

July 19, 2012  
11 AM

Transcript of Lester Brown's remarks only: Earth Policy Institute Teleconference

ENVIRONMENTAL ANALYST LESTER BROWN CAUTIONS  
USDA GROSSLY UNDERESTIMATES DECLINE OF 2012 CORN HARVEST

Thank you all for joining us to discuss what I think is going to be not only an important issue right now but one that will be increasingly an issue in the future, that is, the effect of climate change on food security.

We started this crop year with a near-record 96 million acres of corn planted that got off to a good start. Analysts were expecting a record harvest. And then things began to change. But before I talk about the changes, let me just mention how important the U.S. corn crop is. For one thing, it accounts for four-fifths of the U.S. grain harvest. The other one fifth is wheat, barley, sorghum, rice, etc. So corn is big, big in the United States and it is big in the world, because the U.S. corn harvest is the largest grain harvest than any country. The second and third ranked harvests are the rice harvest in China and the wheat harvest in China. But the U.S. corn harvest is larger than both of those combined.

As an exporter, the United States leads the world. No one else is close. Our exports are roughly triple those of Argentina, which is the number two exporter.

And the other interesting thing is that we have in the U.S. Corn Belt an exceptional piece of agricultural real estate. To illustrate, the State of Iowa produces more grain than Canada. The State of Iowa also produces more soybeans than China. The State of Illinois is not far behind. The basic point is that this is exceptional agricultural land that we have in the U.S. Corn Belt.

On July 11<sup>th</sup>, the USDA issued its monthly estimate of world crop harvests and so forth. It does this by law once every month. And on July 11<sup>th</sup>, it reduced the estimate of the U.S. corn crop by 12 percent from its June estimate. Twelve percent is a very substantial drop within one month. But my sense is that the drop is actually closer to 25 percent, or roughly twice as large as the USDA has estimated.

There are a number of reasons why I think this. One, if you look at Weekly Drought Monitor maps going back to mid May, at that time the drought was concentrated in the southwestern United States and in Florida. After a few weeks, Florida got a heavy tropical storm and it went off the drought map. But the dryness in the southwest kept expanding into the Midwest and the upper Great Plains until eventually it covered most of the country.

By July 17<sup>th</sup>, that is the newest Drought Monitor Report, 64 percent of the country is in drought conditions with drought ranging from moderate to exceptional. It also includes abnormally dry. It covers 80 percent of the continental United States. And throughout the past nine of ten weeks now, each of these maps shows the area in drought increasing. For nine consecutive weeks, drought spread and intensified. This

is what has created the problem for our corn crop. The combination of high temperature and low rainfall has created probably the worst drought in the last 50 years or so.

We look at temperature and we see that the first half of this year was the hottest six months on record, so we have been setting thousands of records across the country at the local level. And the new temperature records are almost all new highs. There are some new lows, but new highs outnumber new lows by at least 4 to 1.

In St. Louis, Missouri, for example, which is in the southern part of the U.S. Corn Belt, in late June and early July, they had 10 consecutive days of temperatures 100 degrees or higher. That takes a toll on the corn crop.

We look at temperatures and we can see quite clearly the relationship between heat and photosynthesis. As temperature rises above freezing and goes up to 68 degrees Fahrenheit, the amount of photosynthesis increases with each degree in temperature rise. But once you get to 68 degrees, there are no further increases in photosynthesis. So it remains steady until the temperature reaches 95 degrees. Beyond 95 degrees, photosynthesis begins to decline. By the time you get to 104 degrees, there is no photosynthesis at all. So the drop off is very fast. Once the temperature goes beyond 95 degrees, photosynthesis begins to decline. When you get to 104, there is none at all and the corn plant is essentially in thermal shock. It's in a very defensive situation. There is no photosynthesis, no growth, no nothing.

The other effect of heat on corn is during the pollination period. The corn plant has a very complex sex life, one that makes it vulnerable to intense heat. If you have ever been in a corn field during the pollination period, you know that the tassel at the top of the corn plant releases the fine dust, the pollen. These tiny grains of pollen, one of those must fall on each strand of silk that comes out the end of the corn. This is the silk that is such a nuisance when you are making corn on the cob and are trying to get rid of it. But each of those strands of silk was originally attached to a kernel site and in order for that kernel to develop, the pollen has to travel down the silk strand, to the kern site, then get fertilization and the corn seed develops.

But because the silk is very fragile, if it is too hot, the silk will turn brown and dry out, and will not, therefore, be able to convey the pollen to the kernel site for fertilization. This a particular vulnerability of corn. It is why analysts always talk about what the temperature is during the critical pollination period. If it is too high, you can have a perfectly healthy corn field but not get very much corn because the pollination has not occurred.

Looking at temperature and the effects on photosynthesis and such are indirect effects, but the report we track most carefully is the Crop Conditions Report that comes out every Monday afternoon from the U.S. Department of Agriculture. On Sunday, the USDA contacts about 4,500 selected farmers spread across the country and gets their feedback on the conditions in their particular community. Then USDA compiles this and releases it on Monday afternoon in their Crop Conditions Report. This report has five categories: very poor, poor, fair, good, and excellent. When analysts talk about these reports, they always add the good and excellent categories together, because that's what really tells us how healthy the crop is.

On May 27<sup>th</sup>, the Crop Conditions Report said that 77 percent of the U.S. grain harvest was in good to excellent condition. That's almost as good as it gets, and that's why early on the USDA was talking about harvesting an all-time record corn crop this year. But then week by week that number went down.

The next week, June 3<sup>rd</sup>, it dropped from 77 to 72 percent. And it dropped for seven consecutive weeks until July 15<sup>th</sup>, when only 31 percent of the crop was in the good to excellent category. This means we are going to have a poor corn harvest. And my sense is that next Monday we are going to see a further drop, because I think it will go down to the mid 20s and we may get still another week of decline because it doesn't look as though there is much rain in prospect for the next close to two weeks or so.

So the good to excellent rating will have dropped from 77 percent on May 27<sup>th</sup> to probably somewhere around 25-26 percent by the end of this month. This, I think, is going to mean that we are going to have a decline in the harvest of at least 25 percent. And it could be more.

Some analysts are now likening it to the heat and drought of 1988. That year, the harvest fell 35 percent below the previous few years. I think this year's is going to fall at least 25 percent and maybe more.

Now, what effect will this have? Well obviously since we are the world's leading corn producer, producing close to 40 percent of the global crop and are by far the dominant exporter, it is going to affect food prices worldwide.

The world doesn't eat a lot of corn directly. But corn is now our biggest crop. The world produces more corn than either wheat or rice, and this year the corn crop is, even with the reduced harvest in the United States, almost double the rice harvest. But if you open your refrigerator, almost everything you are looking at has corn in it. Whether it is milk, cheese, hamburger, eggs, yogurt, ice cream, or bacon, it is corn in various forms.

So one of the things we are likely to see with the rise in corn prices, which are now up by half over the last couple of months, and are undoubtedly going to climb higher. One of the things we are going to see is that the 3 billion people in the world that we estimate that are wanting to move up the food chain, a big chunk of them in China, but a lot of those people are not going to be able to move up for the next year or so. In fact, quite a few of them may move down the food chain because the livestock and poultry products that they consume more of to consume more of to move up the food chain, will be priced out of reach in some cases. So we are going to see some people moving down the food chain.

Interestingly in the United States, we have been moving down the food chain now for the last six years. Meat consumption in the United States this year will probably be down 11 percent from what it was six years ago.

The rising price of corn is also going to raise the price of bourbon. Bourbon is made almost entirely from corn. If any of you drink Makers Mark, I would recommend

getting a case in hand as soon as possible, because the price is definitely going to go up.

Another consequence, a somewhat more serious one, in looking at the effect of rising corn prices. And, incidentally, when the price of any one of the three major grains go up, the other grains follow. They don't just stay where they are. That is because there is a certain amount of interchange and substitution between wheat and rice in countries like China and India or between corn and wheat as a feed in Europe, and so forth. So with corn prices going up, wheat and rice prices will also go up.

And the concern here is that food prices were already elevated. Even before this recent rise in corn prices, they were already, corn, wheat, soybean prices, were already double what they were just five years ago, for example. So we are going from elevated prices to start with to even higher prices and it will be taking us into uncharted economic territory. And it almost certainly is going to translate into more food unrest. Exactly how much we don't know.

In looking at the effect on market, the market effects, this further tightening of world grain supplies that we are now beginning to experience because of the very poor U.S. corn harvest, is going to intensify the interest in land grabs. It is going to lead to other exporting countries restricting exports, as Russia and Kazakhstan have already announced they are going to do this year. It is going to create more panic among importing countries because they are worried about whether they are going to be able to get enough grain or not, especially the lower income ones. It is going to strengthen the interest in land grabs where countries are acquiring land in other countries on which to produce food for themselves. It is going to reinforce the sort of every-country-for-itself that we now see emerging in the new geopolitics of food scarcity.

And we are also going to see further rises in land values, and we have seen quite of bit of this now in the last few years. Land values have been rising faster than almost any of the other things that we invest in ranging from housing to stocks and bonds and so forth. Land values have been going up and they are going to keep going up.

And then we have the climate issue. One of the questions that is being asked in the scientific community is "Is this heat wave due to climate change?" And no one can say for sure, but we do know that it is more likely that heat waves and droughts of this scale and magnitude are more likely with climate change. We are putting more CO<sub>2</sub> into the atmosphere. CO<sub>2</sub> is a greenhouse gas. It traps heat and atmospheric CO<sub>2</sub> levels have risen about 20 percent since 1970.

So we are trapping more heat by putting more CO<sub>2</sub> in the environment and that is leading to higher temperatures. And there are going to be more to come. The more CO<sub>2</sub> you put "up there" (skyward), the more heat there will be down here. CO<sub>2</sub> is a greenhouse gas. It kind of has a blanket effect. It keeps heat in and this is something we are going to have to pay a lot more attention to in the months and years immediately ahead because what we are beginning to see are some of the more complete manifestations of climate change.

We've known this was coming. Scientists have been talking about this for decades, so this is not a new discovery. But not everyone accepts the facts.

And in closing, let me just say, as Alissa mentioned, there is new book coming out. It will be officially published on October 1<sup>st</sup>. It's called *Full Planet, Empty Plates: The New Geopolitics of Food Scarcity*. It is being published by W.W. Norton & Company, and it talks about not only climate change but many of the other issues that are contributing to a tighter world food supply, like spreading water shortages, like some of the worst soil erosion that we've ever seen with new dust bowls forming in northwestern China and western Mongolia and Central Africa and in other places.

So we have a real challenge on our hands in thinking about future food security. It is going to become more and more difficult to ensure food security, and indeed because of this poor harvest we are going to see world carryover stocks of grain, which is probably the most basic indicator of food security, drop further this year.

So all in all it is not putting us a very good situation in terms of food security and the disturbing thing is that we are likely going to be seeing a lot more of this in the years immediately ahead.

Alissa, thank you very much, and if there are questions, I would be happy to respond to them.