Nicholas County
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Agriculture and Natural Resources

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

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Agriculture Development Funds (Phase I) Update!!!

It is time again for the Agriculture development program (Phase 1) to open up for 2016. The Nicholas County Extension Office will be taking applications from **August 15th 2016-September 2nd 2016**. None before or none after these dates. All applications must be in by 4:00pm on September 2nd. To pick up your application stop by the extension office during these dates or you're more than welcome to sit down and fill it out here when you pick it up.

The deadline for all approved projects to be completed will be April 28th 2017. Projects will be pro-rated back to June 1st 2016 meaning if you purchased something that falls under the Phase 1 program from June 1st on, if you are approved, you can turn it in under this program year. The program will run on a 75/25 cost share, with a per-producer limit of up to $3,000. So if you spend $4500 or more you will receive $3000 back.

There are a few things to keep in mind with this program. First off, you must attend an agriculture themed class and have the appropriate paper work filled out to receive funds after you have been approved. Keep this in mind if you don't think you (or the land owner) are physically able to attend a public meeting. Next, two people out of the same household cannot be approved for Phase 1 funds, examples of this are, husband and wife, father and son, or anyone who lives under the same roof, address etc. Lastly, a new rule for 2016 is that there will be **NO cash sales** allowed to be turned in for cost share. You must show copies of cancelled checks for proof of purchase, no exceptions. Frankfort sets the rules, it is only the Extension Office's job to abide by them. For a full list of program guidelines or any other questions, call or stop by the extension office anytime.

Hay Testing

Have you ever been interested in having your forages tested to see what kind of feed quality they actually hold for your livestock? Now is your chance! On September 22nd 2016 there will be a representative from the Kentucky Department of Agriculture in Nicholas County to travel from farm to farm, take samples of your hay, and test them in a lab, giving you a full nutritional report on the quality of your hay. There is a $10 lab fee per-sample that you would like to have tested. This is a bargain price other labs typically cost 20-25 dollars. These results will be great to have when planning your winter feeding program. If you would like to have your hay tested on this day, contact me at the extension office to set up an appointment.

Figure 1: Wilting is among the first symptoms to appear in black shank-affected plants. (Photo: Erica Fealko, UK).

Figure 2: Yellowing, wilting, and stunting in black shank-affected plants. (Photo: Kenny Seebold, UK).

Figure 3: Blackened tissue at the root-stem interface in a black shank affected tobacco plant. (Photo: Kenny Seebold, UK).

Figure 4: Plants severely affected by black shank of tobacco. (Photo: Kenny Seebold, UK).

Black Shank of Tobacco More Common In 2016

Posted on July 26, 2016

While 2015 was a light to moderate year for black shank of tobacco, 2016 is proving to be much more challenging. Black shank can be the most yield-limiting disease of tobacco, and once a field is infested with the pathogen, it can persist in soils for several years. A combination of management approaches is necessary for adequate black shank control, including crop rotation, selection of resistant varieties, and transplant water and soil-directed fungicides.

Black Shank Basics

Black shank of tobacco is caused by the oomycete pathogen Phytophthora nicotianae. The most common way farms acquire this pathogen is through soil or water movement. This can include soil movement on tractor tires, cultivators, fertilizer spreaders, contaminated tools, and even workers' boots. The black shank pathogen primarily infects plants through the roots, which differs from the blue mold or target spot pathogens, which primarily infect through the leaves.

Symptoms

Symptoms of black shank start as wilting during the heat of the day, though early on plants may appear to recover overnight (Figure 1). Later, plant leaves become yellow (chlorotic), and do not recover from wilt even under conditions of adequate moisture (Figure 2). These plants are often stunted (Figure 2) and often have blackened tissue within the stem at the root-stem interface (Figure 3). In late stages of the disease, plants die back completely and in severely affected fields, yields are significantly reduced (Figure 4).

Management

Adequate management of black shank of tobacco requires a three-way approach.

1. Rotate fields away from tobacco for 3 to 5 seasons to reduce levels of the black shank pathogen. While this pathogen can never be truly eradicated from fields, it can be significantly reduced by growing non-host crops over several seasons. nicotianae, the black shank pathogen, can infect other crops, but it is maintained and increases best in tobacco. A number of common rotational crops, including grains, are poor hosts for this pathogen.
2. For fields with any history of black shank, choose a resistant variety. Very good to excellent resistance to black shank has been bred into a number of recent burley releases, including KT-204, KT-206, KT-209, and KT-210. Good to moderate resistance is available in the dark tobacco varieties KT-D14, PD 7305, DT 538, DT 558, and KT-D8. Two different races of the black shank pathogen are common in Kentucky, and unless specific farm populations have been tested, the most conservative approach is to choose a variety with resistance to both races.
3. Apply fungicides in transplant water as well as soil-directed sprays. Fungicides available for application in transplant water include Ridomil Gold and Orondis Gold. At first cultivation and layby, Ridomil Gold, Presidio, and Orondis Gold may be used. Post-transplant applications are most effective when directed at soils using drop nozzles followed by cultivation to move the fungicide into the root zone. Under ideal conditions, this would be followed by a light rain to facilitate fungicide uptake into plant roots.

Resources

- Burley and Dark Tobacco Production Guide (ID-160)
- Fungicide Guide for Dark and Burley Tobacco, 2016 (PPFS-AG-T-08)

By Emily Pfeufer, Extension Plant Pathologist

Preventing Fires in Baled Hay and Straw

Ag Safety and Health September 24, 2015

Most hay fires occur within the first six weeks after baling. Understanding the causes of fires in stored hay and learning how to reduce fire hazards will protect your feed supply and could prevent the loss of time and money associated with a fire.

Causes of Fires in Baled Hay or Straw

Moisture content is the main factor that causes hay and straw to spontaneously combust. Hay fires are more common than straw fires, for reasons involving the type of forage, the moisture content in the stored forage, and heat production.

After forages are cut, respiration of plant fibers (burning of plant sugars to produce energy) continues in plant cells, causing the release of a small amount of heat. When the forages are cut, field dried, and baled at the recommended moisture level (20% or less), plant cell respiration slows and eventually ends.

When forages are baled at moisture levels of greater than 20%, the right environment is provided for the growth and multiplication of mesophilic (warm temperature) bacteria found in forage crops. Mesophilic bacteria release heat within the bale and cause the internal bale temperature to rise between 130ºF and 140ºF. At this temperature range, bacteria die and bale temperature decreases. Fire risk is greater for hay than for straw because a hay bale's interior temperature does not cool after the first initial heating cycle. The respiratory heat created by the mesophilic bacteria provides a breeding ground for thermophilc (heat loving) bacteria. Basically, the higher the moisture content, the longer a bale will remain at a higher temperature. For example, a bale with 30% moisture content may have higher interior bale temperature for up to 40 days. When thermophilic bacteria are present, they multiply and produce heat, which can raise interior bale temperature to over 170°F. At these temperatures, spontaneous combustion can occur.

Additional factors that contribute to the risk of hay fires include the volume of the mow or bale stack, bale density, and ventilation or air flow around the stacked bales. Bales with a lower density that are stacked lower and have good air flow and ventilation have a lower risk of overheating.

Decreasing the Risk of Fire

The best way to reduce the risk of a hay fire is to bale hay at a moisture content of 20% or less because at this moisture level, microbial activity decreases. There are several ways of reducing moisture content in baled hay:

- Baling under appropriate conditions: Weather plays a critical role in achieving the appropriate moisture level in baled hay. The recommended weather conditions for haymaking are a slight wind and a humidity level of 50% or less. Because hay has a higher moisture content in the morning, it is recommended that you bale later in the day. The recommended practice for haymaking is to mow hay in the morning and allow it to dry in the field for a minimum of one full day prior to baling.
- Using specialized equipment: Another way of decreasing moisture content is to use specialized haying equipment designed to increase drying rates. Such equipment includes tedders, windrow inverters, hay rakes, and conditioning equipment.
- Using hay preservatives: Hay preservatives, such as liquid propionic acid, applied to the hay during baling inhibit or reduce the growth of bacteria in hay with a high moisture content.

Another way to reduce the risk of a hay fire is to ensure that stored hay remains dry.

- When storing hay inside, make sure the barn or storage area is weathertight and has proper drainage to prevent water from entering the barn.
- When storing hay outside, cover the hay with plastic or another type of waterproof material. If you are unable to cover the bales, arrange the bales so that air can circulate between them to promote drying. Bales can be protected from ground moisture by storing them on a bed of gravel or lifting them off the ground on used tires, poles, or pallets.

Monitoring the Temperature of Stored Hay

If you are concerned that hay may have been baled at too high a moisture content, monitor the internal bale temperature twice daily for the first six weeks after baling. For safety reasons, you must work with a partner when checking the temperature of stacked bales. One of you stands atop the bales to measure the internal temperature while the other observes. The person testing the hay should wear a harness and a lifeline that is attached to a secure object. In the event of

an emergency, such a system allows the observer to pull the person checking the temperature out of the hay. Due to the potential dangers of this situation, this task should not be assigned to youth workers.

You can use a commercial thermometer to test the temperature of baled hay, but commercial thermometers are not always the appropriate length to monitor the interior zone of baled hay. If a commercial thermometer does not meet your needs, you can fabricate a probe from a 10 ft. length of 3/4 in. iron pipe. Drill eight holes that are 3/16 in. in diameter about 3 in. from one end. Hammer that end of the pipe to form a sharp edge with which to probe. Insert the probe into a hay bale, and use a piece of light wire to lower a thermometer down into the end of the pipe. Alternatively, you may use a piece of 3/8 in. pipe that is 8 to 10 ft. long to test the temperature of hay.

To test the temperature of the hay, place wooden planks or plywood across top of the bales so that the weight of the person standing on the hay is distributed evenly and he or she will be at less risk of falling into a burned-out cavity. Drive a commercial thermometer or a homemade probe into the bale of hay. If you use a fabricated probe, keep the thermometer in the probe for approximately 10 to 15 minutes to obtain the temperature reading. If you use a 3/8 in. pipe, leave the pipe in place for 20 minutes. When you remove the pipe from the hay, if the pipe is too hot to hold in your hand, then you should remove the hot hay.

The following temperature chart outlines further actions that may need to be taken depending on the temperature of the hay.

Critical Temperatures and Action Steps

Temperature (ºF)	Condition and Action
125	No action needed.
150	Hay is entering the danger zone. Check temperature twice daily. Disassemble stacked hay bales to promote air circulation to cool the hay.
160	Hay has reached the danger zone. Check hay temperature every couple of hours. Disassemble stacked hay bales to promote air circulation to cool the hay.
175	Hot spots or fire pockets are likely. Alert fire services to the possible hay fire incident. Stop all air movement around the hay.
190	With the assistance of the fire service, remove hot hay. Be aware that hay could burst into flames.
200 or higher	With the assistance of the fire service, remove hot hay. Most likely, a fire will occur. Be aware that hay could burst into flames.

(Source: National Resource, Agriculture, and Engineering Service [NRAES])

Hay Fire Hazards

The following three hazards exist from hay fires:

- Flare-Ups: When the internal hay bale temperature is between 150ºF and 170ºF, the potential exists for spontaneous combustion, and the hay should be moved to allow it to cool. If the temperature is at the higher end of the range, moving the hay could expose it to oxygen and cause flare-ups. Contact your local fire department and have charged water hoses available.
- Burned-Out Cavities: These cavities form when temperatures deep within stored hay reached high temperature levels and the hay has burned. A person can become trapped in a burned-out cavity if he or she is walking over the top of the hay pile. Due to the risk of a person falling into a burned-out cavity, at least two people should investigate a hay mow.
- Toxic Gas: Toxic gases such as carbon monoxide can be released by smoldering and burning hay. Chemically treated hay may emit additional toxic gas vapors. A trained fire-rescue worker with a self-contained breathing apparatus (SCBA) should be called to assist at the scene in either situation.

When a Fire Occurs

In the event of a fire, or even when hay is smoldering, contact the fire department immediately. Your next action step and main priority should be to protect human life. Remember that you can replace hay, buildings, and equipment, but you cannot replace human life.

Before taking any action to fight a fire, consider other valuable actions you can take to address the situation prior to the arrival of fire fighters, including the following:

- Account for all personnel on your farm or ranch operation.

- Check the area for flammable products. If any are present, immediately leave the area and upon the fire fighters' arrival, make them aware of the flammable products.
- Determine whether electricity needs to be turned off in buildings.
- If the hay fire is located inside a building that houses livestock, consider personal safety before relocating livestock to an area away from the structure.
- Remove any extra vehicles or machinery from the area around the fire to clear space for the fire service equipment.
- Stage bale-moving machinery out of the immediate fire area, but have it available to help move bales, as directed by fire fighters.
- Retrieve material safety data sheets (MSDSs) for any chemical preservatives that may have been used on the hay and that fire fighters will need to review.

Moving hay bales is hot, smoky, and physically demanding work that can cause injuries, exhaustion, smoke inhalation, and heart attacks. Individuals involved at the scene need to be monitored and should receive medical attention should they exhibit signs related to any of these health concerns.

Things to Remember:

- Most hay fires related to moisture levels occur in the first six weeks after baling.
- When baling hay, keep moisture levels at 20% or less.
- Keep baled hay dry by covering it or storing it inside.
- Monitor internal bale temperature on a regular basis.
  - Youth workers should not be given the task of checking hay temperatures.
- If you store uncovered bales outside, arrange bales so that air can circulate around them.
- The use of ventilation changes based on the temperature of the hay. At lower temperatures, increased ventilation around the bales will help the hay return to an acceptable temperature. If hay temperatures reach 175ºF, stop ventilating hay because the increased air flow could feed a fire.
- Maintain MSDSs for any crop preservatives that may have been used on the hay, and have the MSDS readily available for fire service personnel.

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