

MARCH 1990

PROFILE: UNIVERSITY
OF RICHMOND

VIRGINIA BUSINESS

\$3.50



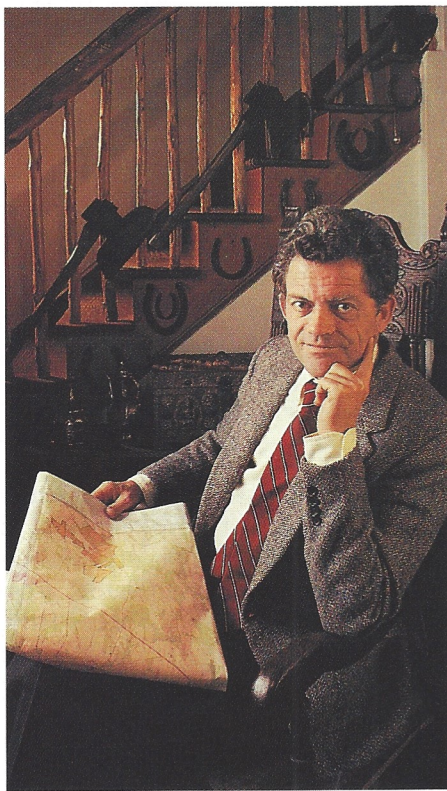
**SOMETHING'S
ROTTIN' IN THE
STATE OF VIRGINIA.**

*Peter Knop
takes on the
Department of
Waste
Management.*

SOMETHING'S ROTTIN'



IN THE STATE OF VIRGINIA



From the air, Ticonderoga Farms (far left) doesn't look remotely pastoral. The main crop, seen in the bottom third of the photograph, is evergreen trees. Bulldozers pile brush from land-clearing operations into windrows up to 20 feet high. As the wood rots, it fertilizes the thin Loudoun County soil. Peter Knop, the owner, lives in the old farmhouse he inherited from his parents.

The way Peter Knop sees it, he's doing a lot more with his 1,200-acre nursery in Loudoun County than just growing Christmas trees and ornamental shrubs. He's doing his bit to solve the landfill crisis.

And clean up the Chesapeake Bay. ... And reduce the use of toxic pesticides. ... And preserve open space in the fast-growing Northern Virginia suburbs.

In fact, if you listen to Knop long enough, you might conclude that his work at Ticonderoga Farms is the best thing to happen to Virginia's environment since the Kepone clean-up in the James River. And you just may be right.

Knop's solution is incredibly simple: Rather than dumping millions of tons of grass clippings, dead branches and tree stumps into landfills every year, turn them into compost and use it as fertilizer. In one swoop, you extend the life of the landfills, cut the use of harmful fertilizers that leach into the Chesapeake watershed, reduce the use of chemical pesticides, and turn scrub forest into verdant agricultural land that can earn a competitive return on investment as an urban

Peter Knop's low-tech composting scheme is breaking new ground in recycling. Despite an impending landfill crisis, state and local authorities are treating him like dirt.

by James A. Bacon

farm. "We literally have the solution to half of America's waste disposal crisis," he says. "It's so simple. It's so easy."

When something sounds too good to be true, it usually is. In Knop's case, Loudoun County and the state Department of Waste Management are trying to shut him down. Accusing Knop of operating an unlicensed landfill, state and county administrators haven't succeeded in their primary aim, but they have chased away much of his business.

The story of Peter Knop is a tale of baleful bureaucracy, of state and local policy makers fixated on petty legalities and losing sight of the greater good. If Virginians want to clean up the environment, the state should be encouraging innovative, free-market mavericks like Knop — not trying to put them out of business.

The 50-year-old entrepreneur, who has made millions in investment banking, disdains convention. Partial to plaid shirts, tweedy jackets and cowboy boots, he drives around his fields and dirt roads in a mud-splattered Cadillac. Like any good deal maker, he abhors red tape. If he had embarked upon a course more accom-

Windrows of brush look bleak in a winter landscape. But the unsightly piles blossom with vine cover — kudzu, wisteria and ivy — in the spring. In five to six years, the mountains of stumps and branches decompose into dense mounds of organic material.



modating to government officials from the beginning, he might not have inspired the resistance that now stymies him. But, then, he argues, the authorities have no legal basis for regulating him in the first place.

The stakes are enormous. Tree stumps, brush and other natural organic material account for more than 20 percent of the solid waste stream in Virginia. The volume should rise now that open burning has been banned. Although Knop's techniques remain unproven as far as the scientific establishment is concerned, they have the potential to save millions of dollars for localities contemplating a \$1.3 billion bill for new landfills over the next 20 years, not to mention hundreds of millions more for recycling facilities and incinerators. Last year, for instance, Fairfax County issued \$237 million in bonds to finance a massive waste-burning facility.

Knop may not prevail in his Kafkaesque nightmare here in Virginia, but he will make his mark eventually. State officials in Florida and New York see promise in his patented process. "We're in great need of some technology" to deal with mountains of yard waste and

organic waste, says Laurie K. Axenfeld, a Washington representative to the New York state senate, who is arranging for senior legislators from the Empire State to visit Knop's farm. "It looks like Ticonderoga Farm might have part of the solution to our problems."

When Knop inherited a 250-acre farm from his parents some 20 years ago, he quickly realized he would have to do things differently. Hay and feed corn did not generate the revenue he needed to cover the rising costs of labor and taxes in suburban Washington. So he became an herb grower. Before long, he was selling herbs as far away as Chicago and Switzerland. But finding field hands for the labor-intensive business became such a chore that he switched to shrubs, ornamental plants, Christmas trees and other nursery products.

Ticonderoga Farms, one of the largest nurseries in the Washington area, has a solid foothold in the local market thanks to its lower transportation costs and ability to supply plants acclimated to local conditions. Still, Knop is eager to branch out. Having

expanded the farm to 1,200 acres, he sees tremendous potential in cut flowers and specialty vegetables. "It's ludicrous," he says, "to import asparagus from California when you could grow it right here."

While those plans are germinating, Knop is expanding the definition of farming: He's not just in the business of selling trees, he's selling recreation. He markets his Christmas trees by giving visitors hayrides and handing out hot cider. He promotes pick-your-own beans and strawberries as a healthy way for suburban housewives to keep their children busy on lazy summer days. "You've got to bring Madison Avenue to the farm," he says.

Although the farm's location in Northern Virginia gives it a built-in market, its heavy clays, thin soil and poor drainage hinder cultivation. Rather than burning brush when clearing his land, Knop began dumping it in compost piles in the hope of upgrading the soil. "I remember my mother sent me out to fetch rotting wood for potting soil," he recalls. "If the compost was good for house plants, it ought to be good for crops too."

Initially, Knop piled the brush in

windrows, as farmers traditionally have done. Over the years, though, he noticed that some mounds of brush decomposed faster than others. To get his land back into production more quickly, he began experimenting to see what worked best. He dumped the brush into piles varying by height, moisture and compaction. His greatest breakthrough came when he noticed the advantage of covering the debris with vines and other plants.

As Knop came to understand it, ivy, wisteria, honeysuckle and kudzu create a microenvironment conducive to decomposition by regulating temperature and humidity. Also, the roots of polk weed, fescue and other plants — "nature's own shredders" — break open the stumps so fungi and bacteria can penetrate the wood and do their work. "In a tropical rain forest, a tree falls down, and two or three years later, it's gone," he explains. In moderate climates, the process normally takes 15 years; Ticonderoga Farms has condensed it to five or six.

Knop bulldozes the compost into the soil, where it builds up the com-

plex organic "soil structure" that supports a micro-ecosystem of insects, bacteria, fungi and other life forms. Through composting, planting nitrogen fixers and practicing integrated pest management, Knop has increased his yields and all but eliminated the use of harmful fertilizers and pesticides.

Organic farming, he insists, is both smart business and beneficial to the environment. "The major source of groundwater and surface-water pollution is agricultural," he says. Phosphates and other fertilizers run into streams and feed the algae that depletes the water of oxygen and, ultimately, denudes the Chesapeake watershed of its rich marine life.

Once Knop began composting his own brush, it was a small step to solicit other peoples' debris. Developers generate thousands of tons every day. They can't burn it anymore, and hauling it to landfills can cost up to \$350 a truckload. Knop takes it off their hands for roughly \$125. He's accepting about 100 truckloads a day, he says, and he could handle far

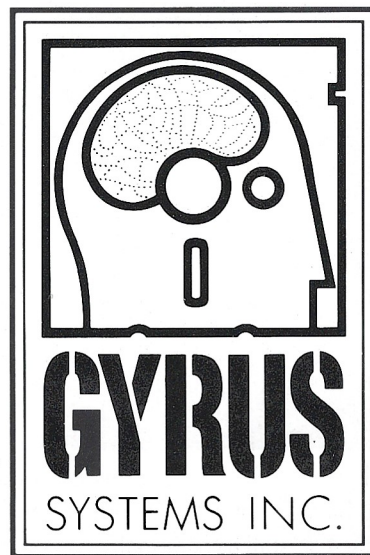
more.

The composting operation, which generates an additional \$4 million or so in revenues annually, makes Ticonderoga Farms a viable venture. Generating a competitive rate of return on his farming operations, Knop has turned down a \$50 million offer from a developer for his 1,200 acres. "The economics of the operation are superb," he says. "And we're only handling 10 percent of the potential."

While Knop has capacity to spare, Virginia is running out of landfill space. In years past, that would have been no cause for alarm: It rarely took more than six to eight months to get a landfill up and running. "We used to dig a hole in the ground, put the waste in and cover it up," says Harry E. Gregori Jr., director of policy and planning for the Department of Waste Management. However, the old landfills tend to leak pesticides, other organic chemicals and heavy metals into the water table, the source of drinking water for 41 percent of all Virginians. The state has

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set a 1992 deadline for all landfills to adhere to tough new design standards.

The new standards will push the cost from roughly \$10 a ton to between \$30 and \$35 a ton, says Gregori. Some experts claim the figure is closer to \$40 a ton. But there's no disputing that it now will take three to five years to find sites, obtain permits and install the elaborate liners and systems needed to protect the water table — when sites can be found. This, after all, is the NIMBY generation — Not In My Back Yard.

Old dumps are filling up at the rate of some 25,000 tons a day, and observers are predicting that many will flunk the 1992 standards. In some localities, policy makers are panicking as they contemplate life without landfills. Will Virginia, like New York, one day load its trash onto peregrinating garbage barges? Will it ponder plans to ship garbage in railroad cars to desert dumps in Nevada?

Sniffing a crisis in the making, the General Assembly has gone beyond protecting the public health. A law passed last year requires all municipalities to complete master plans by 1991 for dealing with waste disposal. There's nothing preventing localities from relying on the private sector, asserts Gregori. "All we're asking them to do is plan ahead."

Unfortunately, making local governments responsible for waste disposal creates a bias in favor of public sector remedies. Typically, localities hire consultants for planning and procurement. Consultants, of course, have an interest in proposing expensive, highly engineered public projects that might create more work for them in the future. Municipalities rarely second guess them. "You see the same thing over and over," says an engineer who asked not to be identified for fear of political repercussions. "It's like following a script."

Another recent law requires all localities to recycle 25 percent of their waste stream by 1995. Theoretically, recycling can save money by cutting the volume of material destined for landfills. But localities that diligently invest in programs to grind up Christmas trees, convert yard waste into

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compost, install recycling facilities or enforce curbside recycling may crowd out private enterprises that could do the job more efficiently.

With government setting standards to protect the public health, a free market in waste disposal services would accomplish the same goals at less cost and less risk to taxpayers. As landfill capacity gets scarce, tipping fees will rise. Higher fees will do two things: encourage households and businesses to explore alternatives to dumping, and attract competitors to develop more landfill capacity.

The private sector is responding to the challenge already. Chambers Development Corp., a Pittsburgh company that specializes in landfills, has opened a major facility in Charles City County and has received approval for another in Amelia County. These huge "merchant" facilities will serve areas far beyond their county limits, says Alexander W. Rangos, executive vice president. Chambers has navigated past the NIMBY shoals by emphasizing community relations and offering lucrative concessions to host localities. The landfill in Amelia, for example, will provide for the county's waste disposal needs and add some \$5 million a year to the local tax base.

These private facilities will be life-savers for small counties and urban

areas. Rural counties don't generate sufficient volume to justify building a \$20 million state-of-the-art landfill, and cities often can't find the land in neighboring jurisdictions, where residents don't want to be the dumping ground for someone else's trash. Joining regional authorities is an option, but it adds a layer of bureaucracy and shifts power to administrators who are accountable neither to voters nor the discipline of the marketplace. At Chambers, by contrast, building landfills "is the one thing we do," Rangos says. "We do it very well."

Sometimes, source reduction is a cost-effective alternative to landfills. The Ford Motor plant in Norfolk reduced the waste stream from its spray painting operation from 900,000 tons a year to 600,000 when it introduced a dip tank to paint its trucks. The new process improved the quality of the product, and Ford saved \$900,000 a year. Similarly, Sandvik Rock Tools in Bristol saved \$48,000 a year by using a new method to clean the carbide tips on its mining tools. As disposal costs rise, industry will find other ways to economize by generating less waste.

In some cases, recycling may be the way to go. Markets already exist for glass, scrap metal and aluminum. Despite a glut, a market for paper has developed as well. "Private industry

will recycle if you can guarantee supply and make sure it's clean," says Gregori, the state planner. Virginia's mandated recycling law is designed to jump-start a market economy for recycled goods by making supplies available.

Government efforts, however, may actually impede recycling by co-opting more promising private sector options. For example, United Bio-Fuels in Petersburg has lined up \$25 million in financing, much of it from overseas, to build a state-of-the-art recycling plant employing proven Austrian technology. The plan, says President Jack L. Kidwell, is to charge a rate competitive with landfills, about \$40 a ton, then separate the waste and sell it. United will sell iron to scrap iron dealers, aluminum to Reynolds Metals and cardboard to any of a number of companies willing to re-process it. Kidwell will use the "heavy organic fraction" (dirt, food and other non-combustible organic waste) to feed the soil of his two sod-grass farms. Instead of recycling glass in the conventional manner, an expensive process, he will pulverize it to a sand-like consistency and also apply it to his turf fields. There are multiple markets, he says, for plastic and other paper products. The rest will go into a landfill. The plant, which should open in 1992, will recycle 85 percent to 95 percent of municipal solid waste — far in excess of the state's 25 percent mandate.

Fortune 500 companies such as Browning-Ferris Industries and Waste Management Inc., which provide trash-collection services, also can make a contribution. In fact, the private sector has the expertise and resources, right now, to take over the entire job of waste disposal from government. The main obstacle is political, acknowledges Gregori. Many citizens just don't trust the free market, he says. "You have a lot of people out there who say they can do it all," he says. "Some can't."

Peter Knop's problem is political, too, but his quarrel isn't with local citizens groups. Loudoun County has used every means within its power to stop Knop from composting other people's



The ultimate purpose of composting at Ticonderoga Farms is to upgrade the quality of soil and accelerate the growth of Christmas trees like these.

brush. The county yanked a grading permit he had obtained for soil erosion control on the grounds that he was operating a solid waste facility. It has written letters to his customers commanding them to cease patronizing his operation. Some have steered clear. And the Board of Zoning Appeals ordered Knop to stop collecting refuse, forcing him to shift his operation to another piece of property.

"They threw the book at us," says Knop. "We're probably the only farm in Virginia with our own general counsel." But even Knop's lawyer, Mario Oriani-Ambrosini, can't handle all the legal work himself. Having filed a suit to halt the county's "harassment," Ticonderoga Farms now keeps two outside attorneys busy.

Knop is fending off the state as well. "They called us [an unlicensed] landfill," says Oriani-Ambrosini. "But we weren't a landfill, because we weren't burying anything. Then they said we were an open dump. But the definition of an open dump involves adverse environmental impact. They sent inspectors down here and couldn't find anything wrong. Then they declared us a fire hazard. The fire marshal came, and he said we were OK."

Terrance Wharton, director of engineering for Loudoun County, says he had no problem when Knop was composting his own brush. Once he began accepting material from the outside, however, he fell under county ordinances regulating the collection and disposal of trash. At the heart of the conflict: State and local officials fear that if Knop gets away with what he's doing, *anybody* could claim to be an agricultural operation exempt from the rules. Wharton raises legitimate issues. So does Knop. The legal questions are in Loudoun County circuit court, and a judge will rule on their merits. But the legal technicalities obscure the big issue. The fact is, Knop has pioneered a promising method for recycling 20 percent of Virginia's waste stream. Rather than stretching the regulations to shut him down, state and local authorities should be bending the rules to make him part of the solution.

History and technology are on Knop's side. In the future, Americans will turn increasingly to biological systems to process waste. Some of the cutting-edge research is occurring in Virginia.

Donald E. Mullins, an associate professor of entomology at Virginia Tech, is exploring the use of microbial populations to digest pesticides. The science is so well understood, he says, that microbial systems may be used to degrade hazardous wastes fairly commonly within three to four years.

Richard Schmidt's work is a little less exotic. The Virginia Tech agronomy professor has been studying the effect of organic waste on soils and water tables. Working in conjunction with United Bio-Fuels, he has found that the waste improves the structure of the soil, making it easier for plants to root, and creates a hospitable environment for microorganisms that form a part of the soil ecosystem. Like Knop, he discovered that compost eliminates the need for chemical fertilizers. Reassuringly, he says, "We have not found any detrimental effects as far as ground water."

Although he is not personally familiar with Knop's work at Ticonderoga Farms, Schmidt says the concept of composting tree stumps is sound. "After all," he says, "in a forest, the leaves fall down every fall. Branches fall down. Trees fall down. I'd say it's a good use."

Thomas W. Simpson, an extension soil scientist at Virginia Tech, has visited Knop's Farm. Although the composting technology remains unproven — Knop has relied on intensive trial and error rather than carefully documenting his findings according to conventional scientific methods — it "may offer an alternative management tool for land clearing debris," wrote Simpson in a report on composting to the Department of Waste Management.

In fact, Knop's methods show so much promise that the state should monitor his progress and devise reasonable environmental controls, Simpson says. For his part, Knop says

he would happily accept regulations tailored to the uniqueness of his operation. He just doesn't want to be pigeonholed into the same category as a landfill or stump dump.

No problem, says Gregori, the Waste Management official. All Knop has to do is apply for an experimental permit. To get that, he needs to obtain appropriate zoning rulings from Loudoun County. "It may be that this guy is a little ahead of his time," Gregori says. "It boils down to a matter of procedure. You can call him innovative. You can call him creative. But everybody's got to play by the same rules."

Sadly, Knop remains locked in mortal combat with Loudoun County, where owners of competing landfills, stump dumps and chipping operations view him as a threat to their business. But Virginia can't afford to let local political animosities determine such an important issue.

As the General Assembly confronts its worst budget crunch in nearly a decade, neither state nor local governments have the money to underwrite the multibillion-dollar transition to an environmentally sound waste disposal system. From a fiscal perspective alone, the logic for privatizing waste disposal services is compelling. By handing over the task to the private sector, localities can channel scarce resources into more pressing needs such as schools, transportation and law enforcement. In the long run, privatization also will harness the energies of innovators like Knop.

Although costs inevitably will rise as Virginians phase in their expensive, state-of-the-art landfills, there is no reason for localities to get caught in a crunch. Chambers Development would be happy to build more landfills. United Bio-Fuels would gladly erect more recycling plants. And Peter Knop would be delighted to propagate his stump-eating nurseries.

"The state has declared it wants 25 percent volume reduction by 1995," says Knop. "I could give them 25 percent by 1991 without blinking an eyelid."

Too bad it's too good to be true. ■