1. **Project Purpose:**
Plantation tree crops, such as rubber, play an important role in income generation for small-scale farmers in the humid and sub-humid tropics. The efficiency of land-use is low, however, during the establishment phase of the plantation with rubber occupying only about one-fifth of the planted area under normal spacing. Intercropping with shorter duration annual and perennial crops offers one means of improving both land-use and income generation during the unproductive immature stage of rubber (ca. 6 years). This study followed on from an earlier project (R5058) in which the effects of planting density of a companion banana crop in intercrop resources use and yield were examined in an on-station experiment. The initial findings were significant in that a three-fold increase in planting density, from the present recommended 500 to 1500 plant ha\(^{-1}\), was found to have no detrimental effect on growth and yield of either the banana or rubber crop. This resulted in an estimated 350% increase in profit from the banana crop during the establishment phase of rubber. The objectives of this one-year programme were three-fold; (i) to evaluate the potential for smallholders to take up intercropping, particularly high density intercropping and the extent to which the impact of this uptake would be poverty alleviating, (ii) to assess the likely impact of increased banana production on the marketing systems of Sri Lanka, (iii) to evaluate the longer-term effects of high density intercropping on growth of rubber.

2. **Outputs:**
- An Analysis of rural livelihoods in relation to smallholder rubber indicated that not only the better off, but also the very poor households could benefit from intensified intercropping of banana with rubber, through increased financial returns, increased demand for labour and, in some cases, the possibility of contracting other households’ immature rubber lands for intercropping.
- The market for banana in Sri Lanka was characterised and the potential impact of increased banana production as a result of widespread adoption of high density banana/rubber intercropping was analysed. Sri Lanka’s banana market was found to be well developed and reasonably efficient. No problems were encountered in terms of access to rural traders or to transport and it was clear that the domestic market had the capacity to expand sufficiently over the next ten years to absorb the maximum potential increase in production likely from widespread adoption of high density banana/rubber intercropping.
- Intercropping resulted in an improved growth of rubber which sustained throughout the third and fourth year, with the result that trees will be ready for tapping ca. One year earlier than in the sole crop.

3. **Contribution of Outputs to Project Goal:**
The project outputs were successfully achieved and provided insight into the potential impact of intercropping on various stakeholders and the marketing system. It was clear from this study that intercropping with rubber, and particularly with banana, offers a potential means of raising the income of both the land poor and landless in Sri Lanka. Further, because multiple cropping is widely practiced on the homestead plots throughout Sri Lanka, it appears that there is already an understanding of the utility of intercropping which has the potential to be utilised to achieve a sustainable increase in land-use efficiency of immature rubber holdings. Intercropping also
provides a means of raising land-use efficiency and productivity without a proportional increase in inputs such as agrochemicals and so addresses the demand for technologies that promote sustainable rural livelihoods.

4. **Publications**


5. **Internal Reports:**


6. **Other Dissemination of Results:**


7. **Follow-up indicated / planned:**

Proposal for an adaptive phase project submitted July 1998 to the Plant Sciences Research programme, entitled “Incorporating local and scientific knowledge in the development and adaptation of intercropping practice for stakeholder rubber land”.

8. **Name and Signature of author of this report:**

Dr Clare M. Stirling