The farm of many faces

by Peter Bane

The first thing that meets your eye when you drive up to Joel and Theresa Salatin's homestead outside Swoope, Virginia, is a strange contraption that looks sort of like, well . . . a big metal chicken on wheels, one end up and the other nosed toward the ground, sitting in the middle of a lush green pasture. When the mind recovers from this surprising vision and you spot what looks like a fleet of miniature aircraft carriers steaming in perfect formation across the hillside behind the house, you know you have left the Farm Bureau far behind. Salatin, who is quick to greet you with a smile and a firm handshake, calls his coop-on-wheels "The Eggmobile". I imagine by now this contraption has entered modern agricultural history, for Joel, who clearly loves what he does, has explained its clever design to hundreds of visitors.

The Eggmobile, and the fleet of chicken tractors up on the hill, are only the most conspicuous of dozens of thoughtful innovations that set Polyface Farms, nestled in the Shenandoah Valley west of Stanton, apart from the herd. In a nutshell, the Salatins use livestock to move fertility around their well-articulated farm system - paying careful attention to refining every step in the cycle - and make a tidy living selling the fruits of their labor. In the process, now 33 years along and entering its third generation in the family, they have built the natural capital of the farm, increasing its health, vitality, and carrying capacity.

Bill Mollison has said that permaculture is the application of what you observe to what you create. That simple but profound process has been the hallmark of the Salatin success story. In fact, you get the feeling that Joel, who bounces around the farm with the energy of a teenager, is thinking all the time about better ways to turn biomass into dollars, with less work, at lower cost. Which is, after all, just what a farmer should be doing.

The Salatins raise their beef cattle, broilers, and rabbits on grass, sell eggs from the mobile flock, and harvest timber for firewood from the wooded acreage up the mountain which forms a splendid backdrop to the rolling pastures at the heart of the farm. Joel and Theresa, their two children, and Joel's mother all seem to share an unabashed enthusiasm for their family enterprise and are quick to credit Joel's father, Bill, with the vision that launched Polyface almost half a century ago. The elder Salatin was an agricultural economist who, in the late 40s, already understood that the U.S. economy was beginning a long-term decline. He foresaw the future of agriculture in the tropical countries of South America and, putting his money where his mouth was, moved his family to Venezuela in 1947, buying a large property to begin a dairy operation. What Bill Salatin didn't foresee were the consequences of U.S. foreign policy: when revolution toppled the government of Venezuela in 1961, and the Salatin ranch was expropriated,

he was forced to return to the U.S. long-drawn negotiations and, ultimately, political pressure yielded a meagre settlement from the Venezuelan authorities, money which became the down payment on the Virginia farm.

Grass farming

The Shenandoah Valley, nestled between the Blue Ridge front range and the folded valley and ridge province of West Virginia, is drier than most of the surrounding territory - rainfall averages 32" a year - and has been managed since pre-Columbian times as a grassland, first by the native Americans who burned it regularly to increase habitat for game animals, and later by European settlers who broke the sod with plows. Until westward migration opened up new lands in Ohio and Indiana, the Shenandoah was a major grain-growing area.

Grass forms the backbone of the operation at Polyface, a name which makes explicit the many complex connections between soil, plants, and animals that the Salatins have crafted into their lives. Beef cattle, a hardy and elegant cross between Shorthorns, Brahma, and Angus, are moved daily from April through October across the entire 95 acres of pasture surrounding the farmhouse. Electric fencing and a simple gravity-fed watering system make this a relatively minor chore. "Fence is the cheapest fertilizer you can buy," opines Salatin. As they move through the rotation, the cattle are followed within four days by the Eggmobile.

Parked in the midst of a recently grazed paddock, the mobile coop disgorges 150 laying hens, a mix of White Wyandottes, White Rocks, Barred Rocks, and Rhode Island Reds, which range out during the day to clean up the cow pies. It seems the hens love to eat fly larvae and, in so doing, kick the fresh manure piles apart, leaving almost no visible residue on the ground. Salatin reports that since he initiated this system he has had no incidence of heel fly parasites in his cattle. Indeed, he insists that even apart from the yield of eggs, which he sells, the eggmobile would pay for itself in improved herd health and pasture sanitation.

From observation - which good management gives him a great deal of time to do - Joel has discovered that heel flies will pupate within 2 - 3 days of manure dropping, and that flies will hatch in four days, thus the timing. The layers thrive on this live protein, and derive 70 per cent of their feed requirements from the pasture. For the balance, they get free choice of whole corn, whole oats, oyster shell, and meat/bonemeal. Salatin has found that feeding them grain with the husk on keeps the chickens free of parasites. Does he ever miss a grazing deadline? Yes, sometimes things just get too busy, but the poultry catch most of the flies anyway.

In addition to beef and laying hens, during the warm months the Salatins raise broilers in 30 mobile "tractors" moved daily across the pasture, ensuring the chicken manure is well-distributed (each spot in the field only has one cage on it for one day each year), and that the broilers get some 30 per cent of their requirements from forage. Each 10' by 10' pen houses 50 birds and is designed to be moved by one person. Joel can shift the whole flock of 1500 in half an hour using a two-wheeled hand dolly. Water from the gravity lines and from a supplemental mobile tanker is dispensed just as quickly. The birds get a minute dose of hydrogen peroxide and Basic H, a mild detergent, in the water to prevent parasites.

In a system so functionally interwoven, it is difficult to discern which are primary and which are side benefits of any given component. Raising poultry on pasture may be unusual, but it yields consistently healthy birds at a low cost, while eliminating the problems of handling manure.

Up and coming

Problem-solving and initiative are two hallmarks of the Salatin family culture. Son Daniel, 13, is his father's eager helper, and has his own segment of the farm operation to manage, the rabbitry. Rabbits are a good product for the Salatins. They bring $2.50/lb. and average 3 lbs dressed out. Now raising 300 rabbits a year, Daniel has been working for several years to adapt them to a pasture system. The problem has been that rabbits, unlike chickens, will burrow out from under their mobile cages unless the bottoms are wired. But bottoms on the cages knock the grasses down and biting into the wire discourages the rabbits from grazing. "The rabbits got gun-shy," Daniel explained. Instead of a fixed cage bottom, he and his father devised a system where they lay chicken wire on the ground in strips six feet wide, and let the grass grow up through it. They then move the rabbit cages back and forth on the wired ground. The bunnies seem perfectly content. Pasturing the bunnies, or young fryers as they are called, has cut feed costs by 65 per cent. Used this way, the pasture yields $4,500/acre.

Direct marketing

The Salatins take pride in their work, and their products, which they sell directly to customers on the farm. Because small volumes of poultry and rabbits are not subject to federal inspection requirements, Joel and his family are able to butcher these animals at home. Working together, Joel and Daniel can dress 20 rabbits in an hour, making the equivalent of $90/hour for their processing work. Economics like that are compelling. Likewise, slaughtering chickens has become an important part of their farm economy. A simple but well-designed open shed equipped with killing cones, mechanical de-feathering equipment, and stainless steel sinks allows them to process several hundred birds in a morning, something they do every second or third week during the season. Broilers are raised on a 60-day cycle, moving from the incubator house to the pasture and finally to the abattoir where Polyface customers arrive Saturday mornings to claim their dressed birds. What stays on the farm, besides the butcher's profit, are the offal and blood, important nutrients reclaimed for the compost piles.

Because of inspection requirements, Polyface beef is slaughtered at a local butcher. Salatin, however, retains a high degree of control of this process. The beef are pre-sold to individual customers, either as fore-or hind-quarters. Hindquarters bring a premium price which helps balance the greater demand for them with the obvious limitation in supply. Each animal is tagged and the carcasses are tracked scrupulously from birth to final sale, establishing a clear trail of ownership which allows Polyface to avoid onerous processing costs. Customers too, are well-regulated. They are notified well in advance of the day their beef will be available (it is slaughtered and racked in the butcher's cold room), and are expected to claim it without delay. If anyone fails to appear as scheduled, Salatin sends them a stern warning, and drops them from his list after a second offense. He can't afford to jeopardize good relations with the butcher or his

status under law. If he sold his beef after slaughter, instead of on the hoof, Salatin would have to take it much further away to a federally inspected meat packing plant, adding significant cost with no obvious benefit.

Self-reliance

Salatin began his farming career selling eggs by bicycle. He is still passionate about the importance of direct marketing. When USDA officials impounded some of his beef last year (allegedly for selling uninspected meat), he responded by forming an organization (FARM, Food Alternatives for Relationship Marketing) to lobby for farmers' rights to sell directly to consumers, and stepped up his already vigorous criticism of big agriculture. "When we don't have community to set parameters for decision-making, government has to regulate food production. When you are selling to people you know, it's not possible to pass off bad food." The government eventually backed down and released the impounded beef, but not before they had let Salatin know that his criticisms were beginning to sting.

Salatin, who trained as a journalist, is not bashful, and he has a flair for presentation. In addition to writing a regular column for Stockman Grassfarmer, he makes more than a dozen speaking engagements and workshops a year, chiefly in the cool months, and has become a very visible exemplar of a better way to farm.

Waxing Jeffersonian in his praise of the small farm, Salatin advocates self-reliance, community bonds, and what has been called good old-fashioned (American . . .) ingenuity. "There are no victims here!" he laughs. "We can only change ourselves."

Salatin's work is testimony to his convictions. When we viewed Polyface fields in early July, the sward was in fine condition, green and lush despite a dry spring, the difference between them and the neighbor's browned fields dramatically evident at the fence line. Polyface land has had no seed or fertilizer applied to it since 1961. Yet the forage has increased in diversity and productivity continuously. Pointing out the many forage plants thriving in his paddocks, Joel describes his product as "Salad Bar Beef. They enjoy the finest greens. . ." The Salatins' 95 acres normally carry 50 cow equivalents, with 22 calves born this year. Heifers are raised to a carcass weight of 400-500 lbs., steers to 500-600 lbs. Besides forage from the diverse and healthy pasture, the Polyface herd gets only kelp, a seaweed, as a mineral supplement, and spring water, flowing by gravity to movable tanks in the corner of each paddock.

Custom genetics

The hardy Brahma-Shorthorn-Angus cross are handsome animals with pretty brown and black striped coats. They are what Salatin calls "thrifty, doughty" meaning thriving and strong. He admires the long-life, heat tolerance, and aggressive grazing abilities of the *Bos indicus* Brahmas, which have lower milk production, but of a higher butterfat content. The *Bos taurus* Shorthorns are stockier and their genetics improve milk production in the herd. He uses purebred semen and has refined his own genetic mix to suit the conditions at Polyface. "Eventually, we'll see a different breed on every farm."

In selecting for best fit with his conditions, Salatin ranks these factors in priority:

1. parasite resistance

2. thrifty coat - prettiness

3. temperament

4. aggressive foraging, heat-tolerance

5. ease of birth

6. size

He works to allow these genetics "full expression."

Compost for nothing

The heart of Polyface's fertility cycle is the composting of winter manure from the cattle herd and its distribution back onto the pastures. No external fertilizer is used on the farm, though poultry feed, diesel fuel, and waste biomass are still imported.

Asserting that mud is the greatest stress on cattle in winter, Salatin explains that he confines them to the open-walled barn (really a big hay mow under roof) from November until early April. Besides sparing the pastures from pugging damage, this saves time, hay, and energy required to feed the animals. Salatin spends about 15 minutes a day on chores during the winter, leaving him plenty of time to read aloud to his son and daughter, who school at home.

Manure spread or dropped from November 1st to mid-March is not taken up by soil organisms, and nutrients are leached by heavy winter rains. This wastes the fertilizer value of the manure and contributes to groundwater and stream pollution. Accumulating and composting the nutrients from farm-grown hay instead allows timing their reapplication for maximum impact. The finished compost is spread in June, just following haying, and again in October, when cool-season grasses are just beginning to slow their growth. "Feed grass when it's hungry," says Joel. This extends the growing season and helps even out the annual forage cycle.

Manure and urine are laid down on bedding consisting of leaves, hay, wood chips, sawdust, or other carbonaceous material. Sawdust and woodchips are preferred because they have very high carbon/nitrogen ratios (500:1) and can absorb the greatest amounts of urine. Salatin gets about 25 truckloads of woodchips from a local utility trimming crew, for which he pays $10/load. He also gets leaves and chipped Christmas trees from the Stanton dump and whatever other high-carbon biomass he can lay his hands on. Salatin has both a chipper and a dump-truck, but he insists it's not yet economical to use them - as long as people are still throwing away organic matter. His advice to other farmers: "Identify your local resources."

Hogs for free

Every week or so, 100 pounds of grain are spread on the growing bedding stack, which rises steadily to a height of three feet by spring. The hay feeding racks have been designed to rise with the packed bedding and manure. Why on earth throw good grain onto a manure pile? Because come spring, when the cattle are turned out onto pasture, Salatin buys two 150 lb. hogs to work over the accumulated manure piles. The grain - barley in the lower layers because it holds longer and ferments slower, and corn in the upper layers, having sprouted and malted, entices the hogs to do what they just love to do, root down in the earth. Two hogs working as a team will dig to three feet to retrieve the sweet morsels of fermented grain. In the same way corn planted with an augur around stumps encourages hogs to root them out of the pasture.

This year Salatin employed eight hogs in four teams. It seems that with serious rooting hogs, two's company, but three's a crowd. The third hog just seems to loaf, get in the way, and winds up undoing much of the work the first two achieve. In the process each team turns 75 yd3 of compressed straw and manure pack, allowing the ensiled hay, wood chips, cattle and (now) hog manure and urine to begin aerobic decomposition.

Compression during the winter keeps the piles in largely anaerobic conditions, binding otherwise volatile nitrogen. Nevertheless, some decomposition goes on, giving off enough heat to reduce the feeding requirements of the cattle by 20 - 25 per cent.

Salatin figures the cost of two hogs plus 1000 pounds of grain is about equal to the value of diesel fuel and his own time that would be required to turn each pile mechanically. And he gets the profit of the fattened hogs when he sells them in the spring. Finished compost is spread "as finely as we can fling it, with the tractor running flat out."

Reaping excesses of nature

Spreading work evenly throughout the year is as important as spreading compost evenly on the fields. Salatin manages to employ himself and his family quite well while still having time for observation, learning, and visitors. To spread both the early flush of grass growth and the chore of haymaking, he grazes his pastures heavily in the spring, turning the herd out about the 3rd or 4th of April, weather permitting, and continues heavy grazing "until the meadowlarks have their babies." By mid-May, the main pastures may have been grazed as many as four times. He begins cutting hay as early as possible, holding some fields back by short-rotation grazing at weekly intervals. In this way he is able to harvest May-quality hay in June.

Every operation on the farm is considered for its demands on time and for how it fits with all the other pieces. Laying hens are butchered in the fall of their second year. Chicks are hatched and the one-year hens begin laying in the fall, replacing the previous year's birds. Chickens lay most of their eggs early in their life cycle. By beginning egg production in autumn, 60 per cent of it will come during the cool months. The Salatins eat eggs during the winter. Hens which begin laying in the spring, lay 90 per cent of their year's total eggs that season. Having eggs to sell in winter helps even out the cash flow and the work of gathering, while reducing workload during the otherwise hectic spring.

To every thing there is a season

Joel explains the rhythms of his agricultural year: "Poultry is a cooling meat: we eat it during the spring and summer. Broilers are hatched in the spring, raised on pasture and slaughtered in an open shed during summer, so they are a seasonal product. Beef is a warming meat, and we harvest it in October and November before the deer go into rut. When frost hits the fall grass growth, the sugars double. In just this brief few weeks the cattle put on a real burst of growth and the meat becomes much more succulent."

Timbering, which gradually adds more cleared acreage to the farms, is a winter activity that yields a good income. Timber valued at $300/acre as sawlog harvest yields $3000/acre when cut for firewood. Salatin has calculated the costs of fuel, and time to deliver, and figures that it's not worthwhile for him to leave the farm. Instead he and Daniel section the timber into stove lengths and stockpile it near the road. Customers who come for meat and egg pick-ups, and others just needing firewood, buy it off the stack and split their own. Finding the right market niche made all the difference. Salatin sells to customers who don't own a chainsaw, but like to warm themselves swinging a maul, adding a little heat value to their fuel. By not selling off farm, he can offer lower prices than other vendors, but still come out ahead. The buyers are willing to drive a few miles out to the farm to save money on cordwood.

What's next?

Salatin's next project, besides experimenting with pastured hogs, is fish. He has his eyes on a couple of ponds lying adjacent to his main pasture, and wants to figure out a way to harvest fish with minimal effort. While we sat in the parlor of the restored antebellum farmhouse that is the Salatin home, Joel and Theresa and their children picked our brains about aquaculture systems, permaculture design, and a dozen other subjects. Clearly, there's more excitement in store.

Joel Salatin has demonstrated the effectiveness of many permaculture principles and strategies: polyculture, functional relationships, biological resources, observation, direct marketing. That he's done so using primarily animals and grass makes his work an important example for millions of farmers and would-be farmers. We need more such farmers; we need more such examples.

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