Pollutes soil and water to a serious level.

- **Enters food chain and become bio magnified.**
- **Affects wildlife directly and indirectly.**
- **Causes phytotoxicity on crops.**
- **Produce endocrine disruptions and cause abnormalities in mammals.**



COMPONENTS OF Integrated Pest Management

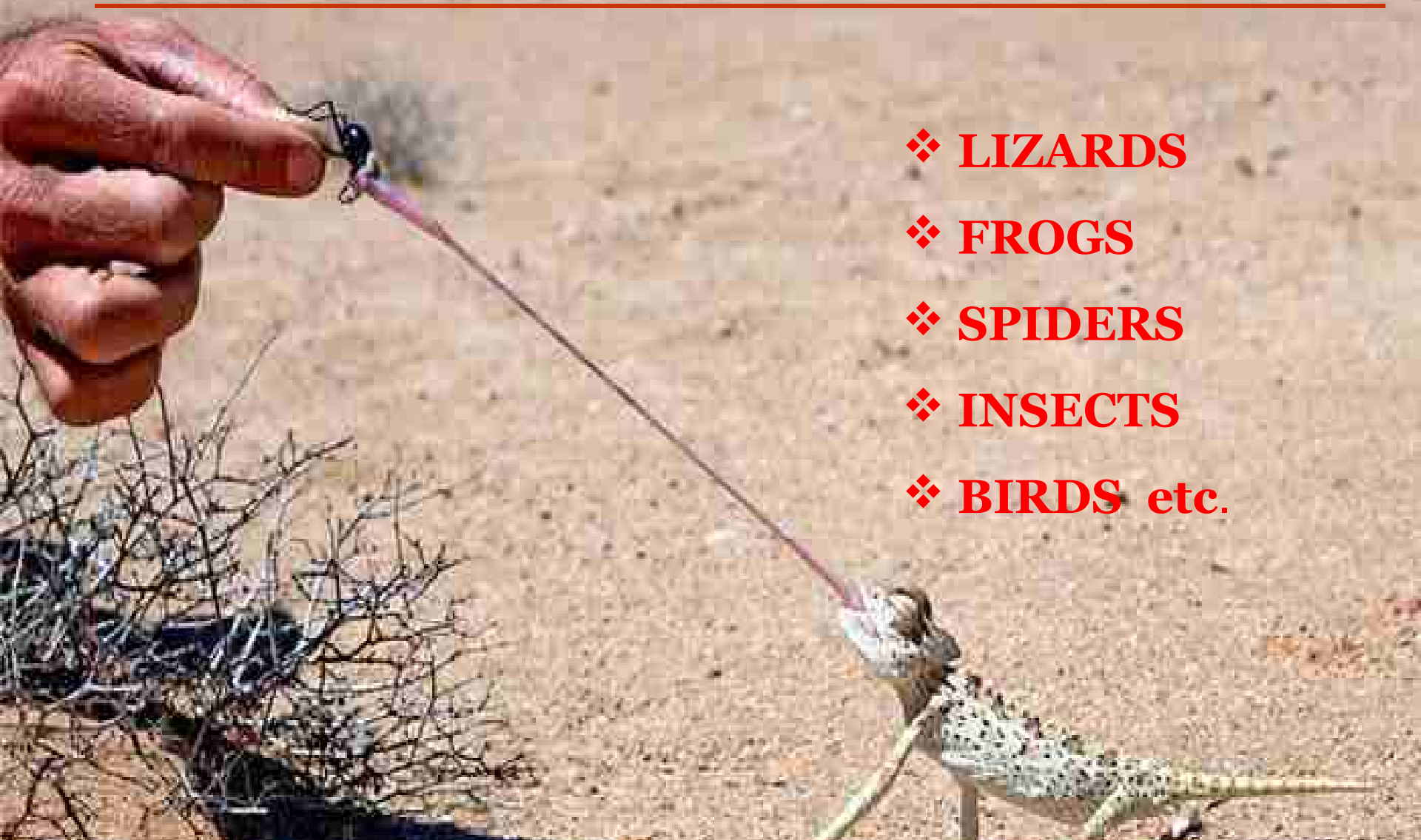
Biological control by:-

- ❖ **Natural Predators**
- ❖ **Cultural methods**
- ❖ **Mechanical methods**
- ❖ **Biopesticides**
- ❖ **Use of Herbal repellents**



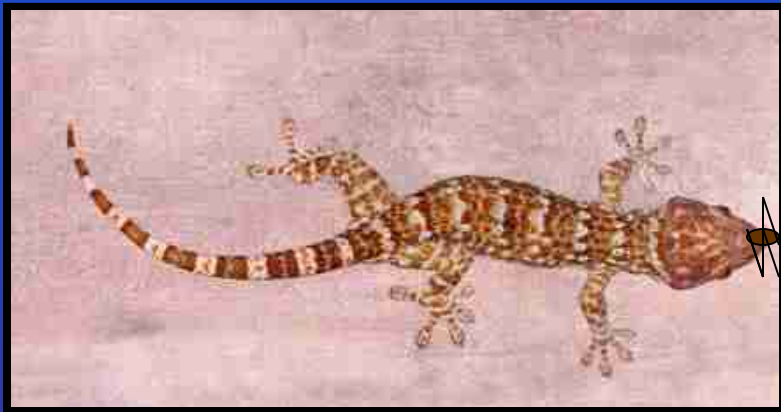
Out of these **Natural Predators** play a major role in control of the pests

II. BIOLOGICAL CONTROL BY NATURAL PREDATORS



- ❖ **LIZARDS**
- ❖ **FROGS**
- ❖ **SPIDERS**
- ❖ **INSECTS**
- ❖ **BIRDS etc.**

Farmer's friends, do not kill them by using chemicals.



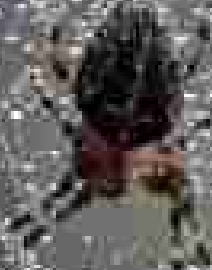
LIZARDS CATCHING INSECTS



FROGS CATCHING INSECTS



WOLF SPIDER CATCHING INSECTS



BENEFICIAL INSECTS



BIRDS





OWLS CATCHING RATS

III. PLANTS WITH INSECT REPELLENT PROPERTIES

Principle for selection of Herbal Repellents

- Plants which are not eaten by goat and cattle. eg. *Adathoda vasica*.
- Plants yielding milky sap. eg. *Calotropis gigantea*.
- Plants with bitter taste. eg. *Azadirachta indica*.
- Plants with bad odour. eg. *Lantana camara*, *Carica papaya* etc.
- Plants which are poisonous. eg. *Datura metal*, *Thevetia peruviana* etc.



TYPES OF INSECTS



✓ **Herbivorous** that eat plants which are harmful and cause economic loss to farmers.

✓ **Carnivorous** insects that eat other herbivorous insects and benefit the farmers.



✓ **Our aim is to develop carnivorous insects and the best method is use of herbal repellents.**

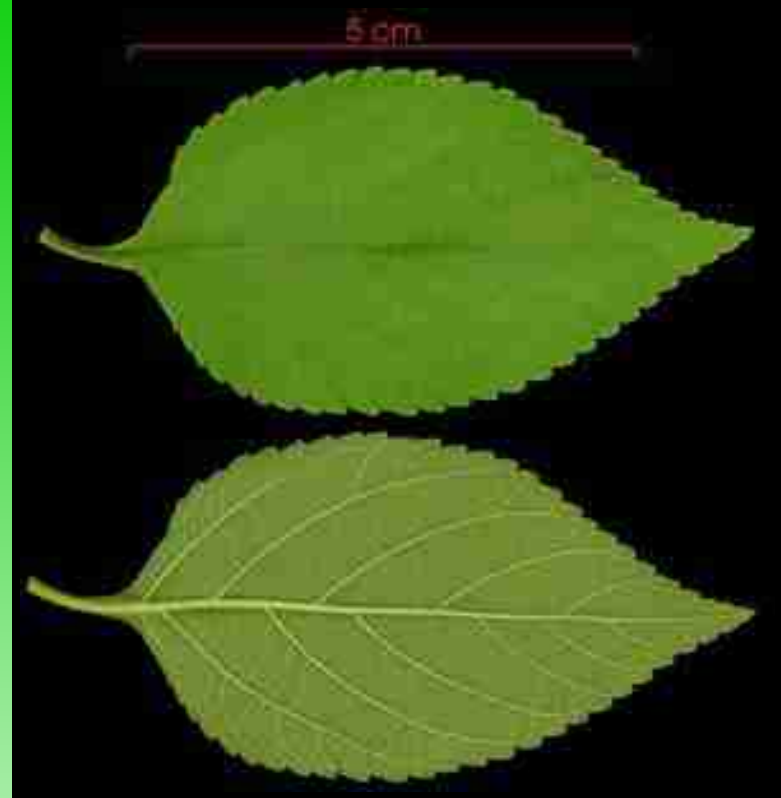


SELECTION OF HERBAL REPELLENTS

- *Lantana camara.*
- *Calotropis gigantia.*
- *Jatropha curcas.*
- *Thevetia peruviana.*
- *Datura metal.*
- *Pongamia pinnata.*
- *Adathoda vasica.*
- *Carica papaya.*



Lantana camara.



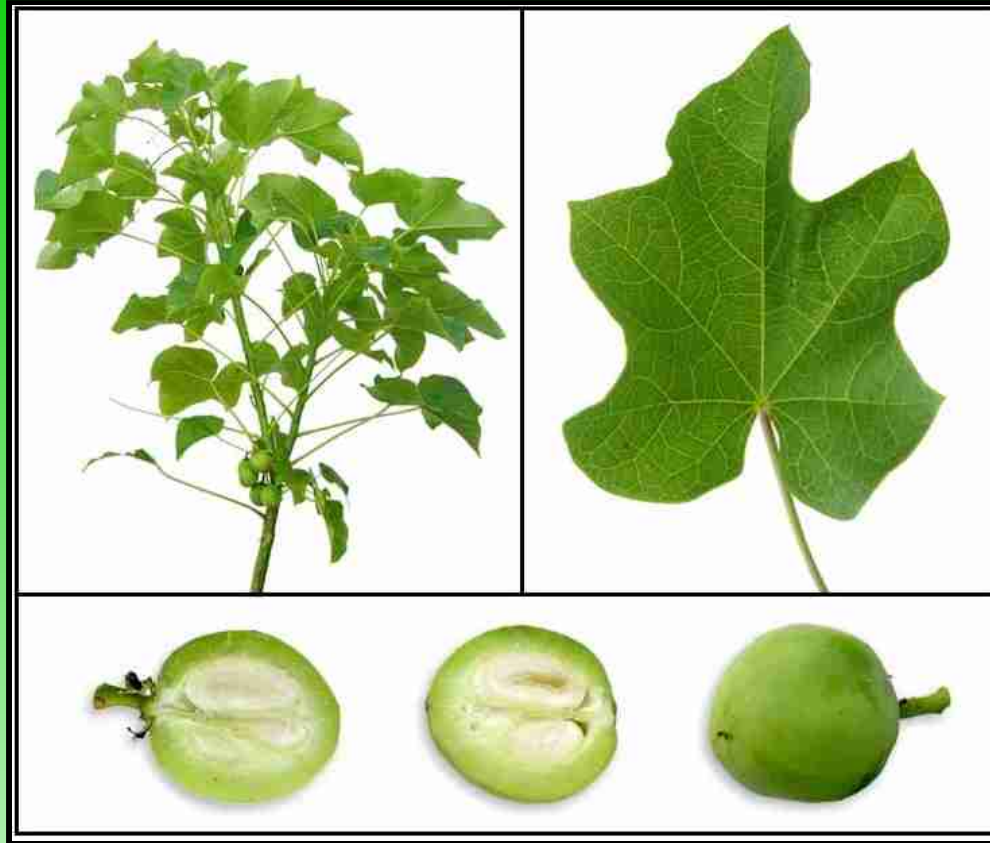
Family : *Verbenaceae.* Grown as a shrub. Brought from America. Now seen throughout India as a weed. It acts as both fungicide and Pesticide. The substances present in this are Lantadine A & Lantadine B.

Calotropis gigantea.



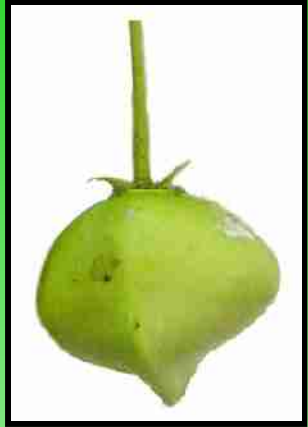
Family : *Asclepidaceae.* Ever green shrub. Seen throughout India. Roots and leaves are used in Ayurvedic medicine for the control of fever, cough and asthma. Poisonous parts – Latex, leaves, roots and flowers.

Jatropha curcas.



Family : *Euphorbiaceae.* Seen throughout tropical and sub-tropical areas in India. The poisonous substance is Carcin. It disrupts blood vessels. Poisonous parts are Latex from leaves, stem and fruits.

Thevetia peruviana.



Family: *Apocynaceae*. Ever green shrub. Seen throughout India. Poisonous parts –Leaves, flowers and fruits. Glycocides – Thevetin, Theverecin etc..

Datura metal.



Family: *Solanaceae*. Seen in tropical areas of India.
Poisonous parts – All parts. Alkaloids –
Seopalomine, Daturin, Atropin etc. It is also used as a
medicine for Asthma in Ayurveda.

Pongamia pinnata.



Family: *Papilionaceae.* It is grown as a tree in forests. Useful parts –Leaves and Fruits. It is used for soap manufacturing. Also used in Ayurvedic medicine for skin diseases.

Adathoda vasica.



Family: ***Acanthaceae.*** Ever green shrub.
Famous plant in Ayurvedic medicine.
Useful parts – Leaf. Alkaloids – Avasicin.

Carica papaya.



Family: *Caricaceae*. Actually it is a fruit plant, seen throughout India. Used for extraction of Papain. Useful parts are Leaf and Latex.

IV. HERBAL REPELLENT PREPARATION

MATERIALS REQUIRED FOR EM BASED NATURAL PEST REPELLENT



HERBAL EXTRACT – 6 Ltrs.



JAGGERY – 1 Kg.



NATURAL VINEGAR – 1 Ltr.



ISO PROPYL
ALCOHOL – 1 Ltr.



EM 1 – 1 Ltr.
(ACTIVATED)

PREPARATION OF HERBAL EXTRACT

CUTTING

Take 2 Kgs. of leaves including flowers & fruits and cut into small pieces.



CRUSHING

Crush the same.



SQUEEZING

Squeeze by adding water and make up to 1 lit.



Follow the same procedure for 6 types of leaves $1 \times 6 = 6$ Lit.

PREPARATION OF **EM BASED NATURAL PEST REPELLENT**

POWDER THE JAGGERY



**DISSOLVE JAGGERY INTO
THE HERBAL EXTRACT**

MIXING

ADD NATURAL VINEGAR & ISOPROPYL ALCOHOL



MIX WITH EM 1 (ACTIVATED)





**KEEP AIR TIGHT
FOR
FERMENTATION
FOR 7 TO 10 DAYS**

**RELEASE THE GAS ONCE
IN A DAY UP TO
FERMENTATION OVER**



FILTERING

**FILTER THE
SOLUTION**





**FILL IN AIR TIGHT
BOTTLES**



**FINISHED
PRODUCT**

EM BASED NATURAL PEST REPELLENT

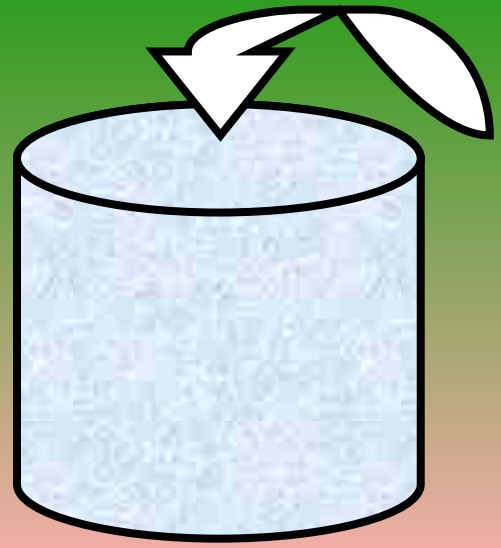
**HERBAL
EXTRACT**

JAGGERY



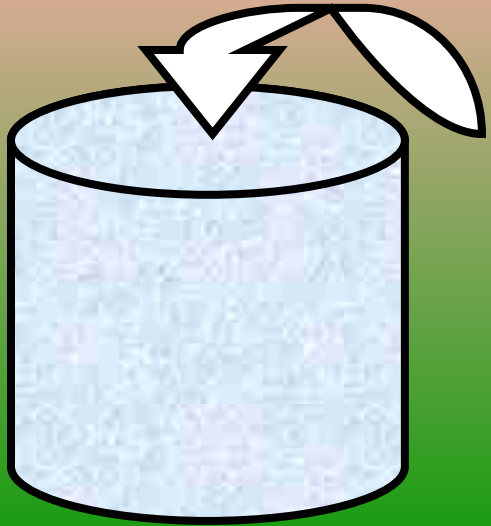
NATURAL VINEGAR

STEP 2



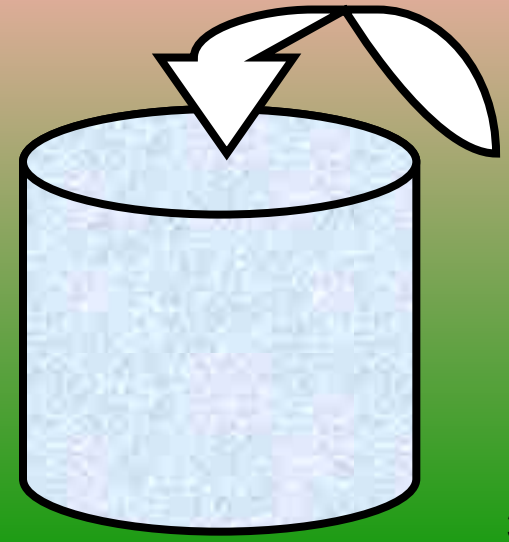
ALCOHOL

STEP 3

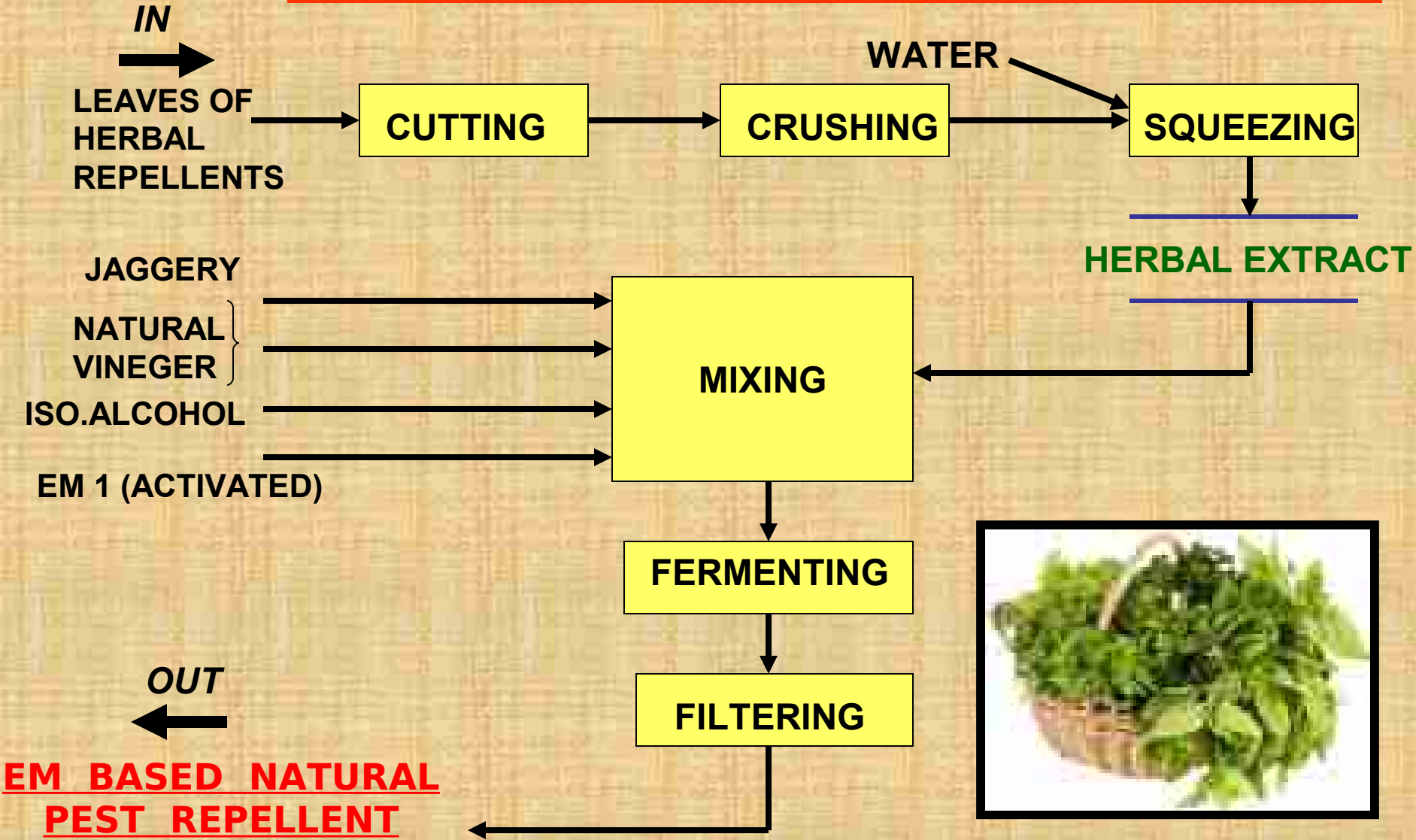


EM 1 (ACTIVATED)

STEP 4



FLOW CHART FOR THE PREPARATION OF EM BASED NATURAL PEST REPELLENT



V. COMMON CROP PESTS

PADDY



- ❖ RICE STEM BORER
- ❖ LEAF ROLLER
- ❖ RICE BUG
- ❖ RICE GALL FLY
- ❖ BROWN PLANT HOPPER etc.

MANGO



- ❖ MANGO HOPPERS
- ❖ STEM BORER
- ❖ SHOOT MIDGES
- ❖ LEAF EATING CATER
PILLARS
- ❖ FRUIT FLIES etc.



VEGETABLES

- ❖ LEAF WEBBER
- ❖ FRUIT & SHOOT BORER
- ❖ JASSIDS
- ❖ APHIDS
- ❖ EPLACHNA BEETLE
- ❖ MEALY BUG etc.



BANANA



- ❖ APHID
- ❖ RHIZOME WEEVIL
- ❖ SPINDLE LEAF MINOR
- ❖ SPOTTED LOCUST
- ❖ SPITTLE BUG
- ❖ MEALY BUG etc.



JASMINE



❖ BUD AND SHOOT BORER

❖ BLOSSOM MIDGE

❖ MOTH BUGS

❖ WHITE FLY etc.



GINGER

- ❖ LEAF ROLLER
- ❖ SHOOT BORER
- ❖ RHIZOME SCALES etc.



COFFEE



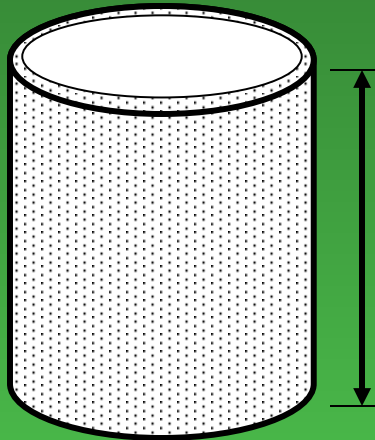
- ❖ BERRY BORER
- ❖ GREEN BUG
- ❖ WHITE STEM BORER
- ❖ MEALY BUG
- ❖ THRIPS etc.



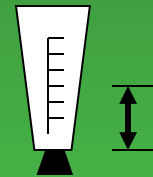
VI. APPLICATION OF HERBAL REPELLENT

DOSAGE

(FOLIAR SPRAY)



1 LIT. OF WATER



5 ml. OF NATURAL
PEST REPELLENT

- ❖ DOSAGE– 5 ml. PER LIT. OF WATER FOR ALL PESTS OF ALL CROPS.
- ❖ AS A PROPHYLACTIC MEASURE ONCE IN 15 DAYS.
- ❖ DOSAGE FOR 1 ACRE = 500 ML.
- ❖ IF THE ATTACK IS SEVERE SPRAY 3 TIMES AT 5 DAYS INTERVAL.

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THANK YOU

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