

Eco-Campus

Thinking Beyond “Green” to Truly Sustainable

by Joel Salatin

As the imperative for developing ecologically-regenerative food and farming systems penetrates deeper into our culture’s collective psyche, even college administrators are asking: “What does an eco-college look like?”

Almost every institution, from corporate to academic, now has some sort of sustainability director. The person hired for this position is supposed to help the organization become more eco-friendly, or at least promote a semblance of green-think. Raising institutional awareness about water usage, natural light, living roofs, local food sourcing and the type of napkins used, these staff members are an impressively persistent lot, often challenging entrenched ways of doing things.

In the last couple of years, I’ve been asked more and more, as part of a day’s speaking engagement, to address presidents, faculty, and operational staff regarding ecologically sensible changes. Points of tension arise from all sorts

of areas. I always have a cheerleading section in the form of a couple of professors who promote permaculture or a group of highly active, engaged students ready to put worm beds in the dining common.

But these cheerleaders butt heads with many entrenched ideas, the most common being the near-universal notion that

agrarianism is anti-intellectual. “Parents don’t send their scholars here to see sheep grazing the lawn,” one recruitment staff member responded after I suggested mowing the lawn with sheep. Interestingly, this prestigious school had pictures in the administration building, taken in the 1930s, of sheep grazing the lawn.

Integrating livestock or fruit trees in a scholastic atmosphere is almost universally perceived as a step back to primitive times. One school ripped out all of its

As I’ve watched this tension in numerous on-campus discussions, I’ve developed a laundry list of extremely radical ideas for collegians. It’s all about vision and selling something that makes economic sense. Ecological design and policy need to be attractive, economical, and intellectual. The intellectual component includes ethics, spirituality, and community outreach — like cultural leadership, blazing new trails, trips to the moon, that sort of thing. All colleges like to think of themselves as discovering new frontiers, going where no man has gone before.

As I’ve refined this laundry list, it has become much more aggressive and bold. No tiptoeing around the tulips. Go for the jugular. Get serious. Big 180-degree changes. That’s where the big paybacks are. And that’s what captures imagination. While it’s true that small steps are better than none, too often small steps don’t pay. For example, replacing white napkins with brown often doesn’t pay,



During the 1920s and 30s, the University of Wisconsin-Madison’s flock of sheep sometimes grazed near the Agricultural Hall.

apple and pear trees in the 1980s because the students were throwing them at each other. Perhaps edible landscaping does encourage primitivism. Farming and anything associated with it, in our mainstream culture, is viewed as something only dolts enjoy. I guess that makes me a dolt.

whereas replacing napkins with a roll of paper towels on the dining tables can bring huge savings.

As I launch into this list, I need to thank *Acre U.S.A.* for providing a forum big enough and eclectic enough to push the edges of its own constituency. When I proposed this article to publisher Fred

UW-Madison College of Agricultural and Life Sciences

Walters, I fully expected to be told that this was outside the scope of *Acres U.S.A.* But true to cutting-edge eco-think, Fred embraced the idea and here we go, my Santa Claus list for a college eco-campus.

1. EDIBLE LANDSCAPING

This seems like such a no-brainer to me that I can't figure out why more campuses don't utilize it. An edible perennial plant does not take much more horticultural maintenance than ornamentals. Ornamental shrubs and trees need to be pruned and mulched to their drip line just like a pear, apple, or Juneberry.

If we take this one step further, does a bed of strawberries or asparagus need more care than daffodils and ornamental cabbage? While annual vegetables arguably take more maintenance than perennial ornamentals, if we concentrate on perennial edibles, including rhubarb and even brambles, these plants would certainly compete with annual posies set out by the grounds crew.

Many campuses have sustainability clubs that could undertake maintenance of more intensive annuals. The sheer production capabilities from what landscape architects loosely call the edges is staggering. Between sidewalks and buildings is a prime area. Along roads and in medians. Countless campuses have hundreds of acres being chemically fertilized, irrigated, and then mowed. I've seen some of these grounds maintenance budgets, and they are staggering.

Now let's make this mosaic of edible landscaping intellectually sexy. The whole campus is divided into quadrants, numbered or lettered, and plugged into the global positional satellite network. With iPhones or other electronic gadgets, the campus community receives daily updates and reminders of what is available where.

When students wake up in the morning, for example, on their Smartphones is the message: "Asparagus ready in quadrant 138." The next day, the message reads: "Strawberries ready in quadrant 53." Students pull up their quadrant grid map and stop by these areas to graze between classes.

Too often when coming to radical cultural or systems redesign we want to press too much of the innovation

through the status quo. When I say, "edible landscaping," most administrators immediately think about how to get the food into the cafeteria. That means it must be harvested, transported, and incorporated into menus. Why? Just let the campus family use these areas like anybody would in their backyard. An info-sheet on protocol (pick only the black blackberries, not the red ones) could help the ignorant get up to speed.

The point is, the easiest changes don't force innovation through the status quo. It re-invents the whole game. Students would love the intellectual challenge of finding, picking, and eating food on the spot. No storage, no menu planning, no hassle to existing staff or plans. Just pick the easiest stuff first.

Imagine a campus brimming with in-season produce and fruit. Every porch sports a pergola with grapevines. Blossoms in the early season; fruit-laden branches in the later season. It would indeed present an Edenic appearance that would both attract aspiring recruits to the campus and present an atmosphere of abundance. I spend a lot of time on university campuses these days, and I am chagrined at the level of pessimism and hopelessness that pervades the students. Negativity, scarcity, and resignation in the face of lost resources. Guilt over their own lifestyle routines; frustration over cultural intransigence. Anger at Mom and Dad's generation for squandering.

But imagine living every day in a cornucopia, a veritable nest of abundance cradled in an ecological womb. That can heal mind and spirit. Who needs exercise machines? Rip them out and replace them with gardening and tree pruning. Climbing ladders to pick apples is absolutely as strenuous as walking on a treadmill — and far more productive.

Can you imagine a physical fitness program centered around food production? Instead of 20 minutes on a treadmill, it's 40 climbs up and down a ladder picking fruit. Or perhaps 200 square feet of garden bed aeration with a hand tillage tool.

2. INTEGRATE ALL ACTIVITIES

Reflective of our cultural fragmented, linear, reductionist, compartmentalized, systematized, disconnected thinking, college students exercise on multi-thou-

sand dollar contraptions in a designated building while right outside the windows the equally disconnected grounds crew spreads 10-10-10 on a grass strip so it will grow enough to mow next week. Integration is the key to ecology; segregation is the key to futility.

For students who really want to exercise on machines, link them into a generator and let all that effort create electricity. Hook up bicycles to washing machines or water pumps. All that exercise peddling something could actually run things. Cisterns to collect rainwater from the roof would eliminate storm water piping. Exercise bicycles hooked to pumps would bring the stored water back up to the living roofs for irrigation.

Once you start viewing the campus as a never-ending set of circles rather than a set of linear activities, all sorts of possibilities surface. As a culture, we're far more enamored of affixing solar panels to the rooftops than harnessing physical activity to do many of these tasks. I suggest that for too long, energy has been viewed as a problem far out there somewhere, rather than being something we can personally and viscerally solve by greater integration. I've never gotten into Walk-a-Thons. Why not collect donations for X number of potholes dug, or square feet of garden beds installed? How about donations for stacking firewood or loading bales of hay? After spending my day in meaningful work, I'm too tired to walk anyway.

One huge hurdle to the edible landscaping idea is that most colleges in North America take a summer break — the very time when food is most abundant. Sterling College in Vermont offers summer work and academic exchange for students who elect to stay there during the summer. These students tend the gardens and farm, as well as help the dining staff preserve the seasonal bounty to feed the students when they come back in the fall.

Surely somebody on a campus is clever enough to figure out how to integrate students this way. At Polyface, we had a wonderful intern who had just graduated from a prestigious New England university with a degree in human nutrition. This degree, preparatory to becoming a licensed dietician, did not require one minute in a kitchen or garden. She

had never baked a cookie. Folks, I'm not making this up. Perhaps no one exemplifies the integrated dietician better than food and urban gardening guru Joan Gussow, whose classroom nutrition instruction drove her to the garden.

One of the biggest hurdles I've encountered on campuses is with the grounds keepers. The bosses have inevitably majored in landscape design and do not see the grounds as anything except something separate from everything else. If lawn is going to be mowed, the clippings should be caught and composted to apply to the edible plants. Better yet, mow the lawn with animals.

Woody prunings and tree scraps should be shredded and chipped to provide the mulch around the gardens. The compost can fertilize the lawn and the ball fields. If the average campus integrated its biomass waste products into an aggressive composting system, preferably using pigs to upgrade it and turn it, no off-site fertilizer would need to be bought. That's another huge savings. And it makes the campus safer.

3. CHICKENS NEXT TO KITCHENS

This is one of my favorite suggestions because I think it is perhaps the simplest, but offers the biggest bang for the buck. I've toured mega-dining facilities proudly boasting green awards for composting or expensive water-reclamation infrastructure that squeezes moisture from table scraps. As much as I like composting, I don't think trucking kitchen waste 10 miles away to a separate facility deserves a green award.

Why not dispense with all the high tech, transport-dependent, energy-using composting systems and locate a flock of egg laying chickens next to the kitchen? That way nothing has to be centrifuged or trucked anywhere. The scraps go into the chickens, who turn them into eggs. That way, dining services doesn't even have to buy eggs from a factory farm to be trucked to the kitchen.

This tight recycling circle eliminates transportation, storage, containers, and yields both eggs and manure on site. If every kitchen in America had enough chickens attached to it to handle all of its scraps, the entire egg industry as we know it would be unnecessary. Half of

all human edible food in the world never gets eaten. The preparation waste and plate waste coming out of institutional dining facilities is enormous; most of it goes to landfills.

We live in a funny world when millions of tons of edible, decomposable food fill our landfills and give off gas methane that when captured with expensive contraptions yields greenie awards to progressive-thinking engineers in the municipal solid waste department. More systematized engineers figure out how to run the garbage trucks on this methane to collect the kitchen scraps to truck and bury to generate more gas to run more trucks several decades from now to collect more kitchen scraps . . . do you see a pattern here?

Forget the freaking methane, green awards, and trucks. Just feed the stuff to chickens and nobody needs all the techno-glitzy infrastructure and energy-intensive trucks. Such a simple system is beyond the constipated imagination of most institutional executives, but every time I present this idea, the students clap, holler and generally go into ecstasy. They get it. Believe me, something like kitchen chickens is radical and exciting enough to capture the imaginations of today's best and brightest minds.

4. SOLARIUMS, SHADE & GREEN ROOFS

Air conditioning and heating are huge costs on college campuses. I recently spoke on the University of North Carolina-Chapel Hill campus. It has 30,000 students. Square footage of interior space — are you ready for this? — is 360 acres. At an average four floors per building, the actual building footprint is 90 acres. Keeping all that interior space heated and cooled staggers the imagination.

What if every building had a solarium attached to its southern wall? Readers of *Acres U.S.A.* know how simple a solarium can be. Many of us have bent cattle panels and covered them with plastic for poor-boy tall tunnels. You can half-bend these on the southern side of existing buildings to make a crude but very functional solarium. For naysayers, don't underestimate the heat-generating capacity of simple plastic tunnel like this. It's enormous.

The hot air naturally rises, so capturing it is easy as long as it flows upward

into the adjoining building. Of course, I don't expect colleges to begin bending cattle panel half-hoops up against all their southern exposures, but if they did, most would see an immediate 50 percent reduction in heating costs. Are any of you comptrollers listening? Hello? If you build them out of Lexan or other sophisticated materials the heat generation is even better. By locating the cisterns for roof water runoff in these solariums, you could grow fish as well as have thermal mass to keep things warm at night.

During the winter, these solariums would grow mesclun mix, lettuces, and other cool-hardy plants. Doing double duty adds significant payback to this kind of infrastructure.

On the other end of the spectrum, heavy deciduous vines and trees on the north side can create a hyper-cool zone in the summer. This cool air can be sucked through the building to cool it, saving air conditioning costs. Tall deciduous trees above the solariums would shade them during the summer so they wouldn't get too hot. Trellises up the solariums could hold both ornamental and vegetable vines.

Living roofs are truly coming into their own these days. Amazingly, the number one reason is that they protect the roof from ultraviolet radiation that deteriorates everything from shingles to metal. Impervious membranes are now extremely functional and last decades because they are protected from sun, rain, hail and wind — all the things that degenerate a roof.

The soil medium utilizes high tech polymers that absorb up to 10 times their weight in moisture but are extremely light otherwise. Some roofs have as little as 4 inches of soil and others as much as 18 inches. But the fabricated soil medium, made with these special lightweight polymers, is not nearly as heavy as regular soil. These living roofs, which grow anything from short lichen-type plants to small trees, provide super insulation and also reduce storm water runoff. They also create beautiful spaces for leisure and meditation. They can be quite productive.

I recently spoke at a green-think conference at a community college and a visiting professor had just returned from China, where he visited a brand new

100,000-person city built on prior agricultural land. The officials and engineers designing the city were mandated to not compromise food production as a result of the city. The buildings were all about five stories with living roofs growing as much food as had been grown on the land previously occupied by the buildings' footprints. The aerial photograph showed vines and plants cascading off the edges of the roof that virtually obscured the entire city: buildings, streets, everything.

He didn't say, but I can imagine people leaning out of their condos picking cucumbers and butternut squash. Wouldn't it be fun every morning to wake up and look at all that abundance? Can you imagine this produce cascade outside your dorm window? "What's for lunch?" asks one roomie.

The other responds: "Hey, this cucumber is finally perfect today. Tie a sheet around my leg and hold onto me as I lean out and grab it." Lunch is served.

5. LIVESTOCK TO MOW & FERTILIZE GRASS

You who know me didn't think I'd let the lawns escape a livestock component, did you? With high tech electric fencing, small livestock can be managed beautifully in and around a campus to mow the lawns. I'm certainly not opposed to lawn, but again, it should be seen as a component in a larger ecological whole.

Cows, while perhaps the easiest thing to manage, might not be the most complementary mower due to the size of their pies, if you get my drift. Manure from chickens and sheep is more people-friendly. With a portable henhouse designed to exclude sheep, egg layers and sheep could be controlled together in electrified netting. The complementarity of sheep and chickens is perfect. Sheep are better mowers. Chickens are better fertilizers. Between the two, a campus could have lawns that would be the envy of anyone. Again, this would eliminate fertilizer bills and produce food for the campus.

Obviously around the edges or less-traveled areas, cows would fit well, especially if followed by chickens. I'm confident that many campuses could see a dramatic decrease in food purchases were these kinds of proposals implemented on a college campus. If the dining services

folks came aboard — and they need to — who knows how much food could be produced on the average college campus?

One of the biggest hurdles on campuses is project continuity. A group of students gets excited about something but by the time they've jumped through all the hurdles, the founding leaders graduate. Increasingly, however, I'm seeing officially-sanctioned student-run organizations take on some of these projects. Traditions in student-run organizations could certainly include the great campus strawberry pick as well as the annual drag dress day.

6. COMPOSTING TOILETS

Perhaps nothing exemplifies the sheer waste and extravagance of modern culture more than water-based sewage systems. Using potable water for sewage is simply an unconscionable misuse of resources. We should at least be using gray water. At the least, all dormitory showers should be plumbed into the toilets.

But even better would be to go to composting toilets. The problem with most composting toilets is that their holding chambers are too small. For a composting toilet to work, especially in a college setting, it needs to be able to handle lots of excrement one day and very little the next. While I appreciate that a comprehensive discussion on this topic would easily take a whole book, I'll cut to the chase based on what I've seen in many different installations around the world.

If buildings are designed so that all bathrooms are against an outside wall and all excrement goes to a large vermicomposting box (something at least 4 ft. x 4 ft. x 4 ft.) you have the advantage of a mouldering toilet mass but the hygiene and sanitation of the alimentary canal (worm digestion). With a simple forklift or castor wheel arrangement, these boxes can be exchanged underneath the toilets at the corners and edges of buildings. From a simple cost savings alone, not having to treat all that effluent justifies going to a waterless system.

From a nutrient cycling standpoint, it converts all that manure into pathogen-free vermicompost for fertilizer. If people are squeamish about using it on vegetables, it could be used on select ornamentals, the lawn, or plants that bear food like

trees or shrubs, where you don't eat the plant itself. This puts one degree of separation between the compost and the food.

That's one of the beauties of chickens for handling kitchen scraps. By using laying hens, the scraps go through a biological separation by the time they are turned into eggs. And chickens will eat anything.

While I'm certainly not naive enough to believe that these suggestions would be enthusiastically endorsed by any campus, I hope that they do at least provide a vision for what could be done over time. A campus utilizing this laundry list of ecological systems will find intellectual stimulation, spiritual fulfillment, and economic payback. Drastically reducing energy costs, growing most of its own food, cutting the grounds keeping budget, and cycling nutrients — that's just what ecological design does. I think I'd enjoy attending classes on this eco-campus, wouldn't you? It would be a hoot.

Joel Salatin operates Polyface Farm in Virginia's Shenandoah Valley with his family. He is the author of several books on ecological, family-scale farming including *Sheer Ecstasy of a Lunatic Farmer*, available from Acres U.S.A. Learn more about Joel and Polyface at www.polyfacefarms.com. See page 27 for information on Polyface's upcoming field day for a chance to visit the farm and meet Joel.

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