

Lessons from Africa on Smart Farming

By Richard W. Franke

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This is the latest installment in our *Signs of Sustainability* series, organized by Sustainable Tompkins. Visit them online at www.sustainabletompkins.org.

The modern concept of sustainability was launched in 1987 with the publication of "Our Common Future," the report of the United Nations-sponsored World Commission on Environment and Development. Sustainable practices, however, existed from ancient times in many traditional societies.

In the previous "Steps to Sustainability" article we saw how the native peoples of the Western Hemisphere developed a number of sustainable farming systems. The indigenous peoples of the West African Sahel region can also teach us much about sustainable production.

The word Sahel means "border"

page 10
or "edge" and refers to the southern edge of the Sahara Desert, an environmentally-fragile region running east to west across the entire African continent.

A particular feature of Sahelian systems is the integration of farming and animal herding. Closer to the desert, Fulani and other herders manage their animals on lands that would be difficult on which to produce crops. Animals can move with the shifting rain patterns to locate the most nutritious and tender grasses.

During the long dry season herders camp with their animals on the edges of farming villages more to the south. They exchange meat and milk for the grain of the farmers. Cattle, sheep, goats and camels graze on the recently-harvested fields, manuring the fields with their droppings, and breaking up ridges in the soil with their hooves. The parallel cycles of meat

and milk for grain and animals eating grain stalks and improving the soil creates a sustainable energy exchange system.

The Dogon people of present-day Mali have added an intense composting system to this traditional Sahelian system. They concentrate some of the animal dung in a shallow hole in the center of the house compound courtyard. It is enriched with millet (a local grain) stalks, peelings from kitchen waste, ashes from the fires and baobab fruit peelings and human waste.

Goats are often tethered next to the site to provide additional materials and to break up the compost with their stamping and walking about. These intense compost piles become the basis for dry-season vegetable gardens on which the Dogon produce peppers, onions, corn, potatoes and cassava.

Perhaps the most remarkable feature of Dogon farming in a marginal area is their use of a local tree, the acacia albida. This tree is so closely associated with the animal herders such as the Fulani nomads that the seed of the acacia must pass through the digestive tract of a ruminant in order to germinate.

The Dogon plant the trees at regular intervals and manage them carefully; they are soil protectors of the highest order.

The real acacia geniuses of the Sahel, however are the Serer, a people living in Southwestern Senegal. The Serer cultivate this tree as the major source for plant nutrients in their general agricultural system.

So close is their connection to the trees that they use the same word for raising them as for raising children. The acacia albida sustains Serer lands. In a generally arid zone, it gets its leaves in the long dry season, aiding in water retention and helping to maintain more even ground temperatures to reduce wind-blown erosion.

During the short Sahel rainy season (June to September) the tree drops its leaves, letting in the sunlight. The leaves rot with the rains, depositing nitrogen, calcium, potassium and phosphate into the soil. Studies have found that grain harvests are 100 percent higher in fields with acacia albida than without. An added benefit: in times of prolonged drought, cattle can feed on the leaves.

Colonial regimes in the 19th and 20th centuries disrupted many traditional African food production systems, but recent research is confirming that the original Sahelian farmers and animal herders managed their resource base in a sustainable way. We can still learn much from them.

This is part three of the series *Steps to Sustainability*. Richard W. Franke is a resident and board member of *Ecovillage at Ithaca* and a member of *Sustainable Tompkins*.

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