

S. No	Diseases	Damage	Control	Reference
1	Alternaria leaf blight (<i>Alternaria macrospora</i>)	<ul style="list-style-type: none"> The affected leaves become brittle and fall off Rot, wilting, mould, spotting (necrosis), fruit rots, deformation of the plant 	<ul style="list-style-type: none"> Remove and destroy the infected plant residues Avoid seeds from infected crop Application of a Mancozeb 80% WP foliar fungicide before the cotton is infected 	
2	Boll rot (Fungal complex)	<ul style="list-style-type: none"> Infection spreads to inner tissues and rotting of seeds and lint occur Reduces yield The bolls never burst open and fall off prematurely 	<ul style="list-style-type: none"> Apply the recommended doses of fertilizers Spray Carbendazim at 200g/acre or Mancozeb at 800g/acre from 45th day and at 15 days interval 	
3	Root rot (<i>Rhizoctonia bataticola</i>)	<ul style="list-style-type: none"> Wilting of the cotton leaves Death of seedlings The entire root system gets rotten Plants get dried and the affected plants can be easily pulled out 	<ul style="list-style-type: none"> Treat seeds with Imidacloprid 20%+Metalaxyl-M 20% + Tebuconazole 2% WS Spot drenching with Carbendazim 50%WP at 1g/lit of water, or Mancozeb 80%WP at 1kg/Ha 	

S. No	Pest	Damage	Control	Reference
1	Cotton aphid (<i>Aphis gossypii</i>)	<ul style="list-style-type: none"> Feeds on Cotton sap Causes defoliation, and severe stunting of seedling growth Causes necrotic spots on leaves and transmit virus 	<ul style="list-style-type: none"> Spray – Cyhalothrin 2.5%EC 120ml/ltr or foliar spray with Imidacloprid 200g/L SL or Fipronil 2.5% EC 	
2	Cotton boll worms (<i>Helicoverpa armiger</i>)	<ul style="list-style-type: none"> Premature shedding of squares and bolls Damage cotton fibres 	<ul style="list-style-type: none"> Spray – Cyhalothrin 2.5%EC 1000mls per ha or Cypermethrin 10%EC or Profenos 40% + Cypermethrin 4%E 	
3	Leaf roller (<i>Sylepta derogata</i>)	<ul style="list-style-type: none"> Leaves rolled in the form of trumpets Marginal portion of leaves eaten away Plants defoliated in severe attack 	<ul style="list-style-type: none"> Collection and destruction of shedded plant parts Hand picking and destruction of grown up caterpillars Spray chlorpyrifos 20% EC 	

S. No	Nutrient	Deficiency Symptoms	Reference	Healthy Cotton	Reference
1	Nitrogen	<ul style="list-style-type: none"> Pale yellow green colour of leaves in older leaves Forced early flowering Premature drying and shedding of older leaves Reduced boll retention and yield 		<ul style="list-style-type: none"> Green Foliage Improved vigor Stimulates vegetative growth Increase yield 	
2	Phosphorus	<ul style="list-style-type: none"> Stunting of plant Poor root and shoot growth Delay in blooming and fruiting 		<ul style="list-style-type: none"> Earlier boll set and maturity Improved early root development Provide strong stems and leaves Improve yield of cotton 	
3	Potassium	<ul style="list-style-type: none"> Yellowing of tips or margin of the leaves extending to the center of leaf base which becomes necrotic (dead spots) Stunted growth Reduced disease resistance 		<ul style="list-style-type: none"> Increase yield Increase disease resistance Increased fibre maturity and length Reduced premature senescence 	

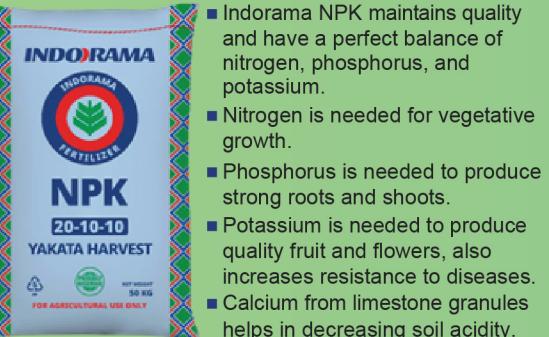
INDORAMA GRANULAR UREA



INDORAMA NEEM COATED UREA



INDORAMA NPK



Cotton

Nigeria's Fiber of Excellence, Sustainably Grown for Textile Brilliance

Cotton was one of the main sources of foreign exchange in Nigeria prior to oil boom. Nigeria produces about 600,000 metric tons of cotton with production concentrating around the Savannah belts of Nigeria. The cotton-producing areas in Nigeria are the Northwest cotton zone which comprises, Katsina, Jigawa, Sokoto, Kebbi and Zamfara States which provides 60 to 65% of the cotton in Nigeria. The Eastern cotton zone comprises of Adamawa, Taraba, Yobe, Maiduguri, Bauchi and Gombe States, and produces 30 to 35% of cotton in Nigeria. The annual business revenue stimulated by cotton in Nigerian economy has an excess of one hundred billion naira and contributed over one million jobs. This makes cotton one of the major value-added crops in Nigeria.

COTTON CROP

Land Preparation and Soil Requirement

- Cotton is adapted to a wide range of soil types (sandy loam to clay loam) but prefers well-drained fertile soil with pH between 6.0 – 6.5.
- The land selected should be void of debris or stubbles from previous crops.
- The land should be ploughed and harrowed into a fine tilth.
- Ridging is done at the spacing of 75 cm.
- Where the land is sloppy, ridge across the slope to prevent erosion.
- Pre-planting herbicide (Glyphosate) at the rate of 2L/Ha should be sprayed two weeks to planting.



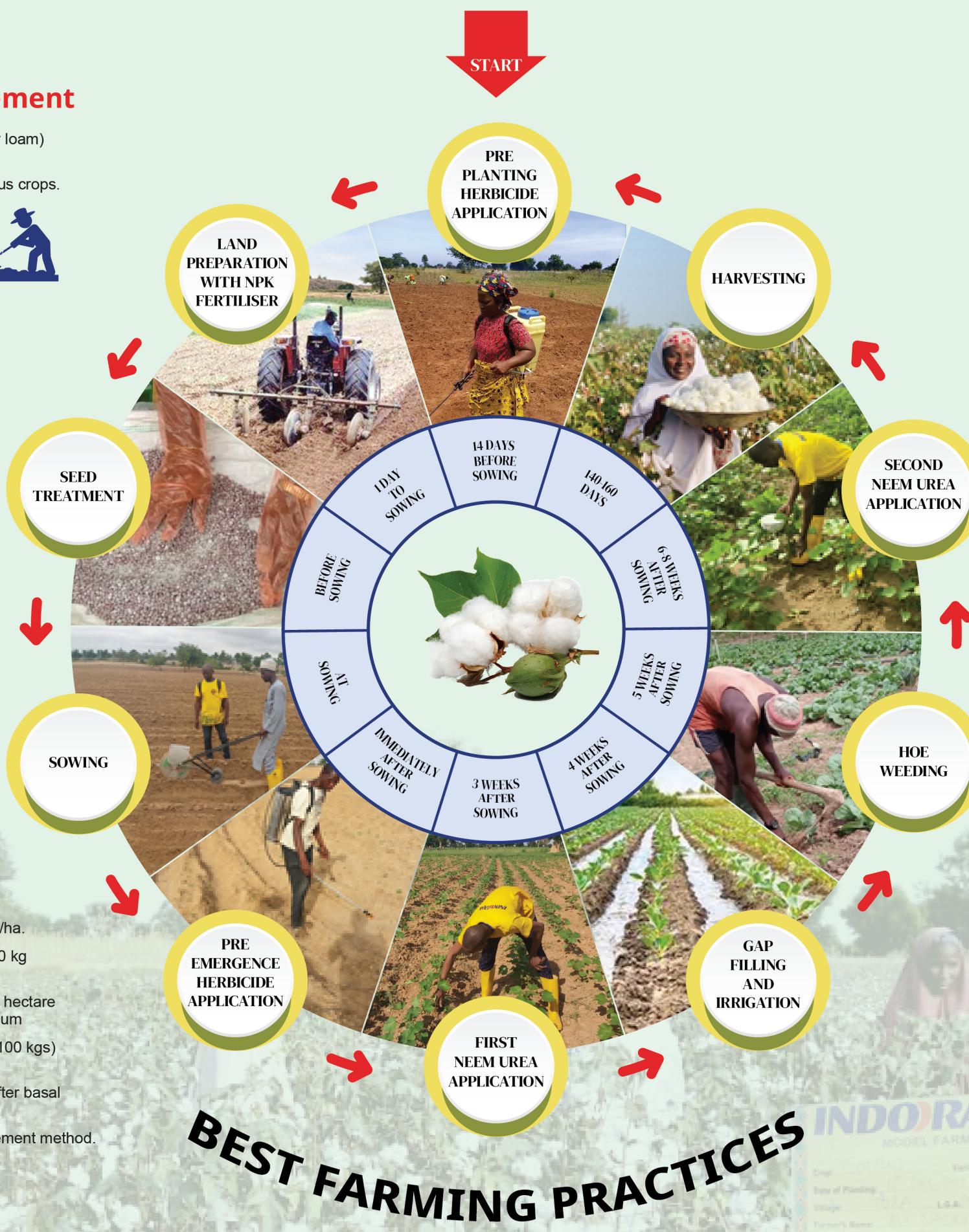
Seed Rate and Time of Sowing

- Obtain seed from reputable licensed seed companies or research institutes.
- The seed rate of 15 kg/ha is recommended.
- Seed should be treated using a seed dressing chemical (such as 20 % Metalayxl + 20 % Imidacloprid at the rate of 10 g per 4 kg of the seeds).
- Seeds are sown at the rate of 5 seeds per hole at a depth of about 3-5cm then thinned to 2 plants per hole at 3 weeks after planting.
- Plants should be 45 cm apart on the ridge.
- Timely sowing reduces the incidence of insects and diseases.
- Late sowing as practiced by most cotton farmers may result to reduced cotton yield by about 46%.
- All missing stands should be reseeded 1 week after sowing.



Fertilizer Management with 4R Nutrient Stewardship

- nutrient stewardship**
- Where available and for good mineralization of organic manure, it should be incorporated into the soil at least 2 weeks before sowing at the rate of 8-10 tons/ha.
 - Apply fertilizer at the rate of 100 kg Nitrogen: 40 kg Phosphorus: 40 kg Potassium /Ha.
 - 8 number of 50 kg bags (400kg) of Indorama NPK is required for 1 hectare of cotton which will supply the full dose of Phosphorus and Potassium
 - The balance of Nitrogen is supplied using 2 numbers 50 kg bags (100 kgs) Indorama neem coated urea in split applications.
 - The first split dose of Neem coated Urea is applied at 3-4 weeks after basal application and the remaining half applied at 6-8 weeks.
 - Apply the urea fertilizer 10 cm away from the crop using side placement method.



How to Reduce Nitrogen Loss

- Apply Nitrogen fertilizer early in the morning or evening.
- Avoid Nitrogen fertilizer application when it is about to rain or when the weather is cloudy.
- Do not apply Nitrogen fertilizer at once but in split doses to minimize losses.
- Avoid broadcast method of fertilizer application.
- Apply nitrogen fertilizer after weeding to prevent competition from weeds.
- Apply only the recommended dose of Nitrogen fertilizer.
- Proper drainage will reduce Nitrogen loss due to runoff.



Weed Control

- Hoe weeding should be carefully carried out at 4 and 8 weeks after sowing.
- For pre-emergence herbicide; Apply 2 L/ha Diuron 80% WP 3 days after sowing.
- Post-emergence herbicide, apply Fulslate forte at rate of 1.5 L/ha at 5 weeks after planting depending on the intensity of weeds.
- Use of tolerant/resistant varieties.



Harvesting and Crop Storage

- Harvesting is done when there are reasonable number of split bolls (50%).
- Seed cotton is to be picked 2 or more times starting with the clean ones first during the cooler part of the day.
- Picking should be done at regular intervals to prevent rain damage and staining which can also lower seed cotton grade.
- Timely picking is advised to avoid falling of seed cotton on the ground which leads to deterioration of quality.
- Picked seed-cotton should be kept well to avoid contamination with dirt and other foreign matters such as dry leaf trash.
- Sort out the inferior from good quality seed cotton.
- Clean storage areas thoroughly before picking and storing produce.
- Picked seed-cotton should be stored in a well-ventilated, cool, shady and clean store or sterilized jute bags.

