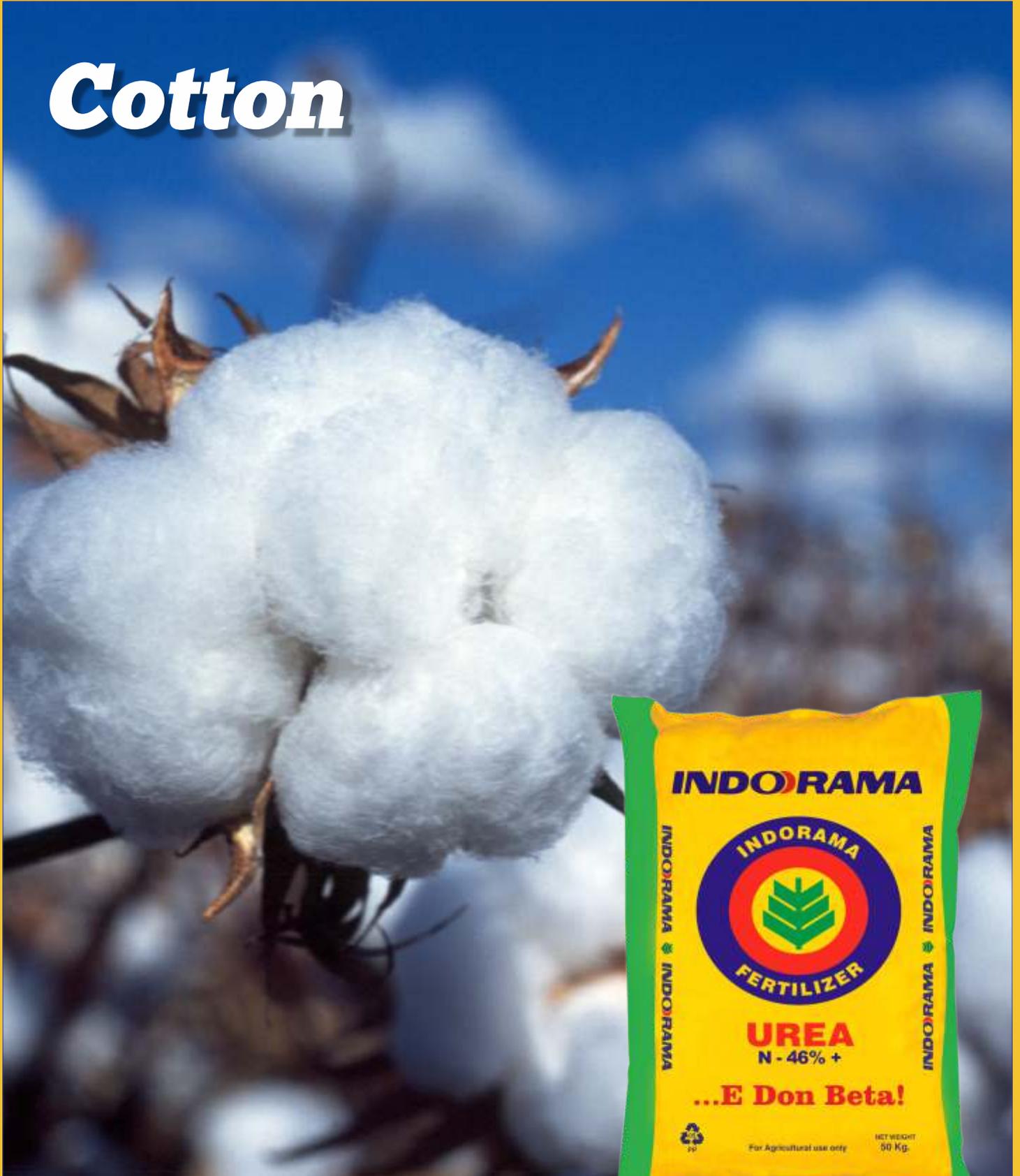




Crop Management Practices

An Agricultural Extension Initiative of **INDORAMA**

Cotton



Cotton



Introduction

Nigeria produces approximately 0.6 million metric tonnes of Cotton per year. Cotton is one of the most important commercial and economically viable Crops in the world. It is an important Fibre Crop, which is cultivated in more than 80 countries of the world. Ten countries, including USA, CIS (Commonwealth of Independent States), China, India, Brazil, Pakistan, Turkey, Mexico, Egypt and Sudan account for nearly 85 per cent of the total production. Cottonseed is crushed to produce Oil for food uses and oilseed cake for animal feed. Cotton is the largest industry in Nigeria after Oil and Agriculture

Climate Requirement

Cotton is a crop of subtropical climate. Cotton needs on an average, a minimum temperature of 60 degrees Fahrenheit for germination, 70-80 degrees Fahrenheit for vegetative growth, 80-90 degrees Fahrenheit with cool nights during fruiting period. An annual rainfall of at least 50cm is the minimum requirement for Cotton cultivation unless it is grown on irrigated soils. Ultimately rains and the heavy humid weather during later stages of cotton cultivation may spoil the produce, lower its ginning properties or promote attack of insect, pest, diseases. Weather should be clear at harvesting because rain will discolor the lint and reduce its quality.

Soil

Cotton needs a soil with an excellent water holding capacity and aeration and good drainage as it cannot withstand excessive moisture and water logging. The major groups of soils for cotton cultivation are the alluvial soils, black soils, and red-sand-loam.

Seed Treatment

For acid delinting seed should be treated with 80-100 ml H_2SO_4 per 1kg of seed for 2-3 minutes followed by thorough washing with water 2-3 times and to remove the acid, it should be washed with lime to neutralize. Seed dressing with appropriate insecticide, Imidachloprid 70 WS @ 5 g/Kg or Thiomethoxam 70 WS @ 4g/kg or Carbofuran SD @ 40 g/kg of Seed. Seed treatment with Paushamycin/Plantomycin 100 mg + Carboxin 1 g/lit of water and allow to soak for 6-8 hrs and then shade dry.

Method of sowing:

- A. Drilling method: For straight varieties
 - B. Dibbling method: For hybrids (wider spacing)
- Normal as well as paired row cropping pattern of sowing for Cotton give similar yields hence either planting pattern can be adopted. Spacing depending upon the hybrids / variety of cotton to be sown.

Fertilizer

Fertilizer application differs from region to region depending on available nutrients in the soil, Climatic factors like rainfall and temperature, soil factors like soil type, depth, pH, EC, CaCO₃ content and organic matter, Crop factors like sequence, and plant factors like genotype and duration determine the nutrient requirement of cotton. Cotton crop should be manured with FYM or compost at least once in 3 years at the rate of 12 to 15 tons/ha.

The Fertilizer dose of 100:50:50 (NPK) kg/ha for irrigated cotton (for N 220 kg Indorama Granular Urea); 80:40:40 (NPK) kg/ha (for N 176 kg Indorama Granular Urea) for rainfed Cotton hybrids. Nitrogen should be in two splits for rainfed Cotton crop i.e. 50% at sowing time and 50% at square formation stage and three split for irrigated cotton i.e. 1/3rd at sowing time, 1/3rd at one month after sowing and remaining 1/3rd at 60 days. While whole P and K should be applied as basal dose for both rainfed and irrigated cotton. The application of basal dose of fertilizer to dibbled cotton crop should be given at the time of sowing by ring method 5 to 6 cm away from dibbled seed. Delayed application of basal dose of Fertilizers reduces the yield of seed cotton to the tune of 10 to 40% within late duration period of 10 to 30 days.

Integrated Nutrient Management:

Spraying of DAP at the rate of 2% at the time of flowering and boll development stage gives 10 to 20% higher seed cotton yield and prevents the redding of cotton.

Seed treatment with Azotobactor is found beneficial for Cotton crop for reducing the Nitrogen dose to the tune of 20 to 25%. For Cotton crop 4.5 ppm available Iron content in soil and 281 ppm in youngest mature leaf at square initiation stage can be considered as critical level for application of iron. Use of bio-Fertilizers: a) Azotobactor @ 25 gm/kg seed b) PSB @ 20 gm/kg seed

Weed Management

Weeds compete with Cotton crop for nutrients, light and moisture. Cotton is susceptible to weed competition from sowing to about 70 days when the canopy covers the inter-spaces. Cotton yields are reduced by 50 % if weed growth is unchecked. Fluchloralin or pendimethalin @ 1kg ai/ha. as pre-plant incorporation with one hand weeding and crosswise hoeing has been recommended for satisfactory weed control. Deep rooted perennial weeds are removed by summer ploughing.

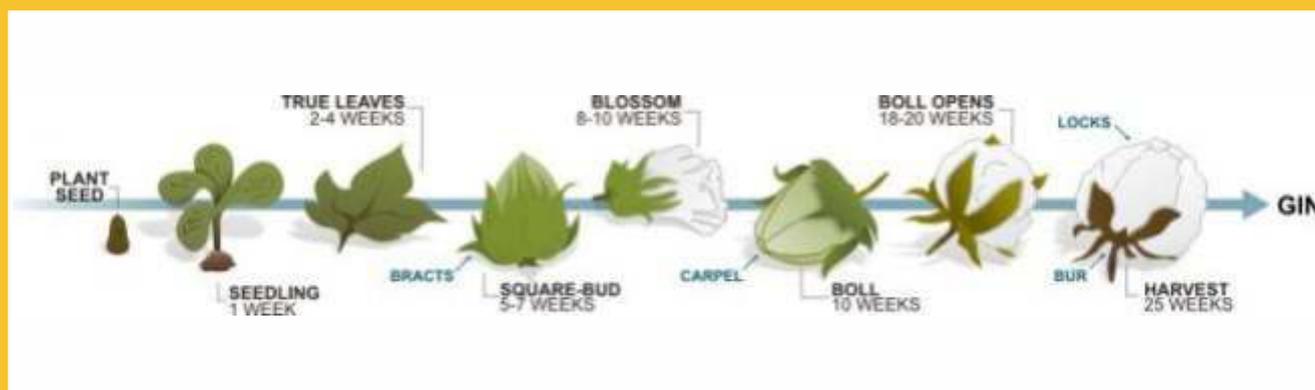
Pest Management

Chemical Insecticides and their doses recommended:

a) Sucking pests: (Aphids, Jassids and Thrips) Soil application of phorate 10 G @ 10 kg/ha or Imidacloprid 70 ws seed treatment @ 10gm/kg seed or Thiomethoxam 70ws seed treatment @ 4.28 gm/kg seed Spraying of methyl demeton 25 EC @ 8m /10lit. of water or Spraying of dimethoate 30 EC @ 10ml/ 10 lit of water or Spraying of acetamiprid 20 sp @ 15 g.a. %/ha

b) For White Fly: Methyl demeton 25EC @ 40 ml /10 lit of water or Dimethoate 30 EC @ 33 ml/10lit of water or Trizophos 25 EC @ 10 ML /10 lit of water or Monocrotopnos 36 WSC @ 28 ML/10 lit of water or Fenpropethrin 50 EC @ 10ml/10 lit. of water

c) For Bollworms: Endosulfan 35 /Ec @ 17 ml /10 lit of water or Quinalphos 25 EC @ 20 ml /10 lit of water or Carbaryl 50 wp @ 40 gms/10 lit of water or Monocrotophos 36 WSC @ 17 ml/10 lit of water or Phosalone 35 /ec @ 14 ml/10 lit of water or Spinosad 45 /sc @ 0.01 % particularly for American and spotted bollworm Beta-cyfluttrin 2.5 EC @ 0.0025 % particularly for pink bollworm.



Disease Management

Blackarm:

Seed treatment with 80-100 ml concentrated Sulphuric acid. Use of resistant varieties like L-389. Removal and destruction of infected seedlings. Seed soaking in antibiotic (Paushamycin /Agrimycin 100 mg/lit) solution along with vitavax 1 g for 6-8 hours will eliminate seed borne diseases. Agrimycin 0.01% + copper oxychloride 0.3% at fortnightly intervals for 3 rounds.

Rootrot:

Seed treatment with Carbendazim 2 g/kg of seed. Drenching with Copper oxychloride @ 3g/lit of water around the base of affected plants. Leaf spots: Mancozeb 0.25% or Copper oxychloride 0.3% for 4-5 times at 15 days interval. Greymidlew: Wettable Sulphur at 3 g/lit or Carbendazim 1 g/lit of water for 2-3 rounds at 7 day interval. Bollrots: Commonly used conventional insecticides along with fungicides and antibiotics.

Critical Technologies which are recommend earlier but need (BMP), special attention

1. Potash application to hybrids under high yielding situations.
2. Need to correct secondary and micro-nutrient deficiencies, particularly Mg, Zn and

Boron.

3. Fine tuning of Integrated Pest Management for specific locations. New and safer chemicals like Imadacloprid and Rimon and Spinosad need to be incorporated in the IPM module to reduce environment pollution and health hazards.

Harvesting and Post Harvesting Technology:

Kapas from fully opened bolls should be collected during cooler times of the day. Kapas picked should be free from debris like dried leaves; dried bracts etc. Kapas from the first and last pickings should not be mixed with middle pickings, which are of better quality. Kapas damaged by bollworms should be picked separately. The cleaned Kapas is to be graded and stored in heaps or in gunny boras in dry and well ventilated godowns.

Picking and Marketing

Cotton should be picked after boll bursting, during sunny days to ensure moisture free Kapas of good quality. Delay in picking leads to falling of Kapas on the ground which results in deterioration of quality due to mixing of soil articles, leaf bits and other trash. High temperature is also detrimental. The picked Kapas should be properly cleaned before taking to the market for sale.

