

Bauers Family Tree Farm News

Miramar Costa Rica

12/15/2015

Issue No. 16



Farm Update

2015

Due to a low maintenance year on the farm, only one newsletter was produced this year.

The 2015 growing season began with a rather dry start to the rainy season and finished with incredibly wet conditions. Late April into early May commences the start of the Costa Rican rainy season, but this year the rains came in a bit later and with less volume than usual.

While it did rain sufficiently for the trees to leaf out and begin growing, it certainly didn't rain as much as normal for the months of May, June, July and August. Fortunately

the maturity of the teak trees helped and will continue to help with the health of the forest stand. The Teak trees on the farm have completely shaded the ground on the farm. This results in the soil beneath the trees staying moist for long periods of time, even during periods of reduced rain. During the months of September, October and November it rained heavily, almost every day, and the Teak trees as well as the rest of the jungle thrived during the 2nd half of the rainy season. The rains have continued into December and due to all the

El Niño

• • •

Much has been said about this year's strong El Niño and a likely culprit for the change in weather patterns in Costa Rica and many other places in the world.

A very basic definition of El Niño

- El Niño is a weather phenomenon that occurs irregularly in the eastern tropical Pacific every two to seven years. When the trade winds that usually blow from east to west weaken, sea surface.
- El Niños can be strong or weak. Strong events can temporarily disrupt weather patterns

late moisture, the trees will most likely keep their leaves well into the month of January.

Little maintenance was preformed on the farm in 2015 due to the fact that there was a major pruning of the trees completed in 2014. In the beginning of 2014 every single tree on the farm was pruned to 20ft in order to keep the trees growing straight and tall. Because of this major and recent pruning preformed in 2014, our forest engineer wanted to give the trees a full year of growth to build more girth and branch out farther before another pruning is scheduled. Also, as mentioned, above due to the maturity of the forest stand the forest floor is now receiving much less light. Therefore clearing around the trees is needed on a less

Timber and Climate Paris Climate Talks

With the worldwide climate talks just wrapping up in Paris earlier in December much focus has been put on carbon, the atmosphere and global warming. Below we have pasted an article

frequent schedule. The Teak trees have grown taller, thicker, and branched out more. A large percentage of the trees have reached over 50 feet in height and a number of the trees are measuring more than 12 inches in diameter. Growth continues to meet expectations. Maintenance scheduled for 2016 includes a clearing where once again all suckers and any ground cover or bushes competing with the trees will be cleared. In addition all branches growing on the lower halves of the trees will be pruned to keep a clear bole and encourage the trees to continue to get taller, thicker and continue to grow straight.

originally published by NPR that speaks to how carbon can be can be sequestered through good farming practices. The article only briefly touches on the farming of timber, but clearly states that this is one of

El Niño continued

• • •

- around the world, typically making certain regions wetter (Peru or California, say) and others drier (Southeast Asia). Some countries suffer major damage as a result.
- El Niños also transfer heat stored in the deeper layers of the ocean to the surface. When combined with global warming, that can lead to record hot years, as in 1998.
- "El Niño" got its name in the 1800s from Peruvian fisherman, who first noticed a mysterious warm current that would appear around Christmas. They called it the "little boy" or "Christ child."

the top ways to sequester carbon.

Carbon Farming Gets A Nod At Paris Climate Conference

Las Cañadas is an ecological cooperative in Veracruz, Mexico that's working to sequester carbon and mitigate climate change while producing food, materials, chemicals and energy.

Las Cañadas is an ecological cooperative in Veracruz, Mexico that's working to sequester carbon and mitigate climate change while producing food, materials, chemicals and energy.

This week, world leaders are hashing out a binding agreement in Paris at the 2015 U.N. Climate Change Conference for curbing greenhouse gas emissions. And for the first time, they've made the capture of carbon in soil a formal part of the global response to the climate crisis.

"This is a game changer because soil carbon is now central to how the world manages climate change. I am stunned," says André Leu, president of IFOAM — Organics International, an organization that promotes organic agriculture and carbon farming worldwide.

Leu is referring to the United Nations Lima-Paris Action Agenda, a sort of side deal aimed at "robust global action

towards low carbon and resilient societies." On Dec. 1, countries, businesses and NGOs signed on to a series of new commitments under the agenda, including several on agriculture.



Currently, the Earth's atmosphere contains about 400 parts per million of carbon dioxide. Eric Toensmeier, a lecturer at Yale and the author of *The Carbon Farming Solution*, a book due out in February, says the atmosphere's carbon dioxide levels must be cut to 350 parts per million or lower to curb climate change.

Toensmeier and Leu are among a growing number of environmental advocates who say one of the best opportunities for drawing carbon back to Earth is for farmers and other land managers to try to sequester more carbon in the soil.

"Reducing emissions is essential, but eventually it still gets us to catastrophic climate change," says Toensmeier, who's attending the Paris talks on behalf of the group Project Drawdown. "The level of emissions in the atmosphere now is already past a tipping point. That means we have to sequester carbon."

The Center for Food Safety created a video in November explaining how soil can help solve climate change.

Using photosynthesis, plants draw carbon from the air and deposit it in the soil. And farming is a simple way of growing crops and managing soil that, under the right conditions, encourages the buildup of carbon in the ground. In addition to countering global warming, carbon-rich soil can be more productive and hold water better than soil with lower carbon content.

There are two basic ways for farmers to capture it, says Connor Stedman, an agricultural consultant in the



Hudson Valley with the firm AppleSeed Permaculture.

"You can put carbon in soil, and you can put carbon in long-lived perennial plants, especially trees," says Stedman.

And you can start, according to Torri Estrada, managing director with the Carbon Cycle Institute in northern California, by disturbing the land as little as possible.

In conventional industrial agriculture, the soil is often tilled or plowed to disrupt weeds and prepare the land for planting. But turning the soil this way (or overgrazing animals on rangelands) introduces oxygen to the carbon. The carbon and oxygen then can bond into

carbon dioxide – a greenhouse gas.

As food production has intensified, between 50 and 80 percent of the soil carbon has been lost around the world, according to researchers at the Ohio State University's Carbon Management and Sequestration Center.

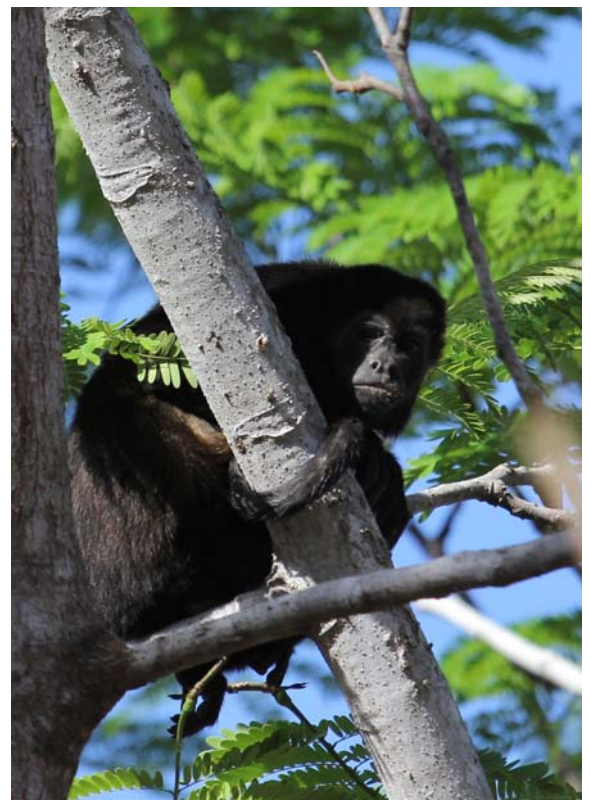
Gabe Brown grows oats, alfalfa, peas, clover and other field crops in North Dakota. He says that when he bought his land in 1991, his soil's carbon level registered at a dismal 1.9 percent on average. "It was a tan, lifeless powder," says Brown, who delivers seminars around the nation on carbon farming and has become a sort of guru of the movement.

But then he decided not to till or plow to boost carbon levels in his soil. And his efforts have paid off. "Now, [the soil] looks like black cottage cheese," he says, adding that his yields are as much as 25 percent greater than those of conventional farms nearby, and his soil is up to 6 percent carbon on average.

According to Stedman, healthy, undisturbed soil rich in organic matter can contain anywhere from 8 to 20 percent carbon. In

addition to minimal tilling and plowing, another way to sequester carbon in soil is to add compost. Cover crops add carbon, too, and also reduce erosion.

But to make a real dent in the carbon dioxide emissions – and climate change – with carbon farming, Stedman says farmers globally would have to deposit on average just over 25 tons of atmospheric carbon into each acre of the Earth's arable land. That could take decades. And that assumes carbon emissions could also be halted and that all farmers in the world actually participate. Stedman says that, realistically, since only some farmers will be actively trying to sequester carbon in coming decades, it may require depositing much more than 25 tons per acre.



There's another possible wrinkle in the scheme, says Peter Donovan, a board member of the Soil Carbon Coalition. As carbon is drawn from the atmosphere and into the Earth, the ocean will release some of its own carbon into the air, which could substantially offset the progress of sequestration.

Ecologist Brock Dolman agrees the task at hand is massive.

"Business as usual with conventional agriculture is just contributing to greenhouse gases, soil erosion, ocean dead zones, all of the above," says Dolman, co-founder of the Occidental Arts and Ecology Center in northern California, which promotes sustainable agriculture. "But to not move forward with carbon farming ... well, somebody would have to tell me what else we are going to do."

There are signs beyond the Lima-Paris Action Agenda, announced in Paris on Dec. 1, that the carbon farming movement is moving forward.

The Carbon Cycle Institute is working with local governments to teach the basics of carbon farming to growers and ranchers around California.

In France, the Ministry of Agriculture, Agrifood and

Forestry has launched an international campaign to increase soil carbon content.

There are other ways to sequester carbon besides agriculture and forestry, such as capturing emissions from power plants and piping the carbon to underground storage spaces.

But Estrada says doing so by farming makes the most sense.

"Photosynthesis and soil has been working for billions of years," he says. "It's the longest running [research and development] project around, so why not use the simple, well proven one that we know works?"

Timber Investing Timber vs S&P 500 and other commodities

Time For Timber? 25-Year Gain Crushes S&P 500

When it comes to commodities, gold and energy typically bubble up as the go-to ways to add some alternative asset class diversification to a portfolio. Thing is, you're typically in for a feast or famine experience, depending on global demand (for oil) and the global zeitgeist (for gold).

From the Lehman Brothers bankruptcy in September 2008 through the debt-ceiling debacle in August 2008 the price of gold nearly doubled. Since then, as the Chicken Little trade has lost its appeal amid mending economies, the price of gold is off nearly 25%.

With energy, you're pretty much beholden to the direction of oil prices, which swing around in line with the global economic outlook. Here's how the Vanguard Energy ETF's (VDE) price



chart side by side with the direction of oil prices.

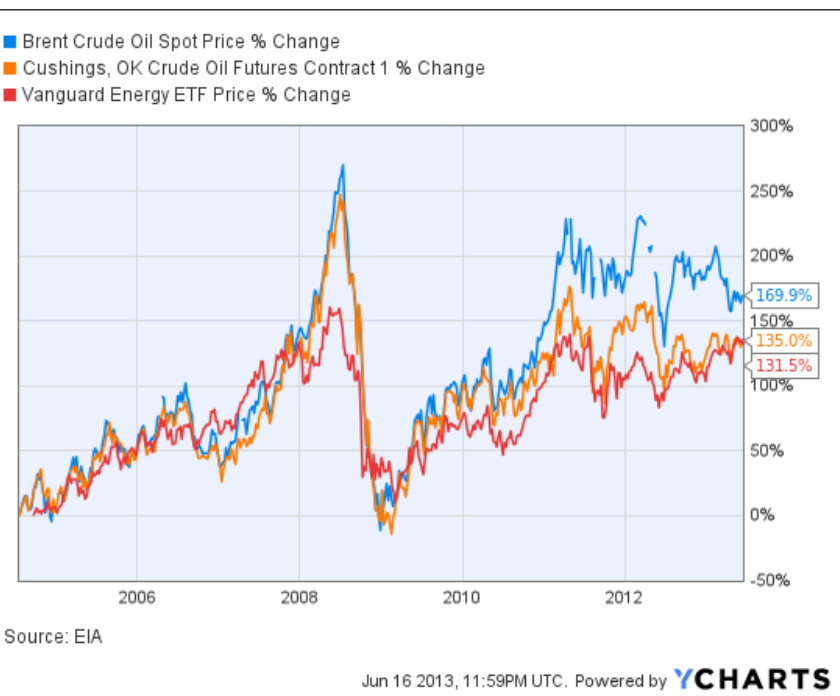
If you're intrigued by the idea of adding a commodity sleeve to your portfolio, timber is an often overlooked commodity

half as productive an alternative investment as the two largest timber ETFs, Guggenheim Timber (CUT), and iShares S&P Global Timber and Forestry (WOOD).

The GMO team has long been pounding the table on the diversification and inflation-hedge attributes of timber for years. In GMO's latest seven-year forecast, the 5.9% projected real return for timber is equaled only by the firm's outlook for much more volatile emerging market stocks. For perspective, GMO expects run of the mill U.S. small and large caps to register negative returns over the next seven years when adjusted for inflation. High quality U.S. large caps -- think excellent ROE and low debt -- are expected to fare better, with an annualized 3.7% real return. But that's still two percentage points less than timber. If you're looking to rotate out of some profitable investments that look a little long in the tooth these days, timber might be worth a look as a long-term hedge position.

To be sure, GMO and other big time institutional clients can invest directly in timber. With timber-focused ETFs you're of course buying a portfolios of businesses that traffic in timber, in whole or part.

For a more direct stake, you can take a look at Real Estate Investment Trusts that own



worth consideration. First off, it's a renewable resource. Can't say that about gold or (most) energy. It's also got a flexible harvesting schedule. You can't keep corn in the ground if prices soften. A benchmark timber index had an annualized gain of more than 12% from 1987 through 2012, compared to the S&P 500's annual gain of just below 10%.

Coming out of the market low in March 2009, the SPDR Gold Share ETF (GLD) hasn't been

Then there's the Grantham seal of approval to consider. Jeremy Grantham, co-founder of GMO, which manages more than \$100 billion for institutional clients, has been an eerily canny long-term seer. He was harping about the tech excess in the 1990s long before bubble talk became fashionable. He was also out in front on suggesting we had a bit of a credit/debt imbalance prior to the 2008 meltdown.

forestland. Weyerhaeuser (WY), which converted from a mish-mosh of paper-related business to a full on REIT in 2010, is a major holding in both ETF portfolios. The company just announced it will pay \$2.65 billion to buy more land that will increase its Pacific Northwest timber acreage by 33% to more than 6 million acres. (Pacific timber has a faster route to Asian emerging markets than southern timberland.) At the same time, Weyerhaeuser says it's considering a sale or spinoff of a home-building subsidiary. The net takeaway: it's doubling down on direct timber ownership and looking to cash out of a main consumer of said timber.

Granted a forward PE ratio north of 20 isn't exactly a bargain, but that's well below Weyerhaeuser's recent highs.

Management announced it plans to finance the deal by issuing more equity and debt. As a little company research

shows, Weyerhaeuser's debt-to-equity ratio is below 1.00; that makes it far more stable than Plum Creek Timber (PCL), but it's still more leveraged than the other major U.S. timber REIT, Rayonier (RYN), which operates in the Southern states.

As with all REITs, at least 90% of income must be distributed to investors. Weyerhaeuser's current dividend yield is 2.8%. Rayonier's dividend yield is at 3.3%.

Thank You

All the Best for the upcoming Year.

Jake, Joe and Jaime

