

Guidelines on Management Strategies for Natural Rubber Plantations under Anticipated El-Nino Conditions

The India Meteorological Department (IMD) has confirmed the onset of El-Nino conditions in the equatorial Pacific Ocean and warned that the phenomenon may intensify during the coming months. El Nino is often associated with delayed monsoon onset, below-normal rainfall, higher temperatures, and prolonged dry spells over many parts of India. These climatic anomalies can adversely affect natural rubber cultivation, particularly in major rubber growing regions where production is highly dependent on adequate rainfall and favourable temperatures. The reduced rainfall and higher temperatures can lead to soil moisture stress, increased incidence of pests and diseases, and a decline in latex yield and overall productivity of the plantations. In view of the anticipated climatic conditions, it is essential for the rubber growers to adopt appropriate management practices on time to minimize crop losses and sustain rubber production.

The following guidelines provide preventive and adaptive measures to mitigate the adverse effects of El- Nino on natural rubber cultivation.

Agronomic management

- Select drought tolerant rubber clones such as RRII 208 (for the North- eastern states, Odisha and Maharashtra), RRII 430 and RRII 417 for planting in drought-prone areas to improve resilience against prolonged dry spells.
- Avoid delays in planting and complete planting as early as possible under favourable weather conditions with adequate rainfall at the onset of the southwest monsoon (June– July).
- Establish cover crops immediately after land clearing/planting rubber and maintain adequate cover to conserve soil moisture and reduce drought stress.
- Construct contour terraces (1.25–1.5 m wide with an inward slope of 20–30 cm) in hilly areas to conserve soil and water and reduce surface runoff.
- Construct rainwater infiltration structures (silt pits) of approximately 120 cm length, 45 cm width and 75 cm depth along contour lines in a staggered pattern between planting rows. Depending on land slope, provide 150–250 pits per hectare. Avoid opening pits in shallow soils and on slopes exceeding 20%.

- Construct stone-pitched contour retaining walls (edakkayyalas), wherever feasible, to reduce runoff and improve soil moisture conservation.
- Replace casualties and weak plants with healthy, high-quality planting material during the initial years to maintain a full plant stand.
- Mulch the soil around the plants with dry leaves, cover crop cuttings, grass cuttings, or paddy straw after the cessation of rains to conserve soil moisture and moderate soil temperature.
- Provide artificial shade to young plants using plaited coconut leaves or gunny bags before the onset of summer to reduce heat stress.
- Apply a 10% china clay solution to young rubber plants for contact shading before the summer season to reduce solar radiation and transpiration losses.
- Provide life-saving irrigation during prolonged dry spells or summer months to reduce plant mortality.
- Whitewash the brown portion of the main stem from the second year onwards using lime or china clay until the canopy develops partial shade to prevent sun scorch.
- Provide a 5–7 m wide fire break (fire belt) around the plantation to prevent the spread of fire.
- Restrict weeding according to the age of the plantation. In third and fourth year plantations, restrict weeding to plant basins or planting strips (contour terraces), with selective removal of noxious and bushy weeds from the interspaces. In plantations from the fifth year onwards, restrict weeding operations to the planting strips (platforms) only.
- Adopt or continue intercropping, wherever suitable, ensuring that it does not adversely affect the growth of rubber plants and promotes soil moisture conservation and efficient land use.
- Practice low-frequency tapping to reduce physiological stress on rubber.

Disease Management

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- Corynespora Leaf Fall: At the first sign of the disease, spray Bavistin @ 1 g/L.
- Powdery Mildew (*Oidium heveae*): On appearance of the disease, dust sulphur powder @ 11–15 kg/ha at 10–15-day intervals. For immature plants, spray Bavistin @ 1 g/L.

- Abnormal Leaf Fall (*Phytophthora meadii*): Before the onset of monsoon spray Copper oxychloride (COC) @ 4 kg in 40 L of agricultural spray oil using a drone or COC @ 8 kg in 40 L of agricultural spray oil using micron sprayers.
- *Colletotrichum* Circular Leaf Disease: Undertake prophylactic spraying of Copper oxychloride (COC) @ 4 kg in 40 L of agricultural spray oil using a drone or COC @ 8 kg in 40 L of agricultural spray oil using micron sprayers, since this disease is usually observed from April to October. For small plants, application of Mancozeb @ 2.66 g/L is effective.
- Brown Root Disease: If the symptoms are observed, remove the infected stumps, improve drainage and drench the root zone of each affected plant and the neighbouring plants with Tilt @ 5 ml/L (apply 5 L of the solution per tree).

The timely adoption of the recommended management practices will help to minimize the adverse impacts of anticipated El-Nino conditions and sustain the productivity and resilience of natural rubber plantations.