

## **Alternative and Regenerative Agricultural Practices for Sustainable Farming**

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### **Introduction**

Part of the development of a sustainable agriculture in any region of the country is the development of a means of communication between the diverse segments of the agricultural scene. If we are looking to foster sustainable farming practices, then we must build sustainable relationships between the individual sectors of the farming economy. Otherwise, the ongoing controversy between the conventional agriculture community and the proponents of ecological farming will continue to restrict our efforts to achieve a healthful and environmentally-sound food production system.

In Colorado, a diverse group of individuals called COSAN-Colorado Sustainable Agriculture Network - has been meeting to develop a dialogue around the concept of sustainable agriculture and to discover a common ground where we may work together. This group includes such diverse participants as the Colorado Department of Agriculture, Colorado State Extension Service, Environmental Defense Fund, Sierra Club, Farm Bureau, Farmers Union, and Colorado Organic Producers Association, to name a few. The purpose of these meetings has been to create a forum for communication where there can be an atmosphere for learning and listening - an atmosphere in which there is nothing to be proven, nothing to be defended, and the well-worked ways of interacting can proceed. At the heart of this process is respect for oneself, respect for each another, and particularly, respect for the commonly created pool of meaning.

I preface my comments on sustainable agriculture in this way because we are primarily concerned with coalition building. Sunrise Ranch serves as the hub for this work as well as an example of good stewardship of the land.

### **Sunrise Ranch: A Sustainable Stewardship Farm**

I would like to share my experience with you at Sunrise Ranch, a Stewardship Farm, and some of the alternative agricultural practices utilized. Sunrise Ranch is one of several Stewardship Farms in the U.S. and Canada seeking to provide good examples of regenerative farming techniques, and support for the sustainable agriculture movement. Sunrise Ranch is located on the eastern slope of the Rocky Mountains, where water conservation and careful management of soil fertility is critical to sustainable farming. Sunrise was purchased in 1945 as an abandoned, depleted wheat farm, and the land was rehabilitated by organic farming practices over 40 years. Today, Sunrise is a 340-acre organic farming community using all natural farming techniques. No pesticides, herbicides, or chemical fertilizers have ever been used on the land. Our operation includes a 150-acre irrigated unit, a six-acre vegetable garden, a biologically managed hydroponic greenhouse, and a diverse livestock operation.

### **Soil Fertility**

The central approach to our farming is to nurture soil fertility and protect the "living soil"; a diverse population of beneficial microorganisms is the key to a productive and fertile soil. All animal manures are composted, and we are currently inoculating the piles with EM. By careful mixing and watering we are able to produce rich compost in 6 to 8 weeks. Green manuring is also an integral part of the fertilizer program, using primarily rye or rye and hairy vetch in combination. Our soil tests are showing 3 to 6 percent organic matter. Crop rotation is practiced religiously, using a 9-year rotation program on 9 fields: 5 years alfalfa, 1 year Sudan grass as a smother crop, 2 years in small grains, and 1 year fallow with green manure. Each field is in a different stage of the rotation cycle.

### **Tillage Practices**

Cultivation implements are critical. Two different implements are the foundation of our tillage system - the Australian-designed Yeoman's chisel plow, and the Dutch-made Lely Roterra. Both implements are designed to do as little disturbance to the soil horizons as possible, thereby

protecting the topsoil as well as conserving soil moisture. The Yeoman's plow, otherwise known as the Bunyip Slipper Imp Plow (the Australians always did have a way with words!) has some important features. We can pull 5 shanks at a 14-inch depth with a 62-horse power tractor. It requires only 15 HP per shank, as compared with 30 HP per shank with the typical chisel plow. The reason is that the shank has been designed to lift up the soil, rather than rip the soil horizontally, thus reducing HP requirements. There are some other unique features as well. The shank tip is called a bullfrog. It is designed to minimize metal wear as you have with other plow shares. It is called a "leap-frog system," because when the tip wears down, you remove it and insert another tip in between, thus utilizing the entire length of the plow point. Another feature is the weed knives which mount on the backside of the shank, so that when you plow down an alfalfa crop in the fall, you can crown the plants at the same time you are doing a deep plowing. The shanks also include an adapter, so that other points such as John Deere sweeps can be utilized. The shanks are moveable up and down the frame, so that the plow can be used as a cultivator in row crop production. We also utilize a simple shear bolt system.

In our rocky soils, protection of the plow from damage is important. Each shank has a plastic nut on the hardened bolt, so that when a rock is encountered, the plastic-lined nuts pop off, allowing the whole shank to pivot on the frame. Two retainer washers keep the bolts from falling out. So you just slip two new nuts on, and away you go-only a five-minute delay. We also use an adjustable guide wheel.

The Lely Roterra does the seedbed preparation, working down the residues, breaking up the sod, and packing the seedbed with rollers. The Lely has teeth instead of blades that rotate from side to side, acting much like an egg beater. This keeps the soil horizons intact, and prevents the loss of soil moisture. This is markedly different from the effect of a rotovator which virtually destroys the lower soil horizons, and can create an impermeable layer because of its flat blades. A well-prepared and soft seedbed has reduced our germination time to 7 to 9 days instead of the 14 to 16 days when we were using the moldboard plow, disk, and land level to work the land. For cultivation in the vegetable garden, we are utilizing an old Allis-Chalmers garden tractor with the Bezzerida system, which includes cultivator blades for use between the rows, as well as a spring torsion bar for weeding in the rows.

### **Pest Management**

We practice integrated pest management, utilizing biological controls. The natural boundaries of our valley allow us the opportunity to work with our neighbors who share the valley to establish a natural/biological pest control area. In 1980 the farmers and ranchers cooperated to control a severe outbreak of grasshoppers using "Nosema Locustae." We had a high degree of success in controlling grasshoppers with this natural/biological method.

Our other strategy is to introduce trees and shrubs to the valley that will encourage wildlife, natural insect predators, and particularly the bird population. We have planted over 800 seedlings in a nursery, to be transplanted around the farm when they are old enough. The nursery includes many wildlife bearing species like Nanking cherry, choke cherry, Russian olive, honey locust, sumac, as well as willows and cottonwoods.

### **Livestock Husbandry**

Our livestock program includes dairy and beef cattle, sheep and goats, poultry, and horses. Our emphasis is on natural remedies for animal health to reduce dependency on expensive drugs and chemicals. A variety of herbs are grown in the garden for this purpose. Some of the techniques we've had success with include comfrey for controlling scours in dairy calves, apple cider vinegar for reducing the incidence of mastitis in dairy cows. EM for rumen inoculation of debilitated animals that have had severe parasitism, and Impro products made from the natural antibodies of colostrum milk, which have a variety of applications. We are also trying to protect our animal genetic heritage by introducing some rather rare breeds into our livestock program.

We are interested in demonstrating appropriate livestock rearing methods that respect the rights of farm animals to have space, sunlight, and plenty of room to exercise. We want our program to be an

example of animal husbandry techniques, honoring the behavioral patterns of farm animals. For example, we use a 3-acre pasture for rearing 400 turkeys annually. We also use a ground-run laying-hen operation, which provides adequate roosting space, a nesting area, and plenty of room to scratch. This requires no more labor than several cage layer operations I've seen, where 4 to 5 chickens are confined to a 1-foot cubical wire cage.

### **Intern Program and Demonstration Projects**

We provide opportunities for 5 or 6 young adult interns to come and learn about sustainable agriculture. The community setting provides a wholesome living environment for them to learn about agriculture and also to learn about themselves.

There are other aspects of our farm where we are seeking to demonstrate a more sustainable approach to living. We utilize state-of-the-art solar compost toilets, where human waste is being composted and recycled back onto the land. These are provided for all our farm personnel and visitors. They are constructed out of natural materials from our area, including the timbers for the frame, straw and clay from the farm for the walls, and a clay dug from a nearby site for making a clay plaster to protect the walls. This is a good demonstration of natural resource utilization, water conservation and recycling of human waste.

We are also concerned in our area with water conservation and careful use of the water re-sources, particularly rainfall. Many of the buildings are now designed with downspouts that harvest rainwater from the roofs to irrigate landscaped areas. With water harvesting, proper mulching and plant selection, a permanent and self-sustaining landscape can be created.

### **Conclusions**

It is our goal at Sunrise Ranch to demonstrate practical and wise use of the land's resources, and to honor the earth as a living organism. Good stewardship of the land is more than producing a healthy food source; it also recognizes the land as a gift and that all life is sacred.