

## PERENNIAL CROP PRODUCTION CYCLE MODELS : INFLUENCE OF HIGH YIELDING VARIETIES AND PRICES

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Narayana, D. (1994). Perennial crop production cycle models : Influence of high yielding varieties and prices. *Indian Journal of Natural Rubber Research*, 7 (1) : 25-37.

The adjustments in supply response to demand changes in the case of perennial crops are always with a time-lag because of gestation lags and peculiar yield profiles. This leads to characteristic movement of price which in turn makes for phases of area expansion. In order to test the hypothesis a basic model of supply response is set out which is further extended by incorporating introduction of HYV, replanting and price. The empirical analysis of the model using data on natural rubber for the period 1955-1989 has brought out the validity of the model. The production of natural rubber is characterised by cycles owing to the phases in the expansion of area in response to the cyclical behaviour of prices one leading to the other and feeding on it.

Key words : Perennial crops, Natural rubber, High yielding varieties, Price.

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### INTRODUCTION

Commodity problem has attracted the attention of economics worldwide and the literature on it has grown voluminous. However, according to Avromovic (1987) no comprehensive investigation has yet been undertaken of the relative weight of different causes of the current price decline. The natural conditions of production of different commodities differ so widely, between annual crops, tree crops etc that no plan can claim to be applicable to all commodities (Keynes, 1974). The natural conditions of production of perennial crops are characterised by long gestation lags and specific yield profiles. Translation of any response in terms of area changes or introduction of a variety with significantly higher yield into production changes requires a time lag no shorter than the gestation lag. Consequently, adjustments in supply in response to demand changes are always

with a time lag and a characteristic of the demand-supply situation is one of long periods of demand exceeding supply followed by equally long or still longer periods of supply exceeding demand. It is such a situation which gives rise to the characteristic movement of prices which in turn makes for phases of area expansion typical of perennial crops. What is of analytical interest and relevance for our purpose is replanting at the end of the life of tree. One immediate implication of replanting is that the area replanted remain unproductive over the gestation lag. In case replanting is marked by phases consequent to the phases of area expansion this might superimpose certain patterns on the demand-supply disequilibrium. The disequilibrium might get accentuated if phases of rapid area expansion are also phases of rapid replanting; if not the disequilibrium may be moderated. The price movement of produce