AGRICULTURE IN THE SOLOMONS

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At the invitation of the Solomon Islands Department of Agriculture and assisted by funds from the South Pacific Commission, I spent a month just before Christmas, and a fortnight this May, in the British Solomon Islands Protectorate. My commission was to consult with and collaborate with a newly appointed plant pathologist whose main problems were two fungus diseases caused by species of Phytophthora related to P. cinnamomi, a pathogen which has claimed most of my research time in D.S.I.R. and the University.

The trips were rewarding in a scientific sense, and I know that I was able to contribute usefully - otherwise the second visit wouldn't have been requested, but there was so much of additional interest that I am persuaded to write up some of my impressions. I found it intriguing to live and work in the midst of an indigenous population practising and relying on one of the most primitive systems of agriculture and to realize after a while that the system will probably continue at least for the next few decades - perhaps indefinitely.

I had read more than once of "shifting jungle - clearance agriculture" as practised by primitive tribes in tropical countries. I had met references to it in relation to New Guinea and conjectured about the role these peoples had unwittingly played in transporting certain cosmopolitan diseases backwards or forwards across the Pacific. I had wondered, for example, if and how long ago Phytophthora cinnamomi root rot had leap-frogged from one jungle clearing to an even more remote island clearing by way of passive transport on taro, kumara or yam.

NEW DISEASES

Two diseases which appear to be relatively recent invaders are "black-pod" disease of cocoa and leaf blight of taro, caused respectively by Phytophthora palmivora and P. colocasiae. Cocoa is a relatively new crop in the Solomons. Taro, however, is a traditional subsistence crop. Taro blight is still absent from some Pacific islands but its impact is severe in Hawaii and since World War II it has become a cause of great concern in the Solomon Islands. The benefits of medecine have led to a steady increase in population and, especially in some islands of the group such as Malaita, a shortage of agricultural land is developing. This calls for increased productivity (a greater GNP !); but losses from newly introduced disease work the other way.

At first it seemed strange that there should be a shortage of workable land. Flying over Guadalcanal, the Florida Islands and Malaita, I was impressed with their large size. I recalled my first sight of Fiji - it had looked so small on the map! Malaita, almost an hour's flying by small plane eastwards from Guadalcanal, has a long volcanic range rising in places to over 4000 ft. Successive uplifts have created flattish areas that were old lagoons. Steeply sloping foothills were once coral reefs. I know, because one day we called by canoe (driven by

a 20 h.p. outboard motor!) at a lagoon village and asked if we could see any local taro gardens. "Oh, yes, close up". Half an hour later we asked "How much further?" "Close up now".

After an hour and a half we got there after walking along bush tracks across a swampy plain, over a 600 ft. escarpment and down and around the lip of a basin in the jungle-clad hills. How did I know that I was still on old coral? I had discarded my jandals (flip-flops over there) because they didn't come back to the surface when the track was deep slush, they didn't help on slippery logs bridging the wettest bits and it wasn't practicable to put them on for the sake of the projecting rocks only partly worn by countless calloused soles. There was old coral all the way.

I have mentioned the shortage of land. Not all of it is suitable for growing crops, although quite a large proportion is. There are two restrictions. Gardens have to be suitably "close-up" - which means that women's groaning backs have somehow got to make it, carrying home 70 pounds of taro, kumara or firewood for anything up to five miles - or the men won't find dinner ready when they saunter back load-free somewhat later. Additionally and critically, the free-draining soils only maintain their fertility for two or three years after a patch of jungle has been cleared, burnt and planted. Nutrients, especially potash, are leached down out of reach of crop plants by the heavy tropical rainfall. Over the past millenia the Islanders have learned that by the third year they must begin to clear another patch of jungle and let the former area revert for at least 15 years.

RAPID REGROWTH

The jungle comes back with impressive speed. Large tall trees will have been left, in the main, because of their size and because some shade is beneficial. Below them rank-growing ferns, lianes, shrubs and trees take over with a rush. On my "close-up" trek I passed a gang slashing down dense thickets of regrowth that completely masked an eight or ten year old coconut plantation that had been neglected for the past four years because of a slump in copra prices. The role of the jungle in the shifting agriculture system is to drag back the leached nutrients. Tree roots go down deeper than crop roots. Potash and other minerals are taken up into leaves, branches and trunks which, when felled and burnt, provide fertilizer where it is required, at the surface. Fifteen years of jungle regrowth does the trick.

In northern Malaita I saw a chilli garden dying because two bags of potash sent there two months previously had not been applied. The local manager of this newly-established village industry had thought to save the potash because growth was lush. The stress of fruiting, along with a secondary infestation of scale insects, brought a pathetic change-and a resultant loss of heart amongst the local people. There was one huge buttressed tree left in the centre of the flat portion of the garden. In a zone which coincided exactly on the ground with the lopsided crown overhead, all the chillies were dark green and healthy. It wasn't the effect of shade because the sun is just as mobile for them as it is for us. The effect was obviously due to continual recycling of leachable nutrients taken up by deep roots of the tree and returned to the surface soil and the chilli roots by way of leaf

exudates washed off by rain.

Fertilizers could be sent to this communal chilli garden because the harvest - an export commodity - will pay for its cost. Potash cannot be used in most subsistence crop gardens, however, for economic and logistic reasons. Sprays to control leaf blight and insects are likewise out of the question. A discussion on the problems of blight control could well form the basis for an article on its own. There is no practicable solution yet, though effective chemicals exist.

CASH CROP PROBLEMS

Currency is a problem in the Solomons. The villagers have little need for it, because subsistence crops provide most of their needs. Reef villagers have their gardens on shore and hill villagers barter root crops for sea foods. In the past each village gained a small monetary income from copra from its own coconut groves, planted up to 60 or 100 years ago. Copra prices have collapsed on the world market and the Solomons have joined in the somewhat desperate hunt for an alternative means of earning or saving overseas exchange. Chillis can at best provide only a partial solution. Rice growing was successfully begun last year on the easily irrigated Guadalcanal Plains but this season's crop failed to survive a bad leaf hopper epidemic. Rice, in any case, could never form the basis of a village industry. Nor, really, could oil palms which are also being planted extensively on the Guadalcanal Plains. Any vegetable oil crop, in fact, runs the risk of over-competition from soya bean and sunflower which are grown in many places as mechanically harvested annual crops. Large schemes for raising beef cattle ("bullimacows") in cleared jungle are under way. They may not all succeed because beating the jungle is not easy.

Cocoa was introduced a few years ago but Phytophthora "black pod" blight became rife and discouraged extension of the industry. Nevertheless cocoa still remains one of the most likely potential replacements for copra and the Solomon Islands Department of Agriculture is working towards an improvement in management and disease control. I Hope they succeed and I certainly hope their next attempt to introduce cocoa on a commercial scale will not suffer inglorious failure. The disillusionment would be cruel.

The Islanders in their villages have access to some of the benefits of civilization. Their education is leading them to emulate more and more the European whose advent has broken into the age-old routines but whose technology has not yet overcome the problems he introduces with his'benefits'.

I know that I was able to give positive assistance to the programme of research on those two vital crops, cocoa and taro. The people I worked with know what a lot there is to do. I came away with a lot to think about.