

North American Biochar Conference

Business Panel Discussion

Bringing Biochar to Market

LIFE

Locally Integrated Food & Energy

presentation by **David Yarrow**

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www.carbon-negative.us — www.nutrient-dense.info — www.ancientforests.us

When I was asked to speak on this Business panel, I thought someone made a mistake, since I'm not a businessman, nor have I ever been in business. Rather, I'm a healer, and my first concern is teaching how to use food for healing. Food is the best medicine, because food becomes your blood, which nourishes and cleanses all the rest of your body's cells and tissues. Thus, my concern is growing high quality, nutrient dense food for people to heal themselves.

This panel's question is: How do we market biochar?
In particular, how do we sell biochar to farmers?
How do we get farmers to buy biochar to put in their soils?
Because farmers are the first and most important market for biochar.

Whether in business, science research, or a Ouija board, the first key is to ask the right question. We need a wider framework to ask our question properly—we need a whole system view. Our persistent human shortcoming is to focus on little issues, and ignore the broader, deeper context. For example, we study biological life while ignoring the magnetic bubble that encloses the entire planet and contains all life on Earth. Specifically, we need to get beyond 20th century thinking to solve our 21st century problems.

It's About Food!

I believe not much money can be made selling biochar to farmers, and probably never will. Selling biofuels is where the gold is. Maybe money can be made selling special biochar-based soil activation blends, but getting farmers to buy biochar is a steep uphill effort. Neither agriculture economics, nor current financial reality, encourage farmers to buy a new soil amendment.

Yet, the climate crisis requires us to convince farmers to put biochar in soil—
—to be leaders in carbon sequestration and soil stewardship.
This undoubtedly requires them to buy biochar.
so this panel's question still begs for an answer.

First, it helps to remember this carbon-negative biochar strategy came from *terra preta* in Amazon rainforest. We've become so tangled in technology to make charcoal and energy, and the urgency to sequester carbon, we forgot why *terra preta* was created.

Terra preta's ancient indigenous inventors didn't make biochar to sell to anybody, to produce biofuels, to sequester carbon, to cut fertilizer use, to reduce greenhouse gas emissions. Yet they created thousands of hectares of some of Earth's most fertile, productive soils.

They did this for a simple, universal reason: to grow food to feed their family and community. Every day, everyone must eat. Feeding people is the first service a community must deliver—
The first stone in any community's economic foundation—
The first activity to prime the financial pump.
Food is the fundamental driver of any human economy.

Economics 101

Farmers grow food for a market.
They buy seed and plant crops because they have a market to sell food.
Give them a market, and they will grow food to supply that demand.

Ultimately, it is consumers who buy food.
It's consumers who fire up food markets with demand, whether for fresh produce, wonder bread or whole grains.
If consumers demand organic food, farmers will grow food without synthetic chemicals.
If processors demand GMO foods, farmers will grow them.
If the market says, "give us food grown with biochar," farmers will buy biochar.

In the 80s, consumers demanded food grown without synthetic chemicals, and we created organic food production and certification to define and deliver that food quality. Now, we must go “beyond organic” to offer 21st century consumers another choice.

The emerging biochar businesses and its supporting movement must form a trade association to establish standards, protocols, trademarks, licensing, and marketplace identity for its products. These are complex, long and difficult tasks, but they begin at this conference.

Carbon-Negative Food

If we want farmers to buy biochar, we must create a label to identify food grown with biochar, and convince consumers to buy that food.

My word to designate this food is “carbon-negative”—food whose production removes carbon from the Earth’s atmosphere, rather than today’s food which generates huge greenhouse gas emissions.

Carbon-Negative food is grown by methods and materials that suck CO₂ from Earth’s atmosphere and store it in stable, safe physical forms, such as charred carbon in soil.

However, while carbon-negative is mostly about sequestered carbon, it’s not just adding biochar to soil. A legal definition and technical standards must include fossil fuel used to power farm machinery, and for food processing and transport to markets.

Grains grown and harvested with fossil fuels are hardly carbon-negative.

Lettuce grown in biochar-amended soil in California and shipped to Boston is hardly carbon-negative.

In the next year, the emerging biochar industry must develop a legal definition, technical standards, trademark licenses, and a product identity to clearly, carefully, precisely define carbon-negative foods, and launch a campaign to teach consumers biochar’s planet-healing, soil-restoring purposes. Then, by their choices for every day’s meals, consumers can choose the future they want by the food they buy and eat.

However, consumers can be picky, fickle and short-sighted. All by itself, “carbon-negative” isn’t likely to motivate consumers. Something more than sequestered carbon is needed to earn consistent consumer loyalty.

Nutrient-Dense Food

But *terra preta* soils in the ancient Amazon didn’t grow any ordinary food. *Terra preta* grew very high quality food—highly nutritious food—food that assured the community’s long-term health and wealth.

In the 80s, when we created organic certification, we prohibited certified growers from advertising their food had any special nutritional qualities. As much as we wanted to offer such a nutritional food, we knew we didn’t have production methods to reliably produce such food, the science to cheaply verify such food, or the inventory controls to authenticate such food in the marketplace. But now we have the methods, the science and the marketing to do this.

The next higher standard of food quality is already being developed and may be test marketed next year. Nutrient-Dense food has a higher nutritional content than food currently grown and marketed. In fact, to be precise, Nutrient-Dense will have at least as many minerals, vitamins, enzymes, and anti-oxidants as when the USDA began to measure and publish the composition of foods early in the 1900s. Nutrient-dense food not only has more minerals, vitamins, enzymes, anti-oxidants and all, It also tastes a lot better, stores longer, dehydrates without rotting.

Last February, in Barre, Massachusetts, led by the Northeast Organic Farming Association of Massachusetts, over 100 farmers sat through a 3-day training with Dr. Arden Andersen, a medical doctor and dairy farmer who has taught biological agriculture for 25 years in Australia, New Zealand, Britain, and Canada—but not much in America.

I sat through the three days, and wondered what these farmers thought about Arden’s ideas and methods. At the end, all the farmers stood up and gave Arden a very long standing ovation. They didn’t just appreciate his instructions to upgrade their soils, farming methods, crop quality, and herd health, they were enthusiastic and pumped up to go home and get started.

If over 100 farmers in New England are excited to grow and sell nutrient-dense food, then the next revolution in farming and food quality has begun. Since the February training, many more growers have signed up to be trained in nutrient-dense methods.

The same community spirit that brought us the American Revolution, the same Yankee ingenuity that brought the Industrial Revolution to America, is now leading a Nutrition Revolution in the marketplace. Similar efforts are underway in the Midwest, California and the Northwest.

So, biochar industry doesn't have to create the nutrient-dense food revolution. Farmers themselves are already leading this movement for a higher standard of food quality. Instead, this new industry can join and support a movement that is already well underway. Because biochar is a key and unique ingredient to create nutrient-dense soil.

Balanced, Full Spectrum Minerals

Biological agriculture is a more complex, exacting discipline than organic or chemical farming. Nutrient-dense begins by boosting and balancing the elements in soil. Not just three, or five minerals, or 25 trace elements, but all 90 elements nature needs to build biology. Not just enough minerals to get a crop out of the ground and off to market, but an abundance of elements to assure fully healthy plants. And these elements must be in proper proportions, in specific ranges of ratios—seven major minerals at parts per thousand, trace elements at parts per million, but others at parts per billion, and a few at parts per trillion.

Once all the physical elements are present, balanced and available, then the soil can be inoculated with the biological organisms—bacteria, fungi, mycorrhizae, algae, actinomycetes, protozoa, and all the soil food web. Once the biology is in place, soil has the resources and intelligence to manage itself, such as maintain stable pH, fix nitrogen, accumulate phosphorus, recycle minerals, and spoonfeed plant roots. This is the paradigm shift to a sustainable 21st century agriculture—from a chemical view of soil, to a biological approach and energy insight.

Biochar is a key resource to grow nutrient-dense food. Biochar's huge capacity to adsorb ions make it a critical ingredient to create nutrient-dense soil. Biochar's complex internal micropores provide perfect residential housing for micro-organisms. Thus, nutrient-dense growers have a special motivation to buy biochar. Nutrient-dense producers will be among the first, best and biggest buyers of biochar.

Arden Andersen doesn't teach nutrient-dense farmers to use biochar because they currently can't buy biochar in large lots at reasonable prices. It's useless to teach farmers to use a soil amendment they can't get. The challenge to biochar industry is to make its case to nutrient-dense producers, to supply the vast volume of biochar needed for farmland applications, and work with growers to perfect the use of biochar in nutrient-dense production.

Consumers then get the added sizzle of nutrient-dense with their carbon-negative food. In my talks around the Northeast, I always end with a question: "If we produce and market food labeled "carbon-negative" and "nutrient-dense" Will people buy this food?" The consistent response is an enthusiastic "YES!"

I urge everyone in this room to buy and consume nutrient-dense food. I recommend everyone here get involved with the emergence of this new, higher standard of food quality. I suggest every business here support this movement to transform our food system—and our society.

Community-Supportive

Now, let's widen the view in our microscope for a larger perspective. How we design and develop this technology must consider not only its environmental and economic effects, but also its social impact. Because every technology either supports or erodes community. In the 20th century, we watched industrial technology disassemble and weaken communities. In the 21st century, the new paradigm of biology and ecology makes community our most important technology.

This invokes another New England tradition represented as the Town Meeting—the citizen-based, community-centered politics of the people and place. I saw this social consciousness in the organic farming movement 20 years ago—New England farms may be small, but they are rich in culture, tradition and community spirit. Today this shows up as an outburst of community-supported agriculture—many small, diversified farms sprouting around cities and towns supported by subscribers.

To modify the terminology, we need to develop biochar as a community-supportive technology. We must move away from large-scale, centralized industrial applications and facilities, and instead develop smaller scale systems—farm-scale, household-size, community-integrated.

My favorite image for this new view is *terra preta* itself—
the **Soil Food Web** that char-enriched soil can create—
the community of micro-organisms in soil—
—the “microbial reef.”

As we regenerate our soil, we can transform our own community.

In New England, we want farm-scale pyrolysis equipment—
—and small farm size, at that.

We need a mobile pyrolyzer to tow to the forest or field, make biochar to leave on site,
and haul biofuels to a central community or cooperative refinery.

We want a biochar-burner to heat and power a greenhouse to grow food under cover year round
in the impending era of extreme weather and unpredictable climate.

We want to factories with jobs to make, sell and maintain one million biochar-making woodstoves
to heat our homes and cook our food in our long winter—maybe even generate electric power.

My native American friends learned through hard experience
that any new technology must be assessed by a strict criteria:

Does this support community?

Or does this weaken community?

Does this bring us closer?

Or further insulate and isolate us?

Does this new method create and retain wealth?

Or impoverish and disempower our common unity?

LIFE = Locally Integrated Food & Energy

Now let's spin our microscope around and look through other end;
let's turn our microscope into a telescope.

Let's not look at minutiae. Let's examine the big picture—
the social and economic context for marketing this new soil amendment.

Every day every one must eat.

After food, the next major service a community must provide is energy—
at least fire to cook food, but also heat for cold weather in winter, and electric power.

Food and energy are the two keystones of any community economy anywhere on earth.

If we produce and distribute food and energy locally,

we have the food, the energy and the money.

We establish the capacity to create and retain wealth in our community.

We put in place the two foundations of any human economy.

We can do more than market biochar, sequester carbon, grow nutrient-dense food, and produce renewable energy.

We also have the tools to create economies that are solvent, stable and sound.

We have the keys to regenerate our own community economies.

If we harness the ceaseless daily human appetite for food
to technological transformation, social change and ecological restoration,
it will happen.

If we do this right, this initiative will be self funding.

People will happily buy carbon-negative, nutrient-dense food—even pay premium price for it.

Farmers will make money, and happily buy biochar to add to their carbon-negative, nutrient-dense soils.

We won't need government subsidies, foundation grants or carbon credits,
because this transformation will be driven by the market.

But I see nothing wrong with federal icing and carbon credit candles on our biochar cake.

But first the cake.

I call this carbon-negative, nutrient-dense strategy
“eating our way to a sustainable future.”

Last, I want to mention that this gold silk shirt I am wearing
is a gift from a man from India who took me to the airport to fly here Sunday morning.
I wear it now to remind us that what we do with biochar in America
will lead the way for those less fortunate in the third world.