

Introduction :Cotton is the most extensively cultivated commercial crop and most important fiber crop of the world. Cotton being a hardy crop, cultivated both irrigated and in rain fed conditions. Nowadays, high yielding long staple and short duration varieties are very popular among farmers. These improved hybrids absorb major, secondary and micro-nutrients from the soil in large quantities. But farmers are using only major nutrients. They are not using fertilizers containing major, secondary and micro-nutrients which have tremendous influence on the quality of the crop.

Season & Field Preparation : Feb-April, June-July, and Sept- Oct finally sowing of the crop depends upon water resources. Cotton is sown on ridges and furrows. For irrigated cotton the land is given a deep plowing followed by two harrowings

Popular Varieties / Hybrids : Jaadu, Money Maker, KCH 144.320, ATM- 160, KCH111

Seed Rate & Spacing : 1 to 2 kg/acre.

Row to row – 3 to 4 feet and *plant to plant* – 1 to 2 feet or

Paired row system – *Row to row* - 4 x 2 feet and

Plants to plants - 1.5 to 2 feet.

Nutrient Management (Fertilizer Dosage) :

Bio organic Manure 120- 200 kg/acre Anshul Compact / Multiplex Annapurna OR Mangala Biogold plus OR MBF Brown Gold OR JK Compost) along with FYM or Compost – 5 – 10 tonnes or 500 kg/acre Bio organic Manure (Multiplex Annapurna .

Package of Practices (POP)

COTTON

NPK – 50:30:35 kg/ per acre.

Combination 1	kg	
Urea (46 % N)	83.2	(Mangala Urea or GROMOR Urea or FACT Urea or IFFCO Urea or VIJAY Urea or Nagarjuna Urea or Ujjwal Neem coated Urea or SPIC Urea or KRIBHCO Urea or Jai kisan Urea)
DAP (18 % N; 46 % P ₂ O ₅)	65.2	Mangala DAP or Gromor DAP or IFFCO DAP or Vijay DAP or SPIC DAP or Jaikisam samrat (DAP) or Mahadhan chetak(DAP)
MOP (60 % K ₂ O)	58.3	Mangala MOP or GROMOR MOP or FACT MOP or VIJAY MOP or JAIKISAN Suraksha (MOP) or Mahadhan Potash (MOP)

Combination 2	kg	
10:26:26 ¹	115.4	MANGALA 10:26:26 or GROMOR 10:26:26 or IFFCO Grade I - 10:26:26 or Jai Kisaan Samarth [10 :26 :26]

Package of Practices (POP)

COTTON

Urea (46 % N)	83.6	(Mangala Urea or GROMOR Urea or FACT Urea or IFFCO Urea or VIJAY Urea or Nagarjuna Urea or Ujjwal Neem coated Urea or SPIC Urea or KRIBHCO Urea or Jai kisan Urea)
MOP (60 % K ₂ O)	8.3	Mangala MOP or GROMOR MOP or FACT MOP or VIJAY MOP or JAIKISAN Suraksha (MOP) or Mahadhan Potash (MOP)
Combination 3	kg	
20:20:00 ¹	150.0	Mangala Urea or GROMOR Urea or FACT Urea or IFFCO Urea or VIJAY Urea or Nagarjuna Urea or Ujjwal Neem coated Urea or SPIC Urea or KRIBHCO Urea or Jai kisaan Urea
Urea (46 % N)	43.5	(Mangala Urea or GROMOR Urea or FACT Urea or IFFCO Urea or VIJAY Urea or Nagarjuna Urea or Ujjwal Neem coated Urea or SPIC Urea or KRIBHCO Urea or Jai kisaan Urea)

Package of Practices (POP)

COTTON

MOP (60 % K ₂ O)	58.3	Mangala MOP or GROMOR MOP or FACT MOP or VIJAY MOP or JAIKISAN Suraksha (MOP) or Mahadhan Potash (MOP)
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Micronutrients (Micronutrient Mixtures): 10-15 kg per acre [Multiplex Srushti](#) OR Kiecite Powder OR Mangala Borosan + 90 % Bentonite Sulphur granules 10 kg (Multiplex Fertisulph OR Mangala S - 90 OR Gromor Sulphur OR Sulphur Bentonite 90 % (Granular) OR Gandhak-90 or MAHADHAN BENSULF or Sulfonate)

Note: Fulfill at least 50% of Phosphorus requirement of the crop through Rock Phosphate

Weed Management : Pre-emergence application of [Pendimethalin](#) 3.3 l/ha followed by one hand weeding on 40 days after crop emergence

Pest & Disease Management :

Common pests: Leafhoppers, Plant hoppers, Aphids, Jassids, Mites, Pink bollworms, spotted bollworms, Heliothis, Cotton red bug, White fly, Leaf roller and Leaf minor etc.,

Common Diseases: Leaf spot, Root rot, Bacterial blight, Anthracnose, wilt, Boll rot, black arm disease, etc.,

General Spray Schedule:

1st Spray: 25 to 30 days after sowing (for sucking pests control)

Pest during this period: Leafhoppers, Aphids, Jassids.

Diseases during this period: Leaf spot.

[Imidacloprid 17.8 %](#) (Nagmida or Imidacel or Confidor or Cohigan) 0.5 ml/liter or [Acetamiprid](#) (Ekka or Nagtamiprid or Harrier or Rekord or Manik or Acetate) 0.5 gm/L + [Mancozeb](#) (Speed or Manzate or Eurofil or Sixer or Indofil M -45 or Dithane M -45 or Uthane M- 45) 2 gm/ L + [Sambrama](#) 1 tab/ 15 L or + Plant extract (Biostrike) – 3 mL /liter.

2nd Spray: 40 to 45 days after sowing (for sucking pests and leaf spot disease)

Pest during this period - Mites, Whitefly, Leaf roller and Leaf miner, Cotton red bug.

Diseases during this period – Leaf spot, Root rot, Anthracnose,

[Carbendazim](#) (Nagcarzim or Benmain) 2 gm/L + Bio activator mixtures ([Amino acids](#)+ [Humic acids](#) + seaweed extract + Cytokinins) [Mahaphal](#) @ 2 mL/L or BT Biozyme (Li) 2 ml/L+ [Acephate](#) (Nagace or Hunk or Acefex or Tremor or [acemain](#) or [Asataf](#)) 2 g/litre or Chlorfenapyr (Lepido or [Intrepid](#)) 2 mL/L + all nutrient mixture ([Krant](#)) 1.0 mL/L + Plant extract (Biostrike) -3 mL /liter.

3rd Spray: 60 to 65 days after sowing (for sucking pests and leaf spot disease).

Pest during this period- Mites, Whitefly, Leaf roller and Leaf miner, red Cotton bug.

Diseases during this period – Leaf spot, Root rot, Anthracnose,

BT Bio-enzyme 1 to 1.5 mL/L + [Hexaconazole](#) (Contaf plus, Nazgol or Sergeant) 2 gm/L + Fenvalerate (Nagfen or Tatafen) 2 ml/liter or [Monocrotophos](#)

(Nagphos or Monomain or Crotochel) 2 ml/liter + Plant extract (Biostrike) – 3 mL /liter.

4th Spray: 70 to 75 days after sowing.

Pest during this period - Pink bollworms, spotted bollworms, Heliothis.

[Flubendiamide](#) (Fame or Fulton) 0.2 mL/L OR [Chlorantraniliprole](#) (Coragen) or 0.33 mL/L.

5th Spray: 90 to 95 days after sowing.

Pest during this period - Pink bollworms, spotted bollworms, Heliothis.

Diseases during this period - Anthracnose, wilt, Boll rot, Bacterial blight, black arm disease

[Multiplex BTC powder](#) 2 gm/L OR [Anshul shine](#) , [Calcium boron](#) (Chamak) @ 3 g/L+ [Bactinash](#) 0.4 g/litre or Krocin Ag 6 gm/ 50 L or Biomyacin 2 mL/L or Kasugamycin 2 mL/L+ [Kavach](#) 2 gm/L + [Quinalphos](#) (Nagin or Ekalux or flash) 2 mL /liter + Plant extract (Biostrike) 3 mL /liter.

6th Spray: 110 to 115 days after sowing.

Pest during this period - Pink bollworms, spotted bollworms, Heliothis.

Diseases during this period - Anthracnose, wilt, Boll rot, Bacterial blight.

Magnesium Sulfate ([MultiMag](#) or Magmix) 4 g/L + Profenofos + [Cypermethrin](#) (Profigan Plus or Hitcel or Rocket) 2 mL/L + Plant extract (Biostrike) 3 mL/liter.

For white flies control.

[Diafenthiuron](#) (Derby or Pegasus or AGAS or Main Star) 0.4 gm/L or [Fipronil](#) + [Acetamiprid](#) (Parviz) 1 mL/L OR [Acetamiprid](#) (Ekka or [Nagtamaprid](#) or Harrier or Rekord or [Manik](#) or Acetacel 0.5 gm/L OR Fenvalerate (Nagafen or Tatafen) 2 ml/litre.

For Leaf miners control.

Triazophos (Trizocel or Fulstop 40 EC or Taran Rite) + c(Decis 2.8) 2 mL/L

For Sucking pests control (Thrips, Aphids, Green leaf hoppers, Jassids)

Beta-Cyfluthrin + [Imidacloprid](#) (Solomon) OR Ethiprole + [Imidacloprid](#) (Glamore) OR Imidacloprid 30 % (Brightstar or Confidor Super) 0.3 mL/L OR [Imidacloprid 70 %](#) (Hotstar or Cohigan WG or Admire) OR [Acephate](#) (Nagace or Tamron® Gold or Hunk or Acefex or Tremor or acemain or Asataf) 2 g/litre OR [Imidacloprid 17.8 %](#) (Nagmida or Imidacel or Confidor or Cohigan) 0.5 ml /liter OR Spinosad 480 SC (Tracer or Spintor or Taffin) 0.375 mL/L.

For Control of flower feeders, leaf feeders and fruit borers.

Flubendiamide (Fame or Fluton) 0.2 mL/L OR [Chlorantraniliprole](#) (Coragen) or 0.33 mL/L OR [Cyantraniliprole](#) (Benevia) OR Novaluron 5.25% + Indoxacarb (Plethora) 1mL/L OR [Monocrotophos](#) (Nagphos or Monomain or Crotocele) 2 ml/liter OR [Chlorpyrifos](#) (Nagpyriphos or Border -50 or Tricel or Anthe- 50) 2 ml/liter OR Deltamethrin (Decis 2.8) 2 mL/L + [Bio Strike](#) 3 ml/liter

For control of Red Spider mites.

When mites are more at earlier stages and no initiation of flower spray [Sulphur](#) (Nagsulp or Wokovit or Mainsul) 2 gm/liter OR [Anshul Sulphur Liquid](#) [Multiplex Liquid Sulphur](#) 2 ml/liter to control.

Chemical Spray of Propargite (Simbaa or Omite) 1 ml/litre OR Fenazaquin (Magister) 2 ml/litre OR Fenpyroximate (Pyromite or Sedna) OR Ethion (Nagethion or Tafethion or Nagata) 2 ml/litre OR FOSMITE 2 mL/L OR New Ecomite 3 ml/litre.

For control of Nematodes.

Consortium of *Paecilomyces lilacinus* (Fungus) and *Trichoderma harzianum* (Fungus) like (Multiplex Safe Root or NEMATO CONTROL or [Bio-Nematon](#) or MYSIS) 5 kg/acre along with Bio organic manure applications.

Chemical Control Cartap Hydrochloride (Nagtap) 5 kg before transplanting will kill. Drenching with Carbosulfan (Marshall) 3 L OR Triazophos (Trizocel or Fulstop 40 EC or TARZAN RITE]) 3 L per acre will control nematodes.

For control of Soil pests like root grubs, Chaffers and Termites.

Entomopathogenic nematodes (EPN) [Anshul Army](#) or [Multiplex Soldier](#) @ 5 kg/acre along with enriched organic manure. Chemical Control Cartap Hydrochloride (Nagtap) 5 kg before transplanting will kill. Several biological agents can be used to effectively control insects like leaf feeders, Aphids, thrips and loopers

- By spraying Biological agents like [BEAUVERIA BASSIANA](#) (Multiplex BABA or Bio-Power (Beauveria bassiana) Powder or Toxin) OR [METARHIZIUM ANISOPLIAE](#) (Multiplex Metarhizium or Bio-Magic or Biostorm) OR [VERTICILLIUM LECANII](#) (Multiple Varsha or VIR-O-ACTION or Bio- Catch or Shock) + Neem oil 1500 ppm (Anshul

Maxinemor , Multinemor or Vijay neem or Neem Baan) @ 2 ml /liter of water, two or times. 10 gm per liter of water.

- Dehydrating pesticides like [Multiplex Strike Plus](#) of Lastraw can be used to kill sucking pests like thrips, aphids and mites. 5 mL/L of water for spray.
- Biological agent [PAECILOMYCES FUMOSOROSEUS](#) Multiplex Check Mite 10 g/litre can be sprayed in evening hours twice at 10 days interval (do not use any chemical fungicide one week before and after spray of Multiplex Check Mite).
- During the fruit stage fruit flies can be monitored by setting up Fruit fly traps with para-pheromone lures. Pheromone traps can also be set to control.
- [BACILLUS THURINGIENSIS](#) (Bt) (Multiplex Minchu or VBT) *can be used to kill many lepidopteran insects.*
- HELICOVERPA caterpillars can be killed by using Ha NPV viral bodies (Helimar).
- SPODOPTERA cut worms can be controlled by Sl NPV viral bodies (Spodomar).

For control of fungal leaf spot

[Mancozeb](#) (Speed or Manzate or Eurofil or Sixer or Indofil M -45 or Dithane M -45 or Uthane M- 45) 2 gm/ L or [Propineb](#) (Antracol or Proximain or Sanipeb) 2 gm/L OR [Carbendazim](#) (Nagcarzim or Benmain) 2 gm/ L OR c combi (Jodi or Bendaco or Macoban C) 2 g/L OR Metalaxyl + Mancozeb (Ridomil gold 80 WP or Syscon or Master or Krilaxyl Gold) – 2 g/litre OR Zineb 68% + Hexaconazole 4% WP (Avtar) 2 g/litre OR Copper EDTA (Neel Cu) 0.5 g/litre OR [Copper Oxychloride](#) (Nagcoper or Maincop or Blue Copper or TRUCOP or Blitox) 2 g/litre OR Copper hydroxide (Kocide or Hi-Dice) 2 g/litre.

For control of Anthracnose

[Carbendazim](#) (Nagcarzim or Benmain) 2 gm/L OR [Carbendazim + Mancozeb](#) combi (Jodi or Bendaco or Macoban C) 2 gm/L OR [Metalaxyl + Mancozeb](#) (Ridomil gold 80 WP or Syscon or Master or Krilaxyl Gold) 2 gm/liter OR Zineb 68% + Hexaconazole 4% WP (Avtar) 2 gm/liter OR [Copper EDTA](#) (Neel Cu) 0.5 gm/liter OR [Copper Oxychloride](#) (Nagcoper or Maincop or Blue Copper or TRUCOP or Blitox) 2 gm/liter or Copper hydroxide (Kocide or Hi-Dice) 2 gm/liter.

For control of stem rot

[Metalaxyl + Mancozeb](#) (Ridomil gold 80 WP or Syscon or Master or Krilaxyl Gold) 2 gm/liter OR [Copper EDTA](#) (Neel Cu) 0.5 gm/liter OR [Copper Oxychloride](#) (Nagcoper or Maincop or Blue Copper or TRUCOP or Blitox) 2 gm/liter or Copper hydroxide (Kocide or Hi-Dice) 2 gm/liter.

For control of fruit rot

[Mancozeb](#) (Speed or Manzate Eurofil or Sixer or Indofil M -45 or Dithane M -45 or Uthane M- 45) 2 gm/L OR [Carbendazim](#) (Nagcarzim or Benmain) 2 gm/L OR [Carbendazim + Mancozeb](#) combi (Jodi or Bendaco or Macoban C) 2 gm/L OR [Metalaxyl + Mancozeb](#) (Ridomil gold 80 WP or Syscon or Master or Krilaxyl Gold) 2 gm/liter OR [Chlorothalonil](#) (Kavach) or Metalaxyl + Chlorothalonil (Folio gold) OR Zineb 68% + Hexaconazole 4% WP (Avatar 2 g/litre) OR [Copper EDTA](#) (Neel Cu) 0.5 gm/liter OR [Copper Oxychloride](#) (Nagcoper or Maincop or Blue Copper or TRUCOP or Blitox) 2 gm/liter or Copper hydroxide (Kocide or Hi-Dice) 2 gm/liter.

For control of dieback.

Copper EDTA (Neel Cu) 0.5 gm/liter OR [Copper Oxychloride](#) (Nagcoper or Maincop or Blue Copper or TRUCOP or Blitox) 2 gm/liter or Copper hydroxide (Kocide or Hi-Dice) 2 gm/liter.

For control of Downy mildew.

Fluopicolide + Fosetyl-Al (Profler) OR Iprovalicarb 5.5% + [Propineb](#) (Melody Duo) OR [Fenamidone + Mancozeb](#) (Sectin) OR [Metalaxyl + Mancozeb](#) (Ridomil gold 80 WP or Syscon or Master or Krilaxyl Gold) 2 gm/liter OR [Chlorothalonil](#) (Kavach) or [Metalaxyl + Chlorothalonil](#) (Folio gold) OR [Copper EDTA](#) (Neel Cu) 0.5 g/litre OR [Copper Oxychloride](#) (Nagcoper or Maincop or Blue Copper or TRUCOP or Blitox) 2 g/litre or Copper hydroxide (Kocide or Hi-Dice) 2 g/litre + Multiplex Multi Laxin 4 ml/liter.

For control of Powdery mildew.

[Nativo](#) (Tebuconazole + Trifloxystrobin) 0.5 gm/L OR [Propiconazole](#) [Difenoconazole](#) (Taspa) 1 mL/L OR [Azoxystrobin + Tebuconazole](#) (Custodia) 0.5 mL/L OR [Difenoconazole](#) (Score) 0.5 mL/L OR [Tebuconazole](#) 2 mL/L OR [Difenoconazole](#) (Treat or Bumper or Olander) 0.5 mL/L or Hexaconazole (Contaf plus, Nagazol or Sergeant) OR Myclobutanil (Myclomain OR Nagsulp (Sulphur) 2 g/litre OR [Multiplex Liquid Sulphur](#) 2 ml/liter/ [Anshul Sulphur liquid](#)

For control of early and late blight.

This disease is severe in winter months. Fluopicolide + Fosetyl-Al (Profler) OR Iprovalicarb 5.5% + Propineb (Melody Duo) OR [Fenamidone + Mancozeb](#)

(Sectin) OR [Metalaxyl + Mancozeb](#) (Ridomil gold 80 WP or Syscon or Master or Krilaxyl Gold) 2 gm/liter OR Dimethomorph (Acrobat or Lurit) 1 gm/liter OR Phosphorous + copper liquid (Multiplex Multi Laxin or Phosphocop) 4 ml/liter along with [Copper EDTA](#) (Neel Cu) 0.5 gm/liter OR [Copper Oxychloride](#) (Nagcoper or Maincop or Blue Copper or TRUCOP or Blitox) 2 gm/liter or Copper hydroxide (Kocide or Hi-Dice) 2 gm/liter.

For control of bacterial leaf spot.

[Copper EDTA](#) (Neel Cu) 0.5 g/litre OR [Copper Oxychloride](#) (Nagcoper or Maincop or Blue Copper or TRUCOP or Blitox) 2 gm/liter or Copper hydroxide (Kocide or Hi-Dice) 2 gm/liter + [Bactinash](#) 0.4 gm/liter or Krocin Ag 6 gm/50 L or Biomycin 2 mL/L or Kasugamycin 2 mL/L.

Several biological agents can be used to control the fungal and bacterial diseases like

- Consortium of BACILLUS THURENGENSIS and [PSEUDOMONAS FLUORESCENS](#)(Anshul Pseudomax)(Multiplex Bio Jodi) 5 gm/L for spray and 10 gm per liters for drenching to control wilts.
- [TRICHODERMA VIRIDE](#)(Anshul Tricomax) (Nisarga or Tricho-Action or Niprot or Bio-Cure-For Bhoomika).
- [PSEUDOMONAS FLUORESCENS](#)(Anshul Pseudomax) (Sparsha or Agnee or Bio-Cure-B or MBF PSEUDO – Gun)

Physiological Disorder : Leaf Reddening In Cotton

Control- A good supply of farmyard manure, a judicious irrigation program and balanced fertilization will help to avoid the problem.