

# NIKKI'S NEWSLETTER

## Marshall County's Agriculture and Natural Resources Update



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Marshall County  
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Hello all! It wouldn't be "Nikki's News" if we didn't talk about this **weather**. This summer has been cooking and the NOAA's Climate Prediction Center is forecasting an above average chance for warmer than average conditions throughout the month of August for the Commonwealth. As for precipitation, drier than average conditions are expected for at least the first half of August. The University of Kentucky College of Agriculture has launched a new resource for drought related resources and tools. Available here:

<https://drought.ca.uky.edu> Overall, the temperature forecast is clear and above average temperatures are expected to dominate the entire month of August, and this is not just for us but for much of the US.

On a happier note, the **Marshall County Fair** exhibition was last month and I would like to take a second to congratulate Doug Pardy and Kathy Nord. Doug's grapes won Best in Show for the farm and garden division and Kathy's roses won Best in Show for the flower division!

Corn growers who are/were considering spraying **fungicides on stressed corn**, you may want to check out the Kentucky Ag. Matters podcast. In a recent episode, the host agents and specialists had a good discussion about these topics. Hopefully it will be a helpful resource for you (even if you are finished with these decisions for this year.) Check it out here: <https://jstonet.podbean.com/>



Podcast brought to you by Western Kentucky Ag Network.

Next months **Lunch Break Gardening** program is on lawn Care & is presented by yours truly.

### Lunch Break Gardening Series



### Lawn Care September 7th's Topic:

Join Nikki Rhein, Extension Agent for Agriculture, as she describes the do's and don'ts of West Kentucky lawn care.

Join us during your lunch break for a gardening workshop!

**\$10**

Includes lunch from a local restaurant!

1st Wednesday Monthly  
12:15-12:45pm  
at the Marshall County Extension Office



RSVP by Sept. 5th  
Call 270-527-3285

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# Hay Production Cost Increases in 2022 & Management Implications

Greg Halich - University of Kentucky

July 29th, 2022

Costs for hay production have skyrocketed in 2022. Fertilizer is driving the bulk of the overall increase, followed by fuel, and then general cost increases for other categories (what could be considered "general inflation"). While we can debate the exact causes of all these increases (i.e. "Policy Blunder" or "Putin's War"), we have a serious situation that needs to be understood and dealt with.



See table to the right for changes in fertilizer prices between 2021 and 2022. Assuming we are using 60 units of N, 30 units of P, and 100 units K per acre, our total fertilizer cost bill would have gone from \$67 to \$150/acre, or an increase of \$73/acre. This is about a \$24/ton increase at 3 tons/acre hay production.

Fertilizer	Spring 2021		Spring 2022	
	\$/ton	\$/unit	\$/ton	\$/unit
Urea (N)	\$370	\$0.40	\$920	\$1.00
DAP (P <sub>2</sub> O <sub>5</sub> )	\$515	\$0.40	\$860	\$0.54
Potash (K <sub>2</sub> O)	\$370	\$0.31	\$815	\$0.68

I will be the first to acknowledge that not all of this fertilizer cost increase will be fully realized as most farmers are cutting way back on fertilizer applications this year. That of course will mean lower yields on average, but the "true" cost will be somewhat less than the \$24/ton shown in Table 1. Using very rough calculations, I would put that figure somewhere between \$15-20/ton effective increase for fertilizer cost.

Note that it is actually possible that some farmers' fertilizer costs went down in 2022. This could have occurred if they are typically reliant on commercial fertilizer but applied very low levels in 2022. However, if fertilizer is actually a benefit to them in most years then either their yields will have gone down in 2022 or they are mining their P and K nutrient bank, which will have to be replenished in future years.

Fuel costs have also increased dramatically. During the spring of 2021 on-farm diesel was in the \$2.10-2.25/gallon range. In 2022 it increased dramatically to \$4.70/gallon in May and peaked over \$5/gallon in late June and early July. Currently, in late July it has fallen back down below \$5/gallon. Assuming 5 gallons of diesel fuel per acre over two cuttings and moving the hay to storage, with an average price increase of \$2.75/gallon would result in an overall fuel cost increase of \$13.75 per acre, or roughly \$4.50/ton.

If we assume all other costs (supplies, repairs, equipment depreciation/interest, rent, labor, etc.) increased at roughly the general inflation rate of 9%, that would give us an additional cost increase of \$3.50/ton.

Thus our total cost increase for making hay between 2021 and 2022 would be in the range of \$23-28/ton. For a 5'x5' bale this would be roughly \$12-15 per bale. For a 4'x5' bale this would be roughly \$9-11 per bale. So far this year, I have not seen anything close to this level of increase in hay prices in Kentucky. However, unless 1) these costs come down substantially over the next 1-2 years, or 2) hay producers learn how to get good yields without commercial fertilizer, hay prices will have to increase.

## Management Implications

Fertilizer cost increases are over twice all the other increases combined. While the record diesel fuel prices in 2022 are getting a lot of the headline news, the overall cost increase levels are nowhere near those of fertilizer prices on a per acre basis as was previously discussed. Moreover, there is only so much you can do to reduce your fuel costs if you are going to continue to make hay unless you are willing to trade in your 80 HP air-conditioned cab tractor for original horsepower that runs on solar energy (i.e. pasture, hay, and grain). Aside note: one of the most efficient hay operations I have ever seen was primarily horse-powered, with both a square and round baler powered by a satellite engine. It was amazing how much hay they put up each year and I suspect embarrassed quite a few conventional hay producers in the area.

Continued on page 3

On the other hand, there are a number of practical options for hay producers and cattle farmers to reduce their dependence on commercial fertilizer. Nitrogen, in particular, can be replaced by learning how to manage legumes in mixed grass stands or even as pure specialty stands. A half-century ago, annual lespedeza was the forage of choice for dairy production in many parts of Kentucky. Dorris Bruce who now has beef cattle west of Lawrenceburg said they planted pure stands for their dairy in Muhlenberg County where he grew up, and that cut in the proper stage would produce more milk than any other forage they could grow. It is also my personal favorite forage for finishing beef cattle on. There are other biological and hay feeding techniques that can be used to reduce or eliminate the need for commercial fertilizer, P and K included. Check out a previous article, "Reducing Your Dependency on Commercial Fertilizers Strategies for Cattle Farm in 2022 and Beyond."

Another option to reduce dependency on commercial fertilizer is to position your farm so it is less reliant on hay. Cow-calf farms that have on average been feeding 130-150 days of hay per year will need to either radically change management or cull their herd so that they can get down to the 60-90 days hay feeding range if they want to have a chance to be profitable. This level of hay feeding is the most profitable level given a realistic range of foreseeable hay price and calf price scenarios. For details of this analysis see the article in Hay and Forage Grower, "Find the Hay-Feeding Days Sweet Spot."

Unless fertilizer prices decrease quickly and dramatically over the next 1-2 years, we will be in a new era for hay production costs. Those farmers that don't quickly adapt to this change in cost structure are going to have a hard time surviving. Those farmers that have already learned, or are willing to learn, to use legumes and other biological techniques for the bulk of their fertility needs will gain a substantial competitive advantage. Collectively cattle farmers have been way too dependent on commercial fertilizer in the last few decades. Many have voluntarily moved away from commercial fertilizer and embraced these biological techniques in the last few years. However, a majority are still trading away profits for purchased fertility and are addicted to the quick fix it gives its user. Sometimes a kick in the butt (i.e. the high \$ figure on the fertilizer bill) is needed to provide the incentive to make a change. The only uncertainties are 1) how hard will the kick need to be? And 2) how many times will they need to receive it? I'm betting most Kentucky farmers are fast learners when properly motivated.

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## Assessing Potential Corn Yield Losses from the Drought

*Chad Lee, Grain Crops Specialist*

Even with the rains near the end of last week, corn in some fields has been severely damaged by a lack of water. Some farmers are calling insurance adjusters trying to decide if they can cut the corn for silage to get some-thing from their crop. In most cases, the farmer would have to leave a strip or strips of corn in the field for yield estimates later. The concern with this is that the corn could end up doing better than expected. A farmer's worst-case scenario is cutting the corn for silage, leaving those strips of standing corn, and having rains that turn the crop around and yield 71% of the 5-year average, and the field was insured at 70% of the 5-year average. If possible, let the corn get through pollination. Corn ears with less than 400 kernels per ear likely have yield loss. Corn with 300 kernels or less will likely have yield losses that trigger crop insurance. Table 1 below lists the yield components that make yield, including ears per acre, kernels per ear and kernel size (listed as kernels/bushel). Ears per acre and kernels per ear determines the number of kernels per acre. Kernels per acre divided

Table 1. Corn yield estimates for two plant populations, 200 to 600 kernels per ear and three kernel sizes. (See page 8)

Table 1 includes three kernel sizes, 80, 90, and 100 thousand kernels per bushel. Good weather during seed fill will usually get most cornfields close to 80 thousand kernels per bushel. Very stressful conditions will result in smaller kernel sizes and get corn-fields closer to 100,000 kernels per bushel.

A corn crop cannot makeup yield for very low kernel numbers. For example, if a corn field only has 200 kernels per ear, but has a good seed filling weather, it may have larger kernels. However, yields may only get to 75 bushels per acre. Conversely, if a corn field has 400 kernels per ear, but poor seed fill conditions, the field might yield 120 bushels per acre.

Estimating yield is not an exact science. The farmer probably needs to grab 20 or more ears in a field to estimate kernel numbers per ear. The estimate is only as good as sampling area. If the farmer choses the worst spot of the field or the best spot of the field, that will skew the estimate yield one way or the other.

# Historical Farm Income and Expenses

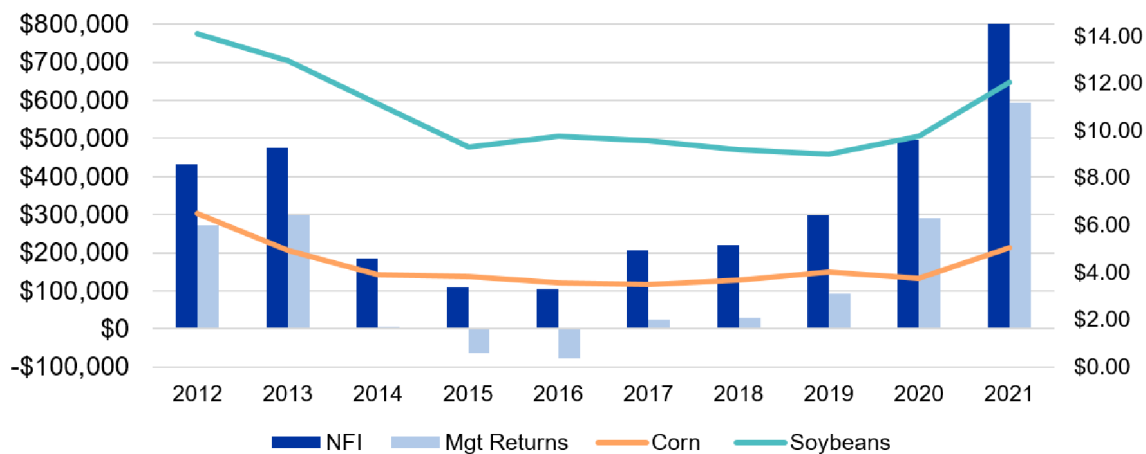
*Faye Kuosman, UK Extension Horticulture Agent*

Agriculture seems to be on a roller coaster recently with the volatile commodity markets, energy costs, and the tough summer weather. Looking back over the last ten years, grain farmers have seen a wide range of commodity prices and yields. There has been much more variance on the income side than the costs per acre. It is interesting to look at trends over the past ten years using data from the Kentucky Farm Business Management (KFBM) program.

Kentucky grain farms had record incomes for the 2021 crop.

Outstanding yields coupled with higher prices resulted in high net farm incomes and management returns. Looking at Figure 1, you can see that net farm incomes (NFI) and management returns usually correlate with grain prices received. Higher prices usually lead to higher incomes and a decrease in prices results in lower incomes, on average.

**Figure 1: Incomes and Grain Prices**



The other major factor in income is yields. Table 1 shows the yields for corn, beans, and wheat over the last ten years. As you can see, 2021 average yields were outstanding for all three crops. With 2012 being a drought year, the corn and wheat yields have seen more variance than beans. The last five years have seen solid yields across all crops. This makes one wonder what the next ten years of yields will look like.

**Table 1: Historical Yields**

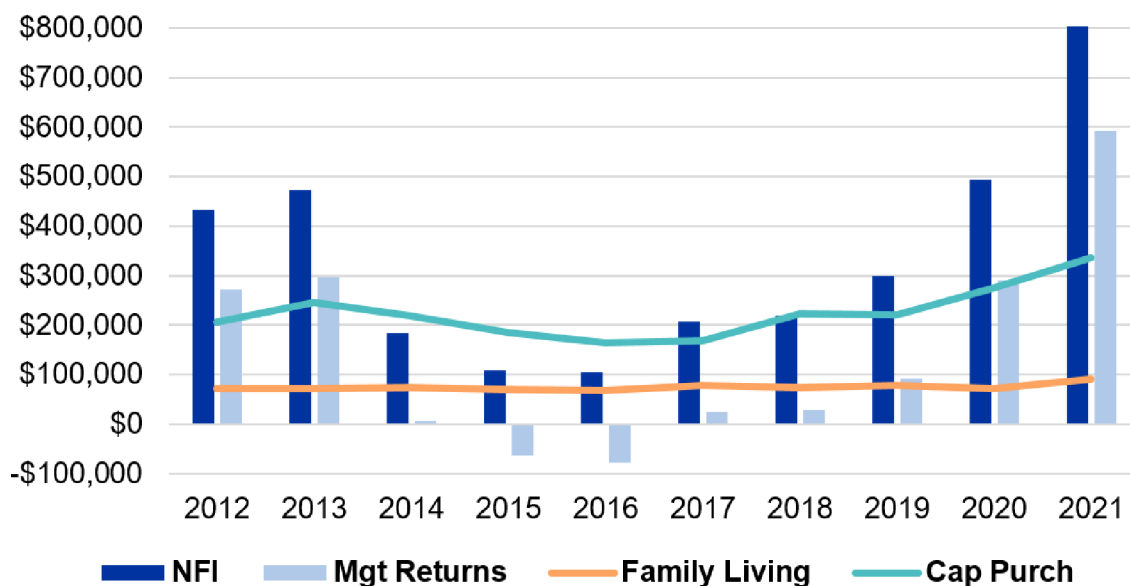
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
<b>Corn</b>	78	190	161	186	174	197	188	193	199	205
<b>Soybeans</b>	45	53	52	53	53	57	53	53	59	60
<b>Wheat</b>	66	81	79	79	85	80	69	82	66	94

KFBM also tracks family living expenditures and capital purchases (machinery and building) for the farms in the program. Family living expenses are always an area of interest to lenders. It is difficult for anyone to change their lifestyle and this has held true with KFBM farms. Regardless of high income or low income, family living expenses held fairly steady over the last ten years, with exception of 2021. In 2021, the average farm spent \$92,000 on family living expenses. This was an increase of nearly 28% over 2020.

Continued on page 5....

The average family living expense over the past ten years was \$74,897. Figure 2 shows the family living compared to NFI and management returns. For five years, family living expenses were greater than management returns.

**Figure 2: Income and Spending**



Another trend interesting to examine is capital purchases (equipment, grain bins, tile, barns, farm shops). All capital items have seen a recent increase in prices and availability, to an extent. Higher incomes usually result in greater cash on hand, thus more capital purchases (Figure 2). Grain bins have truly been able to help producers reap higher prices over the last two years.

Income is only one side of the equation. The other side is input costs, which have to be managed to generate higher NFI. Over the last ten years, KFBM producers have had to manage their costs to keep them as low as possible. The period from 2014 to 2019 was tight for producers, thus they became great managers of their costs. Table 2 shows several costs per acre that are most concerning for producers.

**Table 2: Input Costs**

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
<b>Fertilizer</b>	149	139	135	122	109	94	98	112	105	118
<b>Chemical</b>	51	64	62	62	66	68	64	69	76	84
<b>Seed</b>	81	85	85	84	82	82	81	83	87	84
<b>Fuel</b>	40	41	38	26	20	24	27	26	21	29
<b>Rent</b>	183	195	189	194	188	184	182	188	189	197

Table 2 represents a large portion of the total expenses for a grain farm. Fertilizer and rent are most likely the two largest costs for all grain farms. Undoubtedly, input costs will be higher in 2022. You can see that there has been quite a bit of variance over time in these costs and there hasn't been a true upward or downward trend in any category. Using averages, over a five or ten-year period, can help producers better plan and keep input costs at a manageable, and hopefully profitable, level.

Due to the high-income carryover from 2021, 2022 has been easier to manage. The high input costs were concerning, but cash was not as tight. The market volatility has most likely created large swings in the average prices that will be received per farm. There could easily be a \$2/bushel swing in prices received from farm to farm. Yields won't be at 2021 levels across most of the state, yet there is still a strong possibility for another year of high NFI.



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



**2022**



# Tobacco Twilight Tour

August 11th - 5:30PM

MSU West Farm Tobacco Barns

336 Robertson Rd. North

Murray, KY 42071

Catfish Dinner Following Tour

RSVP - Calloway Ext. 270-753-1452

## Topics

UK & UT Crop Update &  
Research Overview

*(Dr. Bailey & Dr. Richmond- Ext. Specialists)*

Angular Leaf Spot Management  
*(Andrea Keeney, PhD Student)*

Cigar Wrapper  
Management Update  
*(Caleb Perkins, M.S. Student)*

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Family and Consumer Sciences  
4-H Youth Development  
Community and Economic Development

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LEXINGTON, KY 40546



 University of  
Kentucky  
College of Agriculture,  
Food and Environment

*Marshall County*



*Junior Master  
Gardeners*

Every Other Monday @ the  
Benton Library  
Meeting Room B  
5:30-7:00pm  
Ages 9-18

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Fall Schedule:  
Sept. 12th, Sept. 26th,  
Oct. 10th, Oct. 24th,  
Nov. 7th, & Nov. 21st

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For More Information Contact:  
Marshall County  
Extension Office  
1933 Mayfield Highway  
Benton, KY 42025  
270-527-3285  
<https://marshall.ca.uky.edu>

Youth Horticulture 7

# Poison Hemlock- What You Need to Know



*Sharon Flynt, Horticulture Agent*

County extension offices around the state have fielded many phone calls this spring and summer from homeowners and gardeners concerned about poison hemlock. The concern seems to be justified but only if the poison hemlock is ingested by humans or livestock.

Poison hemlock is one of the most toxic plants in the world. It is well known throughout history for accidental deaths of humans and animals. One of the most well-known poison hemlock deaths took place in 329 B.C. when Greek philosopher Socrates ingested the deadly plant.

Poison hemlock has been getting closer to populated areas recently and Kentucky isn't immune. Poison hemlock is a biennial flowering plant, meaning it takes two years to complete its biological lifecycle. The first year the plant grows leaves, stems and roots. Low rosettes of parsley or fern-like shiny green, triangular leaves with a very pungent odor is noticeable. It will grow no taller than 2 to 3 feet the first year.

The second year of the plant's biennial season, plant growth completes with the formation of longer stems, flowers, fruit and seeds. It's easy to confuse poison hemlock with Queen Ann's Lace, which is in the carrot family and is not poisonous. In year two, the plant can grow from 2 to 10 feet tall, and the stems have purple splotches. The purple spots are what distinguishes it from other plants. Each plant can produce up to 40,000 seeds.

Poison hemlock is usually found in unmaintained disturbed sites along fence rows, field edges, ditches, roadsides and low-lying areas with moist soil and shade. Disturbances, such as construction, utility work, or people working the land where poison hemlock is present, help to germinate the abundant seeds. Keeping the plant from going to seed is the best way to prevent spread. You can use preemergent and post herbicides to prevent or kill poison hemlock, but timing is key when applying.

Contact the Marshall county office of the University of Kentucky Cooperative Extension Service for information on poison hemlock. Educational programs of the Cooperative Extension Service serve all people regardless of economic or social status and will not discriminate on the basis of race, color, ethnic origin, national origin, creed, religion, political belief, sex, sexual orientation, gender identity, gender expressions, pregnancy, marital status, genetic information, age, veteran status, or physical or mental disability.

Table 1 from page 3- Corn Yield Loss from Drought

A. Yield Estimates for Average Kernel Size (80,000 kernels per bushel)						
ears/acre	x	kernels/ear	÷	kernels/bushel	=	Bu/A
25,000	x	200	÷	80,000	=	63
25,000	x	300	÷	80,000	=	94
25,000	x	400	÷	80,000	=	125
25,000	x	500	÷	80,000	=	156
25,000	x	600	÷	80,000	=	188
30,000	x	200	÷	80,000	=	75
30,000	x	300	÷	80,000	=	113
30,000	x	400	÷	80,000	=	150
30,000	x	500	÷	80,000	=	188
30,000	x	600	÷	80,000	=	225
B. Yield Estimates for Small Kernel Size (90,000 kernels per bushel)						
ears/acre	x	kernels/ear	÷	kernels/bushel	=	Bu/A
25,000	x	200	÷	90,000	=	56
25,000	x	300	÷	90,000	=	83
25,000	x	400	÷	90,000	=	111
25,000	x	500	÷	90,000	=	139
25,000	x	600	÷	90,000	=	167
30,000	x	200	÷	90,000	=	67
30,000	x	300	÷	90,000	=	100
30,000	x	400	÷	90,000	=	133
30,000	x	500	÷	90,000	=	167
30,000	x	600	÷	90,000	=	200
C. Yield Estimates for Very Small Kernel Size (100,000 kernels per bushel)						
ears/acre	x	kernels/ear	÷	kernels/bushel	=	Bu/A
25,000	x	200	÷	100,000	=	50
25,000	x	300	÷	100,000	=	75
25,000	x	400	÷	100,000	=	100
25,000	x	500	÷	100,000	=	125
25,000	x	600	÷	100,000	=	150
30,000	x	200	÷	100,000	=	60
30,000	x	300	÷	100,000	=	90
30,000	x	400	÷	100,000	=	120
30,000	x	500	÷	100,000	=	150
30,000	x	600	÷	100,000	=	180



# From the Woods Today



[www.FromTheWoodsToday.com](http://www.FromTheWoodsToday.com)

A weekly internet show co-hosted by Renee Williams and Billy Thomas with UK Forestry and Natural Resources Extension featuring segments focusing on Kentucky woodlands and wildlife. The show airs live on Wednesdays at 11 a.m. ET. You can watch via Zoom or Facebook Live. Links to live shows are posted on [www.fromthewoodstoday.com](http://www.fromthewoodstoday.com) just before the show. Join live or watch recorded shows later at the website. August Schedule:  
August 3: American Chestnut, Tree of the Week, Tree Snap  
August 10: Birding ID By Ear, Wildlife Sounds, What's Bugging My Tree?  
August 17: Cook Wild: Squirrel, Asian Long Beetle, Lingering Ash  
August 24: Plant Selection for Hosts, What Does an Extension Agent Do?  
August 31: How Do Insects Find Food?, Upcoming Programs

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## Summer Lawn Management



### *Andy Rideout, Horticulture Agent*

Cool-season grasses such as fescue or bluegrass do not enjoy high temperatures or prolonged periods of drought. These grasses are originally from cooler, more temperate regions of Europe. Cool-season grasses make food using photosynthesis and nutrients from the soil but during very hot summers, they are much less efficient at the process and also use much more water than normal. We can help out our cool-season grasses during stressful conditions with a few good practices, however.

Watering our lawn in the summer is tricky. Deep, infrequent watering is always best. Depending on your soil type and how compact your soil is, it may mean that you leave a sprinkler on for several hours to get a good deep wetting. Deep watering promotes deeper roots, reduces growth rates, and conserves sugars. Just like people, grass has a hard time cooling itself in high temperatures and high humidity so be careful and resist the urge to water more frequently. Water in the morning if possible. The grass plant is very vulnerable to diseases when under the stress of high temperatures and drought. Wetting the leaf blade promotes fungal problems so we want the blade to dry as quickly as possible. Early watering allows the blade to dry very quickly. Watering in the late afternoon or evening also tends to hold heat in the soil longer, slowing down the soil cooling that typically happens after sunset.

Be very careful with any fertilizer application during the summer on cool-season grasses. Unlike zoysia or Bermuda, fescues and bluegrasses can easily be burned with nitrogen applications. Cool-season grasses slow down drastically during the summer and don't need much food. Newer lawns often can benefit from a little nitrogen during the summer months but very little is needed. Ideally, a slow-release nitrogen product will provide the best results in certain situations.

Mowing during the summer should only continue as long as the grass is still growing. Drought and high temperatures will likely slow down growth and mowing should also stop. When we mow our lawns, it puts stress on the plant and in the spring, the grass is actively growing and recovers very quickly. When under stress such as high temperatures and drought, cool-season grasses likely will have a much harder time recovering. Keep your blades sharp and change up mowing directions to reduce damage to dry, hot lawns. Very often our cool-season grasses will develop some disease problems during the summer. This is normal and the grass will typically recover when cooler weather prevails. Sometimes, however, disease treatment is necessary. Contact your local Extension Service for help identifying the disease present and proper control measures.

Overall, fescues are quite tolerant of Kentucky's summers. Even with prolonged hot, dry periods, fescues recover nicely in the fall. Don't be alarmed if your fescue turns brown and goes slightly dormant this summer. This is a natural occurrence even with cool-season grasses.



# Watermelon Salsa

## Directions:

Combine watermelon, blueberries, cucumber, onion and pepper in large serving bowl. Sprinkle with garlic salt. Toss to coat. Stir in lime juice and balsamic vinegar. Cover and chill one hour.

## Ingredients:

2 cups chopped seedless watermelon  
1 cup fresh blueberries  
1 cup chopped cucumber  
½ cup chopped onion  
½ chopped red pepper  
½ teaspoon garlic salt  
1 teaspoon lime juice  
2 tablespoons balsamic vinegar

Yield: 10, ½ cup servings

Nutritional Analysis: 25 calories, 0 g fat, 0 mg cholesterol, 50 mg sodium, 7 g carbohydrate, 1 g fiber, 5 g sugar, & 1 g protein

## Kentucky Watermelon

**SEASON:** July to September

**NUTRITION FACTS:** Watermelon contains a variety of nutritional benefits for minimal calories. A 2 cup serving provides 90 calories and 25% Daily Value for vitamin C and 30% Daily Value for vitamin A. Watermelon also contains phytochemicals that foster heart health and good vision, boosts the immune system and reduces the risk of some cancers.

**SELECTION:** Choose melons with a well-rounded shape and smooth surface. They should be heavy and firm. The underside should be a creamy yellow color. The flesh should be deep red with mature, dark seeds.

**Source:** [www.fruitsandveggiesmatter.gov](http://www.fruitsandveggiesmatter.gov)

**STORAGE:** Cut melon can be stored in the refrigerator and covered with plastic for two to three days. Uncut melon will keep in a cool place for up to two weeks.

**PREPARATION:** Uncut melons should be washed with cool running water. The flavor of the melon is best when served cold and raw.

### KENTUCKY WATERMELON

#### Kentucky Proud Project

County Extension Agents for Family and Consumer Sciences  
University of Kentucky, Dietetics and Human Nutrition students

**June 2015**

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EXTENSION  
SERVICE



For more information go to:  
<http://marshall.ca.uky.edu/AgNaturalResources>  
or follow us on Facebook @marshallcountyanr

*Nikki Rhein*  
Agent for Agriculture and Natural Resources