

Travels with Biosa

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In North America, where our associations with Denmark are likely to extend no farther than *Hamlet*, blue cheese and the Little Mermaid, we might soon find ourselves on better terms with things Danish thanks to the introduction here of a line of products that could substantially add to the well-being of our farm animals and the yield and quality of our growing things – from the fruit and vegetables in our garden patches to crops cultivated on a grand scale – not to mention our own bodily health. The firm Biosa Danmark ApS sells its products in over 30 countries around the globe, but is only now starting to create a serious presence for itself in the New World, with offices and a distribution network.

The principal Biosa products are three in number, all of them organic herbal/microorganism blends. The use of microorganisms in treating the soil or human and animal biology is not new, although agriculturally that use has been confined for the most part to Asia; and in fact it was while doing consultancy work in Thailand in 1994 for the Danish ministry of the environment that Biosa CEO Erik Nielsen was introduced to the potential of microorganisms in agriculture. The person who performed this service was Professor Teruo Higa, of the University of the Ryukyus in Okinawa, Japan, and the developer of a much-used product called EM (Effective Microorganisms – or Efficient Microorganisms, depending on where it's produced). Higa invited Nielsen to Japan for an extended visit, as a consequence of which not only did Higa grant Nielsen permission to work with the product in Europe, but went so far as to send one of his students to Denmark for a year to teach Nielsen production processes.

Convinced that he could do even better, Nielsen spent several years experimenting until he arrived at products that were both completely safe and exceptionally effective. Terra Biosa is dissimilar to the Asian product in three ways: the inclusion of certain types of plant life in the formula, the use of other kinds of sugar in addition to molasses for the fermentation process, and the different mix of cultures. What Biosa has done, in a word, is assemble an assortment of plants (medicinal herbs, largely), fermented them in a combination of selected lactic-acid and other probiotic cultures – and in the process achieved a degree of effectiveness not approached by the simpler microorganism strains or blends previously (and still) in use.

The rationale behind the particular herbs and other plants used in the blends is interesting in itself. Although he was schooled for more strictly financial pursuits, many of Erik Nielsen's young years were spent in touch with the soil, and in time he came to have an important influence on the Danish organic-farming scene until he proved too progressive for what is at bottom a conservative society. "I could tell you that this or that herb is known to be good for one thing or another," Nielsen said to me when we sat down for a chat late in the summer of 2003 in Frederiksværk, where the operation is located, in northern Zealand, Denmark's biggest island. "And that this or that traditional medicine recognizes some virtue or quality in this or that herb. But," he said, in an admission that will resonate sympathetically with herbalists everywhere, "I used a particular herb because it *felt* right."

As much as Vita Biosa (for humans) and Animal Biosa are quick to restore the natural microbial balance in the digestive system, enabling the body to extract the maximum of nutrients from the food it takes in and providing a basis for good health generally, so does Terra Biosa increase the biological

activity of soil, speeding the decomposition of organic materials and releasing nutrients for the benefit of growing things.

As the activity and populations of nitrogen-gathering bacteria in the soil increase, so do plant root systems and the consequent absorption of greater quantities of nitrogen, phosphorus and potassium, resulting both in higher yields and in less need for fertilizer of any kind. And it should be noted that a complete list of uses for Biosa ranges well beyond these applications, from the recycling of contaminated earth and the cleansing of wastewater (and septic tanks) to the more humdrum business of lawn care or the weekly household laundry. Lastly, and importantly, these mixtures are rich in antioxidants.

In the course of our conversation Nielsen confessed that one of the inspirations for his experiments with microorganisms was that, as he said, “In organic farming” – he meant in Europe, of course – “we always had the problem that we couldn’t produce *enough*.” With Terra Biosa he feels he has gone a long way towards remedying that situation, and it was in the spirit of seeing for myself the improvements that Biosa has effected that at a certain point I came to be standing with Jørgen Brandt Hansen in the middle of an acre and a half of gardenias near the town of Sabro on the eastern side of Jutland, that part of Denmark that comprises an extremity of the European mainland. Somewhere I’d read that there are 200 species of gardenia, but these all looked alike to me, so I didn’t ask. What I *did* ask, a little cheekily, was, “Where’d the gardenia obsession come from?”

Brandt Hansen didn’t miss a beat. “It was my father’s obsession,” he said. Then he smiled a little Danish smile. “I just inherited it” – and I found myself reflecting, not for the first time, on the difficulty of making the mental connection between the Danes of today – easy-going, with an impish, stutter-

step sort of humor – and their Viking ancestors, who plundered, marauded and burned wherever they set foot, especially since as a people, Danes are virtually unchanged in four millennia. A Danish schoolmate of mine, way back when, put it to me – in an agricultural metaphor, appropriately – that the Danes simply sowed their wild oats a little earlier than most modern bloodlines.

Jørgen Brandt Hansen inherited more than a mere obsession: along with it came two greenhouses totaling almost 65,000 square feet in which he raises 300,000 gardenias at a time – a year’s worth of sales – for export to various points in Europe. But more than that still, he was bequeathed his father’s commitment to Terra Biosa, the elder Brandt Hansen having been the first to make use of Biosa in indoor floriculture, and the benefits have been considerable.

First, gardenia cuttings get a good head start by being dipped into a solution of Terra Biosa and an organic aphid treatment. Brandt Hansen adds Terra Biosa to recycled water that flows through the tables the gardenias sit on, each in its individual pot, in such a way that the water doesn’t come into contact with the upper part of the plant, lessening the risk of leaf rot. But the plants don’t suffer from *root* rot anymore, either. Before Terra Biosa was introduced, Brandt Hansen’s greenhouses were losing anywhere from 20 to 40% of their product. After one year of Biosa use, that percentage had dropped to five, and is now at virtually zero. In addition to the increased financial profits he derives from a full complement of vigorous plants, Brandt Hansen is saving between one and two full weekly salaries for employees who once did nothing but remove dead leaves and chuck out lifeless or dying plants.

One more thing about Jørgen Brandt Hansen’s growing system. To oxygenate his recycling water he uses a device called a BioReco, which I’d already seen in action in a very different setting, on a dairy farm outside the

village of Wilster in Schleswig-Holstein, one of Germany's northernmost regions and fittingly once Danish territory.

It happened that at times on my travels in *current* Danish territory I would find myself following in the footsteps of Sacheverell Sitwell, of the poetic English family, who in the mid-1950s spent part of a summer seeing the Danish sights. About his traversal of the country's second largest island he wrote, "The reader must try not to tire of castles and country houses, for there is not much else in Funen."

But Sacheverell never met Knud Dencker-Jensen, who lives a few miles in from Funen's south coast. If it weren't for a digital camera always at the ready, Knud with his perpetual half-glasses, kindly expression, husky voice and supply of hankies would possibly put you in mind of a good-hearted creature from some Scandinavian folktale, but in fact Knud is a Biosa executive/consultant, and perpetually on the move.

Where he moves to depends on the location of whoever has a problem to sort out and whose interest has been piqued by the possibilities of Biosa. Knud goes simply to make suggestions, and in Wilster he came to make suggestions to the Langholz family – Thomas, Uta, Thomas's father, Reimer, and three offspring as scrumptious as kids raised on dairy farms are supposed to look – who had a very big problem. The rooms of their house, first of all (including the kitchen, alas), stank of cow manure, and flies were everywhere, not surprising when you consider that the family home adjoined a barn where dung was deposited with regularity.

But in the fall of 2000 Uta stumbled on a magazine article dealing with microorganisms, and a little Internet research led her to Biosa. Thomas called

the firm, along came Knud – and as he reports the case, the initial conversation can be boiled down to this:

Thomas: The house stinks of manure.

Knud: Manure is money...[pregnant pause]...and money smells not.

This possibly sounds better in the original German: “Gülle ist Gelt...und Geld stinkt nicht.” In whatever language, it was a mantra of Knud’s I would get to hear him intone on more than one occasion.

(One of the spots on the globe where I *didn’t* get to hear the mantra but where Knud’s travels take him is Malaysia, where many Muslims raise pigs – not for their own consumption, which is forbidden, but for sale to the country’s Chinese. But just as for reasons of their faith they can’t consume the flesh of the pigs, neither can they use the pigs’ manure as fertilizer. So they dump it in the river. Knud is helping them compost the manure with Biosa, for subsequent export to Vietnam, China, India and Australia, providing at one and the same time a use for a product, a means of income for people [“Gülle ist Gelt...”] and a reduction in environmental damage.)

Knud left the Langholzes with a supply of Terra Biosa. The manure got sprayed, the barn areas in general got sprayed (to keep harmful bacteria to a minimum and provide a more agreeable indoor climate), and the cows got sprayed. When eight days later Knud returned, the smell was gone.

But the Langholz family, and other farmers in the area, had a bigger problem than unpleasant odors. These are marshy lowlands (a sign marking the lowest point in Germany, 3.8 meters below sea level, is no more than a long walk from the Langholz farm), and not only had the soil been poisoned by chemical fertilizer residue, but so had the system of canals that supply water to it. Most area cattle were suffering from lesions of the liver, among other

ailments. The water at the Langholz farm was found to contain an ammonia rate of between 15 and 16 milliliters per liter.

A ditch was dug to accommodate a pond of a little over 20,000 cubic feet, and the water to fill it was pumped from a canal 200 yards away. To oxygenate the water in the pond, a BioReco was installed. This equipment, produced for Biossa, is often used in conjunction with Terra Biossa in the treatment of unhealthy bodies or supplies of water. The device is based on the theory that in clean water, water molecules move in an endless whorl. In polluted water that movement is reduced, resulting in lower oxygen and energy content. The BioReco draws in air from the atmosphere and reintroduces or bolsters the whorl pattern, raising oxygen content not just near the surface but at deeper levels and, given a reasonable depth, at the bottom as well, yet without stirring up sediment and mud – in fact the increased oxygen, especially in combination with Biossa, helps compost the mud, contributing to the health of the water still further.

A healthy water environment in a natural balance is what Biossa aims at, just as it aims at a natural balance of flora in the digestive system of both man and beast. Terra Biossa is effective for example in restoring a healthful bacterial balance in water afflicted with an overabundance of nutrients and abnormally extensive algae growth, first by transforming nitrates into nitrogen and oxygen, which escape into the air, with algae growth dropping as a consequence of diminished nitrogen content, and secondly by competing for space with the anaerobic microorganisms that produce methane and hydrogen sulphide, contributing to an environment that favors the production of beneficial bacteria and fungi.

The process can call for experimentation, given the number of factors potentially involved: the source, quantity and nature of nutrient supply, the

amount of sunlight and the angle it comes from, the extent and type of vegetation both in and adjoining the body of water, the presence or absence of fish and which species (some feed on plant life that absorb nutrients and release oxygen, or on those tiny daphnia crustaceans known as “water fleas” that are found in all manner of freshwater areas and that feed on algae), and so forth.

And in the particular situation of the Langholzes, in addition to the BioReco, every day for two weeks 10 liters of Biosa were added to the pond, which became the source of drinking water for the Langholz cows. Analysis, at the end of this period, showed no trace of ammonia whatsoever, and nitrate and phosphate rates at only two milligrams and 0.5 milligrams per liter respectively.

Concurrently, each cow received a daily dose of 100 milliliters of Animal Biosa in its feed. Health problems decreased – the Langholzes discovered, as many other farmers have done, how much Biosa can end up saving them in reduced veterinary expenses – and in time not only did milk production rise, but the milk itself improved dramatically in quality: the white-blood-cell count, which had been as high as 600,000 per milliliter of milk, well over the European legal limit of 400,000, after six months of Biosa use dropped to as low as 150,000, eventually leveling out at an average of 250,000 to 300,000 units. And the diarrhea problems that had afflicted as much as 60% of the cattle disappeared.

It should be noted at this point that a little Biosa goes a long way. A liter of Terra Biosa retails for about \$30 U.S., Animal Biosa for around \$33, but for applications of any scope, Biosa products are activated and extended in such a way that the resulting proportion of microorganisms resembles that found in the one-liter or five-liter container. One liter of bottled Biosa becomes about

35 liters of activated product, and the activation process is quite simple: to produce just over 100 liters, in a clean plastic drum three liters of organic sugarcane molasses are dissolved in 100 liters of lukewarm water. Three liters of Biosa are added to the mix, which is stirred well and then covered to maintain an oxygen-free environment. The mixture is kept at around body temperature for five days (an aquarium heater is the instrument of choice), after which it is stirred to release carbon dioxide, and surface scum is removed. Another three days completes the activation process, and the qualities of the activated Biosa will be retained for as long as a month if it's kept airtight, out of the sun, and reasonably cool (50 to 60 degrees Fahrenheit).

The Langholz herd consisted of 63 cows when I was there, a combination of black and white Frisians and *Rotbunte* (German Red Pieds). It was the first time I'd been in immediate contact with manure that had no smell. But more than that, it was my first time seeing cows that looked so sleek and fit – *and that had no flies*. To someone who'd had a hard time picturing a cow whose head wasn't swarming and whose tail wasn't constantly flicking away at a horde of pests, this was almost an aberration of nature.

The Langholzes discovered that collected manure treated with Terra Biosa (and note that the manure from animals getting Biosa with their feed is *already* an improved and more beneficial product) generates more clover for the cows' diet when it's sprayed on fields where they'll be grazing, and Animal Biosa also goes on the hay that is mixed with clover and siloed for winter feeding. The corn planted in treated areas also improved, providing bigger, wrinkle-free kernels.

Back in Denmark, the Bigård farm, not much up from the border with Germany, is operated by Frede Larsen. Larsen farmed traditionally for 13 years,

but has been organic for more than 25. In 1996 he saw Erik Nielsen and Knud Dencker-Jensen on TV, was sufficiently stirred to buy one liter of Terra Biosa, sprayed it on some cukes and tomatoes, and liked the eventual results enough to make it an integral part of his farming.

He grows – well, what doesn't he grow: it's that A-to-Z catalogue that seems popular with many organic farmers: celery root, potatoes, carrots, beets, onions white and red, herbs by the dozen, celery, tomatoes, eggplant, fennel, English cucumbers, peppers, squash, leeks, arugula – among other things – and pumpkins. That an individual plant of Larsen's had produced 48 pumpkins in a single season I found remarkable enough, but it slowly sank in, as I pondered a few examples that had been kept aside and were now displayed on a high shelf in the boutique that Frede and wife Jane run on the property, that not just were they handsome specimens of pumpkin, but these particular ones had been sitting here for two or three years and showed no sign of decomposition.

This is testimony to the antioxidant properties of Biosa, Larsen told me. Since he began applying it – Larsen irrigates his greenhouses weekly with Terra Biosa, spreads treated silage over fields both after harvest and in March, machining it into the ground, and sprays his fields every spring (again, a little goes a long way: for normal spraying, it takes no more than thirty liters of activated Terra Biosa, in turn mixed with whatever quantity of water is necessary, to cover an entire acre) – not only are his yield and quality both up, but so is the longevity of harvested crops.

The pumpkins are an obvious example, but he gave me another: of carrots picked the previous summer, in earlier times 50% would be unusable for human consumption by April; now with Biosa, the percentage is no more than five. And indeed, the carrots he brought up from the cellar and that he'd stored there a year earlier were virtually unaffected by the passage of time, still

firm, redolent and sellable. Frede Larsen is an example of a European organic farmer who's found that with the addition of microorganisms to his growing practices he can produce a crop so bountiful that the price to the consumer of an organic carrot – or tomato, or pumpkin – is no higher than that of these vegetables' non-organically raised counterparts.

A little sidebar: Larsen's a thinking man's farmer, and has evolved a method of dealing with *Kortstråle*, a variety of galinsoga that springs up mainly where more desirable vegetation has been planted in rows. He dries a quantity of the weed, soaks it in water for two to three weeks, removes and mixes it with a Terra Biosa solution, then sprays the affected area with the mixture. The galinsoga does not reappear, and Larsen reckons the solution gets the message through to the soil that there's enough of those molecules now, there's no room for more.

This is quite different from the “orthodox” way of using Biosa in weed situations. The idea here is for the farmer or gardener to apply the product in order to paradoxically *encourage* weed growth – treating the soil as though preparing it for seeding or planting – but doing so before the normal growing season so that the weeds can then be “harvested,” leaving an at least relatively weed-free medium for raising more advantageous plant life.

One of the more interesting stops, for a non-Dane, was at Båring Højskole in northwestern Funen, part of the “folk high school” system in Denmark, which takes a little explaining. The concept was evolved by the 19th-century Danish theologian N.F.S. Grundtvig as a way for the common people to learn about their religion, history, and cultural heritage.

These schools have next to nothing in common with North American high schools: the student body consists of young adults who are at school

fulltime, living, studying and working with their teachers seven days a week, in an atmosphere that resembles home. The schools have no special entrance qualifications and no exams, and are open to applicants from elsewhere in the world (there were young men and women from the U.S., Israel and Japan when I visited), with an emphasis on students learning from one another. At the core of its philosophy is the idea of training people for life in democratic circumstances – and in fact it’s been said of Grundtvig that more than anyone else, through his educational and also his political endeavors, he laid the foundation for Danish democracy.

In the agricultural component at the school, everything is organically based – the students eat organic – and the use of Biosa, ever since the school was introduced to it by a neighboring farmer, ranks high in importance. A watchword is sustainability. And the Båring school as it happens is one of the players in spreading the Biosa word around the world, since the school, which headmaster Bjarne Ottesen describes as “an international bridge-builder,” runs or has run agricultural projects in countries as diverse as China, Romania, Iran and Pakistan. Those seeking their guidance have inevitably been eager to incorporate the use of Biosa and of BioReco into their efforts.

Hearing this from Ottesen I was reminded of something Niels Wandler had told me earlier. Wandler ran the Biosa operation in Germany, to date the largest market for the products, before setting up the North American division. He’d said there are three mindsets when people are faced with a new way of doing things. There can be reluctance, there can be acceptance, or there can be a simple let’s go for it. Denmark’s stance vis-à-vis Biosa, he’d said, is one of acceptance, albeit in fits and starts. Ottesen was less generous: “The Danish government looks at money before the environment,” he told me, “and our

school is at cross-purposes with that. And what we seek is to counteract the basically conservative Danish farming mentality.”

But developing countries are often quick to adopt the third attitude: a) what have they got to lose, and b) they often have no well-established biases to overcome. In 2001 a contingent from the Punjab, in India, had spent time at Båring studying Danish organic methods. It occurred to me on hearing this that, with the consequences of the leak at the Bhopal pesticide plant still very much a reality more than 20 years after that calamitous event, the worst industrial catastrophe the world has suffered, India would seem to need little in the way of incentive to seek alternatives to agricultural chemicals.

In its communications Båring Højskole refers to the “active and holistic environment” provided by folk high schools. Almost a year later, on another continent, in the town of Aldergrove in southern British Columbia, in a pub at the end of a day on the road, Knud is outlining for me his personal professional evolution. It’s a journey that describes a full circle, in that Knud says he now finds himself putting into practice the values of Rudolph Steiner, whom he had read as a young man.

In the Austrian philosopher-scientist’s Biodynamic agriculture movement, a holistic system of farming and gardening regards the earth as a living organism. And soil renewal aimed at the production of vital and deeply nourishing food is essential. Steiner, were he still with us, might not be a happy man.

Every indication is that the nutritional value of what we grow, its vitamin and mineral content, is plummeting. And the Food and Agriculture Organization of the United Nations reports that not only is something in the order of 25 billion tons of valuable upper soil lost every year in the world

through erosion and the effects of weather, but that “only 11 percent of the world’s soils can be farmed without being irrigated, drained or otherwise improved” in the first place. Much of the earth’s earth needs a boost, in other words, and while organic farming is already contributing by helping build healthy, moisture-retaining soils and by collaborating with nature to replenish those soils, a holistic approach would seem to be a sine qua non if we have any hope of enjoying a mutually beneficial relationship with the planet and with its creatures.

Consider bees. Bee populations are in decline worldwide, an important reason being a weakening of their resistance to disease and parasites caused by exposure to pesticides and fungicides. Could anything be more irrational, then, than to shovel still more chemicals on the problem? And yet, traditionally, chemical agents have been the weapon of choice in the battle against bee afflictions. What these have generally accomplished has not been to cure disease but merely to suppress it, while pests develop resistance to agents used, and discouragingly quickly.

Olav Rasmussen, an agriculture consultant stationed in the Danish town of Skejby, has written: “Through sterilization, new infections are acquired, and so it becomes necessary to sterilize again. But with microorganisms we go in the opposite direction and try instead to change the balance, so that the harmful bacteria find poorer conditions.” The microorganisms in Bioss are now making inroads among beekeepers in Europe and taking first steps with their North American counterparts – and possibly not a moment too soon: the potential decrease in the extent of pollination and the consequent drop-off in crop production that would accompany a continued reduction in bee populations is alarming to contemplate.

The use of Biosa in beekeeping involves less of looking at a morbid situation in isolation and more of studying a problem in its context. Underlying this use is the realization that healing ideally should come from within. And key to dealing with that problem is the recognition that, first, a well-functioning immune system enables species to rebuff attacks on vital body functions, and that, secondly, the quality of the immune system depends to a considerable degree on the quality of a species' environment. Informed beekeepers, therefore, have not been treating just their hives with microorganisms – the technique consists essentially of spraying a 50/50 solution of Animal Biosa and unchlorinated water on the hive's entrance board and inner surfaces – but *treating the bees' collecting area as well*: woods, orchards, fields, even the water in area ponds and marshes. (The bees can be sprayed with the same solution to calm them, incidentally, thus doing away with the need for smoke.)

The Moselle River has a longish run through France (though the grapes grown along its banks there produce nothing nobler than *vin ordinaire*) and a stretch in Luxembourg (where grape quality picks up considerably), before entering Germany and making its way to Koblenz to join the Rhine. It's on the twisty German leg of the river's course where true wine excellence is found, where Riesling grapes benefit from a schistose subsoil – decomposed rock absorbs daytime heat and releases it at night to the vines – and where they're eventually transformed into the Moselle Valley's most famous product.

And nowhere could I find a better spot for making a Biosa-relevant side-by-side assessment than in the vineyards where Peter Konz grows grapes for his prizewinning Konz Saar Riesling. Konz is of an old area family, so his vines are located, not coincidentally, just outside a small town also known as Konz, which sits near the confluence of the Saar and Moselle rivers about five miles

west of Trier, home to the finest Roman architectural relic in Germany and the birthplace of Karl Marx.

Peter Konz is *ökologisch* and then some: “Even *organic* fertilizers I have not used since 1995,” he tells me. What he *has* used is a homeopathic-type energy-function solution he produces himself under license – *and* he’s been sold on the virtues of Terra Biosa for some time. Konz grows on five acres in the midst of a larger area used by both traditional and organic vintners, with nothing more than a narrow pathway between individual properties, so comparing the results of this, that and the other method is an easy task. (Fortunately for Konz, parenthetically, his vineyards sit upwind of the traditionalists and their chemical sprays.)

The differences between Konz’s vines and grapes and his neighbors’ were an eye-opener. The leaves, first of all, were more vital – they had a different color, even dissimilar shape, and they had an almost palpable energy: they reach for the sun – while those on the chemically treated plants were dwarfed by comparison, their duller green gone to yellow and brown where fungus had been eating away. The grapes themselves presented another stark contrast: in size, in quantity, in juiciness, in the number of successful individual examples as opposed to clumps of wilted fruit.

The organic neighbors, meanwhile, had, in varying degrees, less of the fungus and generally more grapes to the vine than the chemically-treated areas, but fungus was nonetheless still an obvious problem, and a substantial proportion of the fruit showed signs of a struggle, not always a successful one.

Peter Konz harvests two weeks earlier than his neighbors, and in his recent yields the sugar rate of his grapes has climbed by one to 1.5% – which means higher alcohol potential, which in turn means a higher price for the crop.

But even without examining the vines and grapes, you could see the difference in the soil. Konz's was softer, darker, and to the eye alone more nutrient-rich than any other. And it was moister. Readers may recall that much of Europe had a terribly long hot summer in 2003, but Konz's soil was able to preserve a healthy water content throughout. And when a heavy rain did finally come, the water in his various neighbors' fields ran off, but on Konz's was absorbed and remained in the ground. His soil, he reckons, holds 200% more moisture than it ever did before.

Peter Konz wasn't sure how long each of his organic neighbors had been chemical-free, but in making my visual comparisons I thought of some numbers Knud had earlier shared with me. In his extensive experience, he'd said, when you abruptly switch from chemical fertilization to organic methods, without the helping hand of Terra Biosa, crop production over the next several years tends to describe a roller-coaster ride: in the first year it's likely to climb to levels a little higher than the year before; in the second year it will resemble the old levels; in the third year it drops by as much as 40%; while in the fourth, fifth, sixth and seventh years it slowly climbs back to earlier levels. When the use of Terra Biosa is combined with the transition, however, production *increases* from the start of the changeover, and remains at elevated levels. Comparison of the raw material for Peter Konz's acclaimed *Moselwein* with that of his organic neighbors seemed to bear out Knud's mathematics.

Rob Donaldson's Bradner Farms is located northwest of Abbotsford, in British Columbia's majestic Fraser Valley area (said Knud, as we drove at one point through a particularly imposing stretch, with steep tree-lined inclines as far as the eye could see, "Everything is so *big* in Canada"). It's an organic cow and chicken operation with 1,000 or so Holsteins, some 330 of them active milkers.

Donaldson and Willy Fitzl, who oversees the milk-cow operation, had been persuaded that the addition of Animal Biosa to the cows' diet might be worth the small gamble. The cows' winter feed consists of a preparation containing peas, corn, barley, flax meal, a little soy meal, vegetable oil mostly soy, kelp and a multivitamin and mineral mix; in warmer weather the rations account for 40% of their feed, with the rest coming from grazing.

The plan, in order to gauge the Biosa impact as accurately as possible, was to wait for the tester from the Holstein Association to visit the next week, begin introducing Biosa into the feed, and then compare the results of the tester's work with those when he returned some three or four months down the road. Knud recommended that enough activated Animal Biosa be added to the rations so that each cow receive 100 milliliters daily (a cost of roughly 10 cents per cow per day), the formula to be diluted somewhat after a certain amount of time – because of the successful establishment of healthy intestinal flora in the animals' digestive systems – to 70 milliliters, for a cost of around seven cents per cow per day.

Knud had generalized to me that improvement in milk output for cows on a Biosa supplement can be as much as 20%. That figure applies to underperformers; in the case of well maintained and organically fed animals like these the hope was for something in the neighborhood of 10% over time. The farm wasn't impatient enough to expect results after the first interval; they figured the nominal investment was worth a six-to-eight-month wait. *But:* on the tester's return visit in November, July's average output per cow of 67 pounds per day had risen to 74 pounds per day, a difference of over 10% after less than three and a half months. In addition, milk-fat content was up in an even greater proportion, from around 3.5% to 4%. (Fitzl estimates that the

increase in rations over pasturing might also have contributed to the rise in milk-fat, though “maybe not.”)

But important though these numbers are, Fitzl enthuses at least as much over the state of the Bradner cows’ overall health, which he reckons to have improved by a minimum of 50%. That change for the better manifested itself most notably in the cases of mastitis, which have dropped in half, with most instances that do materialize proving to be much milder than before, to the extent that they can be treated homeopathically.

The chicken part of the operation was not functioning when we visited in July 2004, their stock having been some of the 17 million area birds destroyed in light of the avian influenza outbreak. It’s since started up again, and the thinking is that in time Animal Biosa will likely be added to the poultry feed as well.

But Willy Fitzl has chickens of his own, and his enthusiasm carries over to the effects of Biosa on the organic egg operation of more than 2,000 layers run by himself and wife Monica in the same area but just a long stone’s throw up from the U.S. border (and far enough away from the bird flu outbreak that the Fitzls were spared the loss of their hens). Around the time that the Bradner cows started getting Biosa in their feed, the Fitzls began using Terra Biosa on their own farm, where in addition to the chickens they tend a young walnut orchard of over 800 trees.

In the laying houses, where previously it was hard to stick a head in without a mask because of the reek of ammonia emanating from manure, that manure is now being sprayed, and to dramatic effect: Finzl reports, first, that the ammonia odor is gone. (Ammonia is produced when the organic nitrogen compounds in manure decompose; Terra Biosa, in lowering the manure’s pH, retains the nitrogen and eliminates the smell. The possibilities for Biosa use

simply as an odor eliminator in pig and mushroom operations, for example, would seem to be as vast as the quantities of manure those operations either produce or consume.) He also reports that the manure itself is quite transformed in consistency, from a liquidy accumulation that stuck to boots and clumped on chickens' claws to a much firmer mass, with a feeling underfoot like forest moss, thick and spongy, and minimally moist. It's being compressed and solidified – compost is happening.

Gone are the masks. (Spraying the air with Biosa also quiets the dust in an enclosed space, and can have a similar effect on the animals spending time there, reducing aggressiveness in those that are prone to it for whatever reason.) The manure can be scraped up as before or simply covered with sawdust for however long, meaning the necessity of regular mucking out is gone too. Willy Fitzl intends spreading his manure, as he does every spring, between the rows of their walnut trees, but this time will add additional Biosa once the manure is on the ground.

Still in the same neck of the woods but a little father north, in Fort Langley, we stopped in at Ponder Park Stables to check on the progress of a horse named Spin a Tune, better known as Ricky. A couple of months earlier, stable manager Lisbeth MacQuarry had met Niels Wandler at an area health-food store where MacQuarry had gone in the hope of finding an organic preparation to restore some of Ricky's old energy.

The 13-year-old mount had developed a dull coat, and was constipated and listless to the point of hardly moving. Wandler convinced her he might have just the remedy, and after a transatlantic cell-phone call to Knud to check on dosage – Knud advised that the animal be given a full liter-bottle of Animal Biosa to drink, another liter 24 hours later, and 10 milliliters a day thereafter –

the process was begun. Ricky started unburdening himself an hour or two after the first bottle, and produced another five loads over the next 24.

When we caught up with him, he was fit, very mobile, and – in stable owner Marilyn Boswyk’s words – had “regained his old vigor.” I caught Knud smiling his doubly pleased smile at the results of his long-distance counsel, an expression I’d seen before, one part happiness over the product’s success, another over an animal’s relief. But Boswyk and MacQuarry brought up a different concern with Ricky, what they’d found to be a hypersensitivity to being touched or to being groomed with anything but the softest brush. He was *ticklish*, in other words, though that condition too had lessened in severity with continued Biossa therapy. Still, Knud suggested an additional, external, treatment, namely that the horse be ridden until well lathered up and that Biossa then be rubbed over his coat, a process that would break down the remains of insect life lodged next to the animal’s skin. (This, to my knowledge, was never done, from what I gather because Ricky has since made so much progress in the matter of his ticklishness that it hasn’t been considered necessary.)

Later I found myself in a car driving down Fraser Highway with Barrie Briggs. Briggs is an old hand in food wholesaling in western British Columbia who’s joined the Biossa family as a representative. “You know,” he said to me, “I’ve been waiting all my life for products like these to come along. This is important,” he said. “This is something that matters.” And my mind went back to our friend Sacheverell Sitwell, who despite never having met Knud Dencker-Jensen – or Erik Nielsen, for that matter – appeared to me to have summed up with uncanny prescience the potential impact of Biossa when he wrote, “Danes seem to have solved of instinct some of the more terrible and besetting problems of living in the modern world.”