

THINKING UPSTREAM

Mary-Howell Martens (with Klaas' help)

Originally published in Rodale Institute's 'New Farm Magazine'
March 2004

March comes, cold and snowy, but then suddenly overnight, its Spring! Just a few days of warm weather and fields of wheat change from yellow ochre to neon green, rhubarb erupts from the ground like little red elves, the buds on the cherry trees swell against the blue sky, and down by the pond, the song of peepers is deafening at night.

Today, Klaas was outside, striding across the muddy fields with his old horn seeder with the soft breeze and sun on his back, his right arm swinging widely as he seeds clover into the wheat and spelt. As he walks across those fields early in the morning when the ground is still firm with frost, the seeder and his arm swinging smoothly in harmony with his feet, Klaas is truly at one with the soil, the air, the seed, the sun's warmth, he is at one with the land his father tilled that is now his to tend. While the neighbor kid with his 4-wheeler can throw seed on much faster and arguably more accurately, this ritual of seeding by hand, first thing in the spring, is truly an act of love that is the very core of Klaas' being as a farmer and as a human being.



Today, Peter, our 15 year old son, would like to be out on his new used John Deere 4020 tractor, purchased this January with years of accumulated childhood savings. He will pay off the balance this summer with sweat, hard work and concentration. This tractor purchase marks Peter's entry into the adult world of being a farmer, a momentous decision of ownership, responsibility and possibility, a coming of age. When he sits on that rusty seat and looks over the dented green hood, Peter knows the jobs that need to be done, the work that must be accomplished, his shoulders broaden with confidence, his gray-blue eyes serious and focused. On that tractor, Peter is truly a man.

We are pouring over hatchery catalogs right now, planning our annual poultry enterprises. Elizabeth will be raising some designer hens herself this year, the more colorful feathers in odd places the better, and Daniel is thrilled that finally we're buying an incubator to try hatching our green and blue Auracana eggs. But not yet! Despite the temptation of a few warm days, we must wait for a few more weeks for the weather to be reliably warm enough for the new baby chicks.

Just last Saturday, the children and I went up to our neighbor's sap house to celebrate that particular rite of Spring and get our annual gallon of strong, dark grade-B maple syrup.

Stepping into the sap house, the hot sweet steam and pungent wood smoke swirled around us, fogging our glasses, a vivid contrast to the sharp March wind just outside the open door. The sap run has been slow this year, but with good moisture in the ground, these past few warm days should bring on a heavy run this week and good syruping conditions.

Springtime is coming, the new season is about to begin! The machinery is repaired and much of our seed sits on pallets in the barn. We are ready for spring to come! March in New York is a restless time, an anticipatory time, hopeful yet apprehensive, wonderfully warm days and blizzards, standing at the edge of the cliff and waiting for the right moment to leap. Will this be a good year with favorable weather for a change? Or will it be difficult like the past 4 years? Whatever comes, we are ready (we hope!).

LOOKING DOWNSTREAM, THINKING UPSTREAM

So as we wait for spring, we think and plan, always looking for new ways to do it better.

The prologue to Sandra Steingraber's compelling book, Living Downstream, tells the following fable of a village by a river. "The residents who live here, according to the parable, began noticing increasing numbers of drowning people caught in the river's swift current and so went to work inventing ever more elaborate technologies to resuscitate them. So preoccupied were these heroic villagers with rescue and treatment that they never thought to look upstream to see who was pushing the victims in."

In agriculture, in health, and in society, we are much like those brave villagers. We mine our vast collective intelligence and resources to resuscitate poorly designed systems and to prop up abysmal mistakes. The arms race escalates as we react with new pesticides, new genetic cocktails, new medicines, new political schemes, and new social programs, all flimsy and temporary band aids to conceal a fundamentally and profoundly flawed system. Why do we so rarely raise our eyes to look upstream and wonder why? Why do we not question the band aids and look instead for the causes?

Conventional agriculture is reactive, filled with knee-jerk reactions and assault technology. If you see a pest, kill it with the newest weapons in the arsenal. Or better yet, just to be safe, kill it before it even exists, regardless of how much else you kill in the process. Then amazingly, there are always more pests, more problems, to which new and more powerful knee-jerks are applied. This is a downstream approach, treating symptoms but rarely considering the causes. And we forget there is always still further downstream, but that's where we all live and it is here that we must deal with the destruction and pollution caused by those knee-jerks. Rarely do we see the connections between symptoms and their complex, often subtle but inexorably interrelated causes.

Our new friend, Sandy, is a keen observer of people and processes. He is seeking to convert his farm to organic practices and has asked for advice. As a new farmer, Sandy is unencumbered by the typical paralysis of "we've always done it that way" and "everyone says it can't be done."

After listening to our usual rant on soil health, crop rotations and the like, Sandy observed that conventional agriculture is like ‘chemotherapy for the soil’. He sees that it is quite similar to the toxic chemotherapy used to ‘treat’ a weakened body, already ravaged by cancer. By only addressing the symptoms, both in agriculture and in medicine, too often the assault technologies harm the good and bad indiscriminately, ultimately killing the very organism we are trying to cure. For all of us who have watched friends and relatives with cancer suffer and die, as much from the treatment as from the disease, this analogy is chilling and right on the mark.

Organic agriculture must take a more proactive and constructive approach to problem solving. We must mentally take that walk upstream to understand why the problems to exist in the first place. We must learn how to change our thinking, our reasoning, and our management to address those causes and hopefully then, the symptoms will diminish.

STARTING THE REVOLUTION

Our friend, Dr. George Abawi at the New York State Agricultural Experiment Station (Cornell University), is a man with a mission. He is attempting to convince New York vegetable growers that soil quality and soil health do indeed matter. This is an uphill battle. After all, it's just dirt, you know! And everyone knows that dirt merely serves as an inanimate container into which you place seed, fertilizer, pesticide, water etc. Soil Health? Gimme a break! That's not my problem. Let's talk about something pertinent instead, like why vegetable yields are declining precipitously!

George and his colleagues, Dr. Harold Van Es, Dr. David Wolfe, and Carol McNeil, have taken the same information on the road this winter, hitting the farmer meetings with their message of soil health with revival tent zeal. They have lots of eye-catching Powerpoint slides and pictures showing how increasing soil organic matter leads to reduced soil-borne disease and nematodes, improved pore structure, aggregation, tilth, and water holding capacity, greater release of nutrients and growth promoters, and detoxification of harmful substances. And, ultimately, leads to healthier, more productive crops!

Duh! Of course soil health matters and soil is hardly inanimate. This is the most important concept of organic farming – if we tend the soil and its vast and diverse living population with care, the soil will then tend our crops. We must intentionally feed these creatures with fresh, actively decomposing organic matter and sufficient air, and create a loose, uncompacted, well drained home for them. We must plant cover crops to reduce erosion and add valuable organic matter and nutrients. We must rotate crops to provide a variety of conditions and nutrient demands. We must take soil tests regularly to track nutrient availability, and add benign amendments to correct specific deficiencies. If there is ever a mantra for all of organic farming, it should be “SOIL!”.

Unfortunately, soil health has a publicity problem in conventional circles. You can't buy it in a bottle, hire a custom applicator to put it on or a molecular geneticist to jockey genes for it around in a lab. You can't go out and buy it at the local farm supply store, no matter how much you are willing to spend. Soil health takes time, the right operations and serious intention. In short, soil health takes YOU.

Creating a healthy, well balanced soil is THE most important thing we can do as organic farmers. But to get there, it is first important to understand the biological, chemical, and physical characteristics that define soil 'good health' and 'poor health' and to determine the operations, crops and amendments that produce both conditions.

Does that mean we must all go the No-Till Way, with its heavy reliance on synthetic fertilizers and herbicides, especially glyphosate (Roundup)? Recent studies at the University of Manitoba have found a strong correlation between fusarium outbreaks and glyphosate use. Fusarium is a pathogenic fungi that attacks most field and vegetable crops. Fusarium is one tough species, rapidly filling the biological vacuum created by glyphosate massacre and reduced air exchange, perhaps even stimulated by the glyphosate. In grains like wheat, fusarium infection produces increased levels of potent fungal mycotoxins, rendering infected crops unsuitable for food or feed use. Apparently this effect of glyphosate can last up to 18 months after application, which means that planting wheat after Roundup Ready soybeans may be a risky venture. This new discovery is of great concern since glyphosate is used in conjunction with herbicide tolerant crops on a huge and rapidly increasing acreage throughout the world.

So, what do we do? Find a new fungicidal cocktail to kill the fusarium so we can continue to use the glyphosate? Isn't this merely treating the symptom and not addressing the cause? Isn't this very common response just another example of not looking far enough upstream to understand why the condition exists in the first place?

While it is true that no-till does conserve topsoil and offers significant advantages over heavy, repetitive tillage of conventionally farmed soil, no-till is not likely to be the long-term, sustainable answer that its proponents hope. No-till is undoubtedly "less bad" than much of normal conventional farming, but is that good enough? We are reminded of our favorite William McDonough quotation that "Design is the signal of intention. To design systems that are "less bad" is to accept things as they are and to believe that poorly designed, destructive systems are the best that humans can do. The ultimate failure of the "less bad system" is a failure of the imagination to grasp an entirely different model."

There is a better way! Organic farmers can achieve superior results of soil conservation and soil improvement with wise, well planned tillage using appropriate tools, with attention to increasing organic matter and microbial diversity, and with diverse rotations that incorporate soil improving crops and cover crops. The Cornell Soil Program Work Team have found that penetrometer readings, infiltration rates, and aggregate stability – typical measurements of soil health - are much greater on organic soil. We don't need chemicals that kill a host of unintended targets and create a myriad of unintended problems. With organic farming, we CAN grasp a new positive paradigm that is not merely 'less bad'.

WALKING UPSTREAM

Before the season starts this spring, there is still time to take that walk upstream and learn more for ourselves. As we walk, we should ask ourselves a few focused upstream-thinking questions, such as –

- what are the main weed species present on my farm and what conditions cause them to grow vigorously in certain areas? How can I alter those conditions to not favor the weeds?
- how do I provide a healthy soil with balanced fertility that will grow a healthy crop that resists insects, diseases and weeds? What are the best cultural practices and amendments for each field on my farm?
- what is the best crop to plant on each field considering the soil conditions, crop history, and future cropping plans that will make good use of my land, labor, machinery, time, and markets?
- what are the best pieces of machinery for my particular conditions and budget?
- how can I manage this farm in a way that is productive and regenerative for the land, the crops, the people around me, and for myself?

Spring is almost here, warmer days are predicted for the weekend! That should melt the snow and start some field work. May this be a productive and happy season for you!