

AGLINE

PURDUE UNIVERSITY COOPERATIVE EXTENSION SERVICE, Fulton County

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SIDEWALL COMPACTION

As we look into these long periods of spring rain we sometimes get into fields a little too wet. I have enclosed below a writing on sidewall compaction one of the issues that goes along with wet soil planting;

by Mark Kepler

Dan Quinn, Ph.D.
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As planting dates continue to get pushed earlier and spring weather conditions become more variable, the chance that corn is planted into less than ideal soil conditions increases. Sidewall compaction can occur when planting is performed under soil conditions that are too wet.

Why is Sidewall Compaction Important?

Sidewall compaction refers to soil compaction and soil smearing in and around the seed furrow which can result in restricted root growth, poor emergence, and lost yield potential. Once sidewall compaction occurs at planting, it cannot be cured. Sidewall compaction can haunt you throughout the entire growing season by limiting emergence, root growth, nutrient uptake, yield, and increasing the chance for lodging prior to harvest. Therefore, taking the necessary steps to prevent sidewall compaction during planting is important.

What Causes Sidewall Compaction?

Wet soils are easily compacted and planting corn into these conditions is the biggest contributor to sidewall compaction. Planter seed furrow openers can smear and compact the sides of a seed furrow when planting occurs too wet, especially if too much down pressure has been applied. When this occurs, the soil in the seed furrow does not properly break and fall around the seed for adequate seed-to-soil contact, and root growth becomes restricted. Sidewall compaction can also occur when corn is planted too shallow. When corn is planted too shallow and soils are too wet, compaction can also occur below the seed, thus making it difficult for corn roots to penetrate the soil.

(continued to page 2)

How to Identify Sidewall Compaction?

In addition to early season scouting for disease, pests, and nutrient deficiencies, it is also important to scout fields for potential compaction issues. Sidewall compaction can result in non-uniform emergence, stunted plant growth, and nutrient deficiency symptoms despite adequate soil nutrient levels due to poor root growth. Proper diagnosis of sidewall compaction can be performed by digging corn plants in problem areas and examining the roots. A healthy corn root system should have adequate and uniform vertical and horizontal root growth all around. However, if the majority of the corn roots exhibit only vertical growth and poor horizontal growth, as indicated by **Image 1**, this can be an indicator that roots could not penetrate the sides of the seed furrow due to compaction. In addition, it is also important to examine the seed furrow following planting and look for smooth or shiny surfaces within the furrow which can indicate that smearing and compaction occurred. Furthermore, areas within the field with open seed furrows and poor seed-to-soil contact can also be indicators of sidewall compaction.

How to Prevent Sidewall Compaction?

Preventing sidewall compaction starts with planting into optimal soil moisture conditions and maybe waiting an extra day or two for the soil to dry further. However, this may be easier said than done when spring planting is delayed. Other considerations for preventing sidewall compaction include: adjusting downforce pressure on row-units to specific soil conditions, reduce closing wheel downforce, avoiding shallow planting and target a 2-inch seeding depth, and utilizing a spiked closing wheel to till in the sidewall and improve seed-to-soil contact.



Image 1: A) Cross-view of corn roots looking across the row and B) cross-view of corn roots looking with the row. Roots are exhibiting poor and non-uniform growth due to sidewall compaction at planting.

Farming in the Ukraine

By Mark Kepler

I went to Ukraine in 2007 as part of an exchange of information with the Poltava Agrarian Academy. So, I follow the events in Ukraine with special interest. At that time the countries production was starting to rise drastically from the days when it was part of the USSR. The first article below is one I wrote after my visit in 2007. Since that time, they can now sell farmland and this has also led to increase productivity as now you can use land as collateral for banking. The second article from Purdue economist was written last month.(pages 6 & 7)

Written by: Mark Kepler, Purdue Extension Educator-Fulton County, ANR

The breakup of the Soviet Union and the Communist system also meant the breakup of the many State run or communal farms throughout the Ukraine. These farms consisted of many large concrete and brick structures that would house generally pigs and dairy cows. On some of farms there would be 20 of these buildings surrounded by thousands of acres of land. In many cases these were abandoned and left to deteriorate. These farms had hundreds of workers that lived in the local villages. How to split these farms was something that had to be addressed. In some cases, the bulk of the farm would go to the former Communist head.

In some of these cases this led to workers destroying the buildings just to give the old boss less of a deal. Most of the workers also received small plots of land. For this they were given slips. In a lot of cases no official recording of ownership of these lands were made. So, within a large field there can be many land owners, each with their own landlocked plot. What is happening now is large farmers and companies, including prominent U.S. agriculture firms, are farming the land and paying \$20-25 per acre rent. This rent may also be paid in the form of grain.

Ukrainians are also feeling the positive effects of higher U.S. grain prices. The major landowners and farmers are the ones who seem to be making the best income in the Ukraine. Because of some of the identification problem and the possibility that these small plots will be sold for little money, it is illegal to sell land in the Ukraine. However, houses and apartments may be sold.

Don't think that all production comes from these larger farmers. During discussion with the Agriculture Minister of the State of Poltava, Oblast stated 60% of the farm products still come from small farmers. This was very evident around and inside the villages. Next to the houses in villages would be large garden areas and a variety of fruit trees. In mid-April, the apricots were blooming and the pears were about to bloom. In

the center of those gardens would be small hooped cold frames. They were covered with plastic. Potato planting was underway as several people were working together on the plots. Smoke could be seen in the country, as fields and small plots were burned before tillage.

Right outside the village you could see a large field broken into about 1-acre plots, as each individual owner farmed some of their land. On this trip, I saw a few horses doing the work. Most fields were tilled by large tractors and equipment, few of these American made. I saw little livestock near the villages, the exception being chickens and ducks.

The main livestock and the most reverend in its history is the pig. Some invading armies would not eat pork. So, the oppressed Ukraine natives were able to survive on pork. A pig statute can be found prominently placed on the grounds of Poltava Agrarian Academy.

I visited a large research facility called the Pork Institute, where scientists and staff were doing modern work on pig breeding and feeding a few miles away. Local investors were converting an old communal farm into a facility that would have several thousand pigs. They were totally revamping concrete barns into modern farrowing and nursery facilities. Working with them were people from the Pig Institute. One person with us was the swine reproduction specialist from the University of Illinois. The Pig institute is also active in artificial insemination of swine. Together they worked to design experiments utilizing frozen boar semen from the U.S. to improve their genetics. Most pork is extremely fat in this area. I would expect this new-found relationship will generate research that will help the Ukrainian people.



(Ukraine corn planting in May 2007)

April 6, 2022

Ed Farris, Extension Educator, Agriculture & Natural Resources
Purdue Extension – Huntington County Office
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News Release



*Great opportunity for
the Women in
Agriculture!*

Purdue Extension Offers the “Know Your Numbers, Know Your Options” Program to Assist Women with Farm Finances

Know Your Numbers, Know Your Options is a four-week course offered virtually:

April 26, May 3, 10, and 17, 2022 from 10:00 a.m. to 12:00 p.m. EST.

This is a discussion-based workshop to connect women and subject-matter experts in the areas of financial records and interpreting results. Participants should plan on attending each of the four workshop dates. The course requires participants to have an internet connection.

Women will find many opportunities for questions, sharing, and connecting with the presenters and other participants. Upon completion of this program, participants will have a better understanding of how financial records can be used to make decisions.

Session highlights are as follows:

Week 1 - Balance sheet construction and interpretation
Week 2 – Cash flow and income statement fundamentals
Week 3 – Ratios, lease evaluations and negotiations
Week 4 - Know Your Numbers Know Your Options

Registration is \$20 per participant and class size is limited to 20.

Register by April 19 at the following website: <https://cvent.me/KR0r5B> .

Class material is based upon work supported by USDA/NIFA under Award Number 2020-70028-32728 (cooperating with University of Nebraska Extension).

For more information, or if you need a reasonable accommodation to participate in this program, contact Denise Schroeder at schroedd@purdue.edu or 219-984-5115 prior to the program.

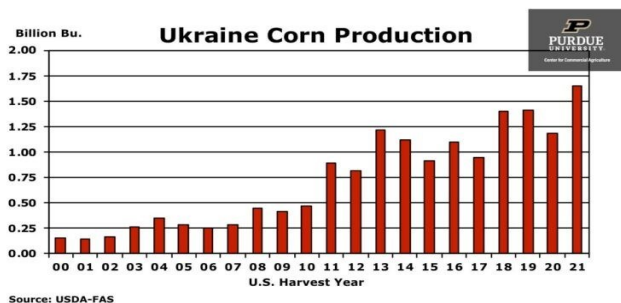
Understanding The Corn Market's Response To War In Ukraine

by James Mintert & Nathanael Thompson

Russia's invasion of Ukraine in late February disrupted world supplies of several key agricultural commodities, including corn. Some readers were likely surprised to learn that Ukraine is an important supplier of corn to the world. A bit of background is in order since it's only in recent years that corn production in Ukraine increased to the point where shifts in Ukrainian production and exports began to impact corn prices.

In the early 2000's corn acreage in Ukraine was quite small, ranging from about 3 million to just over 4 million acres. That started to change as the first decade of the 21st century came to a close and by 2010 corn Ukrainian corn producers were harvesting over 6 million acres of corn. Corn acreage continued to climb in recent years, approaching 8 million acres in 2021, more than doubling in two decades.

At the same time that corn acreage was increasing, Ukrainian corn yields began to increase. National average yields that ranged from a little less than 50 bushels per acre to the high 60's in the early 2000's first eclipsed the 100 bushels per acre barrier in 2011. USDA's Foreign Agricultural Service estimated 2021's average yield at 126 bushels per acre, 2.6 times the average yield in 2000, setting a new record.



The combination of larger acreage and higher yields pushed Ukrainian corn production up from just 151 million bushels in 2000 to an estimated 1.653 billion bushels in 2021.

As corn production increased, Ukraine's exportable surplus increased rapidly, and the percentage of Ukraine's production exported rose from 10% in 2000 to over 80% in recent years. As a result, Ukraine changed from providing less than 1% of the world's corn exports in 2000 to nearly 17% in recent years. Losing access to Ukraine's corn exports significantly altered the world supply/demand balance.



Not only has it tightened world corn supplies at a time when concerns have been arising regarding South American corn production because of adverse weather in Argentina and Brazil, but it also shifted the pattern of the world's corn trade

With Ukraine's Black Sea ports closed for the foreseeable future, some export sales that were expected to originate from Black Sea ports needed to be filled from other sources. Exporters looking for corn to fill prior sales commitments have been shifting the origination

from Black Sea ports to the U.S., resulting in exporters scrambling to fill barges on U.S. waterways. The result has been a shift in U.S. corn basis patterns as well as a strong inversion in Chicago Board of Trade corn futures prices.

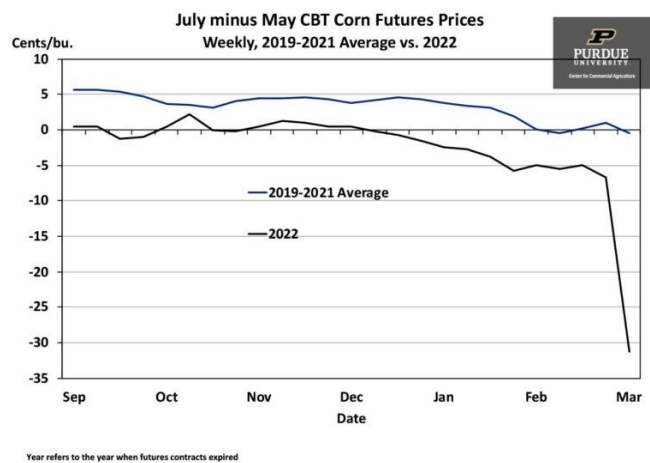
Corn basis levels at river terminals rose sharply in recent days in response to exporters' needs. For example, nearby corn basis on the Mississippi at St. Louis, Missouri ranged from +\$0.20 to +\$0.24/bushel during January. Nearby basis started to strengthen in February ranging from +\$0.32 to +\$0.35/bushel before jumping to +\$0.48/bushel the first week of March. Nearby corn basis at Evansville, Indiana on the Ohio river was relatively flat during January and the first half of February, ranging from +\$0.02 to +\$0.08/bushel before climbing to +\$0.30/bushel in early March. The strengthening corn basis at river terminals stands in sharp contrast to what's been taking place at inland terminals not well suited to help fill short-term export needs. For example, nearby corn basis at Beech Grove, Indiana near Indianapolis weakened, dipping \$0.08 to -\$0.15 in early March compared to -\$0.07/bushel the last week of February.

In addition to shifting basis patterns, evolving trade disruptions have altered corn futures price spreads. Typically, deferred futures contract prices within a crop year trade at a premium to nearby futures contract prices to provide an incentive for some inventory holders to continue storing a portion of the crop until the next harvest. The premium of the deferred contract over nearby futures prices is referred to as the carry since it provides an incentive to carry forward some inventories. However, in years when crop supplies are tight, or there is a production shortfall, futures prices sometimes become inverted with nearby futures prices trading at a premium to deferred prices. The inversion provides a market signal that supplies are more highly valued now than in the future. And that is exactly what has happened in the corn futures market.

Looking at how the spread between July and May CBT corn futures (July futures price minus May future price) has shifted makes clear that the corn futures market is

signaling that corn is needed sooner rather than later in the crop year. The July Minus May CBT Corn Futures Prices chart illustrates the average relationship between these two futures contracts prices for contracts that

expired in 2019, 2020 and 2021 vs. what's been taking place for the contracts that will expire in 2022. July usually trades at a premium to the May contract as indicated by the three-year average. Going back to the beginning of the 2021 crop year in September, the premium of July over May was unusually small and actually inverted in December. The inversion widened modestly in February as crop production problems in South America unfolded and then jumped by \$0.25/bushel following Russia's invasion of Ukraine.



How should corn producers respond to the current market situation? Producers in locales where corn basis is unusually strong should consider moving corn at these favorable basis levels. Basis levels can be secured using either basis contracts or cash sales. Basis contracts leave producers open to changes in futures prices whereas cash sales effectively lock in both the basis and futures price simultaneously. Recognize that futures prices will be very volatile for the remainder of this crop year as the market continues to absorb the implications of shifting world trade patterns, possible production shortfalls in South America and spring planting decisions and progress in the U.S.

SPIRITUAL

***By Mark Kepler
Purdue Extension –Fulton County***

In this month's issue of the South Dakota Magazine, there is an article on the impending loss of the Lakota language. In that article, a Native American interviewee said that even though the language is being taught, it is only at a functional level. He went on to note that few people, if any, can communicate on a "spiritual" level.

Like many children growing up on a farm, I did chores. I was told what to feed to which animals and I functioned in that realm. As I aged, my education allowed me to get away from "what to do" to more "why does this need to be done." Then another level of how could it best be done. All the time advancing in our knowledge of farming and livestock raising. How many of us have evolved to the spiritual level where we understand our animals and cropping systems?

This past month I was among several speakers in a Purdue online program called Beef Basics. A program aimed at new people in the beef cattle industry. Over 100 paid the registration fee for this six-night course. We surveyed them during the registration process about what they hoped to learn. Many had general answers such as diet, how do I find a good bull, genetics, handling, and facilities. These are all important parts of livestock production and as beginners, they need to become acquainted with these at a functional level.

The presentation on animal behavior goes into what I think is the spiritual discussion. Topics include, what it is like being a prey species around a bunch of predators-humans. How animals see the world? What frightens them and why? What is their thought process? What really scares them? How do they react to the human voice? How to modify your voice to achieve results?

Then there is reading the animal's thoughts. What is the position of the ears saying? Nose up or down? Are they aggressive or not feeling well? And how about that bull that is standing sideways with its head down, low mooring and pawing? Then it is time to leave and check the old bull prices at the sale barn.

I think one of the better presentations I saw in the past is how we get cattle in a pasture setting to move the way we want. The demonstrator, a veterinarian, started behind the group of cattle moving back and forth in a manner that allows the cattle to see you out of one eye and then the other. As you move closer to them in this sweeping manner you get to a point where you are in their flight zone and they start to move. Walking up behind them and yelling

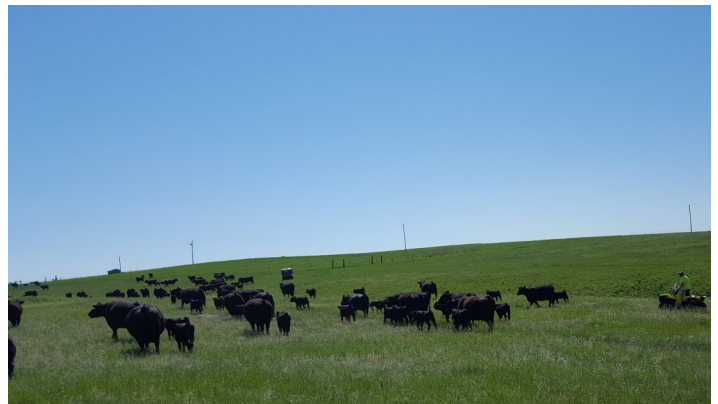
may get them to move but not in the direction you may want. Using this method, we are using our knowledge of how they see the world and initiating a slight bit of their fear instinct to have them move in the appropriate direction. They are also using the knowledge of how cattle see the world through their monocular vision. Only when you stand in front of them is it binocular, like humans.

I find this spiritual discussion comes into play when we think about utilizing a forage. Where in the world did this plant originate from? Let's start with Alfalfa. Alfalfa originated in the vicinity of what is now Turkey and Iran, in a part of the world known as the cradle of civilization. I have never been there but any pictures I have seen are generally desolate. Alfalfa originated in dry soils where its roots could go very deep looking for water. Placing alfalfa in unnatural wet or clay solids, then it has a shorter life span mostly due to disease issues.

Red clover comes from a farther north area of Europe and it is adopted to a wetter area of the world. On our farms, it adapted to the wetter soils. Although it does not like to be underwater it can still do moderately well on most moist soils. These would be considered more of a European type of soil.

When the Lakota person speaks of knowing something spiritually, it is more of an understanding than just going through the motions. It is really not only asking the question of how does this work, but why. Even in the English language, we use a lot of words we know, but do not really know the origin and the real meaning.

So, I had to look up a term I have always wondered about and that is the reference to a dog as Fido. It is a story about a real Italian dog and his faithfulness to a master that saved his life. The master was killed in a World War II bombing but the dog still went every night for 14 more years to try to meet his master at the bus stop. That could be called dedication, but I would I just say they knew each other on a higher level, maybe spiritually.



Moving cattle by zig zagging back and forth. A method to utilize how they see the world to the producers advantage.

FENCING

By Mark Kepler, Purdue Extension Educator, ANR

I was watching an old Western on television with the familiar scene of some sophisticated cowboy bucking the trend of the open range by putting up a barbed-wire fence. In the show, the open rangers came in mass to destroy the fence. In the end, someone got shot and the good guy installed the barbed wire. Have you ever thought by putting up a fence you are one of the good guys? I don't wear a cowboy hat, but maybe I should put a white one on when I am doing fence work. It is the fence that allows us to manage pastures both for productivity and environmental benefits.

It was in 1874 that barbed wire was patented and tremendous amounts of it were being sold to those new homesteaders that were going west to claim their 160 acres. By the end of the 1880s, the open range was hard to come by. Even the ranchers were keeping their cattle enclosed within the prickly wire. Teddy Roosevelt had ventured into the cattle ranching business around Medora in the Dakota territory in 1883 as the days of the open range were coming to a close. The open range, with the let the cattle roam concept was extremely profitable for Teddy until the winter of 1886-87. Multiple blizzards buried the grazing herds and without human intervention and hay feeding, cattle were found "frozen to death" in temperatures as low as -41° F. Around 80% of the cattle died. Teddy returned to New York to get into politics where he did a little better.

I have been in South Dakota when the actual temperature was -38° F. Cattle in barbed wire fenced pastured survived well on fed hay as they hunkered down in the less windy draws between the ridges. No cattle were lost that day. Endless miles of four strands barbed wire, hitched to steel post, stretch the western range serve to keep cattle in the best places for winter protection as well as summer grazing. They even have barbed wire gates.

It is the advent of fences that have made us productive grazers. Those 1870's cowboys did not manage the range and they sure did not worry about overgrazing. They were working for rich people that did not even own the ground. It was truly a "free" range. By managing the growth, we can get the most production out of our land. The highest production comes not from grazing it to the ground but leaving enough growth that the plant replenishes itself. That growth also protects the land and promotes healthy soils. It is a win-win scenario.

We have gone from stone and split rail (remember, rail splitting is what Abe Lincoln use to do) to barbed wire

and then beyond to the multitude of fencing options we have today. Along the way are some interesting creations, one that totally failed was the multiflora rose hedge. Another, hedge apples also known as Osage orange, were successful if managed. Osage orange was also used for fence posts. On my farm, I pulled out an old fence that was rusted away, but the hedge apple posts were still intact. In fact, the part below ground had a greater constitution than that above.

I have a multitude of fencing on my farm including barbed wire, which I have always dreaded working with and have at least one scar from its use. Also present are various woven, high tensile, and poly wires; cattle and sheep panels; metal and wood gates as well as board fences. If there is livestock, there has to be some kind of fence. Unlike the stone walls of ye old England, today's grazer utilizes temporary fences.

Temporary fencing is usually built out of one or two strands of electrified wire. The wire can be made out of steel wire or rope/tape with electric wire woven into it. The rope/tape is more flexible than steel wire and is more visible to livestock. Especially young calves, who seem to be the major source of fence crashing. As they are kicking their heels up, they are unconcerned about what they are running through.

I like poly rope wire. I have used poly tape and find it too prone to the wind but I will grant, it is even more visible as it flutters in the wind.

I also like woven wire in those areas that we calve. I went to tag a newborn calf next to a high tensile fence. I did not get him on the first grab. He ran frantically through the high tensile fence, leaving his mom behind. I had to catch him hundreds of yards away on the neighbors where he ran into a short section of old woven wire. There is no way he would have found his way back to mom. The woven wire fence has a purpose on the farm.

Now back to the old television western. The story took place right after the civil war around 1869 and in true television fashion, they did not quite get the facts right. The production took place about 5 years before barbed wire was patented and the cowboy was loading a wagon with Red Brand Fence, a company founded in 1889.

I guess 20 plus years off is close enough for television. It is a lot more accurate than some social media.

Michiana Fruit and Vegetable Tours

**Thursday Evenings
6:00—8:00pm**

April 14th— Greenhouse Flower and Bedding Plants

Location: Vite Greenhouse (2610 Redbud Trail S., Niles, MI 49120)

May 12th— Early Season Production and Fertilization

Location: Sweet Corn Charlie (11003 CR 42, Millersburg, IN 46543)

June 9th— Irrigation

Location: TBD

July 14th— Organic Produce, Production, and Marketing

Location: TBD

August 11th— Diseases

Location: The David Schrock Farm (4570 N 100 E, LaGrange, IN 46761)

September 8— Insect Control

Location: Fruit Hills Winery (55503 St. Rd 15, Bristol, IN 46507)

October 13th— Winterizing and Storage of Produce

Location: TBD

Purdue University, Indiana Counties and the U.S. Department of Agriculture Cooperating
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