

Agriculture and Natural Resources

Cooperative Extension Service

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



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CYANIDE POISONING VS NITRATE TOXICITY

Monthly Recipe Card

Wild Turkey and Broccoli Casserole



Directions:

To cook turkey breast, preheat oven to 325 degrees F. Add vegetable oil to roasting pan. Place turkey breast in roasting pan. Season meat lightly with garlic powder and black pepper. Cover with lid or aluminum foil. Cook at 325 degrees F until internal temperature is 165 degrees, about 1 1/2 to 3 1/2 hours for 4 to 8 pounds of meat. Let meat cool in pan for 5 minutes before cutting into cubes. Steam broccoli until tender. Drain. Grease a 2-quart casserole dish or 9-by-13-inch pan. Place turkey on the bottom and arrange the broccoli over the turkey. Combine mayonnaise, cream of chicken soup, curry powder or mustard, and lemon juice. Combine cheese, breadcrumbs and butter. Sprinkle over casserole. Bake at 350 degrees F for 30 minutes.

Ingredients:

- 2 packages (10 ounces each) frozen broccoli, or 2 bunches fresh broccoli, washed and cut into pieces
- 4 cups cubed, cooked wild turkey meat
- 1 cup light mayonnaise
- 2 cans (10.5 ounces each) low-sodium cream of chicken soup
- 1 teaspoon curry powder or 1 tablespoon prepared mustard
- 1 teaspoon lemon juice
- 1/2 cup grated cheddar cheese
- 1/2 cup panko breadcrumbs
- 1 tablespoon melted butter

Nutritional Facts / Serving:

270 calories, 12g total fat, 3g saturated fat, 0g trans fat, 65mg cholesterol, 660mg sodium, 17g total carbohydrate, 0g dietary fiber, 2g total sugars, 23g protein, 6% DV calcium, 6% DV Iron, 8% DV Potassium



IMPORTANT DATES

November

- 1st -18th: North American International Livestock Expo
- 1st: Fencing School (Marion)
- 3rd: Fencing School (Clay)
- 11th: Liberty Belle Sale (Casey)
- 17th: Cattlemen's Annual Meeting (Washington)
- 22nd: Winter Feeding Facilities (Washington)

The last opportunity to receive Cost-Share Education in the office will be November 22nd

December

- 1st: **CAIP, Next-Gen, and YAIP Due**
- 3rd - 16th: Holiday Assistance at the Office

January

- 10th: Weed Control in Pasture and Hay Fields (Washington)

**If you have any questions about these programs please call
(859)336-7741**

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www.facebook.com/WashingtonCountyKentucky4H/



Will this plant kill cattle? Frosted johnsongrass is of concern to cattle producers every fall. Tender regrowth of johnsongrass can be very toxic to cattle if grazed in quantity. Often confused with nitrate toxicity, cyanide toxicity is a potential problem with all sorghum species, including johnsongrass.

Cyanide poisoning and nitrate toxicity – Do you know the difference?

Forage Doctor Column

September 29, 2022 for October 6, 2022 Issue

Some aspects of forage management are just confusing enough that the same questions come up every year. Take the forage disorders, cyanide poisoning and nitrate toxicity, for example. Questions on these disorders come up anytime forages from the sorghum family (which includes johnsongrass) are grazed. Questions arise especially often in the fall as we begin to experience light frosts. This article gives a quick reminder about these two forage disorders of cattle. (Cyanide toxicity is also called prussic acid toxicity or poisoning).

But first, you have to take a test. What follows is taken from an exam given to juniors, seniors and graduate students who took the UK Forage Management and Utilization class. Ready? Okay, here you go: Please indicate whether the description below is true of cyanide or nitrate toxicity. In some cases either choice will be correct. (Answers below the 'quiz').

_____ Dissipates in hay

_____ A problem when leaves of freshly frosted johnsongrass or young tender regrowth of sorghums is grazed

_____ Causes suffocation

_____ Never a problem with pearl millet

_____ Usually detoxified by the ensiling process

_____ Can be avoided by waiting until sorghums are 24 inches tall before grazing

_____ High rates of nitrogen and drought

So what do you think? Easy? Hard? My students had a bit of a problem with it the first time (just might have been the instructor, I am afraid). Here are the answers and some explanations.

Cyanide poisoning and nitrate toxicity – Do you know the difference?

Dissipates in hay: Cyanide. Cyanide is released as a gas as sorghums (sudangrass or sorghum sudangrass or johnsongrass) dry out during haymaking.

A problem when leaves of frosted johnsongrass or tender regrowth of sorghums is grazed: Cyanide. In both cases these forages will have high levels of cyanide-producing compounds in their leaves. When consumed by ruminants, cyanide is released in the rumen. Please note that cyanide risk can be several times greater in johnsongrass than the sorghums; some estimate it to be three to five times as toxic. Toxicity with johnsongrass is most frequent in freshly frosted forage, and especially in the new growth that may start after a non-killing frost, similar to the photo above.

Causes suffocation: Cyanide and nitrate. Both of these toxic chemicals react with the oxygen transport in the blood. Blood from ruminants exposed to high nitrates will be brown. Cyanide toxicity causes the blood to be bright red.

Never a problem with pearl millet: Cyanide. Pearl millet does not contain cyanide-generating compounds like the sorghums. For this reason, many prefer pearl millet over the sorghums for supplemental grazing.

Usually detoxified by the ensiling process: Both cyanide and nitrate. Significant amounts of cyanide and nitrate are either evolved as a gas (cyanide) or metabolized during ensiling (nitrates). Generally, the ensiling process will detoxify forage that would be harmful if consumed fresh. If nitrate toxicity is a concern, collect a sample after a month of ensiling and test for nitrate concentrations. Although nitrate toxicities are infrequent, it always pays to be prudent and test.

Can be avoided by grazing sorghums after they reach 24 inches: Cyanide. Young plants of the sorghums have high concentrations of the cyanide-generating compound dhurrin. Concentrations of this compound are diluted as sorghums grow to 24 inches.

High rates of nitrogen and drought: Nitrate. When heavily fertilized with nitrogen (usually above 80 lb N/A) and under drought stress, the sorghums AND pearl millet (and many other plants) can accumulate toxic levels of nitrate in their stems. The concentration of nitrate is higher near the soil and gets lower as you move up the stem. UK ag agents have access to test strips that can indicate if high levels of nitrate are present in stems. If this quick test is positive for nitrate, submit a sample for analysis to measure actual concentrations present.

How did you do? Pretty well I hope. As you might imagine, there is much more information available on the production of summer annuals, and toxicities of cyanide and nitrate. To learn more, please see UK publications AGR 229 “Warm Season Annual Grasses in Kentucky”, ID 220 “Cyanide Poisoning in Ruminants” and ID 217 “Forage-related Cattle Disorders: Nitrate Poisoning.”

Happy Foraging.

Winter Feeding Facilities



Taught by Dr. Morgan Hayes, Biosystems Engineer

November 22nd

6 p.m.

Washington County Extension Office

Call (859)336-7741 or email taylor.graves@uky.edu to

Register



This program is approved for a CAIP
educational hour

WEED CONTROL IN PASTURES AND HAY FIELDS

January 10th

6:00 p.m.

Washington Co. Extension Office



*Learn what to use and when to
treat your hay and pasture field
weeds before they become a
problem this spring.*

Dr. JD Green will be joining us to
discuss common weeds and
treatments.

**Call 859-336-7741 or email
taylor.graves@uky.edu to register.**



This program is approved for a CAIP
educational hour