



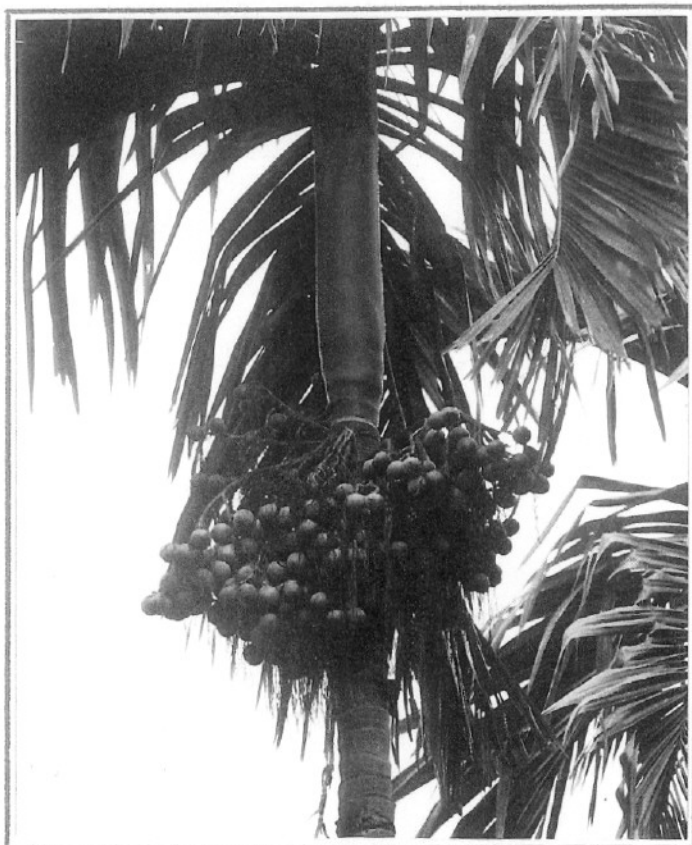
IPM PACKAGE NO. 44



INTEGRATED PEST MANAGEMENT PACKAGE

FOR

ARECANUT



Government of India
Ministry of Agriculture
Department of Agriculture & Cooperation
Directorate of Plant Protection, Quarantine & Storage
N. H. IV, Faridabad - 121 001.

IPM PACKAGE FOR ARECANUT

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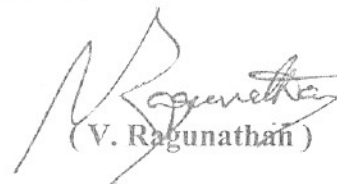
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To the Government of India

FOREWARD

Integrated Pest management (IPM) approach has been globally accepted for achieving sustainability in agriculture. It has become more relevant due to a number of advantages like safety to environment, pesticide-free food commodities, low input based Crop Production Programme etc. Though IPM approach has been taken up since 1981, its impact has not been felt until 1994. Human Resource Development has helped to sensitise extension functionaries and farmers about the usefulness of IPM.

For successful implementation of IPM, the scattered information on various components of this eco-friendly approach forms basic necessity. In this direction, initial attempts were made in 1992 to harmonise the IPM Package of Practices of various crops. Subsequently concerted efforts were made in 1998, 2001 and 2002 to update and develop IPM package of practices for agricultural and horticultural crops. Presently, IPM package of practices for 51 crops have been finalised to help the extension workers and farmers to manage the pests/ diseases and to minimise the over use/ misuse of chemical pesticides. Efforts have been made to incorporate the relevant available technical input provided by the scientists of ICAR Institutes/ SAUs and State Departments of Agriculture. However, suggestions for further improvement in future publication/ revision will be of immense help. Hopefully, these IPM Package of Practices will be useful for the Researchers, Plant Protection Workers and Farmers alike.

April 1, 2002


(V. Raguathan)

P R E F A C E

In order to minimise the indiscriminate and injudicious use of chemical pesticides, INTEGRATED PEST MANAGEMENT (IPM) has been enshrined as cardinal principle of Plant Protection in the overall Crop Protection Programme under the National Agricultural Policy of the Govt. of India. IPM is an eco-friendly approach for managing pest and disease problems encompassing available methods and techniques of pest control such as cultural, mechanical, biological and chemical in a compatible and scientific manner. The greater emphasis has been given on biological control including use of biopesticides.


With a view to provide technical knowledge to the extension functionaries and farmers in the States, first National Workshop on IPM for harmonisation of Package of Practices was organized at National Plant Protection Training Institute (NPPTI), Hyderabad during June 29-30, 1992. Subsequently workshops were organized from April 15-17, 1998 and Nov. 5-6, 1998 at Directorate of Plant Protection, Quarantine & Storage, Faridabad and IPM package of practices for 20 crops were evolved on rice, cotton, vegetables, pulses, and oilseeds. In this series, two National Workshops on IPM have been conducted at NPPTI, Hyderabad and Dte. of PPQ&S, Faridabad during May 14-17, 2001 and Feb. 20-22, 2002 respectively to update 20 available IPM Packages and develop 31 new IPM Packages specially for Horticultural crops. In these workshops, 51 IPM Package of Practices for cereal crops (Rice, Wheat, Maize, Sorghum, Millets), commercial crops (Cotton, Sugarcane, Tobacco, Tea), pulse crops (Pigeonpea, Gram, Black gram/Green gram, Pea, Rajma), oilseeds (Groundnut, Soybean, Rapeseed/Mustard, Sesame, Safflower, Castor, Sunflower, Oilpalm), vegetables (Potato, Onion, Tomato, Brinjal, Okra, Chillies, Cruciferous vegetables, Leguminous vegetables, Cucurbitaceous vegetables), fruit crops (Citrus, Banana, Apple, Mango, Guava, Grapes, Pineapple, Sapota, Pomegranate, Litchi), spice and plantation crops (Small Cardamom, Large Cardamom, Black Pepper, Ginger, Coriander, Cumin, Fennel, Coconut, Cashew and Arecanut) have been finalised.

IPM technology manages the pest population in such a manner that economic loss is avoided and adverse side effects of chemical pesticides are minimized. The IPM packages encompasses various management strategies for containing the pest and disease problems. Pest monitoring is also one of the important component of IPM to take proper decision to manage any pest problem. It can be done through Agro-Ecosystem Analysis (AESA), field scouting, light, pheromone, sticky/yellow pan traps. The economic threshold levels (ETL) of important pests and diseases are also given in the packages to take appropriate control measures when pest population crosses ETL.

These IPM packages developed with the technical inputs from experts from Indian Council of Agriculture Research, State Agricultural Universities, Central Directorate of Plant Protection, Pesticide Industries and State Departments of Agriculture/Horticulture will provide technical backup in the management of pests, diseases, weeds, nematodes and rodents in the Indian Agriculture and Horticulture. These will also be useful in reducing the pesticide residues in exportable agricultural commodities and would also help in the management of pests/diseases/weeds/nematodes which may get inadvertently introduced in the country.

IPM Package of Practices for Agricultural and Horticultural crops will be helpful to minimize the ill effects of chemical pesticides to promote the IPM for sustainable production. These packages will be useful for the researchers, extension workers and farmers alike who are engaged in the agricultural practices.

April 1, 2002


(A.D. Pawar)
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IPM PACKAGE FOR ARECANUT

Arecanut (*Areca catechu* L.) is a highly profitable commercial plantation crop. The people of all over India use for chewing in tender, ripe or processed arecanut. A number of insects and mites attack areca palm from seedlings in nursery stage to growing palm. The population of many of these insects could be reduced to a manageable level by selecting ideal variety, use of need based insecticides and release and augmentation of natural enemies. Arecanut grow well from almost sea level up to an altitude of 1000 m with well distributed rainfall.

1. MAJOR PESTS:

1. Insect pests:

- 1.1 Spindle bug (*Carvalhoia arecae*)
- 1.2 Inflorescence caterpillar (*Tirathaba mundella*)
- 1.3 Pentatomid bug (*Halyomorpha marmorea*)
- 1.4 Scale insect (*Lepidosaphes beckii*/*Ischnapis longinostris*)
- 1.5 Root grub (*Leucopholis burmeisteri*)

2. Other Arthropods:

- 2.1 White mite (*Oligonychus indicus*)
- 2.2 Red mite (*Raoiella indica*)

3. Diseases:

- 3.1 Koleroga or Mahali or Fruit rot or Bud rot (*Phytophthora arecae*)
- 3.2 Inflorescence dieback
- 3.3 Yellow leaf disease.
- 3.4 Anabe roga or foot rot (*Ganoderma lucidum*)
- 3.5 Band disease
- 3.6 Nut splitting

II. PEST MONITORING:

The objective of pest monitoring is to monitor the initial development of pests and diseases in the field. Field scouting for pests/diseases and biocontrol fauna/flora by extension agencies and farmers once in a fortnight should be undertaken to assess increasing/decreasing trend in the pest/disease incidence and availability of biocontrol potential. Therefore, for field scouting, farmers may be mobilized to observe the pest and disease occurrence at the intervals as stipulated under different developmental stage. The plant protection measures are required to be taken only when pests and diseases cross economic threshold level (ETL) as per results of field scouting.

1. Rapid Roving Survey (RRS):-

In the beginning of the crop season, survey routes are required to be identified in the pest and disease endemic areas to undertake Rapid Roving Survey (RRS). During survey the observations are to be made at every 5-10 Kms. distance in the pre-selected route at 7-10 days intervals depending upon pest and disease situation. Record the incidence of pest, disease and defender population at each spot in 5 plants at random and 12 spots per ha.

2. Field scouting:-

Based on the observations of RRS the farmers at village level are to be mobilized to undertake field scouting . During field scouting farmers may record pest, disease, and defenders populations once in 7-10 days in their own fields as per Agro Eco System Analysis (AESA) approach. The State Departments of Agriculture should make all possible efforts by using different media, mode and publicity to inform the farmers the need for field scouting in the specific crop areas having indication of pest or disease built up.

3. Agro Eco System Analysis (AESA):-

AESA is an approach, which can be gainfully employed by extension functionaries and farmers to analyse field situations with regards to pest, defenders, soil conditions, plant health, the influence of climatic factors and their inter relationship for growing healthy crop. Such a critical analysis of the field situations will help in taking appropriate decision on management practices. The basic components of AESA are:-

1. Plant health at different stages.
2. Built-in-compensation abilities of the plant.
3. Pest and defenders population dynamics.
4. Soil conditions.
5. Climatic factors.
6. Farmers past experience.

III. INTEGRATED PEST MANAGEMENT STRATEGIES

A. Cultural Practices

1. 12 – 18 months old seedlings with more than five leaves should be used for transplanting to the main field.
2. Planting should be done in May-June in well-drained soil.
3. Planting is to be done at a spacing of 2.7 m X 2.7 m.
4. Planting pit's size should be 60 X 60 X 60 cm. and filled of topsoil, cow dung and sand up to 50 cm.
5. Protect outer row of plants from sun scorching by covering stem with areca leaves or leaf sheath or by growing tall and quick growing shady trees.
6. Apply recommended dose of fertilizers.
7. About 8 Kg./ palm/year of vermicompost prepared from the organic wastes in arecanut garden may be used to meet the crop nutrient demand.
8. Adequate irrigation and drainage facilities should be provided in arecanut garden.
9. Forking required for uprooting weeds.
10. Use cover crops viz *Munosa invisa*, *Calapogonium muconoides*, *Stylosanthus gracilis* and *Pruraria gavanica* are suitable and sowing of this crops may be done during May – June.
11. Light digging or forking to be given towards the close of monsoon.
12. Harvesting at correct stage is very important ie.
 - a) In chali preparation only ripe nuts are harvested. After harvesting, the ripe nuts will have to be sun dried for about 45 days. Proper drying may be done by spreading the nuts uniformly in a single layer and turning the nuts once a week for ensuring uniform drying.
 - b) For tender nut processing, harvesting green fruits at an appropriate stage of about 6 months maturity is essential. The tender nuts may be processed by dehusking, cutting the soft nuts into pieces, boiling the cut pieces by water or dilute extract from a previous boiling and drying under sun or in oven.

B. Mechanical Practices.

1. **Root grub** – collection and destruction of beetles during the period of their emergence from soil in the evening hours is the effective management practice for drastically reducing the population
2. **Phytophagous mite** - heavily infested and drying leaves of young palm in the initial foci of colonization are to be cut and burnt to check the spread of mite.
3. **Inflorescence caterpillar** – affected spadices may be opened and if all the females' flowers have been damaged the inflorescence should be removed and burnt.
4. **Pentatomid bug** - collect these bugs when seen on alternate host like chillies, ladies finger, bitter gourds etc. and destroy
5. **Koleroga or Mahali** – Collect all the infected nuts and other plant parts and destroy it . Covering the bunches with poly bags gives complete control.
6. **Inflorescence dieback and button shedding** – remove the fully affected inflorescence and destroy them to prevent by spread.
7. **Anabe roga** – Improve the drainage, phytosanitary measures like cutting and burning of the dead palms along with bole and roots should be followed strictly.
8. **Yellow leaf disease** – Remove and destroy the diseased palms in the mildly affected areas to prevent the spread.

C. Biological Practices

1. Conserve the natural enemies as given in annexure I
2. Exposure of grubs by ploughing or digging the soil during pre and post monsoon periods to expose different stages of the insect for predation by birds and other natural enemies. Entomophilic nematodes available in nature also exert some control.
3. **Phytophagous mites**-A number of natural enemies like Coccinellids beetle, predacious mites, staphilinid beetles, predacious thrips, etc. exert a good check on the population. Hence conservation or augmentation of natural enemies are essential.
4. **Scale insects**- In nature, many species of natural enemies like coccinellid beetles (mainly *Cheilocorus nigrata*), and parasites occur which keep the scale population in a low level. Release of Coccinellid beetle could be done periodically @ 4-5 beetles per palm.

D. Chemical Practices

1. Mites- Spraying the lower surface of leaves with Dicofol* 2 ml/litre of water or Dimethoate 1.5 ml/litre of water gives effective check. Repeat spraying at an interval of 15-20 days if there is reoccurrence of pests.
2. Spindle bug- Placement of 2 gm Phorate* granules in a perforated poly bags in the innermost leaves axils during April is an effective practice for maintenance of Areca garden free of spindle bug infestation. As new leaves emerge poly bags are to be shifted to the innermost leaf axils.
3. Root grub-Apply Phorate*10G @ 15 gm/palm to the soil around the palm in May-June. before south west monsoon. Repeat the treatment for 2-3 year continuously.
4. Pentatomid bug- Spray Endosulfan* 0.05% or Fenvalerate* 0.02% to the bunches of the affected palm and few palms around it.
5. Inflorescence caterpillar :-Force opening the infected spadices and spraying Malathion (50EC) at 0.05% concentration are effective management practices.
6. Koleroga or Mahali-Spray Bordeaux mixture (1%) to the bunches immediately after the first few monsoon shower at least two times at an intervals of 45 days.
7. Bud rot- Remove the infected tissues completely and treat the wound with Bordeaux paste. Spray Bordeaux mixture (1%) to the crown of healthy palm which are in the activity of the affected palm.
8. Inflorescence die back:- Spray Zineb* (4 gm in 1 lit of water) twice, once just after female flowers are set and again 15-20 days later. Aureofungine sol. at 50ppm concentration is also effective in controlling the disease.
9. Anabe roga or foot rot-a) Drench the soil with 1% Bordeaux mixture before planting healthy seedlings. b)Apply 2kg Neem cake per palm per year.

* Not as per the approved usage under Insecticides Act, 1968.

IV. CROP STAGE WISE IPM PRACTICES

Crop stage/pest	IPM Components	IPM Practices
1. Pre-sowing	Cultural Practices	<ol style="list-style-type: none"> 1. Select fully ripen nuts for use as seeds 2. Select earlier bearing and high yielding, diseased and pest resistant varieties. 3. Select planting sites with deep well drained soil without high water trouble. 4. Do deep ploughing or digging.
2. Seed and seedling stages	Cultural Practices	<ol style="list-style-type: none"> 1. Sow seed nuts in spacing of 5 to 6cm. cover the seed nuts with sand. 2. Transplant sprouts 90 days old having two three leaves in the secondary nursery at a spacing of 30 x 30cm. 3. Prepare secondary beds of 150 cm width and of convenient length. 4. Provide shade by growing banana, <i>Coccinia indica</i> are by artificial pandal. 5. Apply recommended dose of fertilizer/ manure. 6. Provide irrigation properly.
	Mechanical Practices	1. Collect the adult beetles

		<p>from 18.30 to 19.30 hrs. after 8 to 10 days of pre monsoon showers and kill them.</p> <p>2. Use forke to uproot the weeds.</p>
	Biological Practices	1. Entomophilic nematodes are useful against root grub
	Chemical Practices	<p>1. Mites can be controlled by spraying Dicofol 2ml/lit water or Dimethoate 1.5 ml/lit water.</p> <p>2. Spray Phorate* 10G or Carbaryl* 4% @ 10gm/pam to the leaf axil against spindle.</p> <p>3. Apply Phorate* 15gm/palm twice a year in May-June and Sept – Oct to control root grub.</p>
3. Vegetative stage	Cultural Practices	<p>1. Proper drainage control for foot rot management.</p> <p>2. Remove dead palms to control Bud rod.</p> <p>3. Provide proper irrigation.</p>
	Mechanical Practices	1. Erect bird percher @ 10-12/ha.
	Biological Control	1. Release coccinellids (<i>C. nigrita</i>) beetles against scale insects.
	Chemical Practices	1. Apply Phorate* 10G or Carbaryl 4%. @ 10gm/pam to the leaf

		<p>axil against spindle bug.</p> <p>2. Put Phorate* 10G @ 8gm/palm to contain root grub.</p> <p>3. Apply 1% Bordeaux mixture.</p> <p>4. Apply 1:1 mixture of copper sulphate to control banded disease.</p>
4. Flowering	Cultural and Mechanical Practices	1. For controlling foot rot Phytosanitary measures like cutting and burning of dead palms along with bole and roots should be followed strictly.
	Biological Control	1. Same as vegetative stage
	Chemical Practices	1. Spray Dithane @ 4gm/li against inflorescence. 2. Apply Phorate* 10G @ 8gm/palm twice a year
5. Nut formation	Cultural and Mechanical Practices	1. Collect all the infected nuts and other plant parts and destroy it. 2. Cover the branches v poly bags to check for rot disease.
	Chemical Practices	1. Spray 1% Bordeaux mixture just before onset of monsoon ; second 40 days after
6. Harvest and storage		1. Fully ripened nuts sun dried for 40-4 by evenly spread on level ground/corr floor.

* Not as per approved usage under Insecticides Act, 1968.

V. DO'S AND DON'TS IN ARECANUT IPM

DO'S	DON'T
Cultivate recommended varieties only.	Don't grow varieties not suitable for the region.
Sow the seedlings in recommended width and depth (spacing) for better establishment.	Avoid too thick seedling
Provide irrigation timely.	Should not be exposed to water stress at their critical growth stages.
Use the fertilizers as per the soil test recommendation.	Avoid imbalance use of fertilizer.
Release natural enemies only after noticing adult stages or as per field observation.	Don't apply chemical pesticide within 7 days of release of predators.
In case of pest which are active during night spray recommended biocides-chemicals at the time of their appearance at the night	Don't apply pesticides/biocides when it is not absolutely required.

VI. POTENTIAL NATURAL ENEMIES OF ARECANUT INSECT PESTS

Sl.No.	Name of the defender	Host	Stage attacked
1.	Lady bird beetle(Coccinellids)	Aphids Mites Mealy bugs Jassids Thrips Lepidopterans	Nymph and adult Egg and larvae
2.	Rove beetle(Staphilinids)	Soft bodied insect	Larvae and adult
3.	Entomophilic nematode	Root grub	Grub
4.	Flower bugs(Anthocorids)	Thrips, Mites, Aphids Lepidoptera	Adult and nymph Egg and larvae
5.	Praying mantis	All insects	All stages
6.	Ants	Soft bodied insects	Eggs and larvae
7.	Spiders	All insects	All stages preferably moving stages
8.	Ground beetle	Soft bodied insect	Larval and adults
9.	Long horned grasshopper	Spodoptera	Eggs

VII. SAFETY PARAMETERS IN PESTICIDES USAGE

S. No	Name of pesticide	Classification as per Insecticides Rules, 1971	Colour of Toxicity Triangle	WHO classification by hazard	First aid measures	Symptoms of poisoning	Treatment of poisoning	Waiting period (No. of days)
INSECTICIDES								
ORGANOCHLORINE PESTICIDES								
1.	Endosulfan	Highly toxic	Yellow	Class II – Moderately Hazardous	Remove the person from the contaminated environment.	Nausea, vomiting, restlessness, tremor, apprehension, convulsions, coma, respiratory failure and death	<ul style="list-style-type: none"> - Gastric lavage with 2-4 L. tap water – Catharsis with 30 gm. (10 oz) sodium sulphate in one cup of water - Barbiturates in appropriate dosages repeated as necessary for restlessness or convulsions - Watch breathing closely, aspirate, oxygen and/or artificial respiration, if needed. - Avoid oils, oil laxatives and epinephrine (Adrenalin) – do not give stimulants. - Give calcium gluconate (10% in 10 ml. Ampules) intravenously every four hours. 	
2.	Dicofol	Moderately toxic	Blue	Class III – Slightly hazardous	<p>Remove all contaminated clothings and immediately wash with lot of water and soap; (b) Eye contamination – Wash the eyes with plenty of cool and clean water; (c) Inhalation – Carry the person to the open fresh air, loosen the clothings around neck and chest, and (d) Ingestion – If the victim is fully conscious, induce vomiting by tickling back of the throat. Do not administer milk, alcohol and fatty substances. In case the person is unconscious make sure the breathing passage is kept clear without any obstruction. Victim's head should be little lowered and face should be turned to one side in the lying down position. In case of breathing difficulty, give mouth to mouth or mouth to nose breathing.</p> <p>Medical aid: Take the patient to the docotr/Primary Health Centre immediately along with the original container, leaflet and label.</p>			

ORGANOPHOSPHATE PESTICIDES

3.	Dimethoate	Highly toxic	Yellow	Class II – Moderately Hazardous		Mild – anorexia, headache, dizziness, weakness, anxiety, tremors of tongue and eyelids, miosis, impairment of visual acuity.	For extreme symptoms of O.P poisoning, injection of atropine (2-4 mg. for adults, 0.5-1.0 mg for children) is recommended, repeated at 5-10 minute intervals until signs of atropinization occur.
4.	Phorate	Extremely toxic	Bright red	Class I a – Extremely hazardous			
5.	Malathion	Moderately toxic	Blue	Class III – Slightly hazardous		Moderate- nausea, salivation, lacrimation, abdominal cramp, vomiting, sweating, slow pulse, muscular tremors, miosis. Severe – diarrhoea, pinpoint and non-reactive pupils, respiratory difficulty, pulmonary edema, cyanosis, loss of sphincter control, convulsions, coma and heart block.	Speed is imperative - Atropine injection – 1 to 4 mg. Repeat 2 mg. when toxic symptoms begin to recur (15-16 minute intervals), Excessive salivation – good sign, more atropine needed; - Keep airways open, Aspirate, use oxygen, insert endotracheal tube. Do tracheotomy and give artificial respiration as needed. - For ingestion lavage stomach with 5% sodium bicarbonate, if not vomiting. For skin contact, wash with soap and water (eyes- wash with isotonic saline). Wear rubber gloves while washing contact areas. In addition to atropine give 2-PAM (2-pyridine aldoxime methiodide). 1 g and 0.25 g for infants

							intravenously at a slow rate over a period of 5 minutes and administer again periodically as indicated. More than one injection may be required. Avoid morphine, theophyllin, aminophyllin, barbiturates or phenothiazines. Do not give atropine to a cyanotic patient. Give artificial respiration first then administer atropine.	
SYNTHETIC PYRETHROIDS								
6.	Fenvalerate	Highly Toxic	Yellow	Class II – Moderately Hazardous		Headache, palpitation, nausea, vomiting, flushed face, irritation of nose, throat eyes and skin, allergic manifestations etc.,	No specific antidote. Treatment is essentially symptomatic.	
FUNGICIDES								
7.	Zineb	Slightly toxic	Green	Table 5 – Unlikely to present acute hazard in normal use.		Headache, palpitation, nausea, vomiting, flushed face, irritation of nose, throat eyes and skin etc.,	No specific antidote. Treatment is essentially symptomatic.	
8.	Dithane	Slightly toxic	Green	-do-				
9.	Aureofungin							

BASIC PRECAUTIONS IN PESTICIDE USAGE

A. Purchase:

1. Purchase only JUST required quantity e.g. 100,250,500 or 1000 g/ml for single application in specified area.
2. Do not purchase leaking containers, loose, unsealed or torn bags.
3. Do not purchase pesticides without proper/ approved LABELS.

B. Storage:

1. Avoid storage of pesticides in the house premises.
2. Keep only in original container with intact seal.
3. Do not transfer pesticides to other container.
4. Never keep them together with food or feed/ fodder.
5. Keep away from the reach of children and livestock.
6. Do not expose to sun-light or rain water.
7. Do not store weedicides along with other pesticides.

C. Handling:

1. Never carry/ transport pesticides along with food materials.
2. Avoid carrying bulk - pesticides (dusts / granules) on head, shoulders or on the back.

D. Precautions for Preparing Spray Solution :

1. Use clean water.
2. Always protect your NOSE, EYES, MOUTH, EARS and HANDS.
3. Use hand gloves, face mask and cover your head with cap.
4. Use polyethylene bags as hand gloves, handkerchiefs or piece of clean cloth as mask and a cap or towel to cover the head (Do not use olyethylene bag contaminated with pesticides).
5. Read the label on the container before preparing spray solution.
6. Prepare spray solution as per requirement.

7. Do not mix granules with water.
8. Concentrated pesticides must not fall on hands etc. while opening sealed containers. Do not smell the sprayer tank.
9. Avoid spilling of pesticide solution while filling the sprayer tank.
10. Do not eat, drink, smoke or chew while preparing solution.
11. The operator should protect his bare feet and hands with polyethylene bags.

E. **Equipment:**

1. Select right kind of equipment.
2. Do not use leaky, defective equipment.
3. Select right kind of nozzle.
4. Don't blow/clean clogged- nozzle with mouth. Use old tooth- brush tied with the sprayer and clean with water.
5. Do not use some sprayer for weedicide and insecticide.

F. **Precautions for applying pesticides:**

1. Apply only at recommended dose and dilution.
2. Do not apply on hot sunny day or strong windy condition.
3. Do not apply just before the rains and also after the rains.
4. Do not apply against the wind direction.
5. Emulsifiable concentrate formulations should not be used for spraying with battery operated ULV sprayer.
6. Wash the sprayer and bucket etc with soap water after spraying.
7. Containers, buckets etc. used for mixing pesticides should not be used for domestic purposes.
8. Avoid entry of animals and workers in the fields immediately after the spraying.

G. **Disposal:**

1. Left over spray solution should not be drained in ponds or water lines etc. Throw it in barren isolated area, if possible.
2. The used/ empty containers should be crushed with a stone / stick and buried deep into soil away from water source.
3. Never re-use empty pesticide container for any purpose.