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"EL-NINO": ITS EFFECTS ON RUBBER PLANTATIONS

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"El - Nino" is defined as an abnormal warming of the sea surface in the tropical Pacific Ocean off the coast of South America where the temperature is said to rise by about 5-6°C. This causes the heating up of the air by convection currents. Its effects on different countries vary from heavy rains and flooding to severe prolonged drought periods. The exact reasons behind changes in weather patterns are still not known. Meteorologists feel that this is one of nature's ploys to conceal its intricate workings from man!. In Sri Lanka, the El - Nino effect is always said to give rise to severe drought conditions.

Although rubber plantations are widely regarded as a good substitute for forest plantations, any prolonged dry weather conditions would result in some adverse impact on rubber plantations. This could be in the form of a reduction in growth and yield and decline in stand per unit area. However, the degree of the impact on rubber plantations depends mainly on three factors.

(a) Duration of the drought period
(b) Age of the plantation
(c) Management practices

Duration of the drought period

The effect of the drought on rubber plantations will depend on the duration of the drought period. In rubber growing areas in Sri Lanka dry spells of 1-2 months had been common in some years and the rubber plantations generally withstand these dry seasons without any significant adverse effects on growth or yield. However, prolonged drought periods also occur in some regions with distinct dry spells and these lead to soil moisture stress of different magnitude, adversely affecting the growth which result in longer immature period and sometimes death of very young rubber plants.

Age of the plantation

The impact of drought on the performance of rubber plantations will also depend on the maturity of the clearing. For instance, fully grown mature rubber plantations are somewhat identical to a natural forest system. Under such conditions

the impact of El - Nino is considered to be minimal compared to other agricultural crops. However, there could be noticeable effect on rubber yield as the drought is going to be really severe. The impact of drought on young rubber plantations would be very much severe compared to mature trees. The young plants may initially show signs of retarded growth and could end up with high mortality rates. This would result in low stand per land area.

Maintaining a healthy rubber stand throughout the lifespan is considered as a must to maximize returns on investment of a long-term nature. Any loss of plants at the early stage of the plantation would result in loss of valuable revenue throughout the lifespan as dead young plants cannot be replaced after about 2 years from planting.

Management practices

The impact of drought on young rubber plants may not be much severe if correct agronomic practices have already been adopted as recommended by the RRI.

Rubber is usually grown in association with a leguminous ground cover, which persists during the immature phase and perishes when the canopy of rubber trees closes. The moisture retention is higher under a good cover compared to other situations mainly due to increase water holding capacity by the mulch of decomposing organic matter and humus formed by the cover crop. In this respect mulching has the advantage over cover crops because in addition to conserving the available moisture there is no competition for moisture by mulch.

Moreover, adequate fertility is important in getting most out of the moisture that is present in the soil. The well fertilized rubber plantation will therefore withstand the drought compared to inadequate fertilized conditions. Lateral drains with soil pits known to conserve soil moisture in rubber plantations and correct management practices like these will definitely minimize the ill effects and provide immunity.

Some precautionary measures that could be adopted to mitigate the adverse effect of drought

There are no existing cost effective remedies for a severe drought, but the following precautionary measures could mitigate its adverse effect on rubber plantations.

* Avoid clean weeding in interrow areas, but circle weeding can be done with mulching around the trees with weed removals.

* Slash existing vegetation in the inter-row areas including cover crops and leave the slashed material on the surface. This serves as a mulch and reduces the evaporation from the soil and transpiration from the leaves of the vegetation.

* Mulch paddy straw around the base of the rubber plants at the rate of 5 MT per hectare when the soil is moist. If sufficient straw is not available any other suitable materials like lopping of tree legumes, Mana, Guatemala etc. should be used. This will conserve the available moisture by preventing evaporation.
  Paddy straw is particularly of importance as it is rich in potassium. It is known that adequate potassium tends to increase the water use efficiency of rubber plants and therefore is likely to further mitigate the adverse effects.

* As defoliation starts measures should be taken to leave the fallen leaves on the ground because this litter also will act as a mulching material on soil to conserve the existing moisture.

* Irrigate very young field plants at least once a week if possible.

* Avoid recovery tapping as there is no necessity to do so with no rain interference.

* The above precautionary measures should be followed without fail for plantations on sandy soils (mainly *Homagama* series soils) as the impact of drought will be much severe on for these soils.

Nevertheless, there are no universally accepted successful systems for averting drought but timely attention will minimize the adverse effects and at times even provide immunity.