Vol. 56, No. 2, June 2017

Reporter

ST. CHARLES COUNTY SOIL AND WATER CONSERVATION DISTRICT

Conservation Compliance Concern

Changes to Natural Resources Conservation Service's (NRCS) compliance review procedures may have an impact on landowners currently enrolled in NRCS conservation programs.

According to State Conservationist J.R. Flores, "Missouri farmers who participate in USDA programs will be required to provide additional control of ephemeral gully erosion on highly erodible fields."

He said the change is in response to a recent Office of Inspector General (OIG) report comparing compliance review procedures in several states. Missouri's adjustments are being made in order to have more consistency across the nation. Therefore, some farmers may need to install additional practices following compliance review checks. Compliance reviews are conducted randomly in the spring on a selection of highly erodible fields.

The focus is on identifying and stopping ephemeral gully erosion. The old practice of discing or smoothing the gullies does not fix the problem. A conservation system involving such practices as no-till, cover crops, grassed waterways and terraces can be designed to stop erosion while protecting farm productivity and water quality.

Flores stressed the importance for farmers to meet these erosion control requirements so they will remain eligible for Farm Bill program benefits, including federal crop insurance premium subsidies. NRCS staff will be available to help farmers identify ephemeral erosion and apply the best practices to benefit their farming operations.

Contact the NRCS office at 636-922-2833, ext. 3, for more information.

District Cost-share Program Thriving

The St. Charles County Soil and Water Conservation District has been busy processing applications for cover crop cost-share payments over the past few weeks, and has assisted with the completion of a livestock watering system with electric pond exclusion fence and electric fence to divide pasture to improve grazing. The district and its cooperators also completed several grassed waterways and tile outlet terraces to solve erosion issues.

The district can help livestock managers solve watering problems. This farm had limited access to water in the far pasture. The district cost-shared with the farmer on a hydrant and pipeline as part of

This is the district's 3rd year offering the cover crop program. There has been an excellent response from growers, and we will be able to publish up-to-date numbers in the next issue. A big plus for this county in offering cover crops has been being able to offer assistance to bottomland farmers. Not only do cover crops help hold the soil in place, but they add significant organic matter to the soil which produces a much healthier growing substrate.

Contact the district to learn how you can participate in the cost-share program: 636-922-2833, extension 3.

Poster Contest

See more poster contest winners on page 4.

Fourth, fifth and sixth graders in St. Charles County participated in the annual poster contest which had the theme "Healthy Soils are Full of Life". Receiving Grand Prize recognition was **Jack Jones** (left), a fourth-grader at Sts. Joachim and Ann School.

Jack's poster (below) included a few facts, such as: *"Soil is one of the key factors determining food production"* and "*We need soil like the air we breathe*".

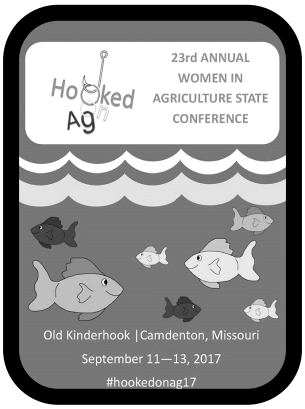
Congratulations Jack!

This newsletter is published with funds made possible by the 1/10 of 1% sales tax for state parks and soil conservation, and by St. Charles County government.

Get *Hooked on Ag* at the 23rd Annual Women in Agriculture Conference

The annual Women in Agriculture State Conference is set for September 11 to 13 at the Old Kinderhook resort near Camdenton. Registration and hotel reservations are required by August 11, so don't delay!

On the workshop agenda for the three -day event are a variety of interesting topics including: Canning and Freezing, Sheep Production, High Tunnels, Cover Crops, Pollinators, Estate Planning, Gardening and more. Attendees may also choose to learn more about new fencing laws, an FSA update, or even rural crimes or farming with a disability.



Monday evening's banquet entertainment is by Tony B the Piano Man who will be taking song requests. Tuesday's tour will feature a farm visit to the property of Jeff and Tanya Apperson, and stops at Ozark Fisheries and Circle F Cattle. That evening, ladies can unwind with Yoga on the Patio.

Katie Dilse is the guest speaker for Wednesday's closing session. She is a business owner, wife, mother of four boys, farmer and a big rig driver. Organizers of the event promise that Katie will make you smile, laugh, and feel good about yourself!

Registration and shirt/jacket orders need to be received by August 11. For more information or help with registration, call 573-422-3342 or through email: mowomeninag@gmail.com

Contact Old Kinderhook directly to make hotel reservations at 888-346-4949.

Seeking Nominations

The planning committee is seeking nominations for the 2017 Missouri Outstanding Woman in Agriculture Award. The recipient will be recognized at the conference banquet on Monday evening. To make a nomination, answer the following questions and mail your nomination to Peggy Lemons, Cole County SWCD, 1911 Boggs Creek Road, Jefferson City, 65101.

Nominee questions:

- Name, address and phone of your nominee
- A description of her farming operation, and how many years she has farmed
- The nominee's level of involvement in day to day farm operations
- The use of conservation practices on the farm
- The nominee's community involvement
- Other noteworthy activities or accomplishments

Include your name, phone number and county so the committee can let you know if your nominee was chosen.

Incentive Program Aims to Increase Habitat for Butterflies and Bees

The NextGen Habitat Project program will offer landowners an economically viable option to provide high quality honey bee and monarch habitat. These projects will help deliver national pollinator objectives including the national monarch butterfly strategic goal of establishing 1.4 billion milkweed stems to increase the monarch population to an overwintering area of 15 acres, and the Pollinator Partnership Action Plan of restoring or enhancing seven million acres of pollinator habitat in the next five years. These projects will also reduce soil erosion, encourage soil health and improved water quality.

Monarch visiting a milkweed plant.

Eligible lands can be cropland or non-cropland. Grasslands are eligible pending cooperator's ability to convert sodbound grasses to a high quality seed mixture. Projects can be from one to 60 acres, and the cooperator will have an option of 3, 4, 5 or 6-year contracts. The program also offers an annual payment option, an incentive payment, and 100 percent cost-share on the seed.

Application should be made by August 15 in order to be eligible for contracts beginning on October 1. Projects must be enrolled by a Quail Forever biologist or qualified partner staff, including the Missouri Department of Conservation Private Lands Conservationist (PLC).

The project is sponsored by Quail Forever with partners including Pheasants Forever and the Bee & Butterfly Habitat Fund.

To learn more, or to make an application, contact the local MDC Private Lands Conservationist Alex Ruff at 636-300-1953, ext. 4162.

St. Charles County
Soil & Water Conservation District
160 St. Peters Centre Blvd.
St. Peters, Mo., 63376-1695
636-922-2833, ext. 3

The Reporter Newsletter is published by the St. Charles County Soil & Water Conservation District quarterly, in March, June, September and December.

Writer/Editor—Theresa Strunk

For advertising information or to submit news, call the district at 636-922-2833, ext. 3.

The mission of the Soil & Water Conservation District is to conserve the soil and water resources of the county; promote the wise use of these resources through education; protect residents from undue hardship caused by erosion, sedimentation and flooding; protect the agricultural soil base to ensure continued productivity; and preserve the quality of water and water courses within the county.

Cleanout and Upkeep of the Sprayer: Don't Get Complacent

The availability of dicamba-tolerant soybean this season increases the need for emphasis on proper maintenance and thorough cleanout of the sprayer system between applications; especially POST applications. The likely introduction of additional herbicide-tolerant traits in the future indicates that sprayer maintenance and cleanout will continue to be an essential focal point to avoid tank contamination and injury to subsequently sprayed crops.

One specific concern about dicamba and 2,4-D in the spray tank is that although they are water soluble, similar to glyphosate, they act as weak acids and require more effort and care in effectively being removed from the spray tank. Additionally, glyphosate is very effective in dissolving remnant dicamba residue left in the sprayer.

It is not just about the tank

Researchers at Mississippi State University recently published results where they studied combinations of spray line types and cleanout practices to determine which were most likely to perform best and leave the least amount of dicamba residue to contaminate subsequent spray mixes. They compared 5 types of hose. Dicamba and glyphosate were added to each hose. The hoses were drained and cleaned with either water or an ammonia solution or not cleaned at all for comparison.

The researchers found that the type of hose mattered more than whether ammonia or water was used for cleaning. The black, Goodyear hose retained the most dicamba regardless of the cleanout procedure used. Amounts of dicamba in the Goodyear hoses were similar between the ammonia rinse and no cleanout and only slightly less with water. The John Deere blue, low-density polyethylene hose held the least amount of dicamba at less than 1 ppm when washed with either water or ammonia. Detectable dicamba in the other three hoses fell in between the Goodyear and John Deere polyethylene blend, and detected levels did not change regardless of whether ammonia or water was used for cleaning the tank.

The scientists cut open the tubes following the experiments to look at wear and tear on the inside of the lines using a specialized microscope. As might be expected, the black Goodyear hose had the most wear and tear over the three years of the experiments and the polyethylene hose had the least.

But what does all this mean?

The wear and tear in the hoses provides opportunity for dicamba to settle and escape cleaning. Earlier research showed that it only takes a very small amount of dicamba to injure non-tolerant soybean so any time there is dicamba left in any of the sprayer parts prior to spraying non-dicamba tolerant crops, it is concerning. The Mississippi State researchers who conducted the spray line study added glyphosate to the spray lines following cleanout and then sprayed non-tolerant soybean to represent a subsequent, sensitive crop. They found that soybean node reduction seemed to be affected by the amount of dicamba detected in the lines following cleanout. The more dicamba detected in the lines, the less nodes on the subsequently, sprayed non-tolerant soybean.

This study emphasizes proper maintenance and cleanout of the spray lines, especially following application of dicamba and 2,4-D, is just as important as maintenance of the entire tank. Last year we surveyed over 2,300 pesticide applicators in Missouri. Of applicators willing to share information on spray tank inspection and cleanout, over 69% responded that they inspected spray parts a minimum of once per week although only about 60% of those who regularly check said they inspect spray lines. Approximately 48% of respondents indicate they clean the spray tank three times following application of one herbicide and prior to mixing another herbicide. These procedures may have worked fine in recent years when applying glyphosate over large acreages; however, from now on we need to improve our alertness and effort in caring for the sprayer in order to minimize off-target herbicide injury to soybean. In addition to the spray tank and lines, it is equally important to check the inductor, endcaps, nozzles, and filters for particulates.

Know the Signs of Heat-Related Illness

Heat Cramps: involuntary spasms of muscles in the calves, arms, abdomen, shoulders and back.

Heat Exhaustion: excessive thirst, weakness, headache, nausea, cramping and loss of consciousness.

Heat Stroke: most serious, death possible; includes symptoms of heat exhaustion as well as seizures, rapid heartbeat, rapid and shallow breathing and hot skin.

Annual Festival Planned

Greenway Network Inc. once again will host the annual Race for the Rivers event at Frontier Park in St. Charles on August 26. The event involves **the race**, a 20 mile or 40 mile Missouri River canoe and kayak paddling opportunity; **the ride**, a 35 mile bicycle trip on the Katy Trail from Washington to St. Charles; and **the festival**, six hours of food, live music and fun activities highlighting ways to enjoy healthy rivers.

Register now for the race and the ride at ***https://www.racefortherivers.org/***

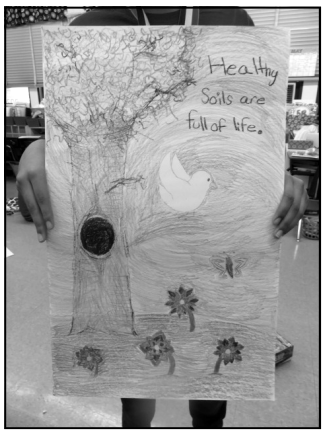
New at the festival this year is the Bass Pro Outdoor Days which is a celebration of education through outdoor adventure, the learning of outdoor skills and the conservation advocacy of natural resources and wildlife. Featured by Bass Pro will be a kayaking pool, a casting pond, a climbing wall and more.

Festival goers will also enjoy food trucks, a beer garden, and various free hands-on nature related activities.

Students Shine with their Parade of Posters

Fifth-grader Tyler VonBokel (left) received second place; while Ella Schultz took third for fourth grade. Both are from St. Paul School.

2017 Poster Contest Topic: Healthy Soils are Full of Life. Students learned how the soil not only is the life giving foundation for food production but is also teeming with organisms vital to the health of our food and of ourselves. Congratulations to all our winners!



Angela Garayzar of All Saints School earned third place for 5th grade.

Gabby Ohlms, St. Charles Borromeo, took second place for fourth grade.

Sts. Joachim and Ann School's, Layla James, placed first for fourth grade.

Madison Troesser of St. Charles Borromeo earned first place for fifth-graders.

Some Farm Work Requires a Wetland Check

Spring flooding has created drainage concerns on some area farms. If you are planning to create new drainage systems, conduct land leveling, filling, dredging, land clearing, excavation, ditch cleanout or levee repairs, you may need to have a wetland conservation certification completed on your farm. Improving or modifying an existing drainage system may also require wetland determination.

Before work is begun, call the Farm Service Agency (FSA) or the Natural Resources Conservation Service (NRCS) to discuss the planned work. FSA will initiate form AD-1026, and NRCS will schedule a visit to evaluate the soils on site. The owner or operator on record will complete the form.

Conservation cooperators with existing contracts with NRCS will want to check to see if the certification is required on their land before beginning work so as not to jeopardize future payments. Call 636-922-2833, ext. 3 and speak with Shawn Keller or Curtis Hoeft.

Converting Pastureland to Cropland May Require an HEL Determination

Pasture or hay fields that are coming into grain crop production require a Highly Erodible Land determination. The process starts with the Farm Service Agency (FSA) and the form AD-1026. Owner or operator of record can complete the form. NRCS will complete the determination, often without a farm visit, utilizing maps and data in the office. If the field is determined to be highly erodible, NRCS will work with the operator to develop a conservation plan based on the soils present, planned field operations and the chosen crops.

Contact Shawn Keller at 636-922-2833, ext. 3.

Palmer Amaranth May Challenge Waterhemp as State's Worst Weed

According to University of Missouri Extension's weed scientist, Kevin Bradley, Palmer amaranth (*Amaranthus palmeri*) is the weed to watch as each year it spreads into more Missouri counties. St. Charles County was added to that list last year when the multi-herbicide resistant strain of the weed was found in fields in the bottoms of the Mississippi River.

This aggressive pigweed may surpass waterhemp as the state's most serious agricultural weed problem. "Season-long competition by Palmer amaranth at 2.5 plants per foot of row can reduce soybean yield by as much as 79 percent," Bradley noted. He added that It is equally destructive to corn with a yield decrease of around 90%.

Palmer amaranth is a native weed in the southwest portion of the country. It is fast-growing (2-3 inches per day) and can reach heights of 6-8 feet at maturity. It is highly competitive with crops, having an extended germination and emergence window and high water use efficiency. Just one plant can produce up to 250,000 seeds.

Lately, various farm groups, university researchers and agency personnel have participated in some finger-pointing when discussing why this problem has evolved so quickly. Theories abound with many centering around waterfowl activity, equipment movement, and animal feed; however recent studies at Mizzou and Iowa State have found Palmer amaranth seed in conservation seed mixes. Bradley and other researchers at MU discovered that more than 60 percent of pollinator seed mixes tested in their lab had Palmer amaranth seed.

Eric Oseland, a graduate student working with Bradley, warned that farmers involved in CRP programs should be aware of the possibility that the seed mixes may unintentionally include this hardy pigweed seed. Oseland recommends intense scouting of fields planted for CRP or other pollinator programs.

"Right now, one of the only options for control of Palmer amaranth in these environments is removing them by hand. Once it's in CRP or a pollinator planting field, it's hard to control. Once it puts on a seed head, your problem just grew exponentially," he said.

"In short, any seed, feed or equipment coming onto your farm should be thoroughly examined for the presence or even the possibility of Palmer amaranth seed," Bradley said.

Iowa's top weed scientist State University agronomy professor, Bob Hartzler, discovered a link between Palmer amaranth infestations in Iowa agricultural fields and the conservation programs. NRCS and FSA deny any responsibility for the infestations because seed purchasing is the responsibility of the landowner, nevertheless in the Iowa cases Hartzler tested, he is "confident that some of the (conservation program) seed mixes were contaminated."

"...any seed, feed or equipment coming onto your farm should be thoroughly examined for the presence or even the possibility of Palmer amaranth seed."

The rapid rise in incidence of the weed in Iowa fields coincided with the fact that Iowa enrolled more landowners in contracts putting fields into conservation programs than any other state—108,799 contracts out of the 637,164 for the entire country. In one year, the weed exploded from 5 to 48 of the state's 99 counties. In at least 35 of those counties, it was found on land in conservation programs.

An Iowa landowner contacted Hartzler after the weed infested 70 acres of farmland planted with a conservation seed mix.

"The Palmer amaranth was uniformly distributed across the entire 70 acres, so that was a good sign that it came from the seed mix," Hartzler said. After growing some seeds from bags the farmer had from the seed mix, Hartzler confirmed the presence of Palmer amaranth.

Awareness of the possibility of contaminated conservation seed mixes is extremely important. If you are planting grasses or flower mixes for conservation plantings, use only local reputable sources. Obtain a seed laboratory report before purchasing the mix, and reject any seedlots that have "pigweed" or "amaranth" as a weed component unless the pigweed seed has been genetically tested to not be Palmer amaranth. It's seed is visually indistinguishable from other pigweed seed.

According to the USDA, limiting soil disturbance and utilizing cover crops like cereal rye to help suppress weeds may help discourage infestations. Hay plantings may also help protect against Palmer amaranth establishment.

If you see Palmer amaranth in your field, contact University Missouri Extension at 636-970-3000. Extension can also help identify the plant if you are unsure. A good I.D. guide can be found at ***https://www.extension.purdue.edu/extmedia/ws/ws-51-w.pdf***

Reporter

160 St. Peters Centre Boulevard
St. Peters, MO 63376-1695

Soil Science 101– Soil Respiration

Soil respiration is the measure of carbon dioxide (CO_2) released from the soil from decomposition of soil organic matter by soil microbes and respiration from plant roots. It is an important indicator of soil health because it measures the level of microbial activity, soil organic matter content and its decomposition. Good soil respiration means that the nutrients contained in organic matter are being successfully converted to forms needed by crops (phosphate as PO_4, nitrate-nitrogen as NO_3 and sulfate as SO_4).

Factors affecting soil respiration include:

Temperature: microbial respiration doubles for every 18 degrees Fahrenheit rise in temperature until reaching a maximum temperature of 95 to 104 degrees, which is too high for good plant growth and microbial activity.

Moisture: soil respiration will increase with soil moisture up to the point of field capacity, or when approximately 60 percent of pore spaces are filled with water. A field that exceeds 80 percent water-filled pore space will see most aerobic microorganisms begin to use nitrate instead of oxygen, resulting in the loss of nitrogen, the emission of greenhouse gases, and a reduction in crop yield.

Texture: medium textured soils (silt and loam) are favorable to soil respiration because of the ideal aeration and high available water capacity.

Management practices that increase soil respiration often involve the addition or increase of soil organic matter. These practices include:

- Leaving crop residues on the surface
- Using no-till
- Using cover crops
- Using crop rotation
- Applying manure or compost
- Irrigating in dry conditions
- Draining of wet soils
- Avoiding compacting soils
- Managing fertilization levels

Soil respiration rates can be used to measure the soil's capacity for plant growth. With low soil respiration, microbes and plants become starved as there is not enough soil organic matter to feed them.

If you decide to measure soil respiration in your field, don't be fooled by a high reading directly following tillage. Tilling a field can temporarily release more CO_2, and in this case the reading would indicate an unstable system.

To properly test soil respiration, take the measurement when the field is at capacity for soil moisture (the amount of water the soil holds after drainage).

The USDA Natural Resources Conservation Service (NRCS) offers guidance in several different soil quality tests. Visit their website at:

https://www.nrcs.usda.gov/wps/portal/nrcs/site/national/home/, and type "soil respiration test" in the search bar.

Or view a test using Sulvita equipment on Youtube at:

https://www.youtube.com/watch?v=WxVSJS4EV2g