THE SYNCHRONICITY OF AGRICULTURAL BIODIVERSITY IN WESTERN KENYA

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Tropical agriculture in Western Kenya is quite different from temperate agriculture. The differences are the growing seasons. In the temperate regions there is a warm growing season (summer) when everything is cultivated, and the cold season (winter) when everything is dormant. In the tropics there is no winter and plant growth can continue year around as long as there is water. Winter in the temperate regions prohibits crops from growing and most pests never survive in that climate. This means that pests like weeds, insects and diseases that would plague the crops are also dormant. In the humid tropics all of these pests can continue to plague the farms throughout the year.

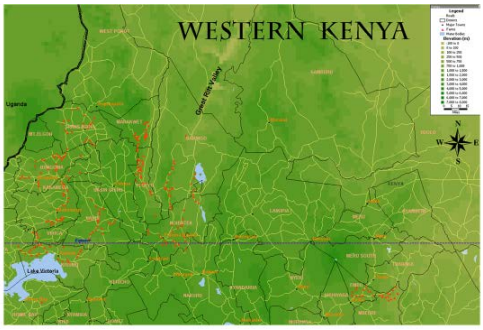

Figure 1: Interview site shown in red, Western Kenya

Because of the year around warmth in the humid tropics, the magnitude of pests is at least tenfold over the pests in the temperate regions. For crops grown in a monoculture format, the cost of controlling pests in the tropics is far greater than that in the temperate areas. Monoculture in the tropics can only be economically successful with crops that cannot survive in the cold weather of the temperate areas. They must have a long growing period. These are bananas, sugar cane, tea (figure 2), coffee, pineapple, mangos and many others that cannot bear freezing weather.

Figure 2. Tea Farming below Mt. Kenya in the Karatina area

Crops like corn, wheat, barley, alfalfa, sugar beets, potatoes, and many vegetables cannot be economically grown in the humid tropical world. True, many of these short growing season plants are grown in the tropics, but they are only for local use. Economically, what works in the humid tropics is

"policulture", where many crops are grown together in the same space. Here the different plants work together in symbiotic relationships, helping each in a variety of ways. One plant provides fertilizer for another. Another provides shade for sun intolerant species. Some crops provide a stalk on which another crop can climb. One crop repels the insects that prey on another crop. There a multitudes of these synchronistic relationships, many of which we do not understand or are even aware. In this biodiverse crop mixture there is little cost, if any, to fight the pests, the weeds are minimized because there niches are already filled with useful plants. Frequently when a weed does gain a foothold, the farmers are able to include it in their diet. The challenge is to identify multi-cropping strategies that Kenyan farmers are using and suggests ways to make it economical. See slides 3& 4.

Figure 3: Crop mix of maize, beans, and sweet potatoes are common.

The two images, one with maize and other crops (figure 3), and the other with bananas (Figure 4.) underlain with a wide variety of crops including beans, squash, maize, medicinal plants are examples of the polyculture that is successful and can provide food to a family.

Figure 4: Multi-cropping of bananas, maize, squash, beans and medicinal plants.

The greatest challenge to 70% of Kenyans who continue to farm in this subsistence manner is to find ways to market their products. At this point, there would need be a great improvement in infrastructure that would mainly provide markets and better roads.

The intricacies of the multi-cropping systems are worthy of recording (Figure 5). There is great pressure globally to end polyculture, abandoning its secrets. There is a need to preserve and understand the traditions of agriculture. Agricultural traditions need to be studied and elaborated in context of usage. There is need to understand the synchronicity of cropping system including combination of crops growing together and the ecological relationship of the different crops. Cultural aspects that go with this synchronicity include music, poetry, legends, folk lore, social order, and ethnography combined to define the traditions that express the whole community at the ground level to establish the integrity of the agricultural tradition and its continuation. Furthermore, there is a need

to find a way to make the polyculture profitable since the Poly-cultural systems are not great money earners, are labor intensive.

Figure 5: Medicinal plant knowledge may be lost.

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