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# **Module 7: WEED MANAGEMENT**



## **Session 1: IWM**



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# Materials:

- Components of IWM: Long term strategy to minimize weed problem is through IWM. Major components of IWM are;
  1. Monitoring weeds, shift in weed flora, appearance of resistant weeds and introduction of new weeds.
  2. Emphasis on ecological, biological and biotechnological methods of environmental safety.
  3. Low cost agronomic strategies.



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# Ploughing:

- It is done at optimum soil moisture content by which the weeds start emerging. Hence, emerging weed seedlings are buried or exposed to hot sun for drying.
- In perennial weeds, ploughing is helpful for propagule control. Intensive ploughing is effective for weed control in lowland rice.
- Continuous land submergence beyond 5cm depth for rice is very effective for weed control in rice.



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# Biological weed management:

❖ It is classified into two types:

**1. Bio-agent approach**



**2. Bio-herbicide approach**





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# Some promising examples of bio-agents are:

Weed	Bio-control agent
<b>Alternanthera philoxeroides</b>	<b>Agasicles hygrophylla</b>
<b>Salvinia molesta</b>	<b>Paulinia acuiminata</b>
<b>Eichhornia crassipes</b>	<b>Neochetina bruchii</b>
<b>Cyperus rotundus</b>	<b>Bactra verutana</b>
<b>Parthenium hysterophorous</b>	<b>Zygomagrama bicolorata</b>



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# Some promising examples of bio-herbicides are:

Bio-herbicides	Source	Target weed	Crop
De Vine	Phytophthora palmivora	Morrenia odorata	Citrus
Collego	Colletotrichum gloeosporioides	A. virginica	Rice
Biomal	Colletotrichum gloeosporioides	Malva pusilla	Row crops
Biopolaris	Bipolaris soghicola	Sorghum halopense	Rice and wheat
Camperico	Xanthomonas campestris	Poa annua	Row crops
DR. BIOEDGE	Puccinia canaliculata	Cyperus rotundus	Forest
LUBOA-2	Colletotrichum gloeosporioides	Cuscuta reflexa	Pulses
Tripose	Shrimp	Echinocloa colonum	Rice



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## Various agronomic practices necessary for higher yields and weed control are:

### ❖ Stale seed bed:

- It involves the removal of successive flushes of weed before sowing a crop.
- Weeds that germinate after land preparation are destroyed mechanically, physically or chemically.
- There should be minimum soil disturbance in above two processes.







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## ❖ Crop stand:

- Higher the seed rate, closure the spacing, better is the ability of crop to compete with the weed.



Using roller marker



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## ❖ Nutrient management:

- Nutrient application should be timed to prevent weed proliferation and yet to obtain maximum benefit from the applied nutrient.





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## ❖ Intercropping and relay cropping:

- Intercrop utilizes the space available for the weed growth where as relay crop utilizes the time.





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## ❖ Cultivars:

- High yielding cultivars are less competitive against weeds than traditional cultivars.
- For rainfed areas, heavy tillering varieties of medium stature may be better suited than semi-dwarf varieties.





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## ❖ Herbicides:

- It is an integral method of integrated weed management throughout different ecosystems of the country.





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## Various weed management ITKs in vogue:

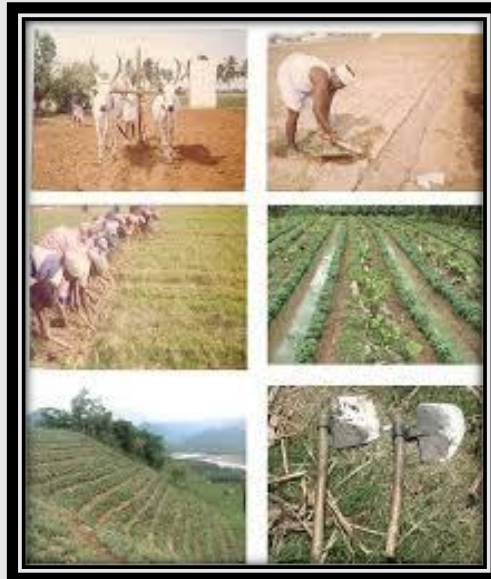
- Before sowing, farmers sieve rice seeds in order to separate the seed of weeds. It is observed that some seeds are smaller and by sieving those will be filtered.
- Farmers irrigate the rice nurseries on the first day and they store the water for three-four days and even some farmers wait for one week. Then they plough the fields by turning the soil upside down .
- Again, they irrigate the nursery area and repeat the entire practice to check the weed growth in rice nursery.



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## *Contd...*

- In traditional transplanted rice field water is stagnated during a long period of crop growth to manage the weed problem.
- Cultivation of sunhemp or daincha or cowpea as a green manure helps to control the nut grass (*Cyperus rotundus*) weed.





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## Contd...

- To check the growth of Aarai (*Marsilea quadrifolia*) weed, *Calotropis gigantea* can be grown as green manure.
- Seeds of Coriander are mixed with sorghum seed before sowing for the complete control of *Striga* (parasitic weed).







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## *Contd...*

- Allowing swine in the fields helps to eradicate nut grass. Involving pigs for burrowing the puddled fields and addition of tamarind husk complimented control of rice weeds especially nut sedge, which was reduced by 61 per cent.
- Keeping the irrigation channels clean reduces weed problem in the field.





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