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A "Minor" Forest Product?

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Dear Peter,

If, as the old adage goes, "you are what you eat," what does it mean to eat trees? This question is one that I have been giving a lot of thought to recently, as I have started to examine uses of trees and shrubs as human food. This question is an important one here in Africa, but one that has not received the attention that it merits.

Do Africans really eat trees? Well, yes and no. Obviously they do not eat woody materials that are indigestible. But many non-woody parts of trees and shrubs are digestible. As in the United States, many ligneous, or woody, species here provide edible fruits, nuts, seeds, and berries. In addition, Africans also eat the flowers and leaves of many kinds of trees and shrubs. Other parts, such as the bark, roots, gum, or young shoots, may be employed in various ways in African cuisine. A wide variety of species are consumed in Africa.

The role and importance of trees and shrubs in human diets is quite different in Africa than it is in the United States. In the States, people will engage in blueberry-picking expeditions and the like as a pleasurable day's outing. The collected berries may provide a supplement to the diet and thus contribute to an overall enhancement of "quality of life". But generally speaking, average American consumers obtain the bulk of their fruits, nuts, and berries at supermarkets.

In Africa, in contrast, such foods have a different significance. While many products are undoubtedly procured by rural inhabitants for their own use during brief periods of the year, as seasonally available, others are sold in local and urban open-air markets -- in fresh, dried, and processed forms -- throughout the year and figure significantly in average diets and local economies. Many of the trees and shrubs that provide these resources are not located in intensively-managed plantations, but may be extensively-managed in scattered locations, in the "bush", along creeks, in household

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compounds, or in and around people's fields.

Although foresters have long-categorized forest resources that are used for human food to be a "minor forest product", they have not seriously considered the role and importance of trees and shrubs in human diets, nor human uses of a wide variety of other "non-woody products (produce)".[1] Woody species, thus, provide many resources in addition to wood -- such as fibers and other materials used in construction, crafts, and textiles, as traditional medicines or spiritual and ritual elements, as food for humans, livestock, and "wild" fauna, and as elements in larger ecosystems. This vegetation has an important role in human societies both in producing a variety of resources and in functioning as integral components of ecosystems, permitting the maintenance and conservation of ecological stability and hence the production of other resources, such as agricultural crops or livestock.

To date, not much information has been gathered on the role and importance of these non-woody forest product uses in human societies. As several authors have noted, there currently exist numerous descriptive inventories of non-woody uses of tree and shrub species. Existing information is generally very limited: e.g., "the leaves and fruits of Species X are edible, the leaves are also important in preparing a traditional medicine for Disease Y, and the bark is used in making baskets". What is lacking, thus, is a serious analysis of the extent and importance of these non-woody uses of trees and shrubs (von Maydell 1983; Poulsen 1981; Taylor 1984).

Through Sahelian countries in West Africa, trees and shrubs are very important in human diets. Woody vegetation has numerous indirect roles in the provision of human foodstuffs. Trees and shrubs play significant roles in agricultural systems, such as minimizing water and wind erosion, improving soil quality by fixing nitrogen or adding organic material, or improving the water absorption capacity of the soil. Ligneous species provide habitat and forage for livestock, game, and other fauna, including bees and insects, from which people obtain food. Trees and shrubs also contribute to the development of micro-climates and other ecological conditions that allow the growth of other species consumed by people, such as mushrooms (Poulsen 1981).

In talking with local forestry managers and researchers and examining the forestry literature available here, I have discovered that very little seems to be known about the amount of human food obtained directly from trees and shrubs, nor how important such foods are as sources of cash revenue. With the exception of a few studies on individual species, information on who uses which species for what purposes, when, where, and how, and in what quantities, has never been obtained.

Very often it is assumed that tree and shrub foods are of minor significance -- that such foods may act, for example, as

supplementary items in the diet or as emergency reserves in times of scarcity or crop failure. Since so little is known about the extent of their usage, this assumption of their "minor" significance may be unwarranted. In a study in Tanzania, Anne Fleuret (1979, 1980) found that wild leafy plants constitute an important and integral part of daily diets. These plants comprised four-fifths of all leafy green vegetables eaten and were consumed in almost half of all meals. (As in the Sahelian countries, these vegetables serve as an important side-dish that accompanies the starchy staple.) It may well be that "wild" plants, particularly trees and shrubs, are eaten in greater volumes and frequencies in West Africa than has been commonly assumed.

Researchers are already aware of the large number of woody species found in the Sahelian countries that are known to be edible. Hans-Jürgen von Maydell (1983) has analyzed 114 different species of trees and shrubs found in the Sahel, of which 23 species are thought to have "great importance" and an additional 46 species "limited importance" in human diets.[2] Fred R. Weber (1974) noted that of 165 tree species commonly found in West Africa, 24 are known to be edible. Marin Terrible (1984) examined more than 90 species of trees and shrubs in Upper Volta -- more than a third of these are used as food. Irving (1948) remarked that West Africans eat more than 100 types of fruit. Georges Savonnet (1980) found that the Lobi people, who live in the northern Ivory Coast and southwestern Upper Volta, eat the fruits of 25 different "wild" tree species. Of plants in general, Franklin W. Martin and Ruth M. Ruberté (1979) noted that Africans eat more than 500 different species.

Von Maydell (1983) has underlined the priority of food uses of trees and shrubs for Sahelian populations. He writes:

> ...the first question posed by many inhabitants of the Sahel who desire to inform themselves of the utility of forestry measures is:
> "When can we eat these, your trees ?"
> (von Maydell 1983: 42; my translation from the original French)

Other foresters have also found that food uses are often a major factor in assessing the value of tree species. In countless forestry projects throughout Africa, development planners have found that when they ask local people what trees they would prefer to plant, the locals generally rank edible fruit-bearing species at the top of the list.

Although Africans may stress the food values of trees, these are not their only considerations. As von Maydell (1983) and others have argued, the majority of these species have multiple uses that make them valuable to local populations. Quite often edible species have important medical uses, and are appreciated

as food as much by animals as by people. Many are important in the fabrication of textiles, baskets, and other tools of daily life. Others have particular cultural or religious significance as well. Some food trees and shrubs may be valued by local people for other purposes, but also used for food. For example, red-flowered kapok (Bombax costatum) is important commercially because it produces the kapok fibers used for stuffing pillows and mattresses. In addition, the flowers and fruits are eaten by both humans and animals.

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As available evidence suggests, food uses of trees and shrubs may be important in the lives of African peoples, particularly those in the Sahelian countries of West Africa. Data does not yet exist, however, that would allow managers and development planners to meaningfully assess the role and importance of edible woody species for a given group of people in a particular area, and to estimate how alternative management strategies might affect local diets and incomes.

This lack of knowledge seems to be a particularly serious omission in light of African development priorities. Many experts believe that the major problem confronting most African countries is the provision of adequate food for their growing populations. The "food problem" is generally considered to be a shortage of cultivated foods. In reading the popular press, one can easily get the impression that Africans live on cereal crops, such as millet, alone. Discussions of national "food self-sufficiency" stress "agricultural development".[3] Consideration of foods that come from perennial woody species is minimal. But it is difficult to meaningfully assess whether a population is receiving an adequate daily nutritional intake when no information exists on how many mangoes, how much soumbala and shea-nut butter, or how many leaf-based sauces enter the average diet.

Why do researchers know so little about the ways in which local populations utilize tree and shrub species in their diets? Perhaps it is because the research approaches to date have been inadequate for understanding the indigenous knowledge and use patterns. It seems that five past weaknesses in research efforts must be carefully considered, in order to suggest ways to overcome current knowledge gaps.

One reason why Western-trained researchers know so little about the uses of ligneous species for human food is undoubtedly the way these researchers have carved up the world. Believing that most people obtain their food from agriculture and grazing livestock -- except for the few remnant groups of "hunter-gatherer" peoples still existing -- food experts have focused their attention on cultivated crops and livestock. Trees and shrubs have been of interest primarily where they constitute commercial crops, such as coffee, cashew, or fruit tree plantations. (Such "tree crops" are often considered to be the concern of horticulturalists, rather than agriculturalists or foresters.)

A second research bias arises from the emphasis on foods that enter the market sector. An assumption is made that people are increasingly obtaining their foods by buying them. It is certainly easier for economists to trace the production and distribution of foods that are sold for cash, and to use price and quantity as indicators of the importance and role of foods. Even researchers in other disciplines also tend to focus on cash foods. Thus, for example, while it is easy to find data on the nutritional value of tomato paste, the content of many edible tree leaves and shrubs has never been assessed. (Some work has been done on a few important species, such as baobab (Adansonia digitata) or tamarind (Tamarindus indica) leaves. See, for example, Giffard's (1974) discussion.)

A third weakness exists in the discipline most concerned with woody species -- forestry. Foresters have not paid much attention to food uses of trees and shrubs because, until recently, they have focused on growing wood. In response to the energy crisis in the Third World, foresters expanded their efforts from producing wood merely for timber to also producing wood for firewood. The first "wave" of forestry development projects in the Sahelian countries, in response to the drought of a decade ago, were industrial plantations of supposedly-"fast-growing" introduced species, such as Eucalyptus species or Gmelina arborea. These industrial plantations were generally located on classified national forest land and designed to grow firewood to sell to urban populations. A second wave of projects, known as community or village woodlot projects soon followed. These projects also tended to stress introduced firewood species, but were supposed to be self-help projects for rural residents and the trees were supposedly planted on communal village land. Learning from their experiences with these first two types of projects, development foresters are increasingly recognizing that Sahelians do not use trees for a single purpose, such as firewood, and that food is a major concern. Consequently, the third and fourth waves of forestry projects, based on concepts of "agro-forestry" -- combining trees with agricultural and/or pastoral systems -- and "natural forest management" -- the management of existing native vegetation, have been cited as possible strategies to begin to expand forestry to encompass the roles of trees and shrubs in food production (Catterson 1984; Weber 1982; Weber and Hoskins 1983; Jackson, Taylor and Condé-Wane 1983; National Academy of Sciences 1983).

Fourth, much of the food uses of trees and shrubs has probably escaped research attention also because of the people who are primarily involved in these food-use activities -- women. As a voluminous literature now testifies, women have major roles in producing, processing, and cooking food in societies the world over. Much of the research has, however, traditionally focused on men farmers and men's commercial food transactions, and most of the agricultural and forestry researchers and development experts are themselves men. The field of nutrition, in contrast,

has traditionally emphasized women. In recent years, the involvement of women in agricultural activities has received increasing attention. To date, forestry research that has examined women's activities has primarily dealt with women's uses of firewood rather than food (Hoskins 1979, 1983; Williams 1982, 1983; Food and Agriculture Organization 1979).

A final reason for the lack of knowledge on the uses of trees and shrubs in human diets has to do with the nature of the activity itself. Just because some part of a tree or shrub is edible does not necessarily mean that a given person, or group of people, will eat it. Food consumption is shaped by a wide variety of factors. Some of these factors are fairly utilitarian, such as taste, nutritional value, ease of preparation, availability, and cost. Other factors are more symbolic, i.e., loaded with social and cultural meaning. Thus, for example, food consumption may reflect social status or serve as a means of group identification. Within a society, people may observe certain food taboos. Although much can be learned about underlying social patterns by studying food consumption, such research typically requires long-term and detailed field studies. Some research of this type has been undertaken by anthropologists working in diverse sub-specialties, such as symbolic anthropology, comparative sociology, ethnobotany (indigineous botanical classification systems), and cultural ecology. This work does not generally focus on tree and shrub foods as such, nor is it widely known among more applied researchers. (Some of the important researchers in this area include Mary Douglas(1966, 1975; Douglas and Isherwood 1979; Douglas and Wildavsky 1982), Jack Goody (1982), and Eugene Hunn(Williams and Hunn 1982).)

Since food consumption patterns may be expressive of deep cultural patterns, it may be difficult for people to explain exactly what they eat. Eating is a daily activity, and patterns of food consumption may be so habitual that people don't consciously think about them a great deal. Certain foods consumed are often not considered to be important. Thus, for example, in Bourkina-Faso (formerly Upper Volta), many rural residents consider a proper meal to consist of tao, a thick cooked millet or sorghum porridge, and sauce. If you ask people what they ate, they might reply, "Tao and gumbo sauce." Unless you explicitly question them about the fruits and beverages they have consumed, they are unlikely to mention these foods. Perhaps it is because fruits and drinks are considered to be incidental snacks rather than parts of meals.

To fully understand the extent to which foods come from trees and shrubs, it is necessary to probe deeper into eating patterns. If you ask a woman about all things consumed during the course of a day and the ingredients of each meal, you may learn for example that she ate some shea-nut fruits (Butyrosperum parkii) in the morning when she was working in her field and brought home the nuts to cook shea-nut butter, a much-utilized cooking fat. Perhaps also she had some dolo, or local beer, that was fermented from the fruit of a local tree, such as Sclerocarya birrea. By asking about

the ingredients that were used to make the tao and gumbo sauce, you can learn that more than just cultivated millet and gumbos are used. The tao is often cooked with an acid to make it more digestible: commonly used acids are lemon juice, tamarind juice, tamarind fruit, tamarind leaves, or leaves of other tree species. The sauce probably contains, in addition to the gumbos, shea-nut butter, soumbala (a condiment made from the fermented seeds of the néré (Parkia biglobosa) tree), salt, hot peppers, and other seasonings. Thus tree and shrubs foods are much more important in the diet than their initial responses would lead you to believe.

* * *

As the preceding example suggests, research is needed that can overcome previous limitations and can contribute to a more profound understanding of the ways in which woody species are used in human diets and the extent of their actual usage. Such research might prove to be very useful in suggesting development or management strategies of increasing the food resources obtained from locally-valued species, and thus contributing to larger development objectives of food self-sufficiency and security.

Various authors have suggested a number of research priorities. Most foresters who are interested in non-woody forest product use agree that information is needed on the amounts of these foods consumed and estimates of their economic values. The quantities and prices of produce sold in local markets needs to be assessed, and compared with the amounts consumed by people in their own homes (Poulsen 1981; von Maydell 1983).

The spatial and temporal aspects of use of these food resources merit close investigation. Do people procure these resources from trees and shrubs in their (court)yards, their fields, along streams, in the bush, from classified national forests, or other locations? How far from their homes do people go to find various foods? How does the spatial occurence of species vary with ecological and climatic conditions, as well as with social and cultural conditions? How does the availability and use of these foods vary with the seasons, with the seasonal workloads of rural residents, and with the seasonal availability of other resources, such as firewood? Are certain foods used only for special occasions? How does the utilization of trees and shrubs for food vary in time and space with other resource use practices? (Pelissier 1980; Poulsen 1981)

It is very important to know who uses these resources -- which groups of people. Certain foods may be eaten only by certain groups of people. For example, a lot of tree fruits are eaten primarily by children -- often as they tend the family livestock in the bush during the day (Fleuret 1980; Savonnet 1980). Do people who utilize and sell tree and shrub foods have access to other types of resources, such as agricultural fields or livestock, or do they tend to be poorer people? (Smale n.d.; Fleuret 1980). Do some people specialize in these activities? How do the use practices of different cultural or ethnic groups living in the same ecosystems compare?

Once researchers begin to understand who is involved in these patterns of resource use, indigenous systems of tree and shrub use and management can be studied. What do people do to manage the productivity of these woody food species? Do people plant trees, protect existing trees against livestock grazing or fires, transplant trees, or engage in other practices? How do they choose these strategies, in relation to their other needs for forest or non-forest resources? How is knowledge of these species, their uses and locations, and management strategies transmitted, and to whom? (Pelissier 1980; Marchand 1980; von Maydell 1983; Williams 1983)

Perhaps as the social and cultural dimensions of uses of trees and shrubs are better understood, the chances for designing more successful forestry development projects will be enhanced. It may also prove possible to answer the question, "If you are what you eat, what does it mean to eat trees and shrubs?"

This is a question that I have just begun to ponder. Does eating parts of trees and shrubs mean that you are more knowledgeable (knowing which species are edible and where and when to find them), that you are poor (lacking money or other sources of alternative foods), that you are traditional or thrifty (minimizing reliance on cash crops and market foods), or perhaps that you are patriotic (reducing foreign exchange spent on imported foods) ?

I don't know if I will be able to answer this question in the months ahead, as I continue my investigations in this area of forest resource use. But as I try to understand the importance of trees and shrubs for human diets in Africa, this question will certainly provide me with much food for thought.

Sincerely,

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NOTES:

0. On the 4th of August, 1984, the "Republic of Upper Volta" changed its name to "Bourkina-Faso". The citizens of the country are thus no longer "Voltaics", but now "Bourkinabe". In the text I use the name of the country as it existed at the time to which I refer.

1. Recently some researchers have replaced the term "minor forest products" (or "secondary forest products") with the term "non-woody forest products" (or "non-woody forest produce") to suggest that some of these products are not "minor" ones. Authors, however, differ in the extent to which they utilize the term to refer to all non-woody products found in forests (including, for example, fauna) or just to refer to non-woody products derived from trees and shrubs, irrespective of whether such trees and shrubs ar are located in forests or not. In this discussion, I use the latter connotation.

2. Unfortunately, it is not exactly clear how von Maydell(1983) has ranked the importance of various species for food. His book is an authorative summary of existing information for Sahelian species, and thus builds upon the subjective assessments of experts on the subject. His summary tables of the importance of various species for various uses are not entirely internally consistent (compare, for example, the rankings of the importance of species for food found in table 4.3, pp. 42-44, with those in table 4.10, pp. 81-84). Von Maydell acknowledges the need for more objective research on uses of these trees and shrubs.

3. For example, in the past year Captain Thomas Sankara, President and Head of State for Upper Volta, stated that food self-sufficiency was the "number one priority" for Upper Volta. In his address of 4 August 1984, on the occasion of the first anniversary of the "Popular and Democratic Revolution", Sankara stated that "agriculture is the motor of our development". While he did stress the need for reforestation, he has not tied trees and shrubs to the priority issue of food production.

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