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Legend lespedeza – a great fit on both sides of the ledger

By Keith Carmichael
Summer is just weeks away

Predictions swirling around for 2017 include very little improvement for beef prices and the possibility of some extended drought conditions in some regions. That means that every serious manager facing this possible scenario had better be looking for ways to manage on both sides of the ledger. Increase returns, and reduce inputs. Annual lespedeza for grazing or hay can do both – adding to the bottom line. But this takes

planning now – in February. It doesn't 'just happen.' Ask yourself: "What fits best?"

More pounds of beef

Ask any old-timer who has used lespedeza in the past and they'll tell you – "lespedeza is better than feeding grain when it comes to putting pounds on calves." They are also usually quick to add: "We all still sell cattle by the pound." Adding Legend lespedeza into cool-season grass pastures provides that badly needed protein source for late summer, and an added bonus is its ability to help

dilute 'hot' KY-31 pastures when other legumes are long gone. The fescue fungus affects all of animal performance – including reproduction. Quality grazing means more pounds and higher conception rates. Letting cattle 'stall out' and go backwards in the late summer affects the bottom line, but it doesn't have to happen. Legend lespedeza is high in protein and has proven to be drought-resistant. It's all about 'timing!' Legend lespedeza provides a 'home-grown protein' boost, and provides it when you need it most.

Legumes pay their own way

In addition to being an essential protein source in the pasture mix, legumes

like clovers and annual lespedeza add diversity and produce their own nitrogen, which eventually becomes available to grasses as well. At today's nitrogen prices, the cost of seed and establishment is easily offset by an increase in animal performance or the added nitrogen produced – one or the other is FREE – take your pick. Over-seeding pastures and hay fields with legumes is basic, common-sense management, but which is best for your operation? The answer is probably... 'All of the above.' No single legume can do it all. Soil fertility, pH, texture, and drainage all help determine which legume is best for a particular soil type.

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What fits best? Many producers are looking at using the newer, safer types of fescue. Not every legume is ideal as a companion that first season. Annual lespedeza is the one legume that can be recommended as a companion legume the first season because it does not compete aggressively with the new grass early in the spring. Remember: There is likely to be that 'summer gap' unless you guard against it with plant diversity.

Great for Stockpiled Pastures

What fits best? Fall stockpiling of fescue pasture is very important in many operations and it should be stressed that the management required to stockpile this forage fits very well in

allowing annual lespedeza to re-seed itself.

Renewed Interest in Lespedeza

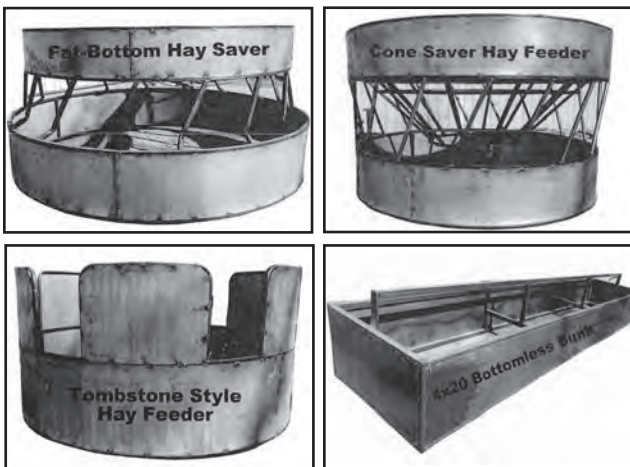
Interest in annual lespedeza continues to get stronger each year because no other legume is both tolerant to drought conditions and low pH soils. It is also one of the few legumes that does not cause bloat. The renewed interest in annual lespedeza also has a lot to do with the continued success of Legend lespedeza, an annual-striate lespedeza that is nearing its 20th year of commercial production.

Annual lespedezas should not be confused with their perennial cousin, Sericea, which is a serious weed problem in many areas.

For more information visit www.Legendlespedeza.com.

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Kansas Grain and Feed Association to award \$25,000 in scholarships

The Kansas Grain and Feed Association (KGFA) will award 19 scholarships to Kansas kids in 2017.

Each year KGFA awards many scholarships to graduating Kansas high school seniors who are planning to attend any Kansas four-year university, community college or vocational technical school. KGFA scholarship recipients are self-starters with excellent academic credentials, good school and community citizens with a strong desire to continue their education.

Because of successful

fundraising efforts, KGFA has decided to add seven new scholarships and increase the amounts given for the 2017-2018 school year. KGFA will be giving four scholarships in the amount of \$1,000 each and 15 scholarships in the amount of \$1,500 each. Each year KGFA also awards one \$500 Dub & Inez Johnson Memorial Scholarship.

For more information on the KGFA scholarship program, please visit www.ks-grainandfeed.org or contact Devon Stewart at devon@kansasag.org

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Fight bad bugs with good bugs: an idea for combating sugarcane aphids

By Dale Strickler

Sorghum has always been considered a very low input crop, but the recent explosion in sugarcane aphids has made sorghum production very difficult without multiple applications of expensive insecticides. It is common for sorghum producers to spend over \$40 an acre on insecticides for sugarcane aphids, with mixed results. At today's grain prices, it takes quite a few bushels to pay for these applications. Is there a better way?

One promising approach is to use flowering cover crops, insectary strips and companion crops to attract natural predators of sugarcane aphids, like lady beetles, lacewings, and syrphid

flies. The larval stages of these predators can thrive on pollen and nectar from several flowering plants, like buckwheat, phacelia, and mustard. The plan is to plant these cover crops in close proximity to the sorghum, and raise up an abundant crop of predators in the area so that they disperse into the sorghum when the aphids show up. The ideas for incorporating these predator-attracting plants are limited only by our imagination. One idea is to plant the outside edge of a field to a blend of these plants, so that aphids are eaten as they move into the field. The plants can be either annuals for a single season use, or perennials for

use every year. Another way is to plant strips throughout the field. Yet another way is to incorporate the flowering plants throughout the entire field, as a companion crop. Some producers will plant one row out of 12 to a flowering mix, others will just throw in a few seeds as they fill the drill box. Otherwise idle ground, such as pivot roads, headlands, and waterways can be put to perennial flowering mixes to attract predators as well as pollinators.

As simple as this method sounds, it has been surprisingly effective for several farmers who have tried it. One such producer is Jimmy Emmons of Dewey County, Oklahoma. Emmons mixed a

diverse blend of buckwheat, flax, and mungbeans right in the drill box with his sorghum. Despite his area being hard hit by sugarcane aphids, he never had a problem in his fields. "I am not saying that if you do what I did, you won't have aphids," said Emmons, "All I can say is this is what I did last year, and that I did not have aphid problems and that I plan to continue doing it."

The success that Emmons and other farmers are having with this approach has led to further experimentation with using cover crops, insectary strips, and companion crops to boost populations of beneficial insects, not only predators like lady beetles but also pollinators and honeybees. The best way to fight bad bugs might just be with good bugs, and the best way to get

a lot of good bugs is to create habitat and food sources for them. "Build it, and they will come" could be a way of achieving your own field of dreams, if your dream is not having to spray for aphids next year.

Dale Strickler is an agronomist for Green Cover Seed. He can be reached at (785)614-2031, or at dale@greencoverseed.com.

Modeling the future for soybeans in the Midwest

How will the rising temperatures expected to occur with global climate change affect soybean growth in the Midwest? Rather than wait and see, researchers at the University of Illinois will use real crop data and computer modeling to better predict future impacts of higher temperatures on agricultural production and identify promising targets for adaptation.

The project is being funded with a \$420,000 USDA National Institute for Food and Agriculture grant. U of I environmental scientist Kaiyu Guan is the project director. Carl Bernacchi and Elizabeth Ainsworth are co-project directors. Both are plant physiologists in the U of I Department of Plant Biology and Department of Crop Sciences.

The project will look at how temperature affects major plant processes such as photosynthesis and respiration.

"Higher temperatures in the future may result in accelerated crop growth rate and shorter growing seasons," says Guan. "There will likely be direct heat stress effects on the various stages in plant reproduction, including number of flowers and pods produced and aborted and the higher temps may increase the plants' demand for water. All of these factors will play a role in soybean crop yield."

Guan says the team will combine the temperature free-air controlled enhancement (T-FACE) experiment

and a newly developed crop modeling framework (CLM-APSIM). Infrared heating arrays will be used to heat three soybean varieties, representing the major groups planted across the Midwest for two growing seasons, and multiple physiological and biochemical measurements will be taken simultaneously.

"We will then use the experiment results to improve and calibrate the model at the site level," Guan says. "Using the calibrated model, we will attribute the historical yield loss due to increase temperature to different physiological mech-

anisms. Ultimately, we will project crop yield for the whole Corn Belt under the various climate scenarios, and quantify the contribution of each mechanism."

In addition to being an assistant professor in ecohydrology and geoinformatics in the Department of Natural Resources and Environmental Sciences in the College of Agricultural, Consumer and Environmental Sciences at U of I, Guan has a joint appointment as a Blue Waters professor affiliated with the National Center for Supercomputing Applications (NCSA).

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Fight sericea lespedeza with late summer burning

Sick of sericea lespedeza? Frustrated over the inability to get it under control? Suffering from the repeated cost of chemical control? Appalled at the damage to non-target range species?

Amazingly, there is a new management strategy that does not require unusual equipment, is compatible with beef cattle grazing, doesn't harm non-target plant species or soil health, and is much less expensive

Managing Costs – N Fertilizer

By David Hallauer, Agent, Meadowlark Extension District, Crop and Soils, Horticulture

A recent Kansas State University analysis compared farms based on returns over total costs, separating the returns into the high one third, medium one third and low one-third categories. What they found helps give a picture of where our focus needs to be if we are trying to manage costs when returns are reduced. One of those areas where differences were noted was in the fertilizer/lime budget line. Those producers in the top one-third for returns have fertilizer/lime costs that were just two-thirds that of the low one third of producers – an almost \$40 difference! How can that be? Two facets of a 'simple' nitrogen recommendation might help explain how some of those savings can be achieved.

Profile nitrogen samples – 0-24" deep, typically – are not easy to take. Their value, however, can be high. According to observations by KSU professor emeritus Dr. Dave Mengel, some profile N samples showed that as much as 60, and maybe even 90 pounds of N could be supplied from the profile. Have you accounted for that? KSU soil test recommendations assume a 30-pound N credit from the profile (in the absence of a test), but that may still be giving up N that could be used to meet the crop's nitrogen need. Is a 30 pound per acre N savings worth the time, effort, and cost of a profile N sample? It might be something to consider. There are other factors of a soil test recommendation that a soil sample could provide information on that might save you money as well. Bottom line: a soil test is a great invest-

than herbicide. Too good to be true?

Come on February 22nd from 1:00-5:00 p.m. at the Sauder Center in Madison to hear presentations by researchers from Kansas State University and Oklahoma State University on how late summer prescribed burning can comprehensively and inexpensively help with the fight against sericea lespedeza. They will be joined by a panel of three Kansas beef producers

ment!
A second facet of a nitrogen recommendation has to do with what we call Nitrogen Use Efficiency, or NUE. Worldwide, NUE is about 35%. In the U.S., it's about 45%. In Kansas, we assume 50% for recommendations, and have routinely measured NUE ranges of 40-70% in corn. If you assume a 50% NUE on a 130-pound-per-acre N recommendation, that's 65 pounds of N uptake. If you drop NUE to 40%, that same N recommendation increases to 163 pounds/acre to get the same 65 pounds of uptake the crop needs. Increase NUE to 60% and you drop the N recommendation to 108 pounds for the same 65 pounds of uptake. In other words, Nitrogen Use Efficiency is a big deal, and your management thereof can result in economic returns.

NUE can be accomplished in a number of different ways. Essentially, it means applying the right source of nitrogen at the right rate in the right place at the right time. The key to this 4R concept is to identify your likely loss problem (if one exists) and apply the right tool to fix it.

Similar efficiencies are more difficult to attain for phosphorous or potassium or any of the secondary or micronutrients. Lime, however, is another building block of the nutrient management foundation that should NOT be overlooked! If nutrient management is a place you were considering making adjustments, now is a great time to research how you can fine-tune things. Always be cautious, however, to base changes on sound nutrient management principles. To request KSU research on those principles, feel free to drop me a line at dhallaue@ksu.edu or by contacting your District Office.

who have tried this technique for themselves and are willing to share their experiences. The afternoon

will conclude with a question-and-answer session that includes our beef-producer guests and all re-

searchers. Come prepared to be amazed!

The Sauder Center is located at 110 South 1st Street

in Madison. Please RSVP by calling the Greenwood County Extension office at 620-583-7455



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SEN -11.25; Marb +.63; RE +.87; SB +108.27



MCR Horizons Alliance 835 • 18604891
Calved: September 15, 2015
Sire: MCR Horizon 081 MGS: E&B 1680 Precision 1023
CED +16; BW -.6; WW +51; YW +92; SC +.57; Doc +.22; CEM +15;
Milk +22; SEN +.11; Marb +.80; RE +.79; SB +137.38



MCR 10Y Harlands Domino 595 ET • P43743545
Calved: September 10, 2015
Sire: NJW 735 W18 Hometown 10Y ET MGS: UPS Domino 3027
CE 5.6; BW 1.4; WW 58; YW 93; MM 36; M&G 65; MCE 4.9; MCW 90;
UDDR 1.33; Teat 1.33; SC 1.4; CW 74; Fat .032; REA .59; MARB .42;
BMIS 27; CHBS 36



MCR 364 Harlands Domino 622 • 43743548
Calved: January 15, 2016
Sire: MCR Trust Harland 364 ET MGS: UPS Domino 3027
CE 4.5; BW 2.1; WW 53; YW 96; MM 34; M&G 61; MCE 4.7; MCW 101;
UDDR 1.25; Teat 1.24; SC 1.4; CW 70; Fat .001; REA .47; MARB .30;
BMIS 24; CHBS 33

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AgriPro® brand wheat varieties break records for 2016 yields and top lists of acres planted

A dedication to continued research and development from the largest private wheat breeding program in North America is reaping results for wheat growers across the country. In 2016, growers proved that they are recognizing the benefits of AgriPro® brand wheat varieties from Syngenta through increases in acreage planted and with record-breaking yields.

In Kansas, SY Wolf winter wheat achieved the highest wheat yield (109.38

bushels per acre) in the 2016 Kansas Wheat Yield Contest for the Central region. In Michigan, new SY 100 winter wheat topped the 2016 Michigan State University Wheat Performance Trial with a yield of 124.8 bu/A.

"We're proud of the record-breaking performance of AgriPro wheat in 2016 and expect to see this trend continue," said Darcy Pawlik, product marketing manager for Syngenta Cereals. "Our investment and expertise in wheat breeding is pay-

ing off, allowing Syngenta to bring to market new and better varieties with strong agronomic characteristics and higher top-end yield potential. We are pleased to see growers benefiting from our investment by choosing to plant more acres of AgriPro varieties than ever before."

In 2016, AgriPro varieties were the top planted in five key wheat growing states. SY Wolf was the number one planted winter wheat variety in both Nebraska and

South Dakota. In South Dakota, SY Wolf comprised 32 percent of all winter wheat planted. In Nebraska, SY Wolf comprised 7.4 percent of winter wheat planted with 94,000 acres.

In North Dakota, SY Soren and SY Ingmar were the top two spring wheat varieties planted with 15.4 percent and 11.5 percent, respectively, of the 6.30 million acres of the state's spring wheat. In Washington, SY Ovation has become the number one planted winter

wheat variety with 248,368 acres, 13 percent of the total winter wheat acres planted. SY Ovation was also the number one planted winter wheat variety in Idaho.

Syngenta is an industry leader in the development of superior wheat varieties, offering growers consistent performance in the field. AgriPro brand wheat varieties target high yield potential, good test weights, quality grain and superior disease protection. From seed to harvest, Syngenta

supports the cereals market with a robust portfolio of seed and crop protection solutions. The unique portfolio breadth enables them to innovate and deliver integrated solutions to help farmers start strong and ultimately grow more wheat.

For more information about AgriPro brand wheat varieties or to find a local AgriPro Associate, visit www.agriprowheat.com. Join the conversation online - connect with us at social. SyngentaUS.com.

UGA scientists use robots and drones to accelerate plant genetic research and improve crop yield

It may be a while before robots and drones are as common as tractors and combine harvesters

on farms, but the high-tech tools may soon play a major role in helping feed the world's rapidly growing population.

At the University of Georgia, a team of researchers is developing a robotic system of all-terrain rovers and unmanned aerial drones that can more quickly and accurately gather and analyze data on the physical characteristics of crops, including their growth patterns, stress tolerance and general health. This information is vital for scientists who are working to increase agricultural production in a time of rapid population growth.

"By the middle of this century scientists estimate the world's population will

reach 9.1 billion people, which is a 30 percent increase in a little more than 30 years," said Changing "Charlie" Li, a professor in UGA's College of Engineering and the principal investigator on the project. "This increase in population will demand that we nearly double our current food production. That's a tall order but one solution is to use genomic tools to develop high-quality, high-yield, adaptable plants."

While scientists can gather data on plant characteristics now, the process is expensive and painstakingly slow, as researchers must manually record data one plant at a time. But the team of robots developed by Li and his collaborators will

one day allow researchers to compile data on entire fields of crops throughout the growing season.

The project addresses a major bottleneck that's holding up plant genetics research, said Andrew Paterson, a co-principal investigator. Paterson, a world leader in the mapping and sequencing of flowering-plant genomes, is a Regents Professor in UGA's College of Agricultural and Environmental Sciences and Franklin College of Arts and Sciences.

"The robots offer us not only the means to more efficiently do what we already do, but also the means to gain information that is presently beyond our reach," he said. "For example, by measuring plant height at weekly intervals instead of just once at the end of the season, we can learn about how different genotypes respond to specific environmental parameters, such as rainfall."

In addition to multispectral, hyperspectral and thermal cameras, the robots will be outfitted with Light Detection and Ranging, or LiDAR, a remote sensing method that uses light in the form of a pulsed laser to measure distances. The

technology will allow the researchers to create precise three-dimensional images of the plants they study.

During preliminary testing of the system last year at UGA's Iron Horse Plant Sciences Farm between Watkinsville and Greensboro, Li estimates the team collected 20 terabytes of data over the six-month growing season. He says the team will collect 30 times that amount when the robots are fully deployed.

To analyze these massive data sets, the researchers are developing an artificial intelligence algorithm similar to the facial recognition program Facebook uses to facilitate the identification and "tagging" of people in a photograph.


"As an example, our algorithm will be able to scan an aerial photo of a large field and automatically identify the location and number of flowers on each plant," said Li.

With teams of autonomous vehicles rumbling through rows of crops and hovering overhead, algorithms will also play a key role in making sure the robots and drones perform their assigned tasks while staying out of each other's way. Javad Mohammadpour Velni, a co-principal investigator on the project and an assistant professor in the College of Engineering, is developing a suite of analytical tools that will allow the ground and aerial vehicles to operate independently but collaboratively to efficiently cover fields and collect different types of data.

The UGA researchers believe their work will provide a platform for plant geneticists to gather massive amounts of phenotype data and empower advances in crops that sustain the planet's population.

"Historically, genetics has been credited for about half of the yield gains that permitted small numbers of farmers and producers to sustain large human populations, for example during the Green Revolution," said Paterson. "It's realistic to envision that genetics will need to account for about half of the doubling of agricultural output that's needed by 2050. This will require roughly doubling historical rates of progress in crop improvement, and more detailed and efficient phenotyping will be essential to accomplishing this."

The team's project is supported by a \$954,000 grant from the National Robotics Initiative, a program jointly sponsored by the National Science Foundation, the U.S. Department of Agriculture, the U.S. Department of Energy, NASA, and the National Institutes of Health. The goal of the National Robotics Initiative is to accelerate the development and use of next-generation robots in the United States.



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Study shows cover crops help soils after flooding

A four-year study by University of Missouri Extension seeks to find how cover crops can best benefit soils after flooding and prevented planting.

MU Extension agronomist Wayne Flanary shared initial results at a recent crop advisers meeting in St. Joseph. The study looks at the impact of cover crops in the recovery of flooded soils.

USDA's Natural Resources Conservation Service funded the study, in cooperation with MU Extension, following the 2011 flood along the Missouri River in northwestern Missouri.

MU Extension faculty and employees planted a variety of cover crops aerially at Graves-Chapple Research Center near Rock Port on Interstate 29 as part of the study. They hope to learn

what cover crops best protect the soil, improve soil health and increase yields of cash crops planted into cover crops.

Weather, timing, cost and other factors determine if aerial seeding into crop residue works.

Early results of the study show aerial seeding works but is risky, as it is dependent upon the weather, Flanary says. One way to reduce risk is to follow the combine with a drill. Drilling requires lower seeding rates than aerial broadcasts. Plant cover crops as quickly after harvest as possible, regardless of the seeding method you use, he says.

Researchers tested different cover crops and planting dates. They also compared termination dates. They found that species that

break dormancy early work best in aerial seeding.

Fall aerial seed application should occur when sunlight shows in the middle of rows after soybean leaves turn yellow. Seed when rain and soil conditions are favorable and average temperatures are less than 90 degrees.

Flanary says farmers need to consider costs in their decision-making. Aerial seeding can cost more than \$40 per acre for airplane use, outside labor and seed costs. Another MU study looks at reducing seeding costs to \$5 per acre with use of a 15-inch row planter.

MU Extension developed a chart that compares species, seeding rates and costs.

Flanary's studies also look at winter small grains

as cover crops. By measuring height and growth rates, researchers find that small grains grow well when seeded in the fall. Small grains reduce erosion in fields and gullies. They also improve crop stands. The disadvantage is that they attract armyworm and voles.

Seedlings such as crimson clover often will not survive the winter. Soil health tests do not show consistent results yet, possibly due to variability in sampling, and the test area is no-till, which may mask the effect of the cover crop, Flanary says.

Flanary discourages use

of hard-to-kill annual ryegrass as a cover crop. Once established, annual ryegrass survived multiple applications of glyphosate. Cereal rye, on the other hand, works well as a cover crop. Knowing the difference between the two is critical, he says.

Flanary says researchers do not know why cover crops grow better in standing corn residue than soybean. Sunlight breaks through corn's canopy quicker than the canopy of denser, lower-to-the-ground soybean.

Flanary notes that weak soybean stands occurred in

soybean planted into heavy small-grain crop residue and wet soils.

Growers also get the extra benefit of reduced soil erosion when using cover crops, Flanary says. They can also serve as a secondary crop for forage or silage in years when prevented planting occurs for corn or soybean.

For more information on cover crops, Flanary recommends the MU Extension Crop Resource Guide at crops.missouri.edu/cover-crops.

Watch the weather to avoid atrazine runoff

Atrazine, one of farmers' least expensive and most effective chemicals for weed control, is under the magnifying glass.

Atrazine is up for re-registration review by the Environmental Protection Agency, says Bob Broz, water quality specialist for University of Missouri Extension. Broz recently spoke to certified crop advisers at a meeting in St. Joseph.

Atrazine's last registration received approval in 2003. EPA reviews products every 15 years after a lengthy process that often involves public opinion as well as science. Closer scrutiny of atrazine use comes when it appears in drinking water supplies at higher rates than allowed by EPA. In 2007 and 2009, EPA determined that atrazine is not likely to cause cancer in humans or affect amphibian gonadal development.

Broz says atrazine is one of the most scrutinized and studied pesticides. More than 500,000 farmers use it to control grass and broad-leaf weeds on 50 percent of the country's cornfields.

EPA monitors 40 Midwestern watershed areas vulnerable to atrazine runoff. The agency measured levels every four days

during the growing season. The 40 watershed areas represent a large number of soil types and conditions, including watersheds along Missouri claypan soils.

Two of the three Missouri watersheds originally selected for ecological review exceeded EPA trigger values, causing a closer look at the watersheds and the conditions that might have caused the exceedance. The levels have now been within the approved guidelines for atrazine runoff. Missouri farmers use 1.3 to 1.5 pounds of atrazine per acre, below the maximum amount they could use. Applicators often mix it with other herbicides to have more consistent control. It works well on no-till fields.

Broz says atrazine and herbicide runoff is seasonal, April through June. Some soils are more likely to allow runoff. Weather appears to be the main factor in runoff amounts. "Timing is everything," Broz says. Intensity and duration of rainfall affect runoff. While farmers cannot control rain, they can manage the land to prevent or reduce runoff, he says.

Farmers can do their part to prevent runoff by applying atrazine when weath-

er conditions are right, using management practices such as filter strips, cover crops, riparian areas and no-till planting. "If we find atrazine in runoff water, it means the farmers are losing money and weed control," Broz says.

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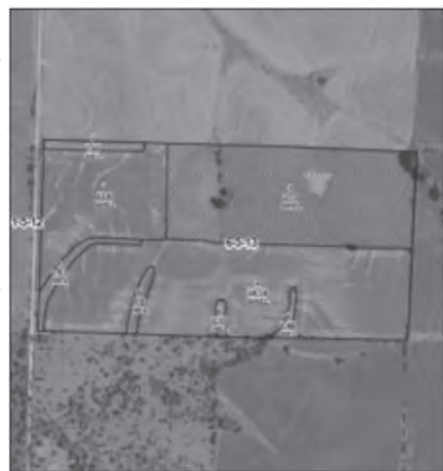


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