

Contents

- **Plant protection.**
- **Methods/Measures taken.**
- **Equipments used and their working.**

plant protection

Is agricultural science devices ways or measures for keeping harmful

- **organisms(Weeds,pests,insects)away.**
- **To limit yeild losses,during growing season and**
- **afterward(Storage).**
- **To reduce probability of damage by removal of**
weeds and harmful organisms.

Plant protection measures

- **Physical control**
- **Sanitary Control**
- **Biological control**
- **Chemical control**
- **Integrated pest management(IPM)**

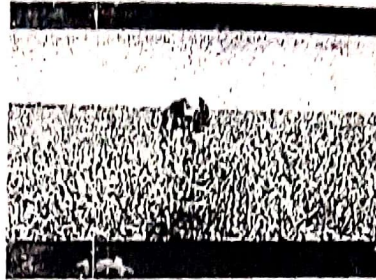
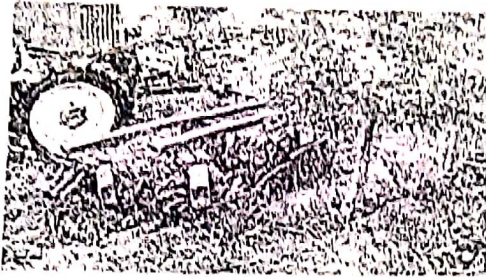
Physical method

Direct destruction of harmful organisms, retard their development and prevent them from spreading, or destruction of weeds by:

- **MECHANICAL MEASURE**
- **THERMAL MEASURE**

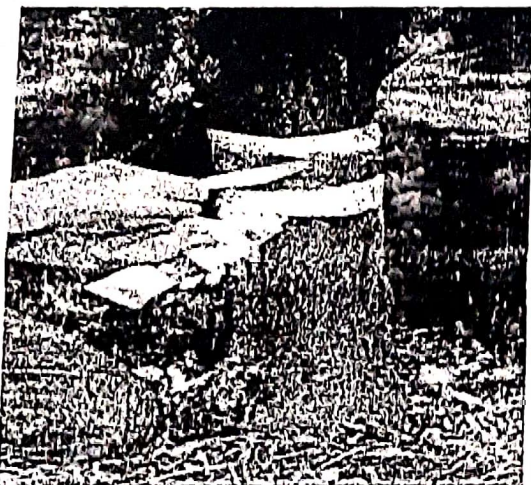
Mechanical measures

- **TILLAGE** to control weeds and pests (Hoing, removal of effected parts of plants, & intermediate host).

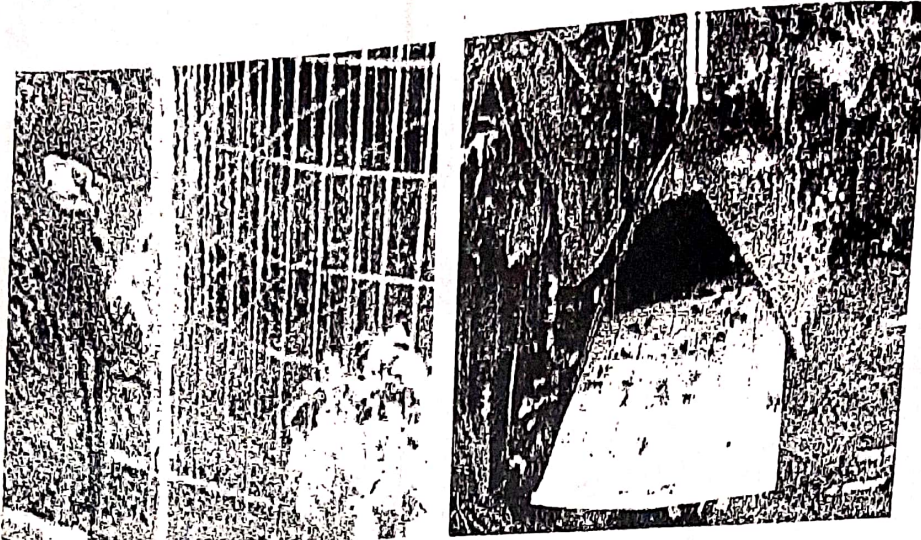


- Tillage
- Flood of field
- Laying of sticky Belts
- Catching Pest

- **FLOODING OF FIELDS**, to combat soil born harmful organisms.
- **LAYING OF STICKY BELTS**, to trap flightless insect pests.



➤ **CATCHING PESTS** or keeping them away by fences, trenches (locusts control), traps.



Thermal measure

Includes pests sensitivity to high or low temperature:

- **HOT WATER TREATMENT** of seeds and planting stock.
- **SOLARIZATION** (covering the surface with plastic sheeting producing phytosanitary effects)
- **BURNING**, of weeds and plant residues.
- **LOW TEMPERATURE** inhibit spread of certain storage pests.

Sanitary Control method

Method to avoid introducing a pest into a field:

- PLANTING CERTIFIED SEED
- QUARANTINES
- CLEANING FIELD EQUIPMENTS

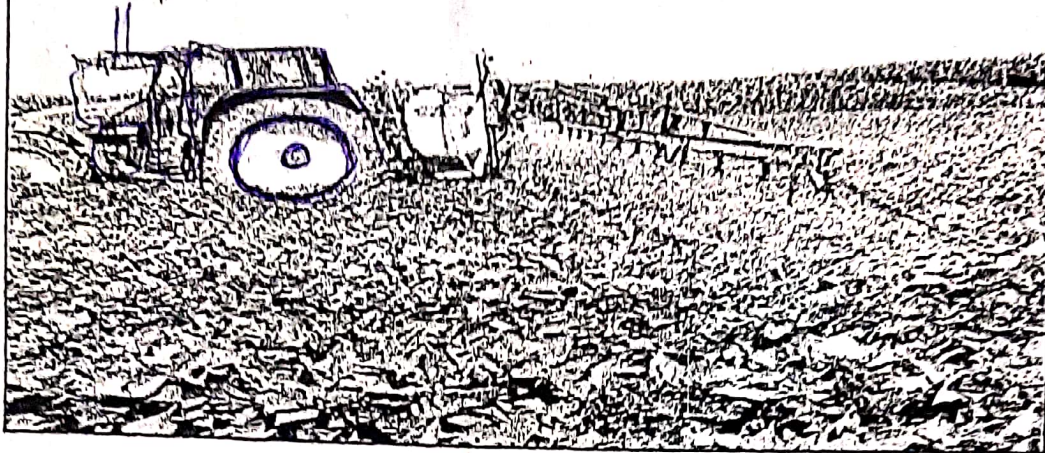
Biological Control method

introduction of biological organisms for controlling the pests.

- Releasing predator or parasite of an insect pest.
- Include resistance to disease (by infecting plant with pathogen having low virulence)
- Biocontrol is generally not effective for weed control in field crops.

Chemical control method

Chemicals are dusted or sprayed in form of effective sized droplets to avoid excessive application which might prove harmful and waste.



Chemical Spraying objectives

- **HERBICIDES** to reduce competition of weeds.
- **FUNGICIDES** to minimize effect of fungal disease.
- **INSECTICIDES** to control insect, pests.

Droplet size for different targets

Target Group	Droplet size(Micron)
Flying Insects	10-15
Crawling and sucking Insects	30-50
Plant surfaces	60-150
Herbicide application	250-500

Types of spraying Equipments

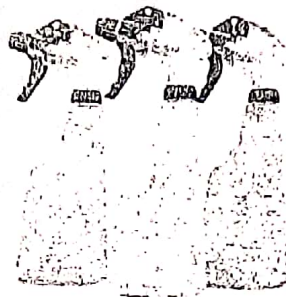
Different size sprayers are there for different type of application, field and crop condition.

- 1 > HAND SPRAYER
- 2 > STIRRURE PUMP/BUCKET SPRAYER
- 3 > KNAPSACK SPRAYER
- 4 > FOOT SPRAYER
- 5 > ROCKER SPRAYER
- 6 > TREE SPRAYER
- 7 > TRACTOR MOUNTED SPRAYERS(BOOM, AEROBLAST)

- ① Hand sprayer
- ② Bucket sprayer
- ③ Knapsack sprayer
- ④ Foot sprayer
- ⑤ Rocker sprayer
- ⑥ Tree sprayer
- ⑦ Tractor Mounted Sprayer

Hand sprayer

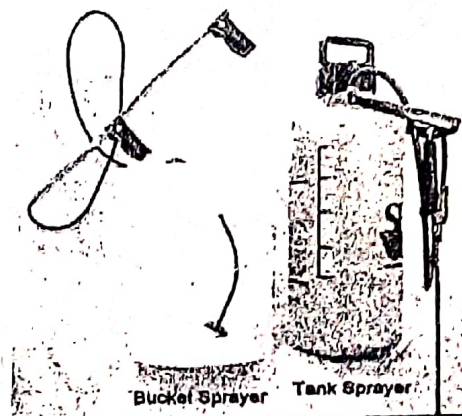
Small capacity sprayer from 0.5 -3 liters. Ideal for small nurseries, rose plants, kitchen gardens and for spraying wettable insecticides and fungicides.



Stirrer pump/Bucket sprayer

Commonly used for mosquitoes sprays, and for vegetable growers, famous among farmer because

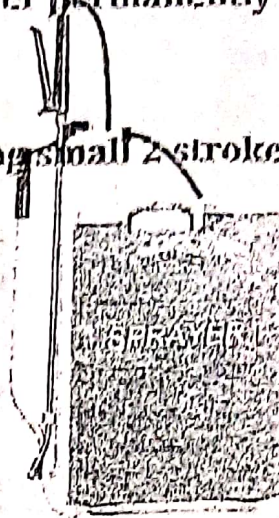
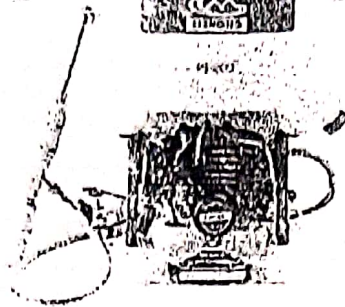
- Simplicity
- Low cost
- Ease in usage



Knapsack sprayer

Consist of a pump and air chamber permanently fixed.

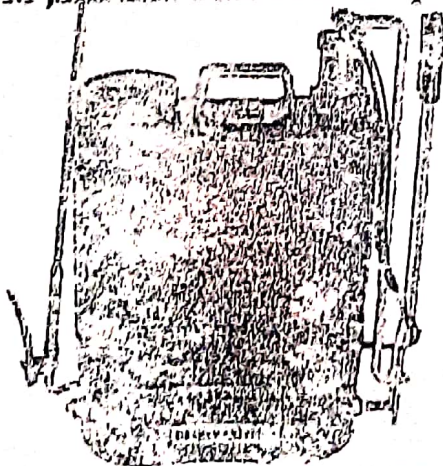
- Knapsack simple sprayer
- Knapsack power sprayer (having small 2 stroke engine with centrifuge fan).



- Two Types of Knapsack Sprayer
- 1- Knapsack ~~sack~~ Simple Sprayer
 - 2- Knapsack Power Sprayer.

Knapsack simple sprayer

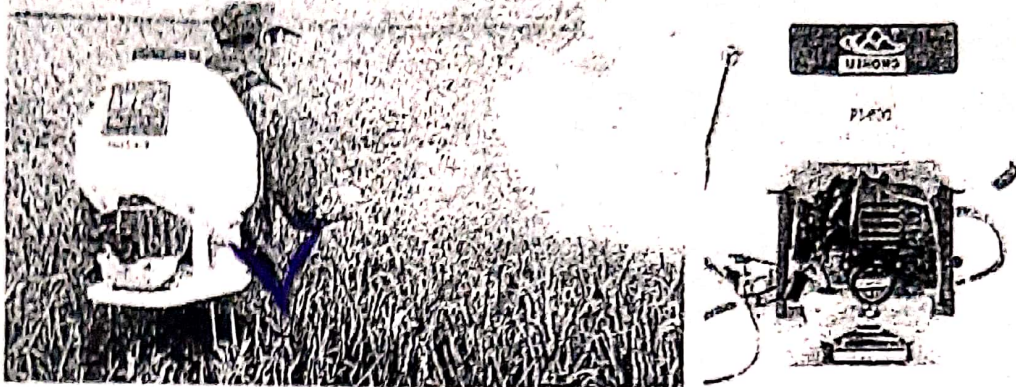
A pump and air chamber, of 9-22.5 liters, and used for spraying insecticides and pesticides on small tree, shrubs and row crops.



Knapsack power sprayer

Motorized knapsack have 2-strook engine, with a centrifugal fan which produce high velocity air stream.

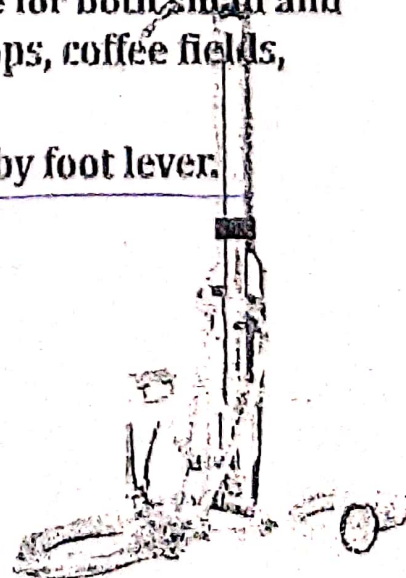
- Used for orchards, coffee estates and tall crops.



Foot sprayer

Is all purpose sprayer, suitable for both small and large scale spraying field crops, coffee fields, flowers etc.

- It consist of pump operated by foot lever.



Rocker sprayer

Is long lever, high pressure sprayer assembly is mounted on wooden board held by ground by foot operator.

- For spraying all trees like, coconut, sugarcane, rubber plant field crops etc.



Tree sprayer

Is for spraying fruit trees having 4-stroke petrol engine for driving the fan.

- Used to spray all tall fruit crops.



Tractor mounted sprayers

These are hydrolic energy sprayers, they use PTO power of tractor to operate pump of sprayer.

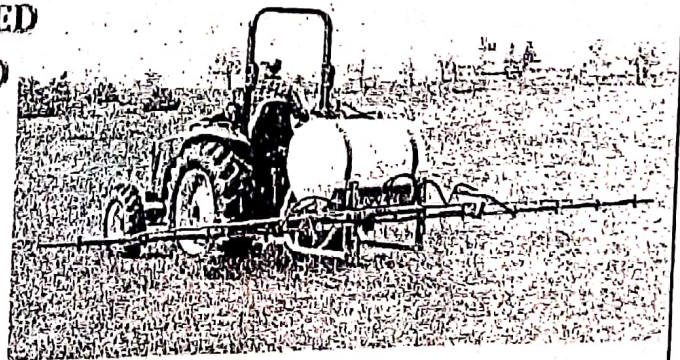
Classified into:

- BOOM SPRAYER
- BLOWER SPRAYER
- AERO BLAST SPRAYER

Boom sprayer

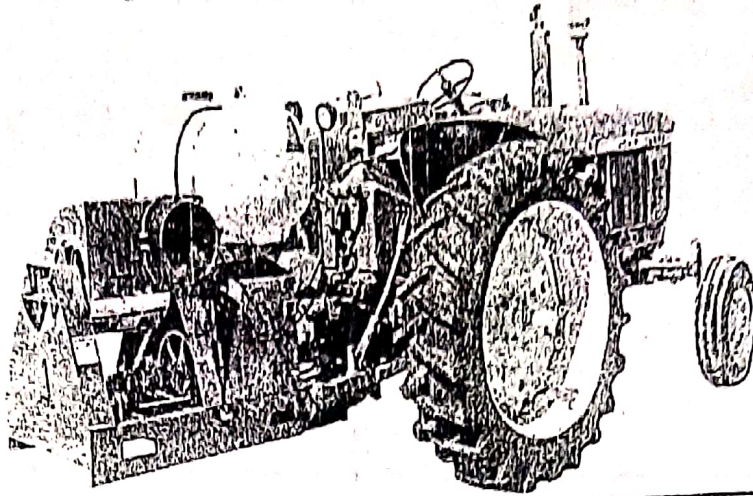
Is tractor mounted sprayer, and used for uniform spray in horticultural fields and other field crops. & may be of

- FRONT MOUNTED
- BACK MOUNTED



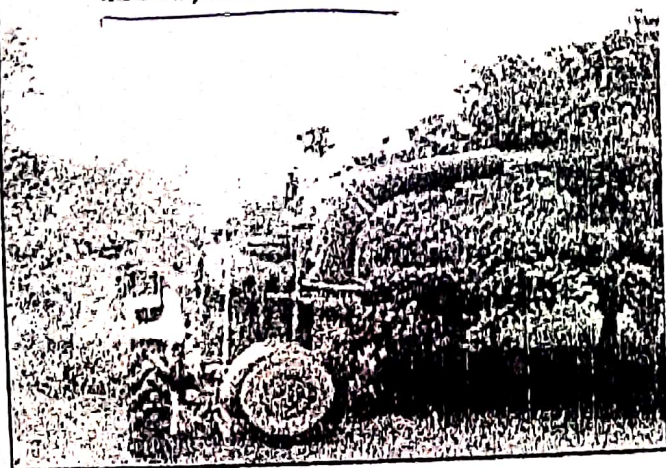
Blower sprayer

Trailed air carrier sprayer for orchard spray volume can be controlled by making it high, low, ultra low volume.



Aeroblast sprayer:

- The machine consists of tank of 400 liters, fan pump, solution in to stream of air blast produced by centrifugal blower
- It is useful for spraying on horticultural trees and crops like cotton, sunflower etc



Integrated pest management

It uses all pest management techniques to keep pest population below the injurious level. pest management technique must be:

- Environmentally sound
- Compatible with produces objective.


Principles of IPM

Thorough understanding of the crop, pest, and the environment and their interrelationships

- ✍ Requires Advanced Planning
- ✍ Balances cost/benefits of all control practices
- ✍ Establishment of the ETL.

Reference:

➤ GOOGLE WEB & IMAGES.



Thank you!