



TOBACCO FARMING from CHENA to SALT!

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No-ONE conscientiously condones the smoking of tobacco; nor the indulgence of any other excess which offends socially. The charge that tobacco thus indulged—or chewed—is injurious to health is more alarming!

Most serious, however, has been the charge against the *growing* of tobacco . . . that it 'wastes' the soil, both nutritionally and structurally, through erosion. That many of the earlier cultural practices associated with tobacco farming have been erosive and destructive of our tropical soils is acknowledged. As a tobacco farmer in my younger days, as also now an experienced

agriculturalist and engineer, I would be the first to accept the gross impropriety of most of the agricultural practices upon which we were trained to farm the undulating uplands of the tropical terrain.

TILLAGE

Ploughing, cultivation and 'clean-weeding' practices which might have been acceptable on the temperate region farms whereon we learned, are now acknowledged as highly erosive when applied to the fragile soils and extremes of climate—sun and rain—of the humid tropics. This applies not only to the growing of tobacco but likewise to the growing of maize, of groundnuts, of

sorghum, of sugar-cane, et-cetera, in which soils are left bare and exposed to the elements. The problem of how correctly to farm such upland soils has been the primary mandate of a major international agricultural research institute, IITA, based in Nigeria. The lessons from such research are now being applied . . . not only to the farming of these arable crops but also to the growing of the major plantation crops such as tea.

Tillage, and any such practise which leaves soil open to erosion loss of structure, nutrition and moisture—is, now known, particularly to be avoided. Then how do we control or manage weeds? How do we restore fertility? The management of fertility and of weeds being the the principle constraints to productivity which face the tropical farmer as well as — to an admittedly lesser extent — his counterpart in the temperate regions. 'Chena' cultivation (the traditional slash-and-burn, shifting-farming system practised throughout the humid-tropics) has long been criticised as erosive and wasteful, but scientists have had to admit that it has not been easy to evolve a better alternative than 'chena' farming when correctly carried out.

CHENA

The correct procedure for 'chena' farming or 'hen-govithan' required the lopping only of the branches of the trees and of the undergrowth in the forest to let light through — hence 'kele-elikireema' — followed by a very light burn of excess undergrowth. The trees were not felled by the traditional, chena farmer. He appreciated the need for their foilage to regrow for yet another cycle. There was also no need to 'cultivate' the soil which had been kept fertile by the recycled mulch of leaves falling from the trees above, and kept free from weeds due to smother by the mulch as well as by the shade over-free and fertile soil quickly germinated and grew in the moist environment under the mulch. After one or two crops, the farmer wisely shifted to an adjacent plot of land leaving the trees from his earlier plot to recover and sprout new foliage . . . for the cycle of fertility and weed-management to continue. He would usually return to the first plot only after about seven to ten years.

Such traditional practises were — in their context of lower population and minimal inputs — ideal. They were — we now know — infinitely to be preferred to the open-farming land-clearing techniques which we learned from 'The West', and which constrain us to imported machinery for tillage to control weeds, and to imported chemicals for fertility. These practises we now realise, are "non-sustainable" !

SALT

A farming system has therefor long been sought

which is low in 'external' inputs yet essentially sustainable in the context of the millions of small farmers eking a living throughout the humid tropical regions of the world. It has necessarily to include 'the tree' for it's facility, as proven over centuries, to cycle fertility brought up by it's roots from sub-soil regions, and through its foliage back to the surface of the soil as a mulch for recycling via the natural soil organisms. The facility, also, of this mulch to buffer the soil against the sun and rain as well as to help control weeds through shade and smother, emphasises the tremendous importance of leaf mulch both to protect the soil and feed it with nutrients . . . , as well as for the management of weeds. Fast growing — ideally nitrogen-fixing (NF) — trees and shrubs are being researched and applied in these new tropical farming systems to fulfill this broad role within each agro-ecological zone of the humid-tropics. One of such systems known by it's acronym SALT (for Sloping Agricultural Land Technology) is gaining farmer and plantation-manager popularity in Sri Lanka (as also in Indonesia and in the Philippines and in many parts of tropical Africa). It is continually being improved and adapted to an ever widening range of crops now growing in the venues between contoured hedge-rows of such trees and shrubs.

TOBACCO

Tobacco, once grown as a sole crop, is now included in such an ecologically benign rotation with soya, maize, cowpea et-cetera. Chemical fertilizer is now required only to replenish nutrients removed from the site with the crop, and as 'supplement to' — but not 'instead of' — naturally recycled fertility. It was easy to pillory the growing of tobacco. Farmers welcomed a crop for which there was an assured market and for which necessary inputs and guidance were promptly available through a well established extension organisation. Farmers were therefor eager to grow tobacco and tended to overlook the primary importance of crop rotation for nurturing the fertility of the soil and the micro-organisms living within it.

Fresh disciplines which have developed within Sri Lanka's tobacco growing industry over the past few years have established new standards for land husbandry, for protecting the soil from erosion, and — through inclusion of tobacco in crop rotations — been extended to the profitable growing of a range of associated crops now being farmed on sloping terrain . . . slopes on which farming was earlier considered impossible . . . far less 'sustainable' !

Sustainability

The technology for farming sustainably on such marginal lands has necessarily had to evolve progres-



sively for each agro-ecological region. The farmers themselves needed to be 'sustained', supported and closely guided over the several (perhaps three or four) years it usually takes to convert the marginal terrain on which they find themselves, now into productive farmland . . . into a national asset rather than an eroding liability! These encouraging changes in Sri Lanka's upland-farming scene give good cause for optimism, . . . for the prospect that sustainability for the farmer in the humid tropics might still be achieved.

Illustrations

Figure 1 'Chena', or slash-and-burn farming was mildly destructive when practised on the gently undulating uplands of the semi-humid or 'dry-zone' regions of the country. When — due to

pressures of population upon limited land — it extended onto the steeply sloping hill-sides of the more highly populated wet-zone, the practise naturally resulted in alarm and criticism for the consequence of severe erosion . . . as also of the crops thereon. Earlier, tobacco was also grown thus and "clean-weeded" to ensure optimum uptake of applied fertilizers.

Figure 2 SALT, acronym for Sloping Agricultural Land Technology, is here demonstrated in the farming now, 'though still on steeply sloping terrain, of a range of perennial as well as seasonal crops — including tobacco — in the fertile avenues between erosion-controlling contoured hedge-rows of nitrogen-fixing trees and shrubs.