

CAVALIER COUNTY AG ALERT



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Field Activity and Weather:

We did get a little more rain than needed and there is more in the forecast. We received close to 3.0 inches of rain last week (7-13-20 to 7-19-20). Majority of the crops are in the flowering to pod development stages. These rains raise the risk of scab and white mold in our area. The weather station at LREC recorded an average of 74°F maximum and 57°F minimum air temperatures (7-13-20 to 7-19-20). After the rain events, the soil moisture is currently at 32.2% and 30.1% VMC (Volumetric Water Content) at 4 and 8 inches at surface and sub-surface moisture is still holding good at 35.7% VMC at 20 inches below surface.

Harmful Algal Bloom Advisory:

Recently, the North Dakota Department of Environmental Quality (NDDEQ) has confirmed the presence of a Harmful Algal Bloom (HAB) in Renwick Dam. The staff of NDDEQ analyzed the lake water using ABRAXIS test strips which indicated elevated level of toxins associated with HAB. Therefore, a water sample was collected and sent to an independent laboratory for confirmation. As a result of the testing, the NDDEQ has issued a Harmful Algal Bloom Advisory for the waterbody.



Blue green algal blooms - Photo: ND Department of Health, Division of Water Quality

The NDDEQ will monitor the waterbody every two weeks until test strips indicate the toxin levels are low. Until then, metal sign boards displaying the following restrictions and safety tips will be placed at Ren Wick dam:

- Avoid swimming, waterskiing, or tubing if the water looks like spilled green paint or pea-soup.
- Avoid swallowing water and watch small children and pets who may ingest water.
- Rinse off with non-lake water after swimming.

General Safety Tips

Avoid areas of scum when boating. While fish are safe to consume, take the following precautions. • Rinse hands with non-lake water after landing fish. • Wash fish thoroughly with tap water before cleaning. Contact your health provider or veterinarian if you or your pet become ill after swimming.

For more information call the North Dakota Department of Environmental Quality. 701-328-5210

What causes Algal Blooms:

Algal blooms are caused due to nutrient pollution as a result of overabundance of the nutrients such as phosphorus and nitrogen in streams, rivers and lakes. Blue-green algae can produce cyanotoxins which can be lethal to pets, livestock and wildlife and may cause serious health problems in people. These algal blooms can also lead to fish kills due to increased aquatic growth and oxygen depletion.

Solutions to reduce Algal Blooms:

Some of the best management practices (BMP) suggested by the ND department of health, division of water quality to reduce the nutrient pollution includes:

- Improving soil health and reducing soil loss through the use of cover crops and reducing tillage.
- Encouraging the use of precision application techniques for fertilizer.
- Implementing manure management systems as required and utilizing manure as a soil amendment.
- Using software tools that aid in identifying land that requires more inputs than generates income. This allows producers to be more profitable and to rest marginal lands.
- Working with industrial and municipal point sources to monitor their discharges, to optimize treatment efficiencies for nutrients and upgrade wastewater treatment plants when necessary.
- Promoting urban soil testing and proper lawn fertilization rates and techniques.
- Educating homeowners about their septic systems and proper maintenance and care.
- Restoring wetland functions where possible and mitigating the effects of drainage and channelization.

Growers and ranchers are encouraged to contact their local NRCS, SCD or

Extension offices for information on how to identify the effective BMPs to reduce nutrient run off.

COVID-19 Creating Uncertainty in Markets:

(By Frayne Olson, Crops Economist/Marketing Specialist, NDSU Agribusiness and Applied Economics Department)

Crop market traders and industry analysts watch the weather forecasts and crop condition ratings very closely during July and August. These months are critical time periods for determining U.S. corn and soybean yield potential, and this year is no exception. However, the COVID-19 pandemic also is creating high levels of uncertainty in the grain and livestock markets.

The combination of these two factors leads to considerable price volatility, which increases risk exposure but also can create marketing opportunities. Developing a crop marketing plan in this environment just got harder. Most people I visit with about crop marketing understand how changes in supply can impact prices. The price response to changes in planted and harvested acreage, crop yields and current grain inventories are well understood. However, the price impacts from changes to demand for crops is more complicated, especially when trying to anticipate the impacts from the COVID-19 virus.

Agricultural products primarily are used for food, fuel and fiber. However, the major crops, such as corn, soybeans and wheat, are processed and used as ingredients for multiple final products bought by consumers. This means that changes in consumer purchasing patterns do not directly impact crop prices; the impacts are indirect. The supply chain that connects farmers to consumers can have many links, depending upon the product.

The COVID-19 pandemic is forcing political and economic systems to balance public

health concerns with economic activity. Instituting stay-at-home/work-from-home orders, closing schools and selected business, and limiting travel have helped slow the spread of the virus but have created significant economic challenges, which is changing consumer demand. In economics, the term "effective demand" has a specific meaning. Effective demand is defined as a consumer want or need that is supported by an ability to pay. This means that individuals must prioritize what and when they buy products and services against a limited budget. Everyone has a different set of priorities about wants and needs, as well as different budget limits. Overgeneralizing about how consumers may respond to changes is a common mistake.

What have we learned so far about changing demand for crops, domestic and international, due to COVID-19? The agricultural supply chains with the fewest links between farmer and end consumer have been impacted the most. The demand for gasoline and ethanol dropped rapidly when the stay-at-home/work-from-home orders were implemented. Lower demand for ethanol caused corn prices to fall.

States are beginning to relax the stay-at-home orders and motor fuel demand is recovering. However, many forecasters don't expect motor fuel demand to fully recover for another 12 to 18 months. Corn demand from the ethanol industry is expected to increase slightly from today's levels.

Overall consumer demand for meat has remained strong, but the most popular type of meat products and packaging sizes have changed. Restaurants purchase meat in bulk while individuals purchase small packages in the grocery store to be prepared at home. High-value meat cuts such as steak and ribs are most often sold to restaurants, while hamburger, chicken and pork chops are more often sold in grocery stores.

Restaurant closures have reduced the demand for high-value meats in bulk packaging while demand for small consumer-packaged hamburger, chicken and pork has increased. Thus, the farm-level prices for beef, chicken and pork have decreased faster than feed prices.

Profit margins for the livestock producers, including dairy, have fallen dramatically. Lower livestock prices and profit margins reduce the demand for feed, such as corn and soybean meal, because of tighter budget constraints. Even though total livestock numbers are forecast to increase slightly during the next year, increased use of forages in beef and dairy rations could limit the amount of extra feed needed.

Demand for vegetable oil, such as soybean, canola and sunflower oil, is expected to remain relatively stable. Vegetable oils are most often used for cooking and frying and have a comparatively long supply chain from producer to consumer.

Vegetable oils also make up a somewhat small portion of the total cost for food products, so a change in the price of the oil will have a small impact on the amount used.

Demand for bread, pasta, cake, cookies and cracker products, requiring wheat and durum, also has been stable. Bread, pasta and other wheat products typically make up a small portion of the total cost for a meal. They are easy to include in meals prepared at home, ready-to-eat products or meals eaten at restaurants.

Macaroni and cheese and pizza have become more popular during the pandemic.

Changes to international demand for crops is by far the most complex and difficult to forecast. Effective demand can be very different in each country and often varies by region within a country.

For example, consumers in Mexico likely will adjust differently to the coronavirus

pandemic than consumers in Japan. Mexico and Japan are major buyers of U.S. agricultural products. In addition, concerns about possible supply chain disruptions can impact the volumes of U.S. products imported by each country. Fortunately, the export sales for U.S. corn, soybeans and wheat are near normal levels and are not expected to change dramatically due to COVID-19.

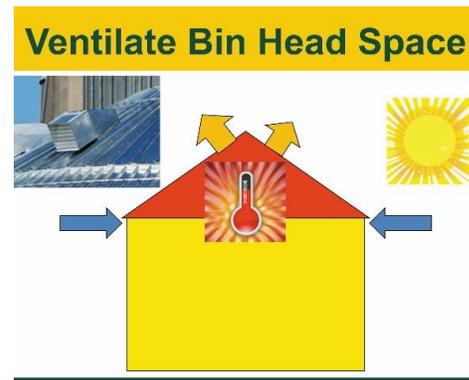
U.S. consumers have changed the way they buy food but have made relatively small changes in the type of foods they buy. The amount of food purchased from grocery stores has increased and purchases from restaurants have decreased.

More people are ordering their groceries online and requesting home delivery rather than going to the grocery store. We've also seen an increase in the number of meal kits or boxed meals bought by people with basic cooking skills or who have little time to prepare a meal from scratch.

Companies at all stages in food supply chains are struggling to understand the rapidly changing consumer preferences and how many of these changes will be permanent versus temporary. In other words, will they see structural shifts in their respective industry and how will these impact their company's role in the supply chain?

Structural shifts typically don't impact short-term crop prices, but they can influence longer-term price trends. No one can accurately predict all the impacts COVID-19 will have on crop prices, but everyone involved in agriculture will need to be watching for any shifts and adjust as quickly as possible.

NDSU Extension Offers Summer Grain Storage Tips:



Ventilate the top of the bin to remove the solar heat gain that warms the grain.

Avoid insect infestations and mold growth by keeping grain as cool as possible.

Summer temperatures will warm grain, which could lead to insect infestations and mold growth quickly.

“The goal for summer storage should be to keep the grain as cool as possible to extend the storage life and limit insect activity,” says Ken Hellevang, North Dakota State University Extension agricultural engineer. Insect reproduction is reduced at temperatures below about 60 F.

Hellevang recommends ventilating the top of the bin to remove the solar heat gain that warms the grain. Provide air inlets near the bin roof eave and an outlet near the peak to exhaust the hot air at the top of the bin. It's much like venting an attic; the heated air rises and is exhausted at the peak.

A ventilation fan to exhaust the hot air is another option. Hot air under the bin roof will heat several feet of grain at the top of the bin to temperatures conducive to mold growth and insect infestations.

Running the aeration fan for a few hours to push air up through the cool stored grain will cool grain near the top. Pick a cool early morning every two to three weeks during

the summer to run the aeration fan, and only run the fan a few hours to minimize heating grain at the bottom of the bin.

Cover the fan when it is not operating to prevent warm air from blowing into the bin and heating the stored grain. The wind and a natural chimney effect will push warm air through the grain. If the wind blows primarily during the daytime, the grain will be warmed to the daily maximum temperature.

“Temperature sensors on cables are an excellent tool, but they only measure the temperature of the grain next to the sensor,” Hellevang says. “Because grain is an excellent insulator, the grain temperature may be much different just a few feet from the sensor and not affect the measured temperature.”

Common temperature cable locations are near the middle and a few feet from the south wall of a bin.

Grain Summer Storage Moisture Content - Having grain at an appropriate warm-season storage moisture content is very important to store grain safely during the summer. The maximum moisture content for warm-season storage is 13% to 14% for corn, 11% to 12% for soybeans, 13.5% for wheat, 12% for barley and 8% for oil sunflowers.

Mold growth will occur at summer temperatures if the grain exceeds the recommended moisture content. The allowable storage time for 15% moisture corn, for example, is only about four months at 70 degrees and two months at 80 degrees.

Controlling grain temperature is more important for low-quality grain. Low test weight, immature grain with damaged kernels has a shorter allowable storage life, so it should be a percentage point drier than good-quality grain.

Checking the grain moisture content is important because moisture measurements at harvest may have been in error due to moisture gradients in the kernel, grain temperature and other factors. In addition, the moisture may have changed while the grain was in storage due to moisture migration or moisture entering the bin.

Check Stored Grain -

Stored grain should be monitored closely to detect any storage problems early. Check stored grain at least every two weeks. While checking on the grain, measure and record the grain temperature and moisture content. Rising grain temperature may indicate insect or mold problems. Insect infestations can increase from being barely noticeable to major infestations in three to four weeks when the grain is warm.

“Grain temperature cables are a wonderful tool, but do not rely on them to replace inspecting for insects or crusting and detecting odors or other indicators of storage problems,” Hellevang says.

Work Safely -

Make sure everyone, including family and employees, working around stored grain understands the hazards and proper safety procedures.

“Too many people ignore safety practices and suffer severe injury or death while working around grain,” Hellevang says.

Never enter a bin while unloading grain or to break up a grain bridge or chunks that may plug grain flow. Flowing grain will pull you into the grain mass, burying you within seconds. Use the “lock-out/tag-out” procedures to assure equipment will not start before entering the bin.

Bridging occurs when grain is high in moisture content, moldy or in poor condition. The kernels stick together and form a crust. A cavity will form under the crust when grain is removed from the bin. The crust isn’t strong enough to support a

person's weight, so anyone who walks on it will fall into the cavity and be buried under several feet of grain.

Determine if the grain has a crust before any grain has been removed. If work needs to be done with a crust, it must be done before any grain is removed.

To determine if the grain is bridged after unloading has started, look for a funnel shape on the surface of the grain mass. If the grain surface appears undisturbed, the grain has bridged and a cavity has formed under the surface. Stay outside the bin and use a pole or other object to break the bridge loose.

If the grain flow stops when you're removing it from the bin, a chunk of spoiled grain probably is blocking the flow. Entering the bin to break up the blockage will expose you to being buried in grain and tangled in the auger.

If grain has formed a vertical wall, try to break it up from the top of the bin with a long pole on a rope or through a door with a long pole. A wall of grain can collapse, or avalanche, without warning, knocking you over and burying you.

Never enter a grain bin alone. Have at least two people at the bin to assist in case of problems. Use a safety harness and rope that prevents you from descending rapidly more than a couple of feet when entering a bin. "Take time to think of all options before entering a bin," Hellevang advises.

(NDSU Agriculture Communication - July 15, 2020)

Soybean Iron Deficiency Chlorosis (IDC):



Photo: NDSU

IDC cannot happen unless soil pH is greater than 7 and the soil has significant carbonates (calcium carbonate, magnesium carbonate, sodium carbonate). All soils with pH greater than 7 have at least some measurable carbonate. There are differences even within a soil type in carbonate content. A Bearden soil, common at the fringes of the Valley, may have 2% by weight carbonates in the surface 6 inches, or 20% by weight carbonates. Carbonates themselves do not influence IDC; however, when the soil is moist enough to dissolve more soluble salts like sulfate or chloride salts, carbonates (CO_3^{2-}) dissolve forming bicarbonate (HCO_3^{-1}). Bicarbonate neutralizes the acidity that soybeans produce around their roots, which is significant because the protein that soybeans exude to change insoluble iron into soluble iron only works in an acid environment (like eggs going into a frying pan- first sort of a liquid, then a solid due to heat). Enzymes are 3-D biological tools that have a function, and when the environment is unfavorable, they change shape. Think of a Phillips head screwdriver changing into a straight head.) Once the protein is inactivated, iron is no longer accessible to the soybean, and new leaves without an iron source turn yellow due to low chlorophyll production (of which iron is a key element). The greatest reason for regional IDC being different than Iowa IDC is soil salinity. Soil salinity is a huge plant stress. Whenever there is a plant stress, its ability to overcome IDC is greatly reduced. The greater the salinity, the worse will be the IDC if carbonate content predisposes the plant to IDC.

Therefore, the number one management strategy in the region to reduce IDC is field selection. Fields that are 7 and below in pH are preferred. The lower the salt (EC) values, the better. Once a field hits EC 1.5, bad things will happen to soybeans. An EC of 2? Call your insurance agent the day after you plant.

The second most important strategy is variety selection. Dr. Kandel and Dr. Helms maintain a site with regional IDC ratings. Using local ratings is very important because these varieties are screened on sites with both carbonates and soluble salts, whereas Iowa ratings are screened solely on carbonate tolerance, with little or no soluble salts.

Other management aids are 1.) planting in wider rows to decrease distance between plants, 2.) seeding a cover crop of oats, barley or rye at the time or before time of seeding to help dry the soil and take up some soil nitrate (high soil nitrate, which we had this spring, causes a physiological precipitation of iron inside the leaf, rendering within-plant iron unusable), and 3.) use a high ortho-ortho-EDDHA containing iron fertilizer with the seed at planting.

Spraying a foliar iron fertilizer at this time will only affect leaves that are out and new leaves will come out yellow. Foliar iron is not mobile within the plant.

When the soil dries out, most areas of IDC will become green again. Some areas that remain moist due to a high-water table, and have high soil carbonate and salts, may not green up at all depending on variety or even in spite of the variety.

For next year, have fields screened for CCE (calcium carbonate equivalent) and EC (soluble salts). Choose the most favorable fields to seed soybeans for greatest economic return in 2019 (Source: Dave Franzen, NDSU Extension Soil Specialist)

Pinkeye Can Be Costly for Cattle Producers (photo: NDSU)



Pinkeye, or keratoconjunctivitis, is an infectious disease of cattle that costs producers money in several ways.

"These include increased labor, cost of antibiotics, decreased weaning weights and decreased price paid at market for animals with scarred eyes," says Gerald Stokka, North Dakota State University Extension veterinarian and livestock stewardship specialist.

One study shows that calves affected with pinkeye weighed 35 pounds less 260 days after they were weaned than noninfected calves in the same herd. Calves that were affected in both eyes weighed 47 pounds less.

"The bacteria *Moraxella bovis* is one of the primary known agents found in cases of pinkeye," says Neil Dyer, NDSU's institutional attending veterinarian.

"However, other bacterial agents such as *Moraxella ovis* and *Moraxella bovoculi* have also been isolated from cases of pinkeye. Younger cattle are usually most often affected."

Herds in which adult cattle develop clinical signs suggest that the herds have not been exposed previously and do not have immunity to pinkeye, Stokka says.

The spread of the organism can occur when cattle bunch tightly together, such as during high heat and humidity and when fly pressure is present.

Other risk factors contribute significantly to outbreaks of pinkeye. They include ultraviolet light, environmental factors (dust, wind, tall grass, weeds, pollen), co-infections with bacteria and viruses, close confinement of animals and animals without pigment around their eyes. Nutrition also may play a role because inadequate vitamin A levels have been shown to contribute to the disease.

"Affected animals present with teary eyes, inflamed conjunctiva (reddened white-appearing area around the iris), squinting and aversion to bright light, ulcerated cornea and excessive tearing from the eyes affected," says Brett Webb, director of the NDSU Veterinary Diagnostic Laboratory. "The disease usually lasts for several weeks, but it may last a month or longer."

Healing leaves a scar on the cornea, which eventually may clear. Severe cases with ulcerated corneas, or corneas with holes in them, may result in partial or total blindness of the affected eye.

"Commercial vaccines provide protection against only a few pathogenic strains; therefore, they will not be 100% effective against disease," Stokka says.

"Autogenous vaccines can be made against these bacteria if isolated, but consulting with your veterinarian is advised when considering the efficacy and administration of such vaccines. Fly control, pasture rotation and proper mineral supplementation also must be considered when managing outbreaks of pinkeye."

Individual antibiotic treatment of bacterial pinkeye usually is successful, he adds. Longer-acting antibiotics commonly are used systemically to achieve antibiotic concentrations in the tear film. In severe herd outbreaks, the entire herd may need antibiotic therapy, but all risk factors must be addressed to curtail new cases. "Consult with your veterinarian regarding antibiotic therapy, vaccination and management of this disease," Stokka advises. *(NDSU Agriculture Communication - July 16, 2020; :Source: Gerald Stokka, 701-231-5082, gerald.stokka@ndsu.edu; :Editor: Ellen Crawford, 701-231-5391, ellen.crawford@ndsu.edu)*

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