

S. No	Diseases	Damage	Control	Reference
1	Black Rot	Tissues becomes slimy and foul-smelling	- Using tolerant variety - Seed treatment with Agrimycin	
2	Leaf Spot Blight	Appearance of multiple lesion	Seed should be treated with hot water before sowing on nursery bed	
3	Black Leg	Stunting, wilting and poor plant growth	Seed should be treated with Mancozeb	

S. No	Pest	Damage	Control	Reference
1	Cabbage worms	- Caterpillars feed on the underside of leaves leaving ragged holes - Plants starve and die	Spray with Bacillus thuringiensis (Bt) commercially available as Dipel or Thuricide	
2	Cut worms	Plants chewed off just above ground level	Put cardboard collar around new transplants to extend 1" to 2" above and below soil level	
3	Root Maggots	- Leaves wilt - Growth is stunted - Legless larvae feed on the host plant riddling the roots with brown tunnels	- Use Diazinon before planting as a soil treatment - Rotate from year to year	
4	Aphids	Green, red-black or white insects that cause curled yellow leaves and exude a honeydew substance	- Insecticidal soaps or a strong stream of water or most labelled insecticides like Diazinon or Sevin - A layer of aluminium foil under plants reflects light to the underside of leaves making them an undesirable habitat for aphids	
5	Diamondback moth caterpillar	- This caterpillar causes small holes in the leaves - weaves cocoons about 1/3 inch long on the leaves	The best form of control is to apply an effective insecticide	
6	Flea beetle	- Tiny holes created in leaves by the adult insect - larvae feed in or on roots but root damage is generally minimal	- Dust with Rotenone - Keep debris removed - Rotate the location of planting from year to year	

S. No	Nutrient	Deficiency Symptoms	Reference	Healthy Cabbage	Reference
1	Nitrogen	- Uniform yellow-green coloration of the older leaves - Some older leaves show reddish coloration - Reduction in leaf size		- Green coloration of the leaves - Improves plant growth - Improves plant development	
2	Phosphorus	- Appearance of purple colour on dark green-leaves - Marginal and interveinal scorch on older leaves - Low shoot/root ratio		- Help in the growth of plant roots and shoot system - Improves plant growth	
3	Potassium	- Leaf margin curls up - Older leaves turn brown and brittle - Leaves becomes necrotic		- Helps in the over all metabolism of the plant - Makes the plant disease resistant - Improves the quality of the produce and 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.



Cabbage

Nigeria's Crisp and Leafy Delight, Harvested for Freshness

Cabbage is a leafy vegetable that is popular throughout the world because of its adaptability to a wide range of climatic conditions, ease of production and storage. Nigeria produced around 2.4 million tons of cabbage in 2020, making it the largest producer of cabbage in Africa. Plateau state in Nigeria is having the highest production due to its cool weather. Cabbage farming is also gaining popularity in other African countries such as Kenya, Tanzania, and Ethiopia. Cabbage is mostly used in preparing salad, vegetable soups or eaten raw. It is rich in nutrients such as calcium which is good for human health. The leaves are cut and used as compost or feed for livestock.



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OF NIGERIA



CABBAGE CROP

Land Preparation and Soil Requirement

- The optimum temperature for tomato germination is between 13 and 24°C, although the range for growth is between 24 and 30°C.
- It can be grown successfully on any well-drained fertile soil, preferably sandy loam.
- Cabbage grows best in cool moist climate.
- It is grown mainly during the cold dry season in Nigeria.
- The optimum pH range for cabbage is 5.5 to 6.8.
- Pre-planting herbicide (Glyphosate) at the rate of 2 L/ha should be sprayed 2 weeks before land preparation.
- Organic manure or FYM (10 - 15t/ha) should be broadcasted on the field 2 weeks before land preparation.
- The land should be harrowed along with the broadcasted farm yard manure thoroughly into a fine tilth. This will aid infiltration, aeration and water holding capacity of the soil.
- The land should be ridged or made into raised beds.



Nursery management and transplanting

- 500 g of seeds is required to plant a hectare.
- Seeds can be sown on seedbeds or in seed trays.
- Prepare raised beds 20-30 cm high, 2 x 1 m dimension or any convenient length.
- Incorporate organic manure into the soil.
- Drill seeds at 5-10 cm apart, 1.5 cm deep.
- Mulch seedbed to protect seeds from sun until emergence.
- Seedbeds should be monitored every day.
- The seedling should be transplanted when they are about 10 to 15 cm in height (4 weeks after sowing).
- Depending on the variety, transplanting should be 45 x 45 or 60 x 60 cm apart.



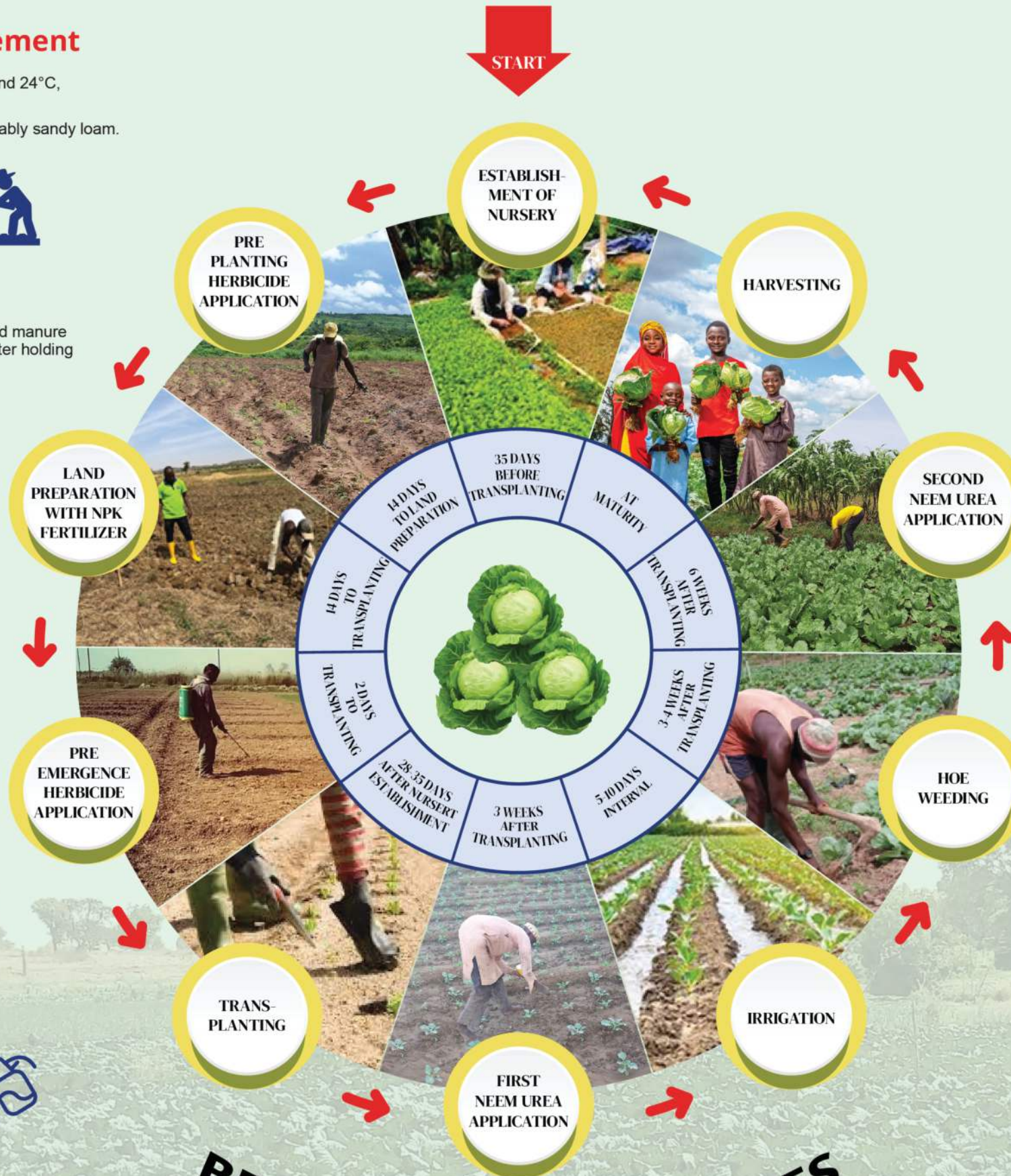
Water management

- Irrigation is essential at the time of transplanting.
- Irrigation should be done within 3 – 7 days interval. The interval depends on crop stage and prevailing atmospheric condition.



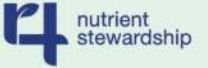
Weed Control

- Cabbage is sensitive to weed competition at early stage of growth.
- The field should therefore be kept weed free.
- Manual hoe weeding can be done at 3 and 5 weeks after transplanting.
- Use Pendimethalin, 2-3 L/Ha or oxidiazone as pre-emergence herbicide at the rate of 1.5 kg a.i./ha.



BEST FARMING PRACTICES

Fertilizer Management with 4R Nutrient Stewardship



- Cabbage requires 150kg Nitrogen, 60 kg Phosphorus and 60 Potassium. That is 8 numbers of 50 kg bags (400 kgs) of Indorama NPK and 3 bags (150 kg) of Indorama neem coated urea will be required for 1 hectare.
- Indorama NPK to be incorporated during the land preparation.
- Indorama Neem Coated Urea is applied in split doses. First split is done 3 weeks after transplanting, and the second split applied at 3 weeks after the first urea application.

How to Reduce Fertilizer Loss

- Apply only the recommended dose of urea fertilizer.
- Split application of Neem coated 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.



Harvesting and Yield

- Harvesting is done when the heads are fully mature and firm and can stay longer in storage.
- Harvest is done when the heads are closed and still in good shape.
- Cabbage with loose or soft head is yet to mature.
- Use knife to cut the cut the head from the base of the plant leaving about 3 leaves to protect the head from damage.
- The yield of cabbage depends on the variety, growing season, and management practices.
- Cabbage can yield up to 50 tons per ha with best farming practices.

