

05A031 I  
RSB-9876-41

Advisor: Roger Gottlieb

**Buy Fresh, Buy Local;**

**Working for Social Renewal through Agriculture**

**A study of Community Supported Agriculture and**

**Sustainable Practices in Agriculture**

**By Joseph Owen Roberts**

## **Introduction:**

An owner of a very successful restaurant once asked me if I was a 'foodie' or someone who obsesses over food. It was a rhetorical question; his point was that everyone is obsessed with food and that if the majority of this country eats three times a day, how could you not be obsessed about what you eat? Most people in this country have never tasted truly good or fresh food. Most American diets come from a can, a frozen bag, or a pre-cooked meal from the grocery store. Who cooks from scratch anymore? The point is that Americans have lost their connection with cooking and caring about what they eat. The main reason for this lack of concern about what goes in our bodies is that we have separated ourselves from where real food comes from; the earth.

Today, anyone can walk into an American supermarket and find twenty kinds of bread, out of season fruits and vegetables, and corn on the cob in winter in New England. Most people don't think twice about the fact that that kind of produce must come from thousands of miles away and that the production methods used to grow these crops are usually harmful to the environment.

Some of these crops didn't even exist in the form people are buying them in today due to the genetic modification of crops to make them produce more, faster, larger, and stay fresh longer. Our government does not require testing or labeling of these products, the consumer is left in the dark. Other countries have banned these genetically modified

organisms all together, but we choose to completely ignore the fact that we are ingesting them without any knowledge of what will happen to us years down the road.

Few Americans are aware that the Midwest is losing soil seventeen times faster than it is being formed. Without arable land to grow food on, this nation will become even more dependent on foreign markets and perhaps add to our already accelerating downward spiral.

I grew up in a liberal, very intelligent, very aware, family. We always ate vegetables for whole meals, meat was scarce. My education from food came from my parents, and sister who was a vegan for years. The argument was that if you couldn't kill and prepare your own food, then you shouldn't be eating it. Two years ago my sister worked as an intern on Sequatchie Cove Farm close to our home near the Tennessee River Valley. I visited the farm many times with her and worked just to see how real food was grown. Over Christmas break and spring break in early 2005 I returned to this farm, worked all break, and kept coming back. I finally decided to live on the farm all summer long for this past summer, and it was a profound experience.

For almost three months straight during the summer of 2005 I worked and lived on a family owned and operated farm near my home in the Tennessee River Valley. This farm was not certified organic, but the practices used were more in tune with nature's balance than larger organic farms. I learned about farming and biodynamic practices, crop and animal rotations, soil health and fertility, and did all the leg work to supply over 75 families with an average of 19 lbs of produce a week.

The problems in America of health and sustainability of the agricultural system have solutions which eliminate hidden costs and provide consumers with fresher,

healthier food which support local economies. Community Supported Agriculture and local food in general is one of these solutions and is a profitable practice even on a very small scale. Perhaps this model that I have presented is not an ideal solution for this countries problem in agriculture, but the ideology and mentality behind how these people run a farm is second to none. Changing conventional farmers thinking from an industrial, production based mindset to one that values the local economy, the land, the quality of product, and the environment as a whole will take time: but we are running out of time.



### **Sequatchie Cove Farm:**

From May 13 to August 12 of 2005 I was an intern at Sequatchie Cove Farm (SCF) outside Sequatchie, Tennessee. This 380 acre farm owned and operated by the Keener and Wright families is set in an amazing part of Tennessee at the base of the Cumberland escarpment right next to the Sequatchie River. Bill Keener, his wife Miriam, their two children Kelsey and Ann, and Miriam's parents Jim and Emily Wright all moved to the farm after Jim purchased the land 10 years ago. They built both the families houses, the studio, two green houses, two germination houses, a hayshed, a barn, a garage, and a 'trading post' for storage and sale of items on the farm. Jim loves to build, and was a great help when machinery broke down. They did not immediately start farming for a few years while they were building their houses and acquiring equipment for the farm.

The farm is not a certified organic farm and the land is not certified organic. To Bill, the word 'organic' has become a label that is misused and mistreated. Bill stresses the fact that everything on the farm is grown with care, without chemicals or hormones of any kind, and thus Bill considers his farm above the label of 'organic'. The word 'Organic' has become a marketing tool used by producers to appeal to the growing health food market in this country. The definition of organic that the USDA thinks is correct is over 500 pages long, but the ideology behind the word is what truly matters. Bill believes that food should be grown as naturally as possible, and with the utmost respect and care. Bill also considers the farm an actual organism that must remain in equilibrium to function properly and thus to be as sustainable as possible. The cattle, lamb, and chickens are rotated through the fields to literally build up the humus and organica matter

content of the soil, fertilizing and creating soil as they go. The animals are unconfined; the chickens are by far above the definition of free range, you will find them everywhere on the farm, even by the houses, in the street, and in the woods with the pigs. The pigs are 'forested' which means they are raised in a natural habitat in dense woods and underbrush where they root for bugs and for cooling of themselves. The cattle are rotated through over 300 acres for only approximately 50 cattle. The herd is a cross breed between Jersey milk cows and Devins meat steers. This is for the future dairy that Bill wants to try, as this heard would be good not only for producing milk, but also for meat.

At the farm, I was given a room to stay in as well as one hundred dollars a week to do anything I was told to do. This varied from saving the Keeners money by working on farm equipment that would otherwise need to be transported and much more money paid to someone who 'specialized' in that particular type of equipment to being a veterinarian. The latter was much more interesting as I had no experience in care for sick animals. This care ranged from castrating small pigs, all the way to birthing calves and removing the afterbirth, as well as killing chickens since USDA slaughter houses cannot slaughter chickens. On the mechanical side, I did anything that my abilities and the available tools would let me do which ranged from general maintenance of the families personal cars to installing new clutches in tractors, and rebuilding all types of tractor attachments. (See pictures in appendix for a better idea.)

Everyday, the laying hens had to be fed once in the morning and once at night. Eggs were gathered in the early afternoon, and a normal days worth of eggs was about 12 dozen. The chicks and meat hens had to be fed and watered twice a day as well as their cages moved. The purpose of the cages was two fold. The primary purpose was to

protect the small chicks from predators such as foxes, coyotes, and hawks. The secondary purpose was to have the small chicks still be grass fed, as they were kept in their cages day and night as well as to compost certain areas. As we moved the cages, the chicks would eat bugs and grass as well as fertilize the soil. As the chickens grew, they would be let out of their cages during the day and put back into their cages at night, thus protecting them from predators again. This idea of specific area fertilization not only reduces the workload on the operators of the farm by automatically spreading the manure that the chickens create, but also helps keep weeds down where the cages were.

Weeding, cultivating, fertilizing and mulching, stringing tomatoes, (basically attaching the tomato plants to vertical posts with twine as to keep the fruit off the ground and thus from rotting), and harvesting were the daily garden chores. To generate a constant supply of vegetables from the garden for over 30 weeks, there was constant tillage of old crops, and planting of new ones. Continuously, we would also remove all crops from about 50% of the garden, cultivate, and spread mulch/compost as to have new, fresh vegetables for all 3 of the 10 week shares. This means that instead of having 4 acres of crops only produce for the duration that one planting of a crop can go for, we would continuously have 2 acres of almost constantly new crops coming in.

We also continuously tilled in mulch and compost to the gardens when we would till an old crop under, thus increasing the volume and soil organic matter. This mulch/compost had to be tilled into the soil within the first few inches of topsoil as to increase the humus content. The next step was to plant a cover crop that would not outgrow or take over the soil to whatever crop we were planting, but at the same time block out the weeds from growing. An example of this is the strawberry crop this year,

which was approximately 1/8<sup>th</sup> of an acre, but provided weeks of strawberries that we could not keep up with. (See appendix for illustration.) Some days people would come out to the farm and pick gallons by themselves. The record for one person in half a day was 15 gallons.

I was also given the task of driving the diesel refrigerator truck into town twice a week, as much as an hour each way. The journey took me over two mountains each way, and the heater had to be used to keep the truck from overheating over the mountains. This is during the summer in Tennessee, so it was very hot in the truck. Imagine going a maximum of 40 miles an hour with the heat on in a large truck in the heat and humidity of the afternoon. Peeling yourself off the vinyl bench seat once you reach the drop off is not a pleasant experience.

Driving the refrigerator truck to town is the only way to get a large number of people fresh produce, as none of the families would make the hour journey to the farm to pick up a weeks worth of produce, not to mention the truck is more efficient at transporting the food to where the people live rather than vice versa.

The Keeners have also experimented with raising rare breeds of animals such as Large Black pigs, Old Spot pigs, Tamworth pigs, Katahdin lamb, and Bourbon Red turkeys. This is in conjunction with Heritage Foods USA which connects consumers such as some of the best restaurants in New York with small farms who can get very good prices for these rare breeds. This has been a successful endeavor for the Keener family, but I believe that the sale of these animals to non-local consumers goes against the doctrine of this farm. However, these sales do help retain diversity of these breeds, as well as help educate people when there are articles written about upscale restaurants who

sell the products and are proud to be selling a rare product. I believe that Bill's main goal is to create his own breads of specific animals that are unique to the farm.

With only seven people working the farm, (at best), things such as weeding and cultivating are sometimes the tasks left undone. To control the weed problem, we try to kill the weeds before they go to seed, but are unsuccessful most of the time. Also, massive cultivating leaves the soil bare and losing precious nitrogen to the atmosphere. One method of weed suppression as well as nutrient replenishment is the use of cover crops. These can either be planted at the end of a growing season to keep the nitrogen from escaping from the soil if it is left bare or exposed, or planted in between crops to keep weeds from germinating. On the farm we used buckwheat and clover for cover crops. The buckwheat is a phosphorous generating crop, and it grows faster than all weeds except pigweed. Clover will not grow as tall as buckwheat, but it germinates faster and stays closer to the ground which helps block sunlight from weed seeds. The fact that the clover also stays close to the ground also helps retain moisture to an amazing extent.

These cover crops also achieve another function that I do not fully understand at this time and that is that some cover crops will actually suppress some types of weed seeds from germinating. The specific example I have seen is the lack of buckwheat, used in this case as a cover crop, on a field of soybeans, the money making crop, where ragweed, a horrible and hard to kill weed, once was a major problem. This was on an organic farm in Ohio where the farmer had planted buckwheat to replenish nitrogen in that field, but did not plant the very end of the field with buckwheat. That next rotation of crops, he planted soybeans and the majority of the field which had buckwheat

previously planted in it had almost no ragweed, but the end where no buckwheat was planted was absolutely taken over by ragweed. (See picture in appendix.)

A normal workday was about 12 hours; Wednesdays and Fridays were over 14 sometimes due to the harvesting, packaging, and delivery of the CSA shares. One thing that is always true is that there is always something left to do at the end of the day no matter how hard everyone works. Some days that it rained we would only get half a days of work in the fields. As I learned, rain is the enemy simply because of the location of the crop fields. Without rain, the weeds are almost nonexistent, but after several days of rain in a week, the fields were totally full of weeds. (See appendix for comparison.)

When we would become overly frustrated with the weed and rain situation, we would jokingly ask Bill to go pick up some herbicides from the local co-op. However, the mental composure of the people on this farm is astounding. Not even in the worst weeds ever seen would Bill or Nathan put any chemical on the gardens. They would till the whole garden under with the crops still growing and sew buckwheat and clover and let the weeds sprout, and then they would cultivate and repeat this process for a full year. This would eliminate almost all the weed seeds in the ground and the field would be amazingly weed-free the coming year.

The studio garden and cave springs, (the main crop field), would overgrow very quickly when there was frequent rain. Rain is also a huge problem for cave springs as it is only 2 or 3 vertical feet above the normal height of the Sequatchie River. Also, the Sequatchie River changed course a year ago this fall which cut almost  $\frac{3}{4}$  of their fields off from easy access as those fields are essentially on the other side of the river now. Last year there was a large flood and it destroyed about half of the large garden and

crops. The river is fordable in summer, but rain sometimes makes the river un-crossable even with a tractor. Another aspect of the rain that hurts the crops is that diseases and funguses spread amazingly quickly especially during harvest because the harvesters transport the funguses to every crop they touch.

The mentality of the family is an interesting one on the farm. Everyday challenges present themselves that are not foreseen, but at the same time proper planning is critical. Everyone deals with these frustrations in their own way, but still, everyone must deal with knowing that the farm is continuously behind. Perhaps this is only my view, but the Keeners seem to have a slower pace of life, or running on 'slow time' as they call it. The pace of life on the farm is amazingly fast and slow at the same time. Time passes very quickly and the days blend together, but the pace of life on the farm is very slow. No one is nervous, except for Ann when she is cooking everyone's meals, even when we know we are very far behind in keeping up with the weeds or crops.

I do not know how these people can maintain composure and not get worried about every small detail; my guess is that if one lived on this farm for very long they would have a heart attack if they were as highly strung as I am. Perhaps the Keeners have just embraced their lack of control.

This mentality also lets things slip by once and a while such as peoples orders. While this may not be a big deal to the Keeners, I feel as if it is the end of the world for these people. As such, organization is the key problem in this operation as communication from shareholders to the people who pack the truck always breaks down because there are too many people who talk to the shareholders. A secretary would be

ideal, just a single person who communicates between the shareholders and the people who pack the truck.

Bill is a very optimistic person, as it would be impossible to have a negative outlook and survive in a small operation like this. Small problems to me seem like the end of the farm, but Bill knows that everything will be ok. Frustrations that surface at the lunch table are usually brushed off with a, “Well, we’ll just sell the farm then,” and a laugh from everyone. Bill does not have much free time, but is an educated man and finds time to read, watch movies with his family, (at the Wrights house since the Keener house does not have a television), and the family takes a trip or two a summer to either South Carolina to see Bills brother and to Tate which is a small community on a lake where they once lived.

Through the relatively few experiences I had in my 3 months at this farm I have learned not only about the general state of the American food industry, but also the lack of connection that Americans have to the land. Some of the shareholders don’t even know what is in their shares and we provide recopies in everyone’s share about how to use the uncommon produce. Seeing a family whose goal is to change the face of the American Agricultural industry is inspiring and frustrating at the same time. The frustration comes from the fact that they are only providing 75 families several meals a week. This number of people is so small that it is hard to think about what it would take to reverse the whole agricultural system in this country.



## **Community Supported Agriculture:**

*“A wise man once told me that the first and biggest step one can take to eating healthy is to know where your food comes from.”*

-Allison Hoffman, Sequatchie Cove Farm CSA shareholder

To talk about Community Supported Agriculture, I must first give some idea as to what the aim and definition of this idea is. “Community Supported Agriculture is a connection between a nearby farmer and people who eat the food that the farmer produces.” (Sharing the Harvest p.3) This is the most basic definition, but the goals and ideology behind CSA is what drives this movement. The goal of CSA is to break the current condition of most industrialized countries of the world where people are disconnected from the food they eat. Also put, “The goal of CSA is to reconnect the people with the land that sustains them.” (Sharing the harvest p.5) People in developed countries do not know the farmer who grew the food, or where the food comes from. Since commodity farming on these ever growing free trade markets has driven so many farmers to sell their operations because of the ever decreasing food prices, the number of farms in the United States has plummeted. Since 1910, the number of people farming or living on farms has decreased by a factor of over 16 times.

The easiest way to acquire local, fresh food is to sign up for a CSA. Community Supported Agriculture started in Japan and Switzerland in the 1960's and soon after the idea was adopted in America. The United States Department of Agriculture defines a CSA as,

“... an innovative direct marketing arrangement that organic farmers have been pioneering in the United States for about a decade. Consumers subscribe to the harvest of a CSA farmer for the entire upcoming season, and pay for their produce in advance.

Under a CSA arrangement, consumers share the production risks and variable harvests of the farmer— including especially abundant harvests —and sometimes participate in festivals and other social activities at the farm. Over 800 CSAs are currently listed in the U.S. database maintained by USDA and the Robyn Van En Center at Wilson College. Most of the CSA farms use organic production systems.” (Agriculture Information Bulletin No. (AIB777) 42 pp, September 2002)

However, on each weekly newsletter in each share, at the very top of the page is printed, “Working for social renewal through agriculture.” This implies something more than what the USDA has said in their definition. Bill believes that the reconnection of people with the land is essential to people’s education about health, food, and the environment. Bill encourages all the CSA members, and anyone who is interested, to come tour the farm, pick strawberries, blackberries, blueberries, and just see the animals in general.

Support from various religious groups, (The Episcopal Ecological Network, Food Resource Bank, and other various sources) are pushing for not only food education, but sustainable practices in food production. Some of the other concerns are knowledge of what foods are genetically engineered, where their food comes from, and biodiversity. None of these sources point directly to, or use the word ‘organic’, but there does exist a push currently for health education and food source knowledge in the Christian world. The Food Resource Bank also takes this thinking further by using their missionary trips to third world countries to teach people the importance of biodiversity, nutrition, etc. I believe that this is a large step in the right direction, that is, away from asking people to send money or food for hunger relief in third world countries.

This support for local agriculture is a step in the right direction, but these organizations and people in general must educate themselves to the horrible injustices that cheap food is causing to the land and peoples health. My belief is that fresh, local

food is the simplest of answers that solves the largest problems that this world and nation face today.

One of the most advantageous parts of CSA for the farmer is the fact that most CSA's have the shareholders to pay for either a whole season or a whole year of produce before the seeds are even in the ground. This gives the farmer more capital to work with to buy equipment, etc before the growing begins. The advantage of this is the bond or obligation that the farmer has to the recipient in the fact that the recipient has entrusted the farmer to produce and come through for the whole season. The word choice of "Community" was not by mistake as Robyn Van En chose it because of the local people connected to local farmers as well as this trust that the recipients have in the farmer, creating true relationships and a strengthened community.

The possibility of making a CSA work is the fact that many of the costs of commodity farming are not present, (or are much smaller), than those in commodity farming. Examples are transportation, processing, packaging, washing, advertising etc. Also, the exclusion of the distributor and retailer increases the percentage of money that goes back into the hands of the farmer. As an example, "Between 1979 and 1997, the producer share of retail beef sales dropped from 64 percent to 49 percent, as the price farmers received for slaughter steer fell 50 percent." (Sharing the harvest p.16) This fact, along with the fact that the consumer only paid 15 percent less by 1997, made for poorer farmers and huge profits for the packing companies.

So, this makes a good case for higher quality products such as free range, organic, natural, and free of chemical foods. Hence, most CSAs are based on the ideology of organic, biodynamic, and sustainable foods and their goal is to preserve not only rural

life, but the land that provides for an ever growing number of CSA members and the farmers themselves.

One of the most pressing problems that these small farms face is building the support group of people who have decided that these natural foods are well worth the (sometimes) extra cost. Health food education is still a large problem in areas, and building the infrastructure of CSA members and local restaurants is always a problem.

Unlike commercial farming which has become a precisely calculated science, organic or just small family farms in general have more vulnerability to weather, pests, floods, etc. To some farmers, this lack of control is just a part of everyday life on the farm. Perhaps one of the strongest bonds formed between these farmers and the land is the face that the farmer embraces his lack of control. He is venerable and he knows it. However, we tell our shareholders that they share in the bumper crops just as they share in the uncertainty of something bad happening to the crops.

Many of their local farmer friends do commodity farming where a middle man will pay them only pennies over what the crops they are going for sell for on the stock exchange. This approach is not cost effective, nor does it encourage any ethics on the behalf of the farmer. SCF tried farmers markets locally, but for some reason the markets are not established enough as actual produce markets, but as art and fluff markets where people mainly come to browse. This is not true in places such as Atlanta, where we can sell our strawberries for four times as much as we do here in Chattanooga for example. The Atlanta farmers market would be ideal for us as we have small quantities, but relatively good quality. However, since Atlanta is 140 miles from SCF, and logistically

delivering the food fresh would be a nightmare even though the farm owns a refrigerated truck.

Another advantage of the pay-it-forward method is that the shareholders share in the bumper crops, but they also share in problems that occur with weather, etc. This is to say that sometimes, when the harvest goes well, the shareholders may get twice as much produce as they normally would, for the same price as a normal share. This indirectly connects people with the land when they can talk to us about what problems or amazing harvests we are having this week. We do, however, try to make up for crops that do not perform as expected by buying from other local organic growers to fill the shares at no extra cost to the shareholders. This means that the farm could make more money by selling the extra crops to restaurants, markets, etc, but choose to hold the shareholders in priority and give them the best and freshest as a rule. Three years ago a Community Supported Agriculture weekly share system was created on Sequatchie Cove Farm, but with less than exciting results. The organizing was difficult and the number of participants was small.

The CSA did not really take off till this year when several times we had to buy specific items from other local farmers due to weather or crop conditions, thus the amount of produce we were able to produce was not enough at times. The total number of weekly shares now is over 75. The CSA is set up in three ten week blocks, a spring, summer and fall season. The shareholders pay up front the full 10 week period (or multiple periods) and they have the option to sign up for an egg share as well. Many of the families will also split a whole or half cow and freeze the meat for the winter. The summer season shares were twenty five dollars a week, so \$250 from each shareholder at

the beginning of that season. This comes out to \$18,750 at the beginning of the ten week period that goes directly into Bills pocket. This gives him much more freedom and flexibility to buy equipment, etc. Also, having the money up front, sometimes before the seeds actually go into the ground, gives Bill the freedom to have a better idea of how many people will be signing up this period, what they want, and how much to plant. Also, the fact that he doesn't have to borrow money and pay interest on that loan keeps more money in his pocket and in the fields. This works out to approximately 56 thousand dollars a year with 3 ten week seasons and 75 shareholders at 250 dollars a share. My estimates on losses to gas/diesel, labor, seeds, paying Nathan Arnold who works full time, paying the interns, maintenance on the machinery, etc in total was about 33 thousand dollars a year. That only leaves 23 thousand dollars left for Bill, his family, and the Wright family.

I talked to Nathan Arnold, the full time vegetable gardener, about the economics of this place. He said that 3 and 4 years ago SCF tried to make the farmers markets work locally, but they just turned out to be a waste of time. Two years ago they started this CSA and this past year it has only now started really making money. Also, the restaurant market fluctuates with demand and other suppliers, so the CSA again appeals because of an almost set volume and we can plan which crops will do best for the upcoming seasons.

The basic setup of the CSA for SCF involves two deliveries a week to different locations in and around Chattanooga. Each share holder or family pays in advance for a 10 week period; fall, spring, or summer. The summer and fall are usually the most popular having almost one hundred boxes a week delivered and spring only having

approximately 55 a week. The spring section is a new attempt as usually there is not enough produce to offer the customers this time of year.

The beauty of this CSA is that the farm doesn't get hurt as badly, but also doesn't do as well depending on crop output fluctuations in a given season. We usually have extra of all the vegetables we offer each week, but if disease or a large storm were to hurt our crop output, the shares are prepaid and we could compensate with other crops. The diversity of crops keeps specific pests and diseases on specific crops in general. This is one advantage over a monoculture because we will lose only a specific crop instead of an entire field. One good example from my experience this summer is the Japanese beetle which only ate our snap beans, but not the surrounding tomatoes, cabbage, or lettuce.

Also, each year seeds are collected from most crops to retain the natural evolution that has occurred in that year. This evolution, simply the strongest crops survive, will produce a crop that is specifically bred for the climate in the fields. This will take a long time, but having our own breed of tomatoes, potatoes, garlic, and other crops is more efficient in production and quite an interesting idea as well. The other main advantage is that unlike a farmers market, there is no direct competition when our buyers see us and our products. Our buyers are a captive audience, we offer our produce and they buy what they want, no competition from outsiders.

As this CSA grows and the farm grows, I am sure the economic situation will only get better. However, if the money were to be invested back into the production of vegetables for the CSA, year-round CSA's would be possible. The new greenhouses produce so much produce and are so much more constant and dense in production, that an

investment there would not only make year-round production possible, but would further increase the efficiency of the farm as it would condense the fields to a physically smaller area for the same output.

Bill wants the CSA to grow to 100 members for 30 weeks a year, and stop there for now. Each shareholder picks up his or her box at one of two drop-off points around Chattanooga Tennessee: Signal Mountain, or the University of Tennessee at Chattanooga campus. The average box weighs about 19 lbs and shareholders can pick and choose what extras they want. We bring extra boxes of almost everything which are free for the taking for shareholders. (See appendix for pictures.)



**Background:**

As a country, we cannot continue to use the practices currently in use to grow our food simply because these practices will destroy what land is left as well as further the problems of health in this country. A revolution in agriculture must be followed by (or in conjunction with) the education of the general public as to reverse this downward spiral we are currently in. We must begin to adapt sustainable practices and use fewer (or no) chemicals due to the associated health and environmental damage that is occurring. It is possible to feed this country, and the world, using sustainable practices, but the rebuilding of the land will take a very long time. Farmers now in small communities are showing that it is economically and agriculturally feasible to produce good food with sustainable and replenishing practices. Our own push to industrialize and turn agriculture into a machine has not only brought the demise of our own nation's health, but the health of other nations and their people as well.

Since the separation of people and the land is ever widening, the general public's awareness of food quality and general health has diminished. The fact that the average American farmer can feed himself and over fifty six other people in this country has "freed" these people who no longer have to worry about food production is the primary cause of this separation. This separation has led to a simple life for the average American citizen, an existence that consists of making money, entertaining himself, and consuming. No longer are people consumers and producers, but simply consumers. We no longer have any connection to the land where our biological and cultural roots came from. Culture was created out of the time freed from hunting and gathering; that is to say when crops were planted deliberately in fields, the increased efficiency in food production led

to less time spent gathering food. From this free time, groups of people created art, music, and literature based on their beliefs and interactions with one another and the earth. Since original cultures were based on the people's interactions with the earth, we no longer operate in such a culture since the average Americans interaction with the earth is mowing or watering their lawn.

The industrialization of American agriculture has not only affected American farmers, but citizens and farmers in countries all over the world. The industrial monster that America and the food industry have produced is driving people in foreign countries off of their land, as the foreign governments can make much more money selling and taxing the land and exports to America with Americans farming the land in the foreign countries. One example of this today is in Brazil where good farmland can be had for eighty to one hundred dollars an acre. The problem is that the Brazilian government is selling the land out from under the tenants who live and farm the land, thus creating more and more urban areas and more dense cities. One figure shows that the number of people in developing countries that live in cities has more than doubled in the last 50 years. This again leads to a gap between people and where their food comes from, but at this point people are starving because they are so poor. The problem with hunger is not food production, or the lack thereof, but the availability of food and the price relative to what people have to spend in these countries.

Eliot Coleman of Harborside Maine is one of the leading organic and biodynamic small farmers in America and has an interesting perspective of how this 'industrial revolution of agriculture' came to be.

“When you study the history of any new idea, it becomes clear how the involvement of the old power structure in the new paradigm tends to move things backward. Minds mired in an industrial thinking pattern, in which farmers are merely sources of raw materials, cannot see beyond the outputs of production. They don’t consider the values of production, or its economic benefits to the producers.” -Eliot Coleman *Small Farmer’s Journal*. Spring. Volume 29, No.2

This is to say that the average commercial farmer in America does not place his main concern on the long term affects of his loss of soil, but more upon the yield numbers and money. The basic idea behind ‘deep organic’ farming is that the farmer views his land and crops and animals as a single organism, working together to become sustainable while taking the energy from the sun and turning it into food. Commercial American Agriculture has lost sight of the ecological impact that they are doing, and concentrating on production and the farm as a machine.

Since this shift, sometime soon after the Depression, farming has been looked down upon by the masses as a dirty, unskilled, and unprestigious walk of life. Now, it is a career for so few, farming is at the mercy of government legislation. However, organic and small farm agriculture are changing the face of farming in America and in many countries, regardless of what stage of development the country is in. Even in Brazil where the government is selling land out from under small farmers, some local governments are taking it upon themselves to reverse this trend of export agriculture. That is not to say that Brazil is a struggling third world country, but it is the extreme of land abuse and a place where tens of thousands of people die of hunger each year even

though Brazil is one of the leading agricultural exporters in the world. One percent of the population owns more than half of the countries arable land.

There is one unique city in Brazil Belo Horizonte, (Beautiful Horizon), that has made food security a right of all citizens. The city creates a market for local produce and thus, local farmers by regulating prices for this market, so all farmers get the same price for their crops. This market is actually on city property and paid for by a private owner since the locations are good. The city charges almost nothing for the rent of the market location, but there are no middle men for the food. The farmers sell directly to the market owner which means more money for both of them. However, the owner must sell the produce at a government price and must pay the farmers a set price. Also, every weekend, the owner must take a produce truck into the slums so that all citizens in the city can at least have access to cheap, fresh, and nutritious food. The price that the government sets is normally at or below half of the Market price. The reasoning behind this system is that while most people who live in the city have enough money and are close enough to produce sellers to get fresh food, before this system was introduced there were still twenty percent of the citizens that were malnourished. The city government then decided to make access to fresh cheap food a right of citizens. This “new social mentality” means food security for those who were once unable to feed their families. This is not charity, but a new way of thinking about the most fundamental rights of people and citizens. (see Lappe’s Hopes Edge for references)

In the last 35 years, the American population has increased 41.5%, not including illegal aliens. Food production on the other hand, has increased to match this demand and then some. However, this does not address the issue of productivity in America,

whose soil productivity has dropped over 40% in the last 65 years. However, Americans meat consumption exacerbates this problem as it takes somewhere between 10 and 16 times the amount of grain or plant matter to produce the same caloric value of meat.

Lappe talks in great depth about the horrors of propaganda that there is a shortage of food and that is why there is so much starvation across the world. Lappe points out that if we were to take the world grain production and use it to simply feed people instead of feeding animals and making finished products, there would be 3000 calories in grain per person per *day*. This is an astonishing fact, and leads me to believe that vegetarianism is the key answer to the world hunger problem (ignoring of course the main issues of politics and transportation). However, this issue is so much more complicated that I have not even touched the tip of the iceberg. Lappe also points out that to produce one pound of beef takes anywhere from 10 to 16 pounds of plant matter. This also at a glance is a huge argument for a vegetarian diet. However, talking to Bill Keener changed my way of thinking on this subject when he pointed out that soil nutrition is the key to all agriculture.

The main problem of soil nutrient depletion can be solved with crop rotation to an extent, but there is a much better solution. Bill pointed out that no matter how efficient we are in planting, harvesting and rotating crops, we are still losing soil through natural erosion from rain, flooding, etc, not to mention that nutrient and humus replacement through just crops is not nearly as effective as using animal waste to replenish the soil. This necessitates cattle and other grass fed animals to be rotated through the planting fields to replenish not only the volume of soil, but the nutrient density of the soil as well. Where did all the fertile soil in the Midwest come from? The way it has been explained

to me is that the massive herds of buffalo created the 70 odd feet of topsoil in the Midwest by grazing and excreting their natural compost.

This goes to say that to have a truly sustainable farm would *require* a fairly large number of animals to replenish the soil continuously. What is going to happen when places run out of topsoil? This is not an argument against a vegetarian diet, but more an argument for the rejuvenation of land around the world. To become sustainable, a piece of land that is farmed must have some amount of animals on it to become sustainable.

I have been thinking about the meaning of sustainability recently especially as to how it is used in the niche that I am currently in. Some people would define sustainable as self supportive, or the lack of outside resources used. That is to say a place that uses no outside resources is to be sustainable. However, I have yet to see a place that strictly abides to this definition of NO outside resources. We use tractors here on this farm and by no measure of the word can we be sustainable at the level of production that we are currently functioning at. We have to have gasoline for the tractors, feed for the animals that we do not grow ourselves, and so forth.

I asked Bill Keener about what his definition is as far as sustainability and I got an interesting answer. Bill said that as soon as human beings created agriculture, they left the idea of sustainability behind because they were no longer merely equaling their work in with what they got out of nature, but in agriculture, human beings now adapt and/or change nature to do what the people want and the energy they get out is now greater than the energy they put in. So, the energy must obviously come from the earth.

But, as far as land sustainability I believe that this farm is far ahead of commodity farms. Each year our soil becomes more and more fertile due to the rotation of crop and I

believe that the pure volume of arable land is actually increasing due to our spreading of manure that comes from the animals that we collect in the winter. I myself have seen multiple cases in different geographic areas of crop rotation that not only increases yields, but also deters weeds. Our bean crop has a definitive line in yields where buckwheat was grown the year before. Also, in Ohio I have seen where the previous year buckwheat was planted there is no ragweed, but at the end of the row where the buckwheat was not planted the ragweed runs rampant.

The approach that America has taken towards food production is to let technology and science do more and more of the work that hands used to do. This same idea was presented in a book that suggests we can solve our consumption problems of natural resources by increasing the complexity with which products we use are produced. I have read a good bit of Natural Capitalism by Hawkin and Lovins and I am somewhat not impressed. The part that did not impress me was their information on hydrogen fuel cell “hypercars”. They solely measure the auto industry’s pollution from the tailpipe, not what it takes for the cars to actually go down the road. What I am referring to is the fact that it will require much more electrical power to convert water to hydrogen and that power which comes from power plants across the nation are not as clean as their ideals would believe. Also, there is not a large enough excess of electrical power to even come close to supplying the demand that the whole United States would put on that system if everyone were to convert to hydrogen powered cars. However, they go on to make several good points about what we here at the farm have been discussing.

This is a similar approach that industrial farming has taken, that is to treat the problem with science, technology, and ignore the base of the problem. This is to say that

nature has had a much longer time to design crops that are adapted to one area, climate, etc, but as humans we want a quick easy solution.

Each day I spend here I understand more and more about Bill Keener's vision. After working in public schools and as a social worker, Bill decided he wanted to change the way people interacted within communities in a different way. He was unsatisfied with his work for the public and his farming has brought him closer to realizing his vision. Bill wants communities to return to real towns, or small communities that can exist on their own. That is to say that people would not need a Wall-Mart, they would have nearly everything made by their neighbors. This would cut pollution from automobiles since everyone wouldn't need to drive as far, would build local support for local business, and of course, local farming was his choice to start at.

The argument for Organic agriculture is an easy one in the eyes of the consumer who is savvy to the health benefits of fresh and naturally grown food. However, most people believe that there is no way that a small organic farm can produce as much produce per acre as a large, industrialized farm.

Yield is a widely used and misused term. Yield, by definition is the amount of product produced relative to the area of land that took to produce that amount of product. This however, does not take into account the variable of time. In a monoculture, one single crop is grown, usually on a large scale, since the machinery requires fewer workers and chemicals can be bought and used in large batches. While the specific yield of a monoculture producing one crop will usually be much higher than that of a small biologically diverse farm, the yield does not take into account hidden costs such as soil depletion, erosion, nutrient depletion, and overall sustainability. The aspect of crop



rotation and intercropping cannot be taken into account when calculating yield, because then one really is comparing apples to oranges. In a biodiverse, small farm, the yield for a particular crop may be lower, but if on that same piece of land, the farmer grows fall and spring crops too, the overall amount of food whether it be in calories or weight, will almost always be higher.

These methods of rotating crops and arranging crops for seasonal growing not only creates literally more food, but can replenish the soils nutrient density. This is especially true for farms that graze livestock or rotate livestock through the same piece of land that the crops are grown on because the manure created actually increases the humus and raw soil volume of the land, combating erosion and soil loss.

So, organic farming is more efficient, better for the land, better for the consumer, and cuts hidden costs of transportation and mineral dependence in this country. How can this idea not be taking off in leaps and bounds? The main problem with Organic agriculture is the education that consumers have about not only the products, but also the lack of information about their food. How often do you see the words fresh and local at your neighborhood? You probably see the word fresh a lot, but what about the word local? Wouldn't produce be fresher if it didn't have to travel as far? Wouldn't the produce need fewer preservatives or less genetic engineering if it were grown locally and thus the time from the field to the consumers hands be reduced? What would consumers lose by choosing local foods?

The main loss of going to fresh foods is the time and knowledge required to prepare meals with fresh foods. You cannot drive to the supermarket (in most places) and buy fresh, local food. Also, the time required to prepare a full meal using only, or

mainly, seasonal foods requires much more knowledge of cooking and much more preparation. The convenience of local supermarkets is hard to beat since the infrastructure of the food network in this country is so developed.

One of the main problems with putting the CSA together is the location as well as the timing to fit into peoples' schedules. You cannot find a single time or location where all the shareholders can be. So, multiple pickup locations and multiple dates with a given week is the only solution, but at the same time the cost of fuel and transportation goes up. The transportation of our CSA shares is most likely still less efficient than a tractor trailer full of produce coming from California, but the freshness of the produce that we produce is unobtainable for other sources geographically.

A simple calculation of transportation costs I have put together is as follows. We did two trips into town in our diesel refrigerator truck a week. The total fuel consumed by the truck was approximately ten gallons a week with a total weight of produce of approximately 1000 pounds on average. This includes the weight of meat, dairy, and eggs, but not the packaging. So, we find a ratio of one gallon of diesel for 100 pounds of food delivered. If we consider a tractor trailer truck from California traveling to the same location as our drop off in Chattanooga, the best efficiency that the tractor trailer can achieve given refrigeration fuel and travel fuel is approximately 115 pounds of food per gallon of fuel. So, our operation is not as efficient in the regard of transportation.

However if one considers the freshness of the food to be of value, then the best time a tractor trailer can make from California is approximately 37 hours straight through. Also, the fact that a tractor trailer load of produce takes a long time to harvest and package adds to the overall time, but the major concerns are that the distribution,

storage, and time it takes buyers to consume a whole tractor trailer load of food. My rough estimate is that this will take approximately one day of storage and distribution time to the freshness of the food. This is a best case scenario in my mind. So, the total average time for the tractor trailer produce is about three days. The produce we collected and distributed was at most eight hours old from the time of harvest till the time it was in the hands on the way home with the consumer. For the type of produce that we produced that has no preservatives, etc, the difference of three days is very large in my eyes in terms of overall freshness.

So by choosing local food over average store bought food, we gain freshness but loose convenience. We also loose some efficiency in terms of transportation, but gain it back because of storage energy that is not required of such fresh food. With more local producers closer to metropolitan areas, this efficiency of transportation and storage will further increase.

Another drawback to fresh local food is the lack of diverse food. Since the majority of local food will be determined by the seasonal shifts in the weather and with general geographical constraints, you won't be seeing strawberries in Tennessee in January without greenhouses and good weather.

This is not to say that it is impossible to have non-native foods in areas, or even out of season foods, but the effort and cost to the producer will go up dramatically. I visited Arctic Organics outside of Palmer, Alaska while on my abbreviated vacation in August. After seeing River and Sara Beans' operation, I am convinced that we have no excuse in Tennessee for not producing almost year round. Arctic Organics CSA runs from mid June till late September, whereas SCF runs 30 weeks from mid March to late

October. Arctic Organics only has two green houses, but the use of space was what struck me. They did not consider just the earth that the greenhouse covered, but used the space in the third dimension. They created a system of rain gutters filled with soil that had eight food vines of cucumber hanging from them as well as flowers in pots hanging from the ceiling. They grew some of their tall crops in the greenhouses as well, as to use the space more efficiently. (See appendix for pictures.)

Another amazing fact is that this 4 acre farm supplies 140 families with a share of vegetables a week, just as we did at SCF. They store their root vegetables into the winter, and continuously sell them to customers.

One similarity that I found between Arctic Organics and SCF was that both families were highly involved with public education and social issues. Bill Keener worked as a social worker as well as a special education teacher for rural schools in Marion County, Tennessee. One of his past students to this day still comes and helps out on the farm several days a week. River Bean worked in the Alaska public school system while building Arctic organics for a few years before the farm commanded all of his time as well as became a source of income. Both River and Bill see the social impact that their work does, but both look to the future and what should be in their eyes the norm for food production.

I noticed something interesting about the type of people who are interested in the farm and who value what the Keener family is doing there. On one hand, you have the well-to-do very wealthy families and high end restaurant owners who value fresh, naturally grown food and pay a premium for a good product. In the middle, there is the mix of liberal and conservative families in a higher than middle class tax bracket who

also already know the value of the farms product, and are willing to pay more than store prices for a chemical free product. Both of the above mentioned groups value the local aspect of this operation, but it is more about the quality and freshness in my eyes. The group that interests me the most is the locals, (read 'rednecks' by every aspect of the word,) who are very pleased to see a small farm that is similar to what they may remember from their childhood. These people are not highly educated; do not read health-food magazines, but know the difference in store-bought produce and what the farm offers. It is a daily occurrence that a 'redneck' will drive up in a pickup or on a four-wheeler and ask if we sell milk. We cannot legally sell milk, but some of the friends of the farm acquire some. These people know that there is a difference in the fact that the practices used on the farm produce a more natural, healthier, better tasting product, but perhaps are not aware of the damage that the American agro-industrial machine is causing all over this world. They still have memories of once knowing a place similar to the farm, or perhaps grew up on a small farm. The mystique of the farm is easy to get caught up in, and lots of people just come to walk around.

At a farm to school conference in Ohio, I spoke to one Idaho man who connects small farms from three counties with local consumers and restaurants. This man showed that in one year, he kept over half a million dollars in circulation around (what city?). When he later went before the local county commission, he asked for 50,000 dollars to pay himself and several part time workers. After stating the fact that the return on their investment would be ten fold, the county commission quickly granted him the money. One interesting point he had was that he believes that every county commission should

have someone doing his job, paid by the local government which makes sense because of the return in local spending.

This is just one example of how a simple organization of small farmers can be made to have a very large impact on a local economy and food system. In the case of SCF, there are not enough small local farms to introduce this idea, but in many parts of the country, this possibility exists.

## **Conclusions:**

Studying the practices by observing them rather than partaking in the grunt work would arguably produce a more concise and complete paper, but perhaps one can value the experience on another level rather than just considering the end result. Living with this family has changed my perspective on not only food production and consumption in the United States, but has made me question my own direction in life.

My own personal experiences in public service have taught me about the simplicity that life can hold for some people. Through my months on the farm I never reached the level of calm that everyone else had. I was always worried if I missed something, left a gate open, anything. I do not know weather to blame my upbringing or the education system for this constant stress, but I would like someday to reach that constant ease of mind that the family had.

Learning about the crisis that this country is facing in agriculture and health has changed my eating habits and shopping habits as well. However, I feel as if I am still part of the problem since I now have most of the knowledge to become a true part of the solution, and this perspective forces me to realize that I could be doing some good instead of just writing about it. This is one of the problems with the education system, that is one learns about the problems of this world but the execution and follow through of these solutions are almost never realized. What should one devote their life to? Which problem? I digress.

Regardless of how this experience has changed me, the facts are that this nation is loosing arable land. Loosing this land at any rate means that at some point in time we

will have no arable land left. The problems of American health can point in many directions, but one of the biggest solutions/problems is what people eat.

SCF is proof that community supported agriculture is profitable and that there is a demand for naturally grown fresh food in the United States. The problem of reaching people who would like to support such an endeavor is still formidable, as the current method of raising awareness that small farms exist in a certain geographic region is still infrequent articles in local newspapers and word of mouth. However, the demand for fresh food is still growing and SCF will grow with the local demand.



**Retrospection:**

Finding myself at the end of an almost 8 week long school term, I am returning home to work on Sequatchie Cove Farm again for break. For me, it has of course changed my thinking of food and food production, but I see myself at a minimum having a very large garden to eat out of whenever my geographic location allows. Perhaps this requirement will dictate where I end up geographically, and perhaps I will go as far as to buy a farm someday.

The Keeners have a good opportunity in their hands to make a difference in Chattanooga, especially with the planned dairy and ever widening market for their products. There is room for growth in the fields, they will need more help in the fields and more help with the organization and planning, but with a bit more work it can be done. Bill says he wants to stop the CSA at 100 shares a week, but depending on the restaurant market and perhaps the beginning of a real farmers market, their focus could shift elsewhere.

## References:

*Agribusiness and Society* Kees Jansen, Sietze Vellema

“Alternative Financing in Agriculture: A Case for the CSA Method” by Sabih, Baker

*Alters of Unhewn Stone: Science and the Earth* Wes Jackson

*Biodynamic Agriculture Introductory Lectures* Alex Podolinsky

“Can Organic Farming Save the Family Farm?” Eliot Coleman, *Small Farmer’s Journal*.  
Spring. Volume 29, No.2

*Diet for a Small Planet* Frances Moore Lappe

*Eat Here: Reclaiming Homegrown Pleasures in a Global Supermarket* Brian Halweil

“Eating for Your Community: A report from the founder of community supported agriculture” by Robyn Van En ‘A Good Harvest’ (IC#42) Fall 1995, Page 29

*Farms of Tomorrow: Community Supported Farms, Farm Supported Communities*  
Trauger Groh Steven McFadden

*Fatal Harvest: the tragedy of industrial agriculture* edited by Andrew Kimbrell

*Hopes Edge* Frances Moore Lappe, Anna Lappe

*Natural Capitalism: Creating the Next Industrial Revolution* Paul Hawken, Amory  
Lovins, Hunter Lovins

“Second Thoughts About Organic Agriculture” Justin Naylor, Small Farmers Journal.  
Spring Volume 29, No.3

*Sharing the Harvest* Elizabeth Henderson, Robyn Van En

*Slow Food* edited by Carl Petrini

*The Soil and Health* Sir Albert Howard

*The Unsettling of America: Culture and Agriculture* Wendell Berry

USDA Agriculture Information Bulletin No. (AIB777) 42 pp, September 2002

## Appendix



The farm before sunrise looking across the studio garden, (studio barely visible on the left).



Here is the studio garden that the family eats many of their meals straight out of. In this picture, Ann and I spent almost all day bushoging all the old dead crops, spreading compost, and tilling the compost into the soil. The family grew cucumbers, basil, snap beans, strawberries, squash, zucchini, other herbs, and peppers while I was there in this



small garden. For such a small piece of ground, (approx. 130 ft by 70 ft) it was amazingly productive.



Here are the items in an early summer share. Zephyr Squash, beats, gold onions, Swiss Chard, broccoli, Napa Cabbage, green lettuce, and red lettuce. The eggs are extra, but only three dollars a dozen.





Here are some happy Old Spot pigs, another Heritage breed, which just came from Mississippi and Illinois. There are only an estimated 400 Old Spot pigs in the United States.



Here is the UTC drop off on July 20<sup>th</sup>. The baskets and plastic tubs are full of extra corn, potatoes, basil, okra, Swiss Chard, Provider green beans, and tomatoes. The coolers are full of beef, chicken, and pork that is available for anyone to purchase in addition to their share. There are also Shitake mushrooms and eggs for sale as well.





Here is Bill Keener with a new mother with her new piglets of Large Black pigs, one of Bills favorite Heritage breeds. Separating one of these piglets from its mother produces one of the most horrendous noises from the piglet and the mothers can move with astonishing speed, even though their ears cover their eyes.





These are Katahdin lamb, yet another Heritage breed, that shed their own wool. I never liked lamb until I ate one of these, the meat is simply amazing. These lambs look large, but lambs are technically sheep under 14 months of age. These are approximately 12 months old and ready for slaughter.





Here is a 1950 Farmall 100 that the pressure plate broke on and I replaced the clutch, pressure plate, and throwout bearing. It took me a full day of work (only \$20 of labor to the family) and only \$150 in parts where as the local dealer quoted the Keeners over \$500 in labor and they had to special order that parts since the stock replacements were no longer available which were over \$300. We found the parts at a local clutch and bearing

shop. As one can see, there was a certain lack of tools but that is what small farming is, making things work with ingenuity.













Here is an interesting sequence of pictures all taken from the same point of view. The first picture was taken on May 15, the second on June 10 and the final on August 8. Between May 15 and June 10, there was very little rain and we had to heavily irrigate this field, but even though the field was almost bare, there were very few weeds. After June 10, there were many frequent rain showers and sometimes heavy storms. The final picture shows the weeds flourished despite our best efforts. In the final picture on the right hand side adjacent to the corn, we had tilled that small piece of land no less than 4 days before this picture and the weeds are relentless. The constant rain (also blocking the sun) does not give the weeds time to die once they are plowed, and the same weeds simply regrow. This also exacerbates the weed problems as they can 'go to seed' or drop their seeds even though we plow and weed as much as possible.





On the right of this picture is one of the four cages that the chickens were housed in during the night at this stage of growth. These chickens are inside an electric fence because of predator problems. Normally, the white meat chickens ran all over the farm, as free range as can be. In general, all the chickens come back to the cage at night as they like to be in large groups. In the background on the left of the picture is one of the brooding houses where the chicks are raised with feed that is ground much finer than the normal feed as well as heating lamps for when they are very young.



Here are the laying hens being fed by fellow intern and high school friend Katie Sanger. The movable coup behind Katie served the same purpose as the small cages for the chicks, as they roost inside at night and generally stay close to the coup during the day so when we move the coup the chickens follow. This serves the purpose of specific area fertilization.





Here is the strawberry patch which used clover to act as a cover crop between the rows which kept the weeds out. Clover is a very good cover crop not only because it germinates faster and shades over faster than most weeds, but it is also a nitrogen restorer in the soil. It is also very nutritious for the cattle and sheep, so we plant it everywhere.

As you can see, we also chose to use black plastic to cover the beds which works wonderfully, but is a large waste of material since it cannot be easily reused.



Above is the soybean field in Ohio. As one can see, the left hand side of the field is taken over by ragweed where the buckwheat was not previously planted. Also, in the foreground, one can see that when the farmer cultivated this field before planting the soybeans, he drug some of the ragweed seeds down the front of the field which explains why the ragweed is present in the foreground.





Here is the Arctic Organics greenhouse that has the cucumbers growing from the rafters, good use of space!