

## **WEED MANAGEMENT IN MAJOR FIELD CROPS**

### **RICE**

#### **Nursery**

Apply any one of the Pre-emergence herbicides viz., Butachlor 2 l/ha, Thiobencarb 2/ha, Pendimethalin 2.5 l/ha, Anilofos 1.25 l/ha on 8<sup>th</sup> day after sowing to control weeds in the lowland nursery. Keep a thin film of water and allow it to disappear. Avoid drainage of water. This will control germinating weeds.

#### **Transplanted**

##### **Pre-emergence**

- a) Use Butachlor 2.5 l/ha or Thiobencarb 2.5 l/ha or Fluchoralin 2 l/ha or Pendimethalin 3 l/ha or Anilofos 1.25 l/ha as pre-emergence application. Alternatively, pre-emergence application of herbicide mixture viz., Butachlor 1.2 l + 2,4-DEE 1.5 l/ha or Thiobencarb 1.2 l + 2,4-DEE 1.5 l/ha or Fluchoralin 1.0 l + 2,4-DEE 1.5 l/ha or Pendimethalin 1.5 l + 2,4-DEE 1.5 l/ha or Anilofos + 2,4-DEE ready mix at 1.25 l/ha followed by one hand weeding on 30-35 days after transplanting will have a broad spectrum of weed control in transplanted rice.
- b) Any herbicide has to be mixed with 50 kg of sand on the day of application (3-4 days after transplanting) and applied uniformly to the field in 2.5 cm depth of water. Water should not be drained for 2 days from the field or fresh irrigation should not be given.
- c) Wherever there is possibility of heavy weed infestation, herbicides can also be applied with neem coated urea which could serve as carrier, three to four days after transplanting instead basal application of N at last puddling.

##### **Post-emergence**

If pre-emergence herbicides are not used, hand weed on 15<sup>th</sup> day after transplanting. 2,4-D sodium salt (Fernoxone 80% WP) 1250 g dissolved in 625 l/ha of water is sprayed with a high volume sprayer, three weeks after transplanting or when the weeds are in 3-4 leaf stage.

##### **Late hand weeding**

Hand weed a second time, 80-85 days after transplanting, if necessary.

##### **Wet seeded rice**

In wet seeded rice apply Thiobencarb at 2.5 l/ha or Pretilachlor 0.9 l/ha on 4DAS/6DAS/8DAS followed by one hand weeding for effective control of weeds OR Pre-emergence application of Pretilachlor + safener at 0.6 l/ha on 4DAS followed by one hand weeding on 40 DAS effectively control weeds.

##### **Rainfed rice**

1. First weeding should be done between 15<sup>th</sup> and 20<sup>th</sup> day and second weeding may be done 45 days after first weeding. or
2. Use Thiobencarb 2.5 l/ha or Pendimethalin 3 l/ha 8 days after sowing if adequate moisture is available, followed by one hand weeding on 30 to 35 days after sowing.

#### **Direct seeded rice**

Thiobencarb/Butachlor at 2.5 l/ha as pre-emergence application one day after wetting / soaking can be applied and it should be followed by hand weeding on 30<sup>th</sup> day. Sufficient soil moisture should be available for herbicidal use

#### **Semi dry rice**

Use Thiobencarb 3 l/ha or Pendimethalin 4 l/ha on 8<sup>th</sup> day after sowing as sand mix if adequate moisture is available, followed by one hand weeding on 30-35 days after sowing.

Or

Pre-emergence application of pretilachlor 0.6 l/ha followed by post emergence application of 2,4-D Na salt 1.25 kg/ha + one hand weeding on 45DAS.

### **SORGHUM**

1. Apply the pre-emergence herbicide Atrazine 50% WP 500 g/ha on 3 days after sowing as spray on the soil surface, using Backpack/knapsack/Rocker sprayer fitted with a flat fan nozzle using 900 lit of water/ha
2. Sorghum is slow growing in early stages and is adversely affected by weed competition. Therefore keep the field free of weeds upto 45days. For this, after pre-emergence herbicide application, one hand weeding on 30-35 days after sowing may be given.
3. If pulse crop is to be raised as an intercrop in sorghum do not use Atrazine.
4. Hoe and hand weed on the 10<sup>th</sup> day of transplanting if herbicides are not used. Hoe and weed between 30-35 days after transplanting and between 35-40 days for direct sown crop, if necessary.

#### **Ratoon sorghum**

1. Remove the weeds immediately after harvest of the main crop
2. Hoe and weed twice on 15<sup>th</sup> and 30<sup>th</sup> day after cutting

#### **Rainfed sorghum**

Keep sorghum field free of weeds from second week after germination till 5<sup>th</sup> week. If sufficient moisture is available spray Atrazine @ 500 g/ha as pre-emergence application within 3 days after the soaking rainfall for sole sorghum while for sorghum based inter-cropping system with pulses, use Pendimethalin 3 l/ha.

## **CUMBU**

### **Transplanted crop**

Spray Atrazine 50 WP 500 g/ha on 3<sup>rd</sup> day of sowing. Then, one hand weeding on 30-35 days after transplanting may be given. If herbicide is not used, hand weed on 15<sup>th</sup> day and again between 30-35 days after transplanting.

### **Direct sown crop**

1. Apply the pre-emergence herbicide Atrazine at 500 g/ha, 3 days after sowing as spray on the soil surface using Back-pack/Knapsack/Rocker sprayer fitted with flat type nozzle using 900 lit of water/ha.
2. Apply herbicide when there is sufficient moisture in the soil.
3. Hand weed on 30-35 days after sowing if pre-emergence herbicide is applied.
4. If pre-emergence herbicide is not applied hand weed twice on 15 and 30 days after sowing.

## **RAGI**

1. Apply Butachlor 2.5 l/ha or Fluchloralin 2 l/ha or Pendimethalin 2.5 l/ha, using Back-pack/Knapsack/Rocker sprayer fitted with flat fan type of nozzle with 900 lit of water/ha.
2. Apply herbicide when there is sufficient moisture in the soil or irrigate immediately after the application of herbicide.
3. If pre-emergence herbicide is not applied hand weed twice on 10<sup>th</sup> and 20<sup>th</sup> day after transplanting.
4. For rainfed direct seeded crop, apply post emergence herbicide; 2,4-DEE or 2,4-D Na salt at 0.5kg/ha on 10<sup>th</sup> day after sowing depending on the moisture availability.

## **MAIZE**

1. Apply the pre-emergence herbicide Atrazine 50 at 500 g/ha (900 lit of water), 3 days after sowing as spray on the soil surface using Back-pack/Knapsack/Rocker sprayer fitted with flat fan or deflector type nozzle followed by one hand weeding 40-45 days after sowing. For maize + Soybean intercropping system, apply pre-emergence Alachlor at 4.0 l/ha or Pendimethalin 3.3 l/ha on 3<sup>rd</sup> after sowing as spray.
2. Apply herbicide when there is sufficient moisture in the soil
3. Do not disturb the soil after the herbicide application
4. Hoe and Hand weed on 17<sup>th</sup> or 18<sup>th</sup> day of sowing if herbicide is not applied.

*Note: If pulse crop is to be raised as intercrop, do not use Atrazine.*

### **WHEAT**

1. Spray Isoproturon 800 g/ha as pre-emergence spraying 3 days after sowing followed by on hand weeding on 35<sup>th</sup> day after sowing.
2. If herbicide is not applied, give two hand weeding on 20<sup>th</sup> and 35<sup>th</sup> day after sowing.

### **REDGRAM, BLACKGRAM, GREENGRAM, COWPEA, BENGALGRAM**

1. Spray Fluchloralin 1.5 l/ha or Pendimethalin 2 l/ha 3 days after sowing mixed with 900 l of water using Back-pack/Knapsack/Rocker sprayer fitted with flat fan type nozzle. Then irrigate the field. Following this one hand weeding may be given 30-35 days after sowing.
2. If herbicide is not given, give two hand weeding on 15 and 35 days after sowing.

### **SOYBEAN**

1. Fluchloralin may be applied to the irrigated crop at 2.0 l/ha or Pendimethalin 3.3 l/ha after sowing followed by one hand weeding 30 days after sowing.
2. If herbicide is not used, give two hand weeding on 20 and 35 days after sowing.
3. Pre-emergence application of Fluchloralin at 2.0 l/ha or Alachlor 4.0 l/ha may be used in soybean wherever labour availability for timely weeding is restricted.

### **SOYBEAN - RAINFED**

1. If sufficient moisture is available, spray Fluchloralin at 2.0 l/ha as pre-emergence within 3 days after sowing.
2. If herbicide is not given, give two hand weeding on 20 and 35 days after sowing.

### **GROUNDNUT**

1. Pre-sowing: Fluchloralin at 2.0 l/ha may be applied and incorporated.
2. Pre-emergence: Fluchloralin 2.0 l/ha applied through flat fan nozzle with 900 lit of water/ha followed by irrigation. After 35-40 days one hand weeding may be given.
3. Pre-emergence application of metolachlor (2.0 l/ha) plus one hand weeding on 30 days after sowing is more profitable.
4. In case no herbicide is applied two hand hoeing and weeding are given 20<sup>th</sup> and 40<sup>th</sup> day after sowing.

### **GINGELLY**

Weed and hoe on the 15<sup>th</sup> and 35<sup>th</sup> day of sowing. Apply Alachlor at 2.5 l/ha on 3 days after sowing and irrigate the crop immediately.

### **SUNFLOWER**

1. Apply Fluchloralin at 2.0 l/ha before sowing and incorporate or apply as pre-emergence spray on 3 days after sowing followed by irrigation or apply Pendimethalin (3.0 l/ha) as pre-emergence spray on 3 days after sowing. The spray of these herbicides has to be accomplished with Back-pack/Knapsack/Rocker sprayer fitted with flat fan nozzle using 900 lit of water/ha as spray fluid. All the herbicide application is to be followed by one late hand weeding 30-35 days after sowing
2. Hoe and hand weed on the 15<sup>th</sup> and 30<sup>th</sup> day of sowing and remove the weeds. Allow the weeds to dry for 2-3 days in the case of irrigated crop and then give irrigation

### **COTTON**

1. Apply pre-emergence herbicides Fluchloralin 2.2 l/ha or Pendimethalin 3.3 l/ha three days after sowing, using a hand operated sprayer fitted with deflecting or fan type nozzle. Sufficient moisture should be present in the soil at the time of herbicide application or irrigate immediately after application. Then hand weed on 35-40 days after sowing.

Note : Do not use Diuron (Karmex) in sandy soil. Heavy rains after application of Karmex may adversely affect germination of cotton seeds.

2. Hoe and hand weed between 18<sup>th</sup> to 20<sup>th</sup> day of sowing, if herbicide is not applied at the time of sowing followed by second hand weeding on 35 to 45 DAS.

### **RICE FALLOW COTTON**

1. Pre-emergence application of Fluchloralin 2.2 l/ha or Pendimethalin 3.3 l/ha ensures weed free condition for 40-45 days. This should be followed by one hand weeding and earthing up during 40-45 days. Fluchloralin need incorporation.
2. Take up hoeing and weeding 20 days after sowing.
3. Take up this operation when the top soil dries up comes to proper condition.

### **RAINFED COTTON**

1. Application of Fluchloralin 2.0 l/ha or Pendimethalin 3.3 l/ha or Thiobencarb 3.0 l/ha followed by hand weeding 40 days after crop emergence. At the time of herbicide application sufficient soil moisture must be there. Fluchloralin needs soil incorporation.
2. If sufficient soil moisture is not available for applying herbicides hand weeding may be given at 15-20 days after crop emergence.

### **SUGARCANE - Pure crop**

1. Spray Atrazine 2 kg or Oxyfluorfen 750 ml/ha mixed in 900 lit of water as pre-emergence herbicide on 3<sup>rd</sup> day of planting, using deflector or fan type nozzle.
2. If pre-emergence spray is not carried out, go for post-emergence spray of gramaxone 2.5lit + 2,4-d sodium salt 2.5 kg/ha in 900 lit of water on 21<sup>st</sup> day of planting or apply 10% Ammonium sulphate on 45<sup>th</sup>, 75<sup>th</sup> and 105<sup>th</sup> day after planting as **directed spray**.
3. If the parasitic weed Striga is a problem, Post-emergence application of 2,4-D sodium salt 1.75 kg/ha in 650 lit of water/ha has to be sprayed. 2,4-D spraying should be avoided when neighbouring crop is cotton or bhendi or apply 20% urea for the control of Striga as directed spray.
4. If herbicide is not applied work the Junior-hoe along the ridges 25, 55, and 85 days after planting for removal of weeds and proper stirring. Remove the weeds along the furrows with hand hoe.

### **SUGARCANE - INTERCROP**

Pre-emergence application of Thiobencarb 2.5 l/ha under cropping system in sugarcane with soybean, black gram or ground nut gives effective weed control. Raising intercrops is not found to affect the cane yield and quality.

### **TOBACCO**

First hand weeding taken up three weeks after planting. A spade digging is followed on 45 DAT which makes the ridges flat and then reformed one week later to have good weed control.

#### **Control of Orobanche**

Remove as and when the shoot appears above the ground level before flowering and seed set. The removed shoots are to be buried or burnt. Trap cropping of greengram or gingelly or sorghum reduces the infestation.

#### **Chemical weed control of Orobanche**

Pre-emergence application of Fluchloralin at 1.0 lit/ha or Oxyfluorfen at 0.5 lit/ha one week prior to planting controls most of the weeds.