

FORAGE

Bermudagrass stem maggot invades Southern states

by James Rogers / jkrogers@noble.org



The bermudagrass stem maggot, *Atherigona reversura*, was first discovered in southern Georgia bermudagrass fields in 2010. This small

fly (Photo 1) is native to South Asia, and it is unknown how it invaded the United States. Damage to bermudagrass is caused by the adult fly laying eggs in the tips of bermudagrass shoots. Fly eggs hatch into larvae (Photo 2) which bore inside the shoot and feed down to the first node. Larvae feeding damage causes death of the leaves that are growing out of the end of the damaged shoot. This gives damaged fields a "frosted" appearance that looks much like light freeze damage. Damaged shoot tips can be easily pulled from the shoot revealing feeding damage from the larvae.

Since first being identified in Georgia, the bermudagrass stem maggot has been busy expanding its territory west. It has been confirmed in Mississippi, Arkansas and east Texas, and has reportedly been found in Oklahoma.

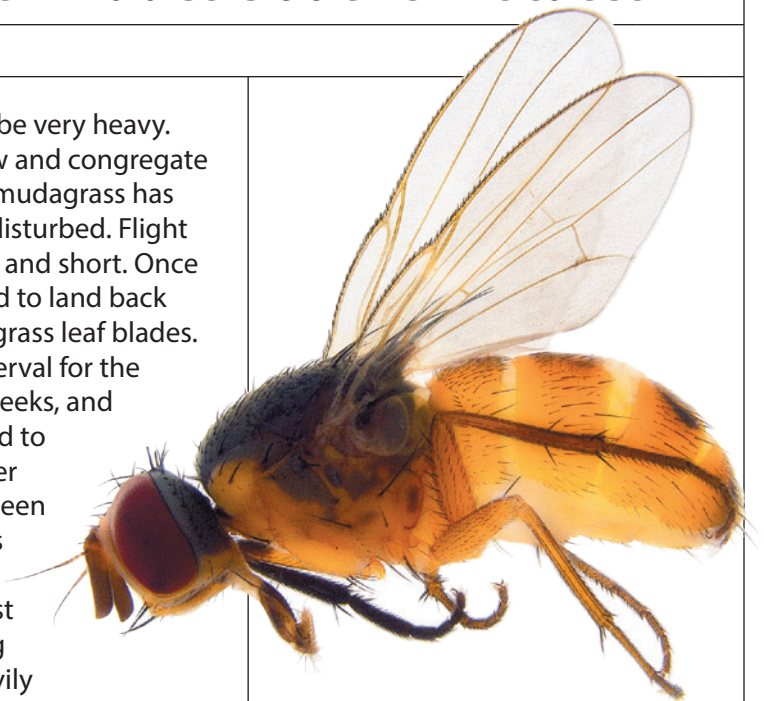
Adult flies are about the same size as horn flies with yellow abdomens and four dark spots found on the upper abdomen. Fly populations in

infected fields can be very heavy. They tend to fly low and congregate in areas where bermudagrass has been trampled or disturbed. Flight patterns are erratic and short. Once disturbed, flies tend to land back onto the bermudagrass leaf blades. The generation interval for the fly is about three weeks, and fly populations tend to build as the summer progresses. It has been reported that fields that appear lightly damaged in the first part of the growing season can be heavily damaged by its end.

Bermudagrass hay fields appear to sustain more and heavier damage than fields that are grazed, due to the cattle removing areas of the plant that the flies use to lay eggs in and reproduce. The flies also tend ▶

Photo 1, top, right: Adult bermudagrass stem maggot (Photo by MSU Extension Service/Blake Layton)

Photo 2, right: Bermudagrass stem maggot larvae (Photo by Dr. Dennis Hancock, University of Georgia Forage Extension specialist)



to have variety preferences, tending to prefer fine stem varieties over coarse stem varieties. Yield effects of the bermudagrass stem maggot are uncertain, and more research is needed to establish control thresholds. Some estimates of potential yield losses are 10 percent or less for well managed bermudagrass, but some Georgia producers estimated yield losses of up to 50 percent in 2013.

Adult flies can be controlled with the pyrethroid insecticides, but multiple applications may be required to minimize hay damage. There currently are no labeled insecticides for control of the larvae as it feeds inside the stem. As mentioned previously, additional work needs to be done to determine population treatment thresholds and the economic benefits associated with control measures. Making a hay cutting of infested fields is another management option as this tends to break up the generation interval since haying removes all potential egg-laying sites for adult flies. Specialists from the University of Georgia are recommending a combination of harvesting and spraying to control very heavy populations.

Reports on the bermudagrass stem maggot theorize that this pest is here to stay. If that is the case, management strategies will need to be developed to deal with it. Part of this management strategy will be to keep existing bermudagrass fields robust and healthy. This will help to minimize impacts on yield. Keep an eye out for this little fly. If you suspect that your bermudagrass may be suffering from its effects, let us know. ■

Safety practices ensure safe mowing

by Ugochukwu Uzoeghelu / ucuzoeghelu@noble.org



For some of us, mowing the lawn is a pleasant summer activity. Many people love the fresh air, the aroma of fresh-cut grass and the satisfaction of getting a chore done with a side helping of exercise. And we can continue to enjoy mowing if safety precautions and measures are in place and taken.

The U.S. Consumer Product Safety Commission estimates that 34,000 consumer injuries related to riding mower incidents were treated annually in hospital emergency rooms from 2010 to 2012. Based on incident reports to the Commission, an annual average of approximately 90 deaths were attributed to riding mowers from 2007 to 2009.

Fatal incidents follow several common patterns: the mower tips over; a person falls under or is run over by the mower; or a person is thrown from or falls off the mower. Incidents involving young children usually involve them falling under or getting run over by the mower.

Here are some safety recommendations for operating a lawn mower and for people riding on a mower:

- Dress appropriately by wearing long pants, long-sleeved shirts, eye and ear protection, heavy gloves, and sturdy, closed-toed shoes with slip-resistant rubber soles.
- Wear sun protection and a wide-brimmed hat, and drink plenty of water.
- Never disengage the fail-safe mechanism found on power mowers. It triggers an important safety feature of stopping the blades quickly if the handle of a walk-behind mower is released or the operator of a ride-on mower is off the seat.
- Turn the mower off before attempting to examine the blades, dislodge debris or adjust the wheel height.
- Avoid mowing the lawn when it is wet and slippery.
- Do not allow children under the age of 16 to use riding mowers or children under 12 years of age to use walk-behind mowers.
- Never allow passengers on riding mowers.
- Always look behind you before putting a riding mower in reverse.
- Slow down to mow slopes and take wide, gradual turns. Mow down a slope, not across, to avoid tipping over.

Using a hand-held string trimmer to mow a ditch is highly recommended. Follow the safety recommendations, keep firm footing and balance, don't overreach, and take time to read the operator's manual. Lawn mower injuries are preventable when you use safe practices. ■



New resource details hoop house construction basics

by Steve Upson / sdupson@noble.org



As an educator

and consultant, I have been asked numerous times by work associates and growers to produce a “how to” resource on hoop house

construction. I’ve been hesitant to do so because hoop house design and construction techniques are always evolving. The number of innovations that have occurred in hoop house design and function over the past 20 years is amazing. These innovations also apply to the various techniques growers use to erect structures. Some techniques have been borrowed from the commercial greenhouse industry while others are more the product of “aggie engineering” in an attempt to do more with less.

Currently, there are many excellent extension and grower-authored publications on hoop house crop culture but few detailed publications on construction. The Noble Foundation High Tunnel Hoop House Construction Guide is the product of 17 years of experience in hoop house design, construction and utilization. In developing this resource, my intent was not to offer a complete set of construction plans for any particular type or size of hoop house but rather to introduce the novice grower/hoop house builder to the various tools and techniques used in constructing a wide range of hoop house models. The various procedures and techniques detailed in the publication are applicable to both prefabricated, commercial structures as well as homemade structures.

Admittedly, my experience with hoop house structures has a Southern

flavor. Therefore, the guidelines may or may not have application in other regions of the country. It is my belief that a careful study of this publication prior to purchasing a hoop house kit or materials to custom build a structure will save the builder time and money, as well as reduce the level of frustration encountered during the construction process.

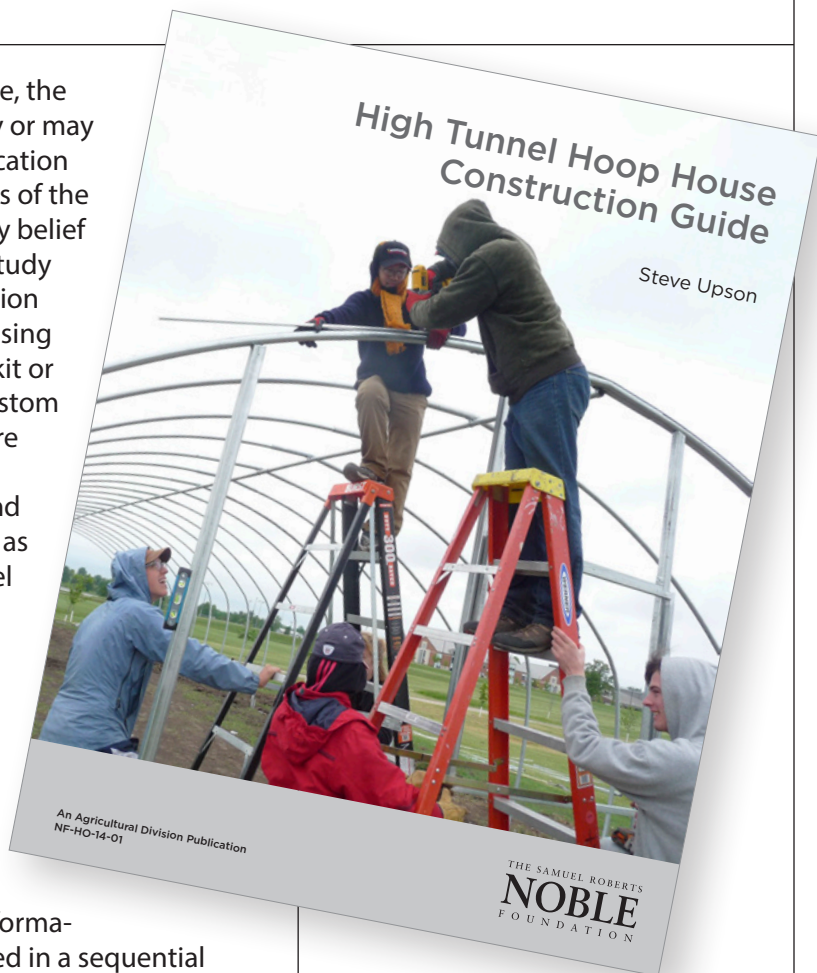
To ensure construction proceeds in an orderly fashion, the information is presented in a sequential manner that mirrors the construction process. The publication contains a detailed review of the various models of permanent and movable hoop houses, as well as traditional and novel building materials used in hoop house construction. Also, considerable attention is given to site selection, site preparation and house layout. Many hoop houses fail to function properly due to poor site selection and preparation. Poor fit and finish is a recurring theme among first-time novice builders assembling pre-engineered structures who fail to pay attention to detail when laying out the house perimeter and elevation.

Hoop house builders use a myriad of techniques and hardware to

install ground posts, hoops, end walls, bracing and vents. Some of the more popular, as well as novel, construction methods are described in this new publication.

A section listing the tools and supplies needed for hoop house construction appears at the end of the publication. Depending on the type of house to be constructed, some of the tools and supplies may not be required. Having the required tools on hand prior to construction will save you time and frustration.

The 96-page, full-color publication is accessible on the Noble Foundation website at www.noble.org/ag/horticulture/hoop-house-construction-guide. ■



Alternative culling method increases profits

by Jon Biermacher / jtbiermacher@noble.org, Kellie Curry Raper (OSU) / kellie.raper@okstate.edu and Billy Cook / bjcook@noble.org

By summer, cow-calf producers start thinking about weaning their spring calf crop and how best to manage and market older, unproductive and open cull cows. To help provide producers options for managing and marketing cull cows, researchers at the Noble Foundation and Oklahoma State University teamed up and conducted a study that evaluated the economics of two alternative management and marketing systems for retaining open beef cows.

A total of 161 cows (48 in 2008, 42 in 2009 and 71 in 2009) from a black-hided Angus herd maintained at the Noble Foundation's Red River Farm were retained in either a dry-lot feed system or in a stockpiled native grass pasture grazing system. In the drylot system, cows were provided a low cost diet of rye hay, mineral and a 20 percent cubed supplement while the native pasture system allowed cull cows access to stockpiled native grass pasture. This system allowed cows grazing access to stockpiled native grass. In addition, at the time of weaning in October, body weight, body condition score (BCS), and USDA grade and dressing percentage were obtained for each cull cow. Approximately every 30 days for a five-month period, weight, BCS, and USDA grade and dressing percentage were collected again on each cow through March (about 150 days in total).

Using feed, pasture and labor costs, and body weight, BCS, and USDA grade and dressing data collected in the study, net returns were calculated for each management system at each of five sequential marketing periods (November, December, January, February and March). In addition, the body condi-



tion scores were used to categorize cull cows into three independent size categories, including thin ($BCS < 5$), medium ($5 < BCS \leq 6$) and heavy ($BCS > 6$). In each period, net return was calculated as the difference between the revenue that would be generated at marketing minus retention, feed, labor and pasture costs minus the revenue that would be generated if cows had been sold at the time of weaning. This allowed us to compare the potential profitability that a producer could expect to earn for each marketing period beyond when cows are typically culled and sold at weaning in the fall. This is also the time of year when the market for cull cows is typically at a seasonal low.

At first, we excluded the body condition scores collected in the study and accounted for the net benefits of all culled animals, regardless of their condition, and found that it was more economical to retain them on stockpiled native grass pasture and market them in February. On average, in this scenario, open cattle earned an additional \$32 per head compared to marketing them at weaning in October. However, when body condition scores were used to separate cull cows by size, the results suggested that it would be more economical for producers to go ahead and market their heavier cows ($BCS > 6$) at weaning in October

and retain the medium and thin cows on stockpiled native grass pasture until at least February. This strategy resulted in an additional net return of \$60 per head above what would have been earned selling them at weaning in October. So producers who have the ability to place BCS on their cull cows at the time of weaning can expect to increase the salvage value of thin and medium-sized animals beyond selling them at the time of weaning in October. Thin ($BCS < 5$) cows realized a positive net return of \$20 per head in the dry-lot system during the February marketing period, which was \$40 lower than the pasture system.

Our results suggest that there are economic alternatives for producers to add value to the beef cows culled out of their spring-calving herds prior to taking them to market. However, we note that producer resources (land, labor and management) are important when making these decisions. For more information and specific details about this study, including the management and marketing systems discussed in this article, please see the following publications:

<http://pods.dasnr.okstate.edu/docushare/dsweb/Get/Document-9258/AGEC-627web.pdf>
<http://ageconsearch.umn.edu/bitstream/169046/2/jaae428.pdf> ■

Weight measurement enables effective management

by Bryan Nichols / bmnichols@noble.org



We commonly hear the phrase “you can’t manage what you don’t measure,” especially in regards to forage production and pasture management. However,

this statement applies to many other facets of beef cattle production. Cattle are managed, in many ways, according to their weight. Stocking rates, feeding programs, and dosages for antibiotics and dewormers are all based on an animal’s weight. In public markets, all cattle except for breeding females are sold in terms of weight. Given the importance of weight in cattle production, it is important to capture weight data when necessary to make good management decisions. Below are a few ways that this data can be collected.

Individual chute scales are effective in serving a number of purposes. Perhaps their most important function is in determining correct dosages for treating livestock. It is very important to use the correct dosage because under-dosing can be ineffective and overdosing can be costly. Many of today’s antibiotics cost upwards of \$4 per milliliter and are administered at 1 milliliter per hundred pounds. If producers are overestimating the weight and overdosing, it does not take long for this number to add up. Chute scales can also be used to collect individual weight data on cows and calves to measure productivity. This data can then be used to make culling decisions when appropriate. Additionally, during scheduled workings when all animals come through the chute for vaccinations,

weights can be collected so that an average weight can be calculated and used to design supplementation programs most effectively.

Pen scales are a great tool for collecting weights on all types of livestock. These are nice for collecting average weights on a large number of cattle in a quick manner. They typically have tremendous value for stocker operators. It is very important to have accurate weights in order to make good marketing decisions. If an operation is selling cattle directly off the ranch, accurate weights are essential. A good set of pen scales can be a sizeable investment, so these are typically used by larger operations.

An alternative option is to use the truck scales at a local feed store, truck stop, etc., to get an average weight of a set of cattle. There is usually no cost to use these scales. Your only costs will be time, the fuel to get the cattle there, and wear and tear on your vehicle and trailer. This is an option that many people may forget.

Another type of scale that can be useful is on your pickup feeder. This ensures the amount of feed

that you are providing is the desired amount. Without scales on a feeder, you should at least know the amount your feeder contains when full, and calibrate to know how much is released with each “click” on a trip-hopper or per a certain amount of time with auger-fed systems. However, these amounts will vary depending on the type of feed you are using, the amount in the feeder and the angle of the truck if you are not on a flat surface. If emptying the feeder to one set of cattle, this is not a problem. However, if you are splitting a feeder between multiple sets of cattle, errors can occur. Once again, underfeeding can result in decreased performance, and overfeeding is overspending.

My hope is that this article causes producers to ask two questions. First, how am I determining weights currently to help make management decisions, and can I improve upon it? Second, would purchasing one of these types of scales be a wise investment? The answer will vary by producer, but I encourage everyone to ask the questions. ■



Summer management affects waterfowl habitat

by Will Moseley / wamoseley@noble.org



It's hard to imagine cold mornings in the duck blind during the heat of the summer, but duck hunting success on those cold mornings might depend

on what is done during the summer. Some of the best duck hunting is a result of abundant food, and the most important foods are primarily aquatic plants. Since most aquatic plants grow during the summer, management for those plants should be done at that time. There are a few options when managing for aquatic plants. One option is to manipulate water levels to manage plant communities. Another option is to passively work with what nature provides. Both methods have their positives and negatives.

If water levels can be manipulated, emerged and shoreline plant communities can be more productive for waterfowl. Timing of water level drawdowns can encourage different plant communities. For instance, an early drawdown in the first 45 days of the growing season usually encourages smartweeds. However, a later drawdown in the growing season usually encourages millets and other grasses. If possible, the best option is to draw down only a portion of an area early to encourage certain plants, and then draw down another portion of the area later in the growing season to encourage another plant community to increase plant diversity. The ability to manipulate the water level also allows a manager to control problem species such as cocklebur, which does not tolerate flooding as well as many desirable waterfowl plants.



Several species of submerged aquatic plants that serve as waterfowl food

If desired plant species are not present, they can be planted and managed. Grazing, burning and light disking can also be used to promote desired plant communities in wetland areas. It is not recommended to drain an impoundment in the Southern Great Plains when there is no ability to re-flood it due to unreliability of timely rainfall to refill the impoundment before fall migration.

If water levels cannot be drawn down and raised at will, aquatic vegetation can still be encouraged and managed. Many submerged plants are food for waterfowl, such as southern naiad, coontail and long leaf pondweed, and can be managed in an impoundment with relatively permanent water and somewhat static water level. These plants are also preferred foods of grass carp, so establishment and growth could depend on the presence of this herbivorous fish. These plants can be transplanted into water bodies when not present, but be careful to not introduce any unwanted plant species. During summer, there is

usually a natural drawdown due to evaporation which exposes the shoreline. Emerged and shoreline plants, such as smartweeds, sedges and others, germinate in the moist soil along the shoreline, and some tolerate flooding if the water level rises. These plants may be present and grow naturally, but seeding or transplanting may be necessary. Japanese millet is a popular plant to broadcast onto moist soil and takes about 60 to 90 days to mature. However, it is difficult to establish such plants when cattle are allowed free access to an impoundment. This type of management usually requires little work but may not attract as many waterfowl as more active management.

Active management of plant communities may attract more waterfowl, but it requires more labor and infrastructure than working with submerged aquatic vegetation and natural drawdown during summer. When managing for waterfowl, aquatic vegetation is one of the most important things to have to attract waterfowl to an impoundment. ■

Cotton root rot inhibits alfalfa stand longevity

by Carolyn Young / cayoung@noble.org, James Rogers / jkrogers@noble.org and Todd Baughmann / todd.baughmann@okstate.edu

Alfalfa is considered one of the world's most important forage crops because of its high nutritive value and ease of incorporation into year-round grazing systems. Unfortunately, alfalfa stands within the Southern Great Plains are often infested with cotton root rot (CRR), causing heavily affected fields to be taken out of production within two to three years. This makes alfalfa production economically unfeasible in parts of southern Oklahoma and much of Texas.

In addition to alfalfa, CRR causes significant economic losses in numerous broadleaf crops, such as cotton, pecans, peanuts, fruit trees and vegetable crops grown in Oklahoma, Texas, New Mexico and Arizona. The causal agent of this devastating disease is a persistent soil-borne fungus known as *Phymatotrichopsis omnivora*. This pathogen was first documented in the late 1800s and still plagues production of these valuable crops.

Many alfalfa producers will be familiar with the telltale signs of CRR. During mid to late summer, affected plants will rapidly wilt, turn brown and die. These dead plants are easy to see at the leading edge of the disease foci or "fairy rings." Infected roots eventually collapse and rot just below the plant crown, and the plant is then lost from the stand. Sclerotia, the pathogen's resting bodies, can be long-lived (five to 10 years, or more) in the field and are considered the primary inoculum for disease, although mycelial cords can overwinter on roots of perennial hosts such as alfalfa. As the infection spreads, the fairy rings will expand and merge, killing much of the alfalfa stand.

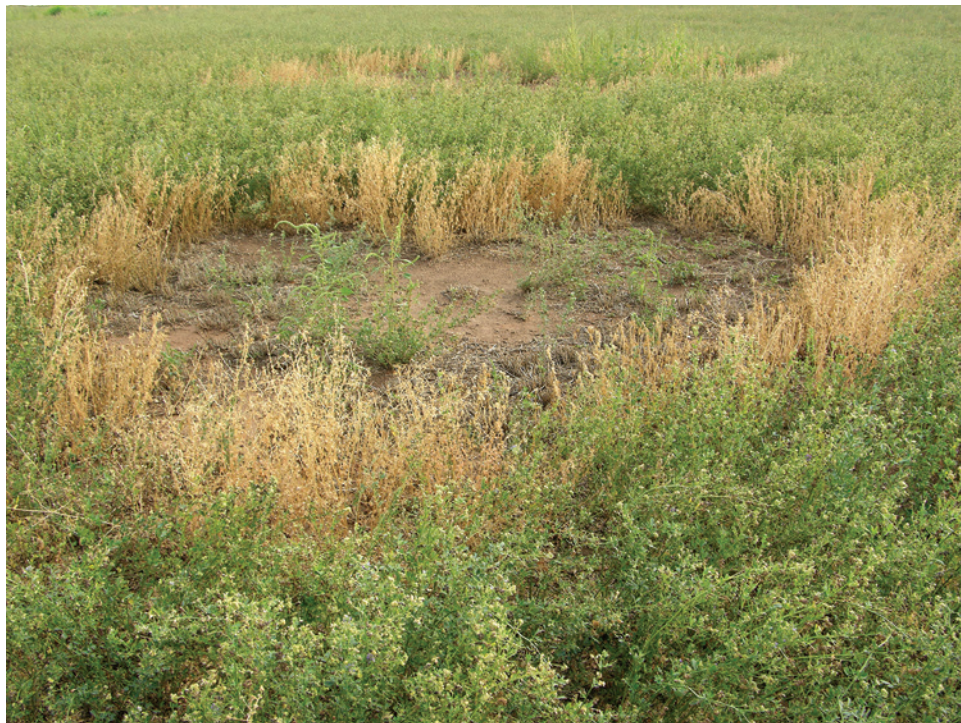
Until recently, control measures have been ineffective or unavailable,

and chemical fumigation methods are not cost-effective. Furthermore, no genetic resistance has been reported in any of the susceptible field crops. However, recently the Environmental Protection Agency (EPA) approved the use of the fungicide flutriafol, marketed by Cheminova, Inc., as TOPGUARD™, for emergency use on cotton to control CRR disease. Since cotton is an annual crop, flutriafol can be applied in the furrow during planting where it will persist in the soil and help protect the plant from the disease later in the growing season. Unfortunately, use of flutriafol is unlikely to eradicate CRR as the fungus can persist deep in the soil as sclerotia. For once, however, success has been seen in controlling CRR disease.

Unfortunately, before this fungicide can be made available for alfalfa, we need to understand how to

effectively use it for alfalfa. Dr. Todd Baughmann, Oklahoma State University, has established trials at the Noble Foundation Red River property in collaboration with researchers from The Samuel Roberts Noble Foundation to evaluate flutriafol for use on alfalfa. As a perennial crop, alfalfa stands should last up to five years, so we need to consider how and when to most effectively apply this fungicide, and the most economical and efficacious application rates. Over the next few years, we hope to establish a number of alfalfa flutriafol trials so we can determine the best methods for producers to combat CRR disease.

We are interested in hearing from producers who have experienced problems producing alfalfa due to cotton root rot, either currently or in the past. Please answer a few questions at the following link: <http://bit.ly/cotton-root-rot> ■



CONTENTS

Page 1

Bermudagrass stem maggot invades Southern states

Page 2

Safety practices ensure safe mowing

Page 3

New resource details hoop house construction basics

Page 4

Alternative culling method increases profits

Page 5

Weight measurement enables effective management

Page 6

Summer management affects waterfowl habitat

Page 7

Cotton root rot inhibits alfalfa stand longevity

EVENTS

Winter Pasture Stocker Seminar

Time: 1 p.m.-5 p.m.

Date: July 15, 2014

Location: Southern Okla. Tech. Center, 2610 Sam Noble Pkwy, Ardmore, Okla.

No Registration Fee

Fall Cattle Seminar

Time: 1 p.m.-5 p.m.

Date: Aug. 26, 2014

Location: Noble Foundation Kruse Auditorium

No Registration Fee

Integrity Beef Alliance Meeting

Time: 5:30 p.m.-8 p.m.

Date: Aug. 26, 2014

Location: Noble Foundation Pavilion

Registration Fee: \$30 for non-members

For more information or to register, please visit www.noble.org/agevents/ or call Jackie Kelley at 580.224.6360. Preregistration is requested.

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