Timber Tales

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LSU AgCenter Research · Extension · Teaching

Bats and the COVID-19 Pandemic

By Dr. Ashley M. Long

Like some celebrities, bats have a bit of a public relations problem — people get freaked out by their appearances, they tend to be most active at night and their behaviors can look a little creepy. Understandably, these negative feelings are heightened during crises like COVID-19, which is caused by the SARS-CoV-2 coronavirus and may have originated in bats in China. In response, some people have resorted to killing, harming or harassing bats, but it's important to be informed about the pathways of transmission, the causes of such zoonotic spillover events and the vital role that bats play in our environments. Only then can we minimize risks associated with the current and future pandemics.

SARS-CoV-2 is a coronavirus, which is a term used to describe a large group of spherical viruses with spikey projections on their surfaces that affect birds and mammals. Scientists have identified hundreds of coronaviruses, but only seven are known to affect humans, and most cause only mild-to-moderate symptoms. Scientists think that SARS-CoV-2 may have passed from bats to an intermediary host, and transmission from the intermediate host to humans likely occurred at a live wildlife market in China.

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On a roll: Flushable toilet paper

From taboo invention to essential product

By Whitney Wallace

The COVID-19 outbreak had a dramatic effect on consumer behavior worldwide. Items typically considered mundane suddenly exploded in their demand. One of these items was a forest product, toilet paper.

Toilet paper plays an essential part of modern life by increasing sanitation in a convenient manner. These handy tissue paper products are built to deliver strength, softness and absorbency, all in one easy package. It is no wonder why society has deemed this a crucial product. Not only is toilet paper an important item, but tissue products are a sustainable agricultural product.

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Soybeans growing with heavy weed competition.

A pod growing on a cowpea plant.

Soybeans browsed by deer. Photo by Luke Stamper, LSU AgCenter.

Choosing the right warm-season forage for deer

By Luke Stamper

As a natural resource professional, one of the most common questions I receive is, "What food plot should I plant for deer?" The answers to this question are fairly complex because decisions must take into account the crops' adaptability to soil site index, the landowner's specific goals and objectives for deer management, and the current condition of the deer herd. Before a supplemental food plot program is initiated, it is important to evaluate and measure herd dynamics to balance the deer population with the surrounding native habitat. Examples of herd dynamics include population density, sex ratio, recruitment rate and age structure.

Warm-season food plots are an excellent place to begin as this season and the planting options provide exceptional nutrition when deer need it most. At this time, bucks are growing antlers and does are fawning. Both tasks are nutritionally demanding for the individual. Among the warm-season forages that are often planted for deer here in Louisiana are soybeans (Glycine max), cowpeas (*Vigna unguilata*) and American jointvetch (*Aeschynomene americana*). All these species meet or exceed the nutritional demands of a deer herd. With the many options available, it can sometimes be difficult to weed through the marketing and be sure that what you have selected is truly appropriate for your situation. The purpose of this publication is to shine a little light on common warm-season forages to better equip you in the decision-making process.

Soybeans are often referred to as the "king of warm-season forages." No argument here. When soybeans and cowpeas are planted side by side in a demonstration plot, he soybeans are clearly the more preferred of the two species at that point in the growth stage, demonstrated by how aggressively the soybeans have been browsed. Soybeans can be established by drilling at 50 pounds per acre or broadcasting at 60 to 80 pounds per acre.

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There are many soybean varieties out there with many characteristics, and before choosing a variety you should ask yourself several questions:

1. What is my deer density? Soybeans have a tendency to be over-browsed in their younger vegetative (leaf and stem producing) stages, so if your deer density is high, then planting in small acreage plots should not be considered. If large plots aren't an option, then soybeans aren't likely the right option for your situation.
2. What is my weed density and weed spectrum? In marginal soil types weeds can often be prolific, and they can quickly cause food plot failure. Sites with high broadleaf weed densities are where soybeans are advantageous because they lend themselves to numerous herbicide options that will aid in reducing competitive weed species.
3. What time of year am I wanting to make an impact with nutrition? The answer to this question might be the deciding factor in choosing either a late maturity group forage variety or a more commercial variety

intended for row crop use. Forage soybean varieties with indeterminate growth habits will continue vegetative growth later into the growing season, producing high quality forage. A typical southern row crop variety will be an earlier maturity group (maturity group 4 or 5) and move from being vegetative to reproductive earlier in the growing season, causing a decline in overall palatability and nutrition of the leaves. If the goal is to provide high-quality nutrition late in the growing season while native plants are beginning to decline, then a forage variety should be considered. If you want to extend the life of your soybean plots by providing grain throughout the fall and winter months, then maybe a higher-yielding commercial variety is more suited for your situation. Either way, soybeans make an excellent warm-season forage. For more information, check out the LSU AgCenter 2020 Soybean Variety Yields and Production Practices Guide at https://www.lsuagcenter.com/articles/page1576271753656.

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Cowpeas are commonly planted in the Southeast because of their versatility. They will grow in just about any soil condition and don't require much fertilizer. Establishment can be achieved by drilling at 60 pounds per acre or broadcasting at 100 to 120 pounds per acre into a well-prepared seed bed. Studies indicate that, much like soybeans, cowpeas are susceptible to over-grazing in early growth stages. This is another reason for a complete native habitat management program. This would entail creating diverse plant communities and plant structure often accomplished through various disturbance practices (e.g., logging, disking, herbicides) and then maintaining deer populations at or below the native nutritional threshold.

Cowpeas are a vining legume with relatively weak stems and will produce long pea pods that are relished by deer. Because of their tendency to lodge and grow along the ground it is often recommended to plant a companion plant with them, such as sunflowers, so that the cowpeas can climb upright and remain available to browse. According to recent research conducted on the LSU AgCenter Northeast Research Station, cowpeas become extremely competitive to weeds and grazing pressure once they've reached approximately 28 days after emergence. This attribute makes cowpeas an excellent choice for moderate to high deer densities with significant weed pressure. Establishment can be achieved by planting in larger plot areas and keeping the deer herd in check. Cowpeas are among my favorite due to their long planting periods and tolerance to drought. Here in northeastern Louisiana, environmental scenarios often consist of prolonged flooding into May, June and even July followed by droughtlike conditions. Landowners that find themselves in those types of weather patterns should consider cowpeas as their go-to warm-season forage.

American jointvetch is a warm-season annual legume that is often underutilized but can have tremendous impacts in a food plot program. In an LSU AgCenter study, researchers found that when American jointvetch was available in a pine-dominated landscape it composed 33% of summer-fall deer diets. They also found that when compared to other available native forages, American jointvetch was higher in crude protein and was the most digestible. American jointvetch has pinnately compound leaves and can reach heights of 4 to 6 feet. Establishment can be achieved by broadcasting 20 pounds per acre onto a firm seedbed and then covering seed to a one-quarter inch to one-half inch depth. This can be accomplished by the use of a cultipacker across the plot area before and after planting. American jointvetch tolerates wet soils as well as acidic pH levels, making it ideal for heavier clay soils prone to inundation and low levels of pH. American jointvetch also tolerates shade quite well, making it suitable for long, narrow woods rows that will receive a few hours of sunlight each day. There are many options to incorporate American jointvetch into your summer programs due to its environmental versatility and high forage output characteristics. American jointvetch is resilient to overgrazing and is extremely competitive, so it is a good choice for small plot areas with moderate to high deer densities. Don't overlook this one as a potential prospect for your situation.

We have covered a lot of general ground regarding some of the more common species used in warm-season food plots. There are many other options not mentioned that could be considered for specific situations. Understanding the environmental conditions of your property along with the anticipated impacts of the deer density will help aid you in creating a successful planting. For more detailed information, email lstamper@agcenter.lsu.edu or call at 318-649-2663.

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A new management tool for Chinese tallow trees: Biological control

By Dr. Rodrigo Diaz, Dr. Veronica Manrique and Dr. Gregory Wheeler

The Chinese tallow (*Triadica sebifera*) is one the worst invasive trees in Louisiana. Originally from Asia, the Chinese tallow was introduced in the United States in the 1700s and is now present across the southeastern United States (Figure 1). The invasion of tallow has resulted in increased control costs and loss of revenue to foresters and natural resource managers. Current control methods, which include mechanical removal and herbicide applications, are considered ineffective for long-term control. To address this issue, the U.S. Department of Agriculture is developing a biological control program for tallow.

Biological control is the use of host-specific insects to reduce the growth and reproduction of target weeds resulting in decreased populations over time. After years of intensive research quarantine testing for insects that feed exclusively on tallow trees, two insects will be released in the United States for control of

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Figure 2: Tallow root feeding beetle.

Figure 3: Nolid moth caterpillar.

Adult Nolid moth. Photos by Gregory Wheeler.

Figure 1: Chinese tallow invasion in Louisiana. Photo by Veronica Manrique.

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tallow. One is the beetle *Bikasha collaris*. Adult *Bikasha collaris* beetles feed on tallow leaves (Figure 2), and their larvae feed on tallow roots. The other insect to be released for tallow control is the nolid moth Gadirtha fusca. Nolid moth larvae are aggressive tallow defoliators (Figure 3). Previous studies showed that these two insects control tallow saplings and stress large trees. Once approved for release in Louisiana, efforts will be made to make this new tool available to land managers. Studies are underway to collect pre-release data on tallow demography, identify release sites and prepare for insect rearing in Louisiana. For more information about the Tallow Biological Control Program, please visit: www.lsuagcenter.com/chinesetallow.

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Chinese tallow with beetle-damaged leaves.

Louisiana Stumpage Report

First Quarter 2020

The most recent stumpage price report indicated that prices for all forest products declined from the prior quarter, with the steepest declines for pulpwood.

Product Class	Price per ton	% Change from Prior Quarter
Pine sawtimber	22	-4
Pine chip-n-saw	17	-11
Pine pulpwood	6	-25
Oak sawtimber	40	-11
Hardwood sawtimber – mixed grade	32	-11
Hardwood pulpwood	7	-36

— Dr. Michael Blazier, Professor and forest management specialist Hill Farm Research Station, LSU AgCenter School of Renewable Natural Resources.

— *This document is intended for use by forestry stakeholders of Louisiana. The source of these prices is proprietary in nature; prices are rounded per agreements to disseminate them to the public.*

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These establishments sell live and dead animals for human consumption and can create conditions that facilitate zoonotic spillover events, as we've seen with COVID-19.

Regardless of how SARS-CoV-2 originated, once the virus passed to humans, COVID-19 spread through human-to-human contact. To date, there is no evidence that SARS-CoV-2 passes directly from bats to humans or that this particular coronavirus occurs in North American bats, but there are concerns that humans could transmit SARS-CoV-2 to our native bat populations, which could have unintended ecological and economic effects. Bats represent incredible diversity — over 1,400 species worldwide — and they provide many benefits, including pest control, crop pollination, fertilization and nutrient redistribution, among others. Scientists estimate that one bat can eat up to 6,000 mosquitoes per night. And collectively, bats save U.S. farmers more than $3.7 billion dollars per year by reducing crop damage and pesticide use.

We have 12 bat species in Louisiana, and they use a variety of habitats for roosting and foraging, including forests, wetlands, grasslands and urban settings. Again, killing, harming or harassing bats will not protect people from infection or end the COVID-19 pandemic. These actions will only reduce the ecological and economic benefits we gain from having bats in our environments and accentuate the threats to native bat populations. Instead, take the same precautions you would take if COVID-19 wasn't circulating among humans.

Many people fear or dislike bats, but a closer looks reveals that bats are actually amazing animals. They are social, use complex signals to communicate, navigate and hunt using echolocation, and exhibit many other fascinating behaviors that add to the diversity of life and contribute to our well-being. Check out resources provided by the Louisiana Department of Wildlife and Fisheries or Bat Conservation International to learn more about bats and the ecological services they provide. You could also head outside at dusk and enjoy the show from afar. Bats are true aerial acrobats, and watching them forage on flying insects can be exciting. Consider installing a bat house on your property. Such actions won't solve the current crisis, but focusing on these activities could help our state's bats and provide opportunities for you and your family to enjoy the great outdoors.

Ashley Long is a wildlife specialist and assistant professor in the LSU School of Renewable Natural Resources.

Precautions:

- If you see a live bat lying on the ground or roosting in a building, avoid contact. Call your local wildlife agent, animal control agency or public health official if the animal appears sick, as bats carry other diseases (e.g., rabies) that can be problematic.
- If you find a dead bat, use gloves to pick it up, place it in a sealed container, wash your hands, and contact your local public health official.
- Prevent bats from moving into human living quarters and other buildings. First, carefully inspect the structure for small openings through which bats could enter (e.g., roof edges, broken or poorly fitted screens, places where boards or shingles have come loose). Then seal the openings with caulk, flashing, screening or heavy-duty mesh. Consult online resources or contact your local AgCenter extension office for additional guidance.
- If you need help removing bats from a building, hire a licensed nuisance wildlife control operator. You can find a list of individuals permitted by the Louisiana Department of Wildlife and Fisheries at www.wlf.louisiana.gov/page/nuisance-wildlife-control-and-removal.
- Bats rarely bite or scratch people. Nevertheless, if you or your child has been scratched or bitten by a bat, contact your local public health official immediately. While there is no evidence that SARS-CoV-2 passes directly from bats to humans, many wildlife species carry other diseases (e.g., rabies) that are preventable if treated before symptoms appear.
- Use personal protective gear (e.g., gloves, masks, safety glasses) when cleaning up bat droppings. First, dampen the droppings with water. Then clean the area with soap and water. Finally, disinfect the surfaces with a bleach solution (1 part bleach to 9 parts water). Bag and discard any contaminated material, and wash your hands and supplies when you're done. Consult resources available through the Centers for Disease Control and Prevention or Occupational Safety and Health Administration for additional guidance.

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Throughout history, people have used various materials and items to clean themselves. A quick search will show you that the first products designed specifically to wipe one's posterior date to the beginning of time, with objects ranging from clay and stone to leaves and sponges. Colonial Americans were known to wipe with corncobs, and later switched to old newspapers catalogs and farmers almanacs.

In 1857, a young entrepreneur in the United States named Joseph Gayetty designed aloe-infused moistened sheets made from manila hemp dispensed from “Kleenex-like boxes.” He guaranteed his sheets would prevent hemorrhoids. Unfortunately, Gayetty’s invention did not take off because Americans had grown accustomed to wiping with paper catalogs that came in the mail for free.

Sit-down flush toilets attached to indoor plumbing systems became a staple in houses being built toward the end of the 19th century. The New York State Tenement House Act of 1901 was one of the first such laws to require that new buildings be built with indoor toilets. The proliferation of this building standard created a need for a product that could be flushed away with minimal damage to the pipes. Immediately, toilet paper advertisements bragged that their product was endorsed by both doctors and plumbers.

Brothers Edward, Clarence and Thomas Scott were credited as being the first to market toilet paper sold on a roll in 1879. The Scotts had a goal of making paper goods and quickly realized domestic bathroom plumbing was taking off. Because this item was still considered taboo in the Victorian era, they knew they would face adversity convincing people to buy it. At this point in time, people would not ask for it in stores because it was considered impolite. Even the Scott brothers, founders of Scott Paper, were too embarrassed to put their own name on their product. They needed a marketing idea.

The Scott brothers developed a distinctive plan to get pharmacists and buyers to purchase perforated toilet paper on a roll in 1890. They gave each pharmacist an exclusive interest by allowing them to create their own custom packaging. Hotels and upscale department stores, such as the Waldorf Hotel and Macy’s in New York, and retailers offered their own designer toilet paper made by Scott. They eventually produced private label brands for over 2,000 companies.

Around 1903, Scott Paper chose to cease all private brand marketing and began marketing their own private label. To avoid any prolonged distasteful reaction, they advertised their toilet paper as a medical product to help stop the spread of dysentery, typhoid and cholera. By 1913, Scott's sales exceeded $1 million for the first time and in 1915 was traded on the New York Stock Exchange.

In the early 1900s, toilet paper was still being marketed as a medicinal item, but that was soon to change. In 1928, the Hoberg Paper Company introduced a new toilet paper. With a ladylike logo and advertisements focusing on its softness rather than its purpose, this toilet paper was quickly adopted as a necessity in everyday households. The toilet paper was described as "charming" by an employee, and from there the name Charmin was born. This was considered a big advancement in the toilet paper industry, and the product was extremely successful. In the 1930s, the Northern Tissue company touted their toilet paper as "splinter-free," making it a pain-free experience for its user.

Another factor in the increased popularity of toilet paper in the United States was innovation in papermaking. The American paper industry implemented the sulfate pulping process in 1910, and the United States was able to become a major paper product manufacturer because it no longer needed to import wood pulp from Canada. As a result of these technological paper-processing developments, many paper mills in the United States converted from cotton fibers to wood pulp. This increased domestic papermaking ability made it easier to produce toilet paper in the United States.

By the 1940’s, America could no longer conceive of life without toilet paper. This proved to be true in December 1973 when Johnny Carson, host of the national late-night television show, joked about a toilet paper shortage during his opening monologue. Instead of laughing, viewers across the country ran out to their local grocery stores and wiped out toilet paper shelves, creating a national shortage.

Innovations in toilet paper products have led to new product applications to meet the changing demographics of on-the-go millennials and today's families. Today, the manufacture of toilet paper is a large paper products and forest products industry. In the Western world, its use has made life much easier and more hygienic for people of all socioeconomic statuses. Thankfully, this innovation was adopted in America, leaving the last question for the us to ponder, “What is the correct orientation of a toilet paper roll, over or under?”

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