AGRICULTURE NEWSLETTER
PULASKI COUNTY

T.J. ADKINS, AGENT *MAY 2022*

BQCA TRAINING DATES

ALL DATES & TIMES SUBJECT TO CHANGE BASED OFF OF NEED

- April 14th- 9 am to 10:30 am
- April 26th- 9 am to 10:30 am
- May 13th- 9 am to 10:30 am
- May 26th- 5:30 pm to 6:30 pm
- May 31st- 5:30 pm to 6:30 pm

** You must RSVP to attend***

Cooperative Extension Service
Agriculture and Natural Resources
Family and Consumer Sciences
4-H Youth Development
Community and Economic Development

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LEXINGTON, KY 40546

Disabilities accommodated with prior notification.

University of Kentucky
College of Agriculture, Food and Environment
Cooperative Extension Service
Agriculture and Natural Resources

KENTUCKY BEEF QUALITY AND CARE ASSURANCE (BQCA) CERTIFICATION

is now available for sign up through the Pulaski County Extension Office

Be sure to sign up by calling:

606-679-6361

We can't control inflation, but we can control our management practices in response to rising inflation.

Jennifer Rogers, KFBM Area Extension Specialist, gives her top 3 farm management tips to mitigate risk and manage finances during times of high inflation in her latest article.

Read >> bit.ly/3N0UJEl

Grass Tetany - A Complicated Disorder with An Easy Prevention

Dr. Jeff Lehmkuhler, Extension Professor University of Kentucky and Dr. Michelle Arnold, UK Veterinary Diagnostic Laboratory

Classic "grass tetany" is a rapidly progressing and potentially fatal disorder caused by low magnesium level in the blood, also known as "hypomagnesemia". It is usually seen in older, lactating beef cows when grazing young, succulent grass in early spring, particularly during cool and rainy weather. Other common names for this disorder, including spring tetany, grass staggers, wheat pasture poisoning, and lactation tetany, reflect the season of the year, symptoms seen, types of forage, or physiology of the animals most often involved. Magnesium is an essential mineral as its presence is vital for many enzymes of major metabolic pathways, in normal nerve conduction and muscle contraction, and in bone mineral formation. Approximately 60-70% of total magnesium in the body is bound up in the bones. Grass tetany occurs when the magnesium (Mg) level in blood decreases rapidly, resulting in less than adequate Mg reaching the cerebrospinal fluid surrounding the brain and spinal cord. Without Mg present in spinal fluid, there is uncontrolled activation of the nerves supplying muscles throughout the body. This causes constant overstimulation and contraction of muscles, appearing first as nervousness then muscle stiffness and rigidity ("tetany"), that can progress to convulsions then death.

Maintenance of normal blood magnesium depends on daily absorption of enough Mg from the rumen to meet the amount required for milk production, soft tissue and bone growth, fetal development during pregnancy, and the small amount lost in feces. Any excess dietary Mg is excreted by the kidneys in the urine (see Figure 1). Hypomagnesemia results when magnesium absorption is less than the daily Mg lost. Cattle have no effective tissue Mg reservoir so a shortage cannot be compensated for by removal from bones or increasing Mg^{2+} ion absorption from other sites in the body. In addition, Mg is not under direct hormonal control to keep it in balance as with other major minerals. Although a simple lack of Mg intake in the diet can happen as in cases of starvation or if off feed, deficiencies are most often due to interference with Mg absorption in the rumen. Absorption basically depends on 1) the amount of soluble Mg^{2+} ions available ("in solution") in the rumen fluid and 2) the performance of the transport mechanisms that move Mg^{2+} ions across the rumen wall to the bloodstream.

Known factors negatively affecting Mg absorption include:

High potassium (K^+) in rumen fluid. High K^+ is consistently cited as the most important factor in development of hypomagnesemia. The movement of magnesium across the rumen wall depends on an active transport mechanism (or "pump") driven by an electrical potential created at the cell membrane. High potassium along with low sodium conditions alters the ion gradient required for active transport. If this active transport mechanism fails due to high K^+, there is a secondary pathway, but it requires a much higher rumen magnesium concentration (4X higher) to enable Mg^{2+} ions to override the pump and passively flow down a concentration gradient to the blood.

High K+ levels in rumen fluid (Figure 2) are expected in any of the following situations: 1) cattle graze pastures on soils naturally high in K+ 2) cattle graze pastures fertilized with excessive potash or when high nitrogen fertilizer is added when soil phosphorous is low; 3) when cows are deficient in sodium (salt) and 4) when the diet changes suddenly from hay/dry feed to lush pasture. Small grain forages, including wheat, oats and rye, ryegrass and cool season perennial pastures in spring are often high in potassium (K+) and nitrogen (N+) ions and low in magnesium (Mg2+) and sodium (Na+) ions; these forage factors collectively reduce absorption of dietary magnesium

Sudden increase in rumen ammonia. Lush grass is often high in soluble nitrogen and rumen degradable protein which allows for an increase in rumen ammonia levels. A rapid change from low-nitrogen to a high-nitrogen diet and rapid increase of ruminal ammonium ions (NH4+) impairs ruminal Mg2+ absorption, although the effect is transient and lasts for just a few days.

Insoluble Form of Magnesium. Magnesium must be present in soluble form (ionized) to be absorbed through the rumen wall. Solubility declines as the rumen fluid pH rises above 6.5. Grazing beef cattle often have higher rumen pH due to buffers present in saliva and slower production of volatile fatty acids from forage fermentation compared to grain diets. In addition, Mg2+ ion binders within forages, such as unsaturated fatty acids, can form insoluble Mg2+ salts reducing availability for absorption in the rumen.

Lack of dietary energy (fermentable carbohydrates)- In rumen fluid, a lack of fermentable carbohydrates results in fewer short-chain fatty acids (SCFA), a higher rumen pH, and an increase in ammonia concentration which decreases Mg2+ ion absorption. This is an important factor in development of winter tetany, an underlying form of hypomagnesemia that most often occurs when feeding harvested forages high in K+ but low in Mg2+, calcium (Ca2+), sodium (Na+) and energy throughout the winter. Cattle will have borderline low Mg and Ca blood levels but do not show tetany symptoms until triggered by a stressor such as severe weather, a new feed or environment, or after shipping. The stress hormone adrenaline rapidly shifts Mg2+ ions to the inside of cells, making it unavailable to the spinal fluid of the animal. If blood calcium is concurrently low, Mg levels in the spinal fluid decline even more quickly.

The classic grass tetany cow is most often found dead with disturbed soil around her hooves due to paddling and seizures before death. The interval between first symptoms and death may be as few as 4-8 hours. However, if noticed in the beginning stage, the earliest signs are twitching of the ears, facial muscles, shoulder, and flank and a stiff gait. The affected cow separates from the herd and may show a variety of symptoms including excitement, teeth grinding, aggression, galloping, bellowing, staggering and may appear blind. As the fall in magnesium progresses, sustained muscle spasms eventually cause the cow to stagger and fall, legs outstretched, stiff and paddling. Convulsions and seizures follow with the head arched back and the legs paddling. The heart rate may reach 150 beats per minute (approximately twice the normal rate) and can often be heard without the use of a stethoscope.

Respiratory rates of 60 breaths per minute (normal is 10-30 breaths per minute) and a rectal temperature as high as 105°F may result from the excessive muscle activity. Animals may get up and repeat these convulsive episodes several times before death. The diagnosis is made based on history, symptoms, and low magnesium concentration measured in the blood, urine or cerebrospinal fluid prior to death. After death, postmortem samples of spinal fluid that test below 1 mg/dL of magnesium or vitreous humor, fluid within the eye, below 1.34 mg/dL are reliable indicators of grass tetany if collected within 1-2 days after death.

Cattle exhibiting symptoms of grass tetany need immediate veterinary treatment; preferably 1.5-2.25 grams of magnesium intravenously for an adult cow. If unable to treat in the vein, a 10% magnesium sulfate solution given SQ or as an enema is a useful alternative therapy until a veterinarian arrives. Response to therapy depends on the length of time between onset of symptoms and treatment. Cattle that do recover take at least an hour to return to normal. Many of these cows will relapse and require additional Mg treatment within 12 hours. Administering oral magnesium gel or drenching with magnesium oxide or magnesium sulfate once the animal has regained good swallowing reflexes will reduce the rate of relapse. A magnesium sulfate enema can be administered because the large intestine can absorb Mg rapidly. If grass tetany has occurred within a herd, an effort should be made to immediately increase the intake of magnesium to other members of the herd to prevent further losses.

Prevention of grass tetany is based on maintaining consistent intake of soluble magnesium to be absorbed in the rumen of susceptible cattle when conditions for grass tetany exist.

Highly susceptible groups include lactating cows or cows in late pregnancy, especially 2-3 weeks prior to spring grass. These groups should be provided supplementary dietary sources of magnesium, commonly magnesium oxide. The average beef cow reaches peak lactation at 6-8 weeks post-partum which is her highest demand for magnesium.

UK Beef IRM mineral recommendations for free choice supplements for grazing beef cattle include 4 oz/head/day of a 12% magnesium trace mineral mix and all from magnesium oxide (no dolomitic limestone or magnesium mica). This will provide approximately 13 grams of magnesium which is approximately 50% of the daily requirement for lactating beef cows. These complete mineral mixtures also supply additional sodium in the form of salt to aid in combatting high potassium intakes that can interfere with the active transport of magnesium.

For cooked molasses products with a recommended intake of approximately 1 pound per day, the guaranteed analysis for Mg^{2+} should be approximately 4%. Read the label to ensure adequate Mg^{2+} levels; know recommended intake and monitor consumption.

Mineral consumption should be monitored because intake is generally inadequate if using poor quality mineral products since magnesium oxide is not palatable.

High magnesium mineral may be discontinued in late spring once the grass is more mature, the water content of the forage is decreased, and daily temperatures reach at or above 60°F.

Provide the required amount of salt in the diet. A deficiency of sodium triggers the release of the hormone aldosterone that conserves sodium in saliva and rumen fluid and replaces it with potassium. Adding the correct level of sodium to the diet is important but too much sodium increases urination and loss of magnesium in the urine. Research has shown that the negative effects of high potassium cannot be overcome by the addition of large quantities of salt.

The ionophores monensin and lasalocid significantly increase Mg absorption. Both ionophores lower ruminal K^+ concentrations and help maintain Mg transport. If feeding grain is an option, mixing 5# Magnesium Oxide (MgOx) to 50# Dried Distillers Grains (DDG) and feeding the mix at 1#/head/day will provide 22 grams Mg daily. MgOx is often sold as a "laxative powder". If the water source is a tank, soluble Mg^{2+} salts can be added, such as magnesium acetate, magnesium chloride and magnesium sulfate (Epsom salts) at a rate of 3 g/L water.

Delay turn-out to spring grass until plants are 4 to 6 inches tall. Mg2+ is more available in mature plants. Graze the less susceptible animals (heifers, dry cows, stocker cattle) on the higher risk pastures since the threat of disease is lower in non-lactating cattle.

Limit grazing to 2-3 hours per day and provide free-choice access to hay while cattle are grazing lush pastures. Dry forages can provide additional Mg2+ and Ca2+and slow passage through the rumen, increasing the time available for absorption. In the long term, prevention of disease is based on instituting management changes that decrease K+ and increase Mg2+ and Ca2+ in the forage.

One approach is to incorporate more legumes into pasture mixes, as legumes have higher Mg2+ and Ca2+ than do immature grasses, resulting in a better balance across the pasture.

Soil test and apply fertilizer based on soil test results and use no more potassium than recommended. When potassium is applied to forages in the early spring, plants take up more potassium than needed, called "luxury consumption". High soil potassium also inhibits Mg2+ uptake by forages. The resulting high potassium forage blocks the uptake of Mg2+ in the rumen.

Use caution if applying broiler house litter for fertilizer as this has been associated with an increased risk of grass tetany due to the high K+ and N+ content.

Figure 1

Figure 1. Cow receiving an adequate supply of Mg in her diet.

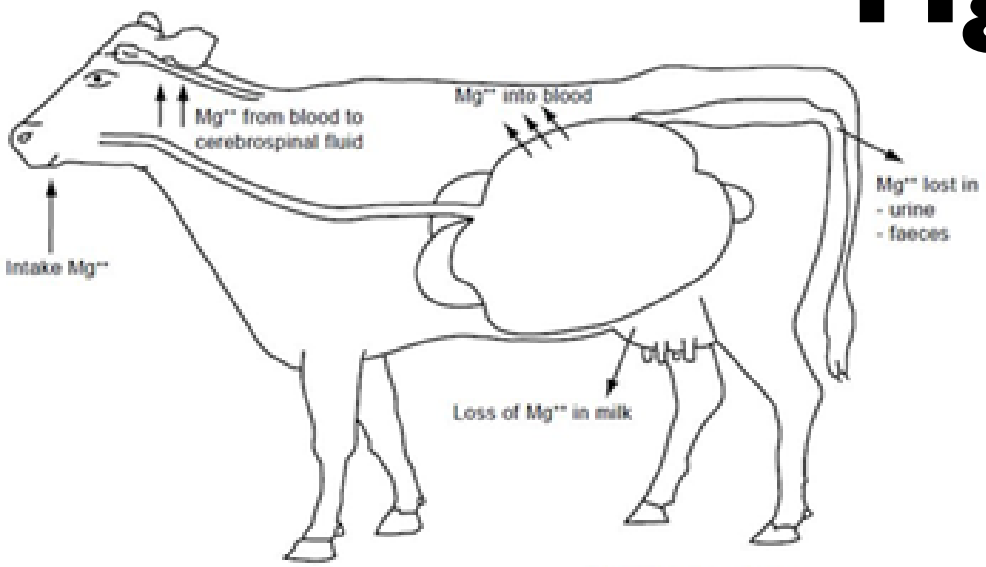


Figure 2

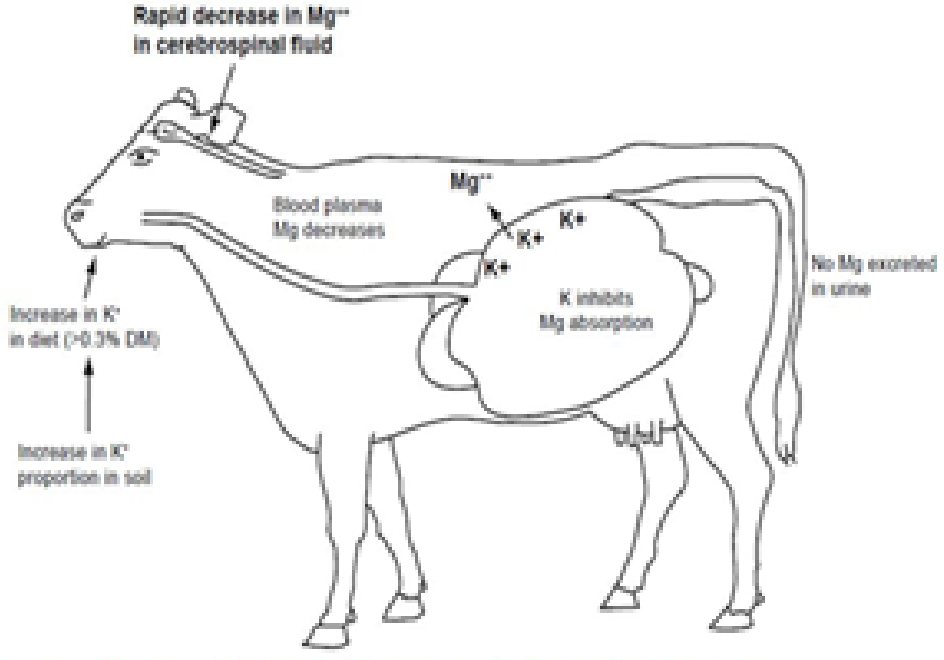


Figure 2. Cow with a temporary magnesium deficiency as a result of a high intake of K in her diet.

Kentucky Corn Planting Progress does not Explain Corn Yield

Chad Lee, University of Kentucky
Chad.Lee@uky.edu

Corn planting is on everyone's mind as corn planting progress is as late this year as it has been in a long time. The Week #16 corn planting progress was only 10%, but corn planting progress reports from 2001 to 2021 show very little correlation between planting progress and yield. Let's get to the some of the erratic planting patterns we have observed and then we will get back to those correlation.

Wild Swings in Corn Planting Since 2008

Since 2001, corn planting progress for the Week#17 report has been below 20% nine springs, with all of those occurring since 2008. Corn planting progress has been at 60% or above four springs. The highest planting progress rate occurred in 2012 which also had the severe drought and the lowest corn yields.

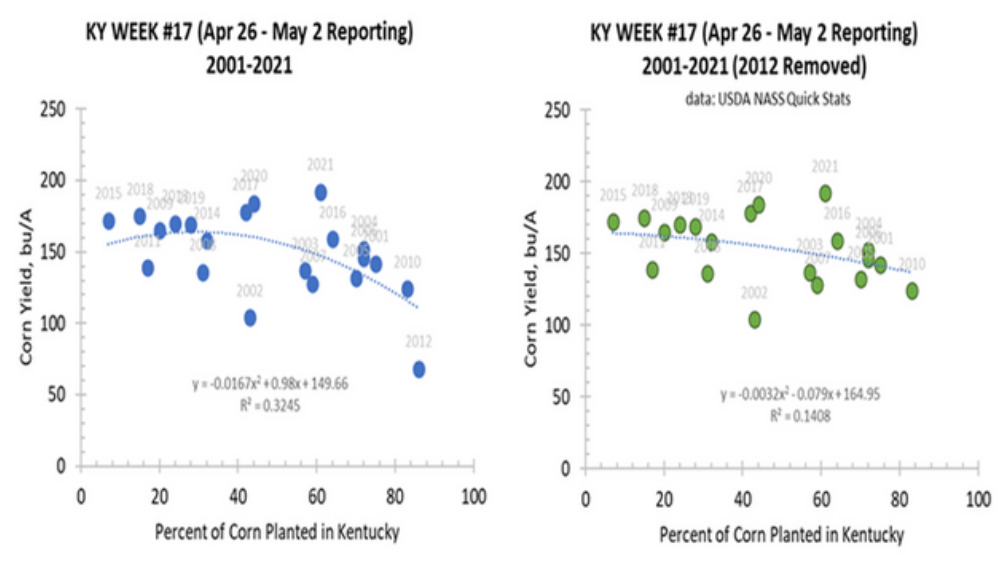
Poor Correlation Between Planting Progress and Corn Yields

RELAX.

Corn planting progress in these reports have very little correlation to corn yields at the end of the season. Graphs with blue circles include corn planting progress for Week, 17 compared with corn yields for 2001 to 2021. Corn with green circles include the same comparisons, except that 2012 is removed.

With 2012 included the correlations between corn planting progress and corn yield are stronger with r-square values ranging from 0.44 to 0.32. In all those comparisons, the 2012 season pulls the yields down when more acres are planted early. Again, 2012 had the highest planting progress for most weeks and the lowest yields of any year. When 2012 is removed correlations between corn planting progress and yield become weaker with r-square values ranging from 0.11 to 0.185. With these weak correlations, the weak trend suggests that more planting progress in weeks 15, 16 and 17 result in lower corn yields.

Week #18 gets interesting. For Week #18, corn planting progress between about 40 and 60% resulted in highest yields most often whether 2012 is included or not. Again, these correlations are weak. If anything, they confirm that many other factors besides planting date are important for corn yields. I would suggest that these correlations support that field conditions and weather are more important than calendar for planting corn. Still, it will be fun to see what the Week #18 report tells us.



Still need education hours?

You're Invited!

University of Kentucky
College of Agriculture, Food and Environment
Cooperative Extension Service

Weed Identification Field Day

Date: June 7th, 2022
Time: 6:00pm EST
Location: Brian, Lauren & Clay Johnson's Farm

Join us for an evening of learning about weed identification and treatment.
UK Extension Weed Scientist Dr. JD Green will lead a pasture walk covering the identification of common weeds in forages.
Casey County Soil Conservation District will offer a hands-on demonstration on how to calibrate a sprayer.

Schedule:
6:00 - Meet and Eat
6:30 - Introduction & Get Into Groups
6:45 - Rotation #1
7:30 - Rotation #2
8:30 - Sprayer Demo
8:45 - Wrap-Up

Directions:
From Liberty take Hwy E. 70 to the crossroads, turn right on S. 837, travel 2.3 miles and the farm is on the right.

From Russell Springs take 80 to Hwy 837, turn left off 80 onto 837, travel 8.5 miles, farm will be on the left just past Hwy 1649.

From Somerset take the parkway to the Nancy exit, turn right onto Hwy 80, travel 4 miles then turn right on Hwy 837 at the Dollar General store, travel 8.5 miles and the farm will be on the left just past Hwy 1649.

Sponsors:
Casey County Farm Bureau
Warner Fertilizer

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LEXINGTON, KY 40546
Disabilities accommodated with prior notification.

Food, Farm & Fun Night

The Woodstock Lavender Co.
Somerset, KY

$20 per person, includes meal at the farm, tour, and bundle of lavender. RSVP to Facebook event page

Tuesday
June 14
6pm

WOODSTOCK
LAVENDER CO.
Rooted in Heritage, Crafted with Care

KENTUCKY WOMEN IN AGRICULTURE

Educational
Fun
Make New Friends

2022 UK Equine Farm & Facilities Expo

Thursday, June 16 3:30-8:00 PM

Schedule:

3:30: Registration and trade fair
4:00: Farm tours begin, every 15 minutes until 5:30
5:30: Dinner
5:45: Welcome and highlight from Newtown Anner Stud Farm
6:15-7:45: Educational stations
- Barn design and its impact on horse care, Dr. Bob Coleman
- Barn design and its impact on ventilation, Dr. Morgan Hayes
- Controlling Johnsongrass and other summer species, Dr. Bill Witt
- Understanding Pasture Health at a Glance, Dr. Ray Smith.

Location:

Newtown Anner Stud Farm
3401 Elkchester Rd Lexington, KY 40510

RSVP to woodford.ext@uky.edu or (859) 873-4601

Newtown Anner

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Ag Equine Programs
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Farmers in Kentucky started no-tillage and added winter wheat into their crop rotations. Now, they are incorporating cover crops between soybean harvest and corn planting. Our team has been studying how to best manage corn following a rye cover crop. Applying some nitrogen at planting and the remainder at a "sidedress" timing helps reduce the total amount of nitrogen fertilizer needed. Planting an extra thousand seeds per acre and terminating the cover crop at least 14 days before planting also helps. Several colleagues in PSS are working on cover crops and working with them is an honor.
-Dr. Chad Lee, Extension Professor

Hodgenville farmer Ryan Bivens empties wheat from his combine into a wagon driven by his son Cyrus. Bivens said he has seen outstanding crop yields the past 10 years. Photo by Katie Pratt, UK agricultural communications.

Grain farmers talk about adapting to new climate normals >
***https://news.ca.uky.edu/.../kentucky-grain-farmers-adapt*...**

My program is interested in the fate of ammonium in soils. Ammonium can bind to clay minerals and be transformed by microorganisms in soils, however, the relative contribution of these processes is unclear. To address this question, we are performing lab studies of ammonium removal by clay minerals from diverse soils formed over a range in mean annual precipitation. Matthew Burton, an undergraduate Chemistry major (pictured below), is helping to quantify ammonium sorption onto clay minerals. These results will move us one step closer to designing management strategies to enhance nitrogen availability while minimizing adverse environmental effects of reactive nitrogen.
-Dr. Chris Matocha, Associate Professor

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STRAWBERRIES ARE IN SEASON !!!

Plate it up! Kentucky Proud

Scrumptious Strawberry Salad

5 cups spinach
½ large cabbage head, chopped
1 cup golden raisins
1 cup halved red grapes
1 pint sliced strawberries
½ small red onion, sliced
½ cup toasted and chopped pecans (optional)

Dressing
¾ cup plain non-fat Greek yogurt or plain regular yogurt
3 tablespoons honey
6 tablespoons apple cider vinegar
3 tablespoons olive oil
½ teaspoon Dijon mustard
1 teaspoon poppy seeds
1 teaspoon salt
½ teaspoon pepper

Combine all salad ingredients together in a large bowl. Prepare salad dressing by **mixing** all ingredients together in a jar, **cover**, and **shake** well to combine. **Pour** dressing over salad mixture and **toss** to combine.

Yield: 8, 2-cup servings

Nutritional Analysis:
240 calories, 10g fat, 1g saturated fat, 0mg cholesterol, 340mg sodium, 33g carbohydrate, 4g fiber, 27g sugar, 6g added sugars, 5g protein