Contrasting Soil Use in Fiji

James I. Mallory

While visiting in Fiji in August 1981, I observed both permanent gardens for root crops and shifting cultivation, otherwise known as slash and burn agriculture. There were plantations of pine and sugarcane in addition to these. I got a fairly close look at their permanent gardens, shifting cultivations, and pine plantations; but, I will have to go back to Fiji some day to figure out how those sugarcane plantations maintain productivity.

Traditionally, only slash and burn agriculture is successful in humid, tropical climates without fertilization because of the rapid growth of competing vegetation in the garden. This rapid growth ties up the available N, P, K, and Ca storing it in the competing vegetation so quickly that only two or three crops can be grown in the same garden plot without significantly reducing the yield. To get these essential elements back into the soil for another crop, the competing vegetation (which in Fiji is usually the grass called “nasaw”) is cut with their machetes and allowed to dry for about 2 months, usually July and August because they are the driest months of the year in Fiji. When the grass is dry in August, it is burned and the nutrients are returned to the soil in the ash. Only carbon, carbon dioxide, water, and a small amount of N go to the atmosphere in the smoke.

This sudden onslaught of smoke plumes arising from the slash and burn agricultural practice is a surprising contrast against the crystal clear skies of early August. When the fires are out, the burned areas are cultivated to incorporate the ash into the soil. Then a new crop of yams, taro, or cassava is planted. Occasionally crops of yaqona, pineapples, or bananas are planted.

I expected this agricultural practice. I had not expected to find permanent gardens of these crops like those at the village of Luvunavuaka on the northeast coast of the island of Viti Levu. The gardens were harvested and replanted the next day vegetatively, not by seed. I was invited to their planting where I asked when they would clear and burn. Surprisingly they said, “Oh, we don’t do that in this garden.” The garden, harvested only the day before, was cultivated by a group of three men.