S. No	Diseases	Damage	Control	Reference
1	Bacterial Blight	• Water-soaked spots appear on leaves • Spots become brown in colour • Leaves dry off	• Crop rotation to break disease cycle • Remove and burn infected crop • Spray with Streptomycin sulphate	
2	Powdery Mildew	• Is a fungus infection? • Flowers and capsules are infected • Shedding of capsules and flowers • Reduction in yield	• Practice good field sanitation • Destroy infected crop • Spray farm with wettable sulphur at 2.5kg/ha	
3	Phyllody	• Leaves and flowers are infected • Flowers become sterile • Abnormal branching occurs in plants • Crop become stunted	• Remove infected crops and burn them • Avoid growing sesame near cotton and ground nuts • Spray field with Monocrotophos	
4	Root rot	• This is a fungal disease • Leaves become yellow • Drooping occurs in plants • Defoliation • Sudden death occurs	• Treat seeds with thiram at 2kg/ha • Apply farmyard manure on the farm • Apply neem cake on the farm at 150kg/ha	

S. No	Pest	Damage	Control	Reference
1	Gall fly (*Asphondylia sesami*)	• They eat the floral buds • Buds fail to develop into flowers • There is flower abortion	• Maintain clean field condition • Uproot infected crops • Spray field with pesticide	
2	Grasshopper (*Zonocerus elegans*)	• Feed on the leaves • Leaves are destroyed • Photosynthesis is affected • There is a reduction in yield	• Spray neem seed kernels extract (NSKE) 5% or dimethoate 30EC@ 1.5 ml/l	
3	Cutworm (*Agrotis ipsilon*)	• Feed on both leaves and capsules • Destruction of capsules and leaves • Yield reduction occurs	• Handpicking and destruction of worms • Application of pesticide	

S. No	Nutrient	Deficiency Symptoms	Reference	Healthy Sesame	Reference
1	Nitrogen	• Pale yellow green color of leaves • Dropping of leaves • Stunted growth • At severe cases, death of crop occurs		• Green Foliage • Helps in photosynthesis • Increases vigor in the plant	
2	Phosphorus	• Small dark green leaves • Stunted growth • Leaves become tinny and pointed		• Encourage healthy root development • Provide strong stems and leaves • Promote good capsule development	
3	Potassium	• Leaf chlorosis • There is curling of leaf tip • Reduced disease resistance • Reduced plant crop and capsules		• More capsule production • Increase disease resistance • Increases the yield	

INDORAMA GRANULAR UREA

- Uniform granule size.
- Low moisture, anticaking properties, low biuret content & Free flowing.
- Higher crushing strength, which prevents caking.
- Standards Organization of Nigeria (SON) Certified.

INDORAMA NEEM COATED UREA

- Enhances the nitrogen use efficiency and crop remain green for longer time.
- It increases crop productivity
- Protect crop from pest and diseases.
- Prevent Urea application losses by Volatilization and Leaching.

INDORAMA NPK

- Indorama NPK maintains quality and have a perfect balance of nitrogen, phosphorus, and potassium.
- Nitrogen is needed for vegetative growth.
- Phosphorus is needed to produce strong roots and shoots.
- Potassium is needed to produce quality fruit and flowers, also increases resistance to diseases.
- Calcium from limestone granules helps in decreasing soil acidity.

INDORAMA For more information, fertsales@ng.indorama.com +2349139364345

INDORAMA
Essential materials. Better lives.

Sesame

Nigeria's Tiny Seeds, Unleashing Global Flavors

Sesame (Sesamum indicum) is an oilseed crop grown for its seeds, which are rich in oil and protein. The cultivation of sesame in Nigeria involves several aspects, including cultivation practices, varieties, and economic importance. The major producing states in Nigeria are Nasarawa, Taraba, Jigawa, Sokoto and Benue. Others include Yobe, Kano, Katsina, Kogi, Gombe and Plateau. Sesame is adapted to tropical and temperate conditions. It grows well with minimal irrigation or rainfall and can produce yields in the range of 1.0 to 1.5 mts per hectare.

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FEDERAL MINISTRY OF AGRICULTURE AND FOOD SECURITY, FEDERAL REPUBLIC OF NIGERIA

SESAME CROP

Land Preparation and Soil Requirement

- Harrow the soil to a fine tilth for effective performance of the crop.
- Pre-planting herbicide, Glyphosate at the rate of 4 L/ha should be sprayed two weeks to planting.
- Sesame is adaptable to many types of soil but it does best on well-drained sandy loam soil.
- The crop is usually produced on upland plains while depressions and valleys are generally unsuitable.
- Once established, it can tolerate short periods of drought.
- Good drainage is crucial, as sesame is very susceptible to short periods of waterlogging.
- Sesame is intolerant of very acidic or saline soils.
- The optimum pH for growth ranges from 5.4 to 6.7.

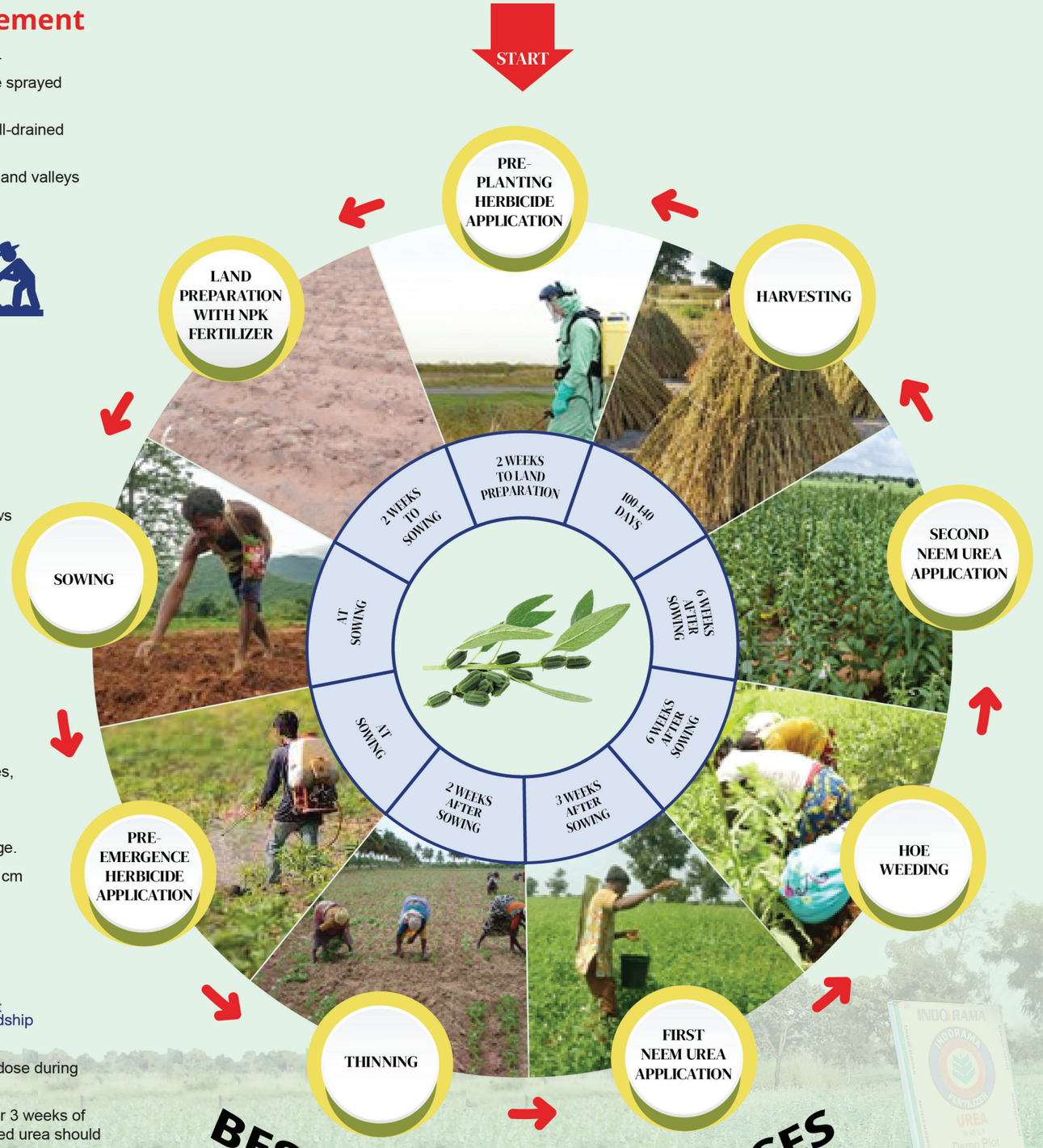
Seed Rate and Time of Sowing

- Recommended seed rate is 8 kg/ha for broadcast and 4 kg/ha for drilling methods.
- The recommended practice for a sole crop of sesame is to plant on a flat bed with 60 cm between rows and 10 cm within rows.
- Planting on ridges with 75 cm between rows and 15 cm within rows can be adopted when sesame is intercropped with another crop.
- Due to the small size of sesame seeds, sowing depth should not be more than 2.5 cm.
- Planting sesame is the most critical phase of its management.
- Successful establishment of sesame requires careful seedbed preparation and close attention to soil moisture.
- The crop can be grown twice as an early or late crop, or once a year depending on the ecological zone.
- In the Sudan savanna zones, broadcasting should be done within ending of June and early July while in the Guinea Savannah zones, it is done within late July to early August.
- Soil moisture must be sufficient to guarantee good germination.
- The critical stage of water requirement is during the flowering stage.
- Thinning should be done when the plants attain a height of 10-15 cm to remove the weak and diseased plants.

Fertilizer Management with 4R Nutrient Stewardship

nutrient stewardship

- Sesame requires: 60-70 kg Nitrogen, 20-30 kg Phosphrous, 20-30 kg Potassium /ha.
- Apply 2 bags of 50 Kg (100 kg) Indorama NPK fertilizer as basal dose during land preparation.
- Apply 2 bags of 50 kg (100 kg) Indorama Neem Coated Urea after 3 weeks of sowing and again 2 bags of 50 kg (100 kg) Indorama Neem Coated urea should be applied at 6weeks after sowing.
- Organic Manure can be incorporated at 5 tons/ha depending on the quality.



BEST FARMING PRACTICES

How to Reduce Fertilizer Loss

- Apply only the recommended dose of urea fertilizer.
- Split application of urea fertilizer.
- Use dibbling as method of urea fertilizer application.
- Avoid broadcast method of fertilizer application to avoid wastage.
- Apply urea fertilizer late in the evening or early in the morning.
- Apply urea fertilizer after weeding to avoid competition from indigenous weeds.
- Proper water management practices (avoid excessive irrigation).
- Proper drainage will reduce urea fertilizer loss due to runoff.

Weed Control

- Sesame grows slowly during the early stages and is not strongly competitive with weeds.
- Poor weed control early in the life of the crop can result in greatly reduced crop yields.
- Weed control is achieved via thorough land preparation, appropriate use of fertilizer and keeping the surroundings of farm weed-free.
- Hoe weeding is done at least twice at 3 and 6 weeks after sowing.
- Use of pre-emergence herbicide (Pendimenthalin3-4 liters/ha immediately after sowing). and post-emergence herbicide (Glyphosate 3-4 liters/ha before land preparation) is recommended.

Pest and Diseases Management

- Pest and diseases are generally less in sesame fields.
- Caterpillar and gall fly are the common pests of sesame.
- Employ seed treatment to control seed-borne diseases.
- Ensure field sanitation by removing weeds that could serve as alternate hosts to diseases.
- Use improved varieties that are tolerant to pests and diseases.
- Practice crop rotation with non-host crops.
- Use bio-pesticides such as neem-extracts to control insect pests.

Harvesting

- Harvest sesame when the leaves and stem change from green to yellow, and the leaves also start to drop from plants.
- If harvesting is delayed, shattering of the capsules will result in seed loss.
- Harvested plants should be stacked in the field for a few days to dry before stripping the pods.
- Drying should continue under the sun for 6-7 days until the moisture content is reduced.
- Sesame seed is best stored unshelled and in dry conditions.

Indorama Fertilizer: Improving Agriculture, Improving Lives