

S. No	Diseases	Damage	Control	Reference
1	Anthrachnose	- Fruit lesion are the most common symptoms - Circular or irregular grey spots appear on the leaves - Concentric rings appear on upper surfaces of the leaves - Falling of leaves	- Rotate crops with other non-<i>Solanaceous</i> plants - Use of preventive fungicides - Reduce watering with the aim of reducing relative humidity	
2	Bacterial Spot	- Yellow Green leisons on young leaves which usually appear deformed and twisted - Older leaves become dark and water soaked - Small brown Circular spots may also occur o stems and fruits	- Plant resistant varieties sanitize all equipment. Regularly - Rotate crops away from tomato for several years - Use of copper based fungicide	
3	Cercospora leaf spot	- Small brown flecks develop with a reddish border, expanding to a circular spot with an ash grey Centre - When the disease is severe, defoliation and reduction in fruit size occur	- A calendar-based protectant fungicide spray program - Mulch and furrow or use drip irrigation to reduce spread of the pathogen from splashing water	

S. No	Pest	Damage	Control	Reference
1	Broad Mite (<i>Polyphagotarsonemus latus</i>)	- Mites damage the outer cells of the leaf as they feed on the plant sap - Plants show a distinctive stem distortion with thin twisted leaves - Dieback is a common result from mites infesting chillies	- Avoid planting new crops next to those already infested with Mites, otherwise the mites will spread to the new crop - Treat the infested plants with lambda-cyhalothrin @ 1L/Ha, Azadirachtin (neem)	
2	Aphids (Aphis spp.)	- Aphids remove sap from the plant with their piercing-sucking mouthparts - Severe infestations can cause leaves to curl and may stunt plants - Aphids are also vectors of certain plant viruses	Application of Dinotefuran, cyhalothrin @ 1L/Ha	
3	White fly (<i>Trialeurodes vaporariorum</i>)	- Whiteflies damage peppers by sucking enormous quantities of sap and covering plants with sticky honeydew - Feeding by high populations may result in stunting, poor growth, defoliation, and reduced yields	- Destroy crops quickly and thoroughly after harvest, killing whiteflies and preventing re-growth - Use of cyhalothrin, @ 1L/Ha or azadirachtin (Neem extract) @ 2L/Ha. Imidacloprid @	

S. No	Nutrient	Deficiency Symptoms	Reference	Healthy Pepper	Reference
1	Nitrogen	- Uniform yellow-green coloration of the older leaves - Some older leaves show reddish coloration - Reduction in leaf size		- Green & Healthy 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		- Helps in the growth of the plant root and stem system - Helps to develop a strong and healthy plant	
3	Potassium	- Leaf margin curls up - Older leaves turn brown and brittle - Leaves becomes necrotic		- Helps the plant to be disease resistant - Improved the yield of the crop - Improves the quality and shelf life of the crop	

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
Essential materials. Better lives.

Pepper

Nigeria's Fiery Essence, Igniting Taste Buds with Flavorful Fireworks

Pepper originated from Central and South America, it is now distributed and cultivated widely across the globe. Pepper is an important agricultural crop not only because of its economic importance but also due to the nutritional and medicinal value of its fruits as well as being an excellent source of natural colors and antioxidant compounds. It is the world's second most important vegetable ranking after tomatoes, and it is the most produced type of spice flavoring and coloring for food. Nigeria is the known to be one of the major producers in the world accounting for about 50% of the African production and the major area of production is Northern Nigeria.



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AND FOOD SECURITY, FEDERAL REPUBLIC
OF NIGERIA



PEPPER CROP

START

Land Preparation and Soil Requirement

- Pepper is a day length neutral plant. The optimum mean daily temperature for growth is 21 to 26°C.
- The land selected should be void of debris or stubbles from previous crops.
- Chili Pepper is adapted to loam or Sandy-Loam soil.
- Select a well-drained fertile soil, free from nematodes and with pH range of 6-7.
- Select a flat and well leveled site to avoid leaching of nutrients.
- Pre-planting herbicide (Glyphosate or Glufosinate-Ammonium) at the rate of 2-3L /ha should be sprayed two weeks before land preparation.
- The field should be ploughed and harrowed to ensure fine tilth.
- Ridging is done at the spacing of 75 cm.
- Where the land is slopy, ridge across the slope to prevent erosion.



Nursery management and transplanting

- Obtain seed from reputable licensed seed companies or research institutes.
- Seeds should be sown at rate of 400-800 g/ha for OPV or 80-100 g/ha for hybrid in seedling trays or round nursery (raised or sunken nursery beds).
- Mulch with dry grasses or perforated synthetic material and irrigate lightly using watering can immediately after sowing.
- Seedlings should be transplanted when they are about 10-15 cm in height (4 - 5 weeks old).
- One seedling per hole should be transplanted at a spacing of 75 x 50 cm on ridge and 50 x 50 cm in bed.



Fertilizer Management with 4R Nutrient Stewardship

- For good mineralization, organic manure should be incorporated into the soil at least 2 weeks before transplanting at the rate of 8-10 tons/ha.
- Inorganic fertilizer at the rate of 180 kg Nitrogen: 75 kg Phosphorus: 150 kg Potassium /ha.
- Full dose of Phosphate and Potassium should be applied during land preparation with 10 numbers of 50 kg bags (500 Kgs) of Indorama NPK fertiliser
- The Nitrogen is to applied in split doses through Indorama Neem Coated Urea ie 2 number 50 kg bags (100 Kg) Neem coated urea at 3 weeks and again at 6 weeks.
- Timely application of both organic and inorganic fertilizer is essential in Pepper crop growth and development.



How to Reduce Fertilizer Loss

- Apply urea fertilizer early in the morning or evening.
- Apply Neem coated Urea for slow release of Nitrogen.
- Do not apply urea 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 urea fertilizer.
- Proper drainage will reduce urea loss due to run off.



Weed Control

- Post-emergence herbicide (Metalachlor +Metribuzin) can be applied at the rate of 1.0 kg a.i/ha at 3 weeks after transplanting.
- Alternatively, hoe weeding should be carried out at 2 and 4 weeks after transplanting.
- The field should therefore be kept weed free.



Harvesting and Crop Storage

- The fruits are ready for first picking at 9-12 weeks after transplanting and spread over a period of 5 weeks and beyond (1-2 pickings per week).
- They are picked manually by hand when they turn from green to reddish color.
- Pepper that is grown for processing should be harvested when fully ripe to ensure the desired quality is achieved.
- Store in cool, dry well-ventilated.
- Peppers should dried in well ventilated hygienic environment



BEST FARMING PRACTICES