Field Notes

Kerr Center for Sustainable Agriculture E-Newsletter

E-Field Notes
November 2022

Happy Thanksgiving!

The original Thanksgiving story was one of neighbors helping neighbors - which is also the theme of an Oklahoma Conservation Commission program aimed at **mitigating the worst environmental effects of the poultry industry**. Sign up by December 15!

Those first Plymouth settlers would never have made it without Native American farming know-how. All these centuries later, those techniques still hold lessons for modern agriculture. Learn more in our report on **Three Sisters gardening**.

Some of us may be alarmed at recent declines in insect populations. Others, battling insect pests in crops, may feel something more like relief. New research, though, shows that **despite their decreasing numbers, insects are causing more damage to plants than ever**.

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On the flip side, Will Lathrop and David Redhage start off this month's issue with a **heartening report from the never-ending battle against parasite resistance to de-wormers** - something to be truly thankful about!

In this season of thanksgiving, we're especially grateful for the support you show for our work. If you're already donating to the Kerr Center, thank you! If not, please consider it!

President's Note: Avoiding Parasite Resistance

by Will Lathrop and David Redhage

One of the concerns with the use of chemicals (herbicides, pesticides, antibiotics) in modern agriculture is the **risk of resistance buildup over time**. Apples were once sprayed with lead arsenate sprays to control codling moth, which over time developed resistance to the insecticide. It was eventually taken off the market due to concerns about the toxicity of lead and arsenic.

Modern GMO crops are faced with some of the same issues. There are **weeds which have become resistant to herbicides used in modern GMO cropping systems**. One of the most familiar is **Palmer amaranth**, which **shows resistance to glyphosate** herbicides.

Goat producers have seen resistance develop with the wormers used. Goats are susceptible to the barber pole worm, which in high enough levels can kill a goat.

The Kerr Center ran a **goat test program** for several years which used a technique called FAMACHA testing to monitor goats for levels of internal parasites, in particular the barber pole worm. As a result, producers were able to **identify genetic resistance to internal parasites and select for natural resistance** through breeding.

Last year we found out the **de-wormers we have been using for many years were ineffective in our livestock herd**. The theory is the internal **parasites had developed immunity to these products because they are a long-acting anthelmintic**. We learned **an old wormer used many years ago was still an effective de-wormer** in our herds.

In the spring of this year, we were contacted by the maker of a short-acting anthelmintic wormer to participate in a county-wide parasite testing clinic. We learned this type of de-wormer was not long-acting so parasite resistance is very low. For participating in the clinic, we were given several parasite testing kits to use on our own herds.

This fall, we collected fecal samples and sent them in to be analyzed. The results show we had no parasite load, which was probably due to the hot, dry summer. Heat and short grass kill parasites. **For the first time ever, we did not de-worm the cattle this fall**, and will test the cow herds next spring to look at the parasite load.

Continue reading....

Neighbors Helping Neighbors Project: Signup Deadline Dec. 15

If you're concerned about the **environmental impacts of a poultry operation** in your vicinity - or if you've got a poultry operation, and are trying to mitigate those impacts yourself - the **Oklahoma Conservation Commission has a new program that may help**.

Called "**Neighbors Helping Neighbors**," the program **works with poultry growers and their neighbors to address concerns related to the expansion of the poultry industry** in eastern Oklahoma.

The Oklahoma Conservation Commission recently received a Regional Conservation Partnership Program grant to provide education and funding to implement best management practices for the poultry industry.

The program serves **11 counties in eastern Oklahoma**, selected because they contain the **largest number of poultry operations in the state**.

Practices that can be funded by the program include conservation easements, **buffer strips** and **windbreaks**, phosphorus removal structures, litter transfer and storage, water and soil health monitoring, and many others. The program is also open to practices not included on the list, in an effort to encourage new, innovative approaches.

The deadline to sign up for the program is December 15. For more information or to sign up, visit the **Neighbors Helping Neighbors webpage**, or contact Jeri Fleming by **email** or phone (405-334-6343). The website also has a form for reporting concerns about particular farms.

Three Sisters Gardening

Beans, corn, and squash - chances are, they'll all three be making an appearance on your dinner table for Thanksgiving this month.

You may have heard that those three crops were also the basis of a traditional form of Native American intercropping, called the "**Three Sisters**." The beans added nitrogen to the soil, the cornstalks served as a trellis for the beans, and the squash leaves provided ground cover, shading out weeds and keeping the soil cooler and moister.

That approach to polyculture was popularized in the book, *Native American Gardening: Buffalobird-Woman's Guide to Traditional Methods*. This year marks the 10th anniversary of a **Kerr Center demonstration trial** of the technique, which attempted to adapt it to a row-cropping situation.

The results of the trial are published in a **free report**, available in our **online horticulture library**. In addition to a detailed description of the trial itself, from rationale and design to planting and harvest, it also includes **profiles of the varieties of each of the three crops** used (all **open-pollinated**).

Download the* 2012 Three Sisters Trial *report

Insects Declining - But Damaging More Plants than Ever

Scientists have been sounding the alarm about a **dramatic drop in insect populations** for some time now. Even laypeople have noticed that their windshields don't catch nearly as many bugs now as just a few years ago.

Strangely enough, **even as insect numbers plummet, insect pests seem to be doing more damage than ever to plants**. That's the finding of a new study by researchers at the University of Wyoming.

The study took a long view of insect herbivory, examining fossil leaves from as far back as the Cretaceous Period, 67 million years ago, for signs of damage from hungry bugs. At the other end of the timeline, researchers examined preserved leaves in present-day herbarium collections.

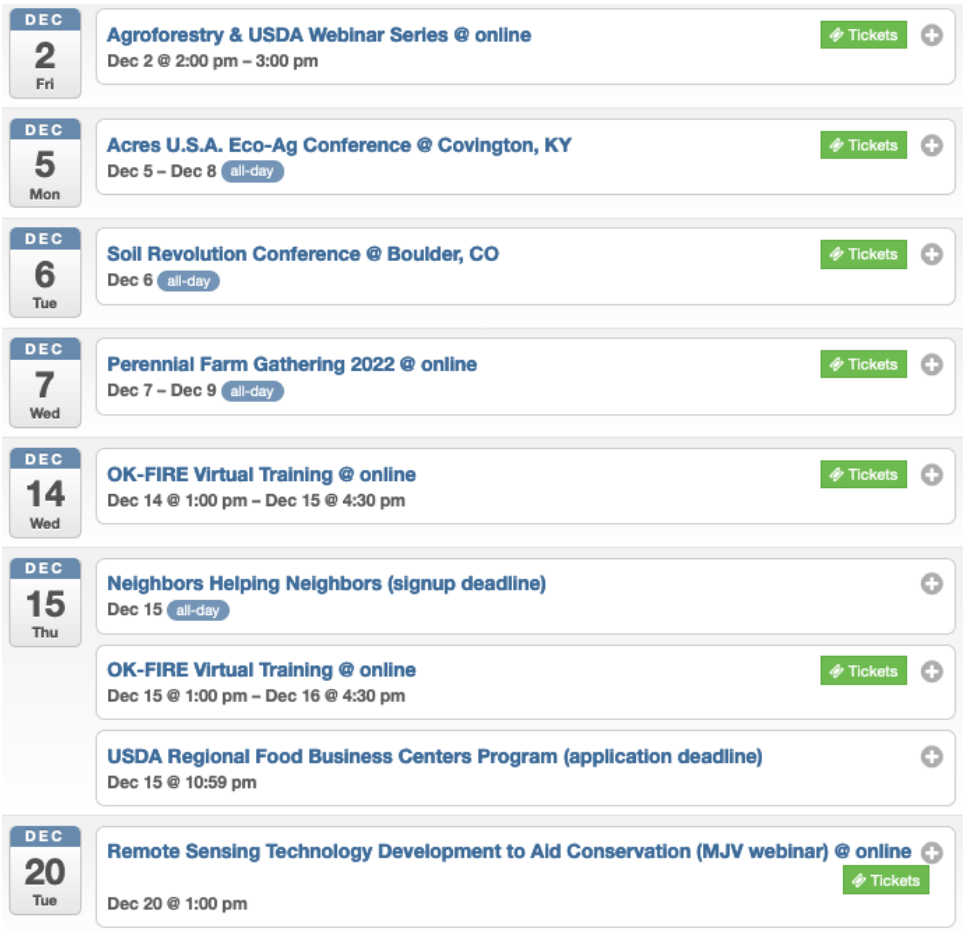
The results? **Fossil leaves**, from the dinosaur era through the time of mastodons and saber-toothed tigers, **showed less insect damage than leaves from modern times**.

Within the modern period, the increase in insect damage to plants continued. Leaves collected in the early 2000s, researchers reported, showed higher levels of damage than those from early in the 20th century.

The **study** was published in the journal *Proceedings of the National Academy of Sciences*.

Late Fall Events: Agroforestry, OK-FIRE Training, Remote Sensing, Regional Food Business Centers Grants, Conferences....

Online in December, you can catch the latest installment in the **Agroforestry & USDA webinar series** (Dec. 2), profiling USDA programs that can help with agroforestry enterprises.
Oklahoma Mesonet is also again offering its **free virtual training sessions for OK-FIRE**, its weather-based decision support system for wildland fire management (Dec. 14-15).
Monarch Joint Venture's final webinar of the year covers the use of **remote sensing techniques in conservation** (Dec. 20).



December conferences include:

- **Acres U.S.A. Eco-Ag Conference** (Dec. 5-8 - Covington, KY)
- **Soil Revolution Conference** (Dec. 6 - Boulder, CO)
- **Perennial Farm Gathering** (Dec. 7-9 - virtual)

December 15 is the **deadline** for applications to USDA's **Regional Food Business Centers grant program**, as well as to **sign up for the Neighbors Helping Neighbors program** (see above).

Full details on these and other sustainable agriculture learning opportunities, as always, can be found on the Kerr Center's online **events calendar**.

Don't forget that you can also use our online calendar to **keep yourself and your friends up to date** on these and other upcoming events, including our tours:
- **Subscribe to our feed** and receive **updates to your personal calendar** as they are made.
- **Share events on the calendar** via a number of **different social media sites**, including Facebook, Twitter, and Pinterest.

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Contact Information

The Kerr Center for Sustainable Agriculture
24456 Kerr Road
Poteau, OK 74953
Phone: 918.647.9123
Fax: 918.647.8712
mailbox@kerrcenter.com