Conservation Strategies

If you were a waiter at a five-star restaurant, you would certainly take every painstaking care to tend to your guests. You’d dutifully dole out fresh napkins and utensils, offer up excellent but honest food recommendations, all while showing genuine pleasure in catering to your guests’ every need.

Not only would your guests depend on this esteemed level of service, but so would your livelihood. To put it bluntly, rude and inattentive waiters make poor tips.

Yet if you are reading this, you are probably not a waiter. Instead, you are probably involved in the demanding world of agriculture or its economic extensions. But, much as a waiter must tend to his guests, so must a farmer keep a vigilant watch. You depend on it. If a poorly maintained dining relationship yields low tips, a poorly maintained farming operation yields low – or negative – profit levels.

But instead of worrying about dining room temperature, food quality and meticulous presentation, you must attend to your soil composition, fertilizer and pesticide blends and quality control of the outcome.

As any industry analysis would indicate – or any farmer would tell you – this can be infinitely more difficult than maintaining a service relationship at a restaurant.

A farmer’s livelihood, then, is clearly his natural resources. There is inherently a vested interest in maintaining these resources. And the principle method for doing so is clearly conservation strategies.

With that being said, it may seem at first that this message is redundant – study after study has demonstrated that farmers have an innately strong sense of stewardship. This is especially true in some sort of property ownership relationship, as opposed to rental agreements. Nonetheless, there is a science to resource conservation, and it is changing. It behooves any farmer – but especially those interested in their yields beyond this season – to stay up to date on this science.

This is a task requiring your constant upkeep beyond any dated publication.
Nonetheless, here are the basic varieties of conservation approaches as well as some introductory approaches of implementation:

Soil conservation – Much as the state of our atmosphere is constantly receiving attention from environmentalists, so should the quality of our soils. In fact, they should probably take even more precedence. Consider that, while our atmosphere extends some 90 miles up from sea level, the strata of earth that we interact regularly with could be measured in inches and feet rather than miles.

The primary concern with soil quality has got to be its texture and impermeability to water. As a general rule, you should desire a loosely compacted blend rich in organic compounds. In addition to the chemically abundant properties, water absorption is also dependent on highly organic blends.

But before you start trying to alter your soil, find out what you have to start with. In addition to commercial testing companies, there are testing kits and other resources available through your county’s Cooperative Extension office.

Studies have shown that regular applications of organic matter protect your scarce inches of high-quality soil from erosion. This is good – geologists estimate that it takes between 300 and 1 million years to develop 1 inch of new soil, depending on a host of factors.

To increase organic composition levels, the U.S. Department of Agriculture’s (USDA) Sustainable Agriculture Research and Education (SARE) program recommends:

• Adding manure, whether it’s trucked in or deposited by livestock;
• Spreading compost;
• And plowing less – or not at all if you have a good transplant method – as it can compact and break down existing organic matter.

Another method of approaching the problem with erosion deals with altering the structure of your fields on a macro level. In other words, consider different combinations of row tillage and ridge construction.

Finally, a good crop rotation cycle is perhaps the most important ingredient in soil conservation. Although the ideal cycle lengths and crop varieties vary depending on your region and its physical characteristics, the “science” to these suggestions is constantly evolving. Be sure to stay up-to-date on suggestions from your farming resources, including as much personal testimony as you can gather.

Typically, however, study after study has confirmed that a good rotation including regular plantings for cover-value only produce better commodity and forage crop levels over extended periods of time. Allowing cover crops to decompose can offer a host of advantages in addition to changing the soil composition. For instance, it can reduce the need for supplemental fertilizer applications, saving both money and the detrimental
effects this can have on the environment. It can also reduce the need for herbicides and pesticides to the same savings.

But regardless of the individual approaches to soil conservation that you choose to adopt, the central ingredient is clearly on-going education. Pennsylvania has an incredibly adept support network for agricultural, which is afterall its number one industry.

One final caveat in this matter: When taking steps to alter one’s soil composition, keep in mind that this is a slow process wherein it may take years of good practices for the effects to truly become apparent (these same effects will manifest in years to come, however).

Water conservation – Although not as essential in our relatively moist climate – when compared with much of the farming world, that is – it is still tremendously beneficial for you to practice effective water conservation techniques.

The Pennsylvania Geological Survey estimates that agriculture accounts for only about 5 percent of our state’s water usage. Nonetheless, other important industries such as mining – in addition to our own personal well-being – are much more dependent on good conservation techniques.

Your best resource with this highly individualized area of expertise is probably the Pennsylvania Farm Assessment System (Farm•A•Syst) information package, which was created thanks to a cooperative effort among Penn State Cooperative Extension, Pennsylvania Association of Conservation Districts, Pennsylvania Department of Agriculture, Pennsylvania Department of Environmental Protection, and the USDA. Contact your Cooperative Extension office or Penn State’s Publication Distribution Center by dialing (814) 865-6713.

Energy conservation – A particularly hot topic in the media right now is energy use and its clearly dwindling sources. At issue to most people is energy’s rising cost – a phenomenon that farmers know all too well.

A recent Farm Production Expenditures report from the USDA concludes that fuel expenses rose by 7.9 percent in 2006 to about $10.9 billion. Of this, roughly 60 percent was in diesel fuel to power farm equipment. While a 7.9-percent increase is never good news, the report also notes that this still comprises less than 5 percent of the average farm’s expenses.

Nonetheless, your profit margin may depend on your energy costs.

As a cost-control method, consider:

• Changing incandescent lighting in your facilities to T-8 fluorescent lighting;
• Using dimmers and timers on your lights where appropriate;
• Keeping air pressure in vehicle tires at the proper levels;
• Explore technologies specific to your niche, such as variable speed drives on milk pumps and pre-cooler systems prior to a milk bulk tank;
• Maintaining effective insulation on all buildings;
• Performing an energy audit to locate wasteful practices.

Lastly, perhaps the most important application of conservation techniques in farming deals with:

Chemical conservation – The nearest thing that agriculture has to a public black eye has got to be the use (and misuse) of fertilizer and growth limiting formulas such as herbicides and pesticides. It’s inherent that much of the public scrutiny the industry feels on these topics is the result of misinformation. But it’s also irrefutable that there are some farmers who, as the saying goes, give the rest of you a bad name. News story after news story deals with chemical runoff from agricultural areas and how this causes everything from toxic tidal algal blooms to poisoned potable water and cancer frequency increases.

The clearest way to make sure that you are not in this dangerous category is to practice careful application methods and to make sure to not overuse any chemicals you find necessary.

In addition to careful application techniques, there has been a great deal of interest in recent years into cover-cropping as a means to inhibit unwanted organisms. Adopting a “whole-farm strategy” rather than field-by-field approaches, many growers have discovered that there are natural alternatives to the more common chemical means of limiting undesirable growth. For instance, many species of rye have long been known to produce natural compounds that limit the growth of many weed species. There is also ample evidence demonstrating that just about any cover crop inhibits growth if harvested and left to decompose on the surface.

These eco-friendly alternatives to herbicides will doubtlessly become even more important in coming years as pressure increases from environmental advocates. But there is a very strong agricultural incentive as well. Much as human pathogens have been demonstrated to show resistance to drugs – e.g., antibacterial-resistant staph infection – so have weeds been evolving resistances to many common herbicides. Also like bacterial resistance, these weeds have likely been developing at an accelerated pace due to careless or unnecessary herbicidal applications.
The same cover-crop approach has been demonstrated to work against animal invasive species as well for many of the same reasons. In particular, the let-it-compost approach provides a habitat for the natural predators of many harmful pests, such as the Colorado potato beetles.

The same whole-farm approach can also be applied to insect control.

For instance, many apple growers in recent years have resorted to encouraging the black ladybird beetle population as a way to limit infestations of European red mites. But when pesticides are necessary, a little bit of careful research can help you determine which chemicals will not harm your pest’s natural predators.

Lastly, there has been a significant amount of development in recent years on fertilization techniques. Specifically, there are perpetually evolving tests that can help you determine how much and what kind of chemical additives to consider applying. This flies in the face of contemporary farming techniques, which used a blanket approach to oversaturate fields with fertilizers. Today’s research indicates there are peak absorption rates that limit the practical benefit of fertilizing. Put another way, if you over fertilize, you end up wasting time and money as the excess additives end up washing right off your fields and into our water supply.

In Pennsylvania this is especially important. Much of the state is in the Chesapeake Bay watershed, which directly affects one of the largest breeding grounds for many fish and bird species. Even the safest of fertilizers can inadvertently encourage unusual weed growth – e.g., the so-called “red tide” effect that kills fish and is toxic to humans as well. Nature has a precise balance for its ecosystems and your actions, if left unchecked, could disrupt that.

Regardless of the specific methods adopted, there are clearly countless reasons that conservation should matter to you.

First and foremost, good conservation practices are symptomatic of outlooks that are equally beneficial to good farming practices.

Specifically, the same level of care and attention that would drive an ecofriendly farmer to, say, reduce phosphorous applications will ensure that the same farmer pays close attention to threats to his farm, thereby allowing him to stem off crop-killing invaders.

From an economic standpoint, good stewardship also makes sense.

If there’s one thing America’s industrial past has demonstrated, it’s that abuses are eventually legislated back into equilibrium. This means that the same industries
responsible for the original abuse end up paying the ultimate price as regulatory measures go into effect strongly limiting their productivity. And these same careless industries rarely get a seat at the table, so to speak, when the political will finally reaches a critical mass for change. It’s this same philosophy that has in recent times driven many of the nation’s biggest polluters to publicly adopt “green” campaigns.

In the same vein are the public relations benefits that inherently result from careful stewardship.

This is especially true in many agricultural niches, such as organic foods growers and marketers. Quite simply, the consumer is willing to pay higher prices for such value-added products only if he or she is convinced that the financial sacrifice has a moral impact.

It should also be noted that there are logical reasons for conservation even for the most selfish among us.

For instance, family legacy is a common incentive for wanting to leave behind a successful business. You want to leave a profitable and healthy farm for the next generation, don’t you?

Finally, though, we must consider the alternatives to conservation. We have only one environment and there are a finite number of resources within it.