Field Notes

Kerr Center for Sustainable Agriculture E-Newsletter

E-Field Notes
June 2023

Welcome to summer!

David Redhage gets this issue rolling with a report on a recent conference on **elderberries**.

This month, we've got an encouraging report about the **long-term soil-holding benefits of no-till and cover crops**, news about the **first-ever vaccine for honeybees**, and a reminder of a useful resource on the **basics of rotational grazing**.

This week is **pollinator week**: you can check out others' events, and even host your own. If you're not in a position to support them directly, you can always **support our work** with pollinators - and **sustainable crop and livestock raising** as well! **We appreciate it!**

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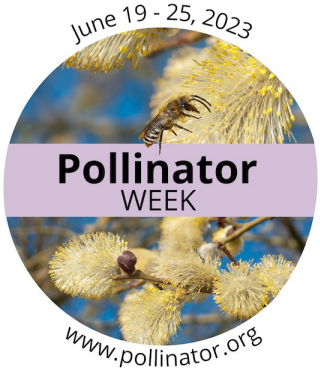


President's Note: Elderberries

I just returned from a three-day meeting in Columbia, Missouri, on **elderberries**. The first day was presentations covering a four-year grant the Kerr Center is part of.

We have a genetics x environment trial at the Kerr Center Horticulture Farm. Twelve varieties are part of the study.

One issue we are challenged with at our location is eriophyid mites. The mites cause leaf curling and can damage blossoms. We are struggling with a heavy infestation.

Some varieties seem to be doing better than others. Identifying such traits is the purpose of a research trial. This will be monitored over the four years of the trial to see if those with apparent resistance to mites maintain the resistance.

The following two-day conference was focused on growers. Growers from northern locations such as Canada presented about their unique challenges in a short-season climate. There were presentations on the blue elderberry native to the western United States.

Many presentations covered value-added products growers have developed. Some had their products for sale at the meeting. Included are elderberry juice, elderberry infused honey, freeze- and air-dried berries, drinks infused with flowers, jelly, teas, salves, etc. Since growers need to develop their own value-added products, food safety was also covered.

It will be interesting to see what is learned on the research grant over the remaining three years of the grant. Growers are willing to share their information, and show tremendous innovation in product development.

How to Hold on to Your Soil for Millennia

For most farmers, **soil erosion** is a fact of life, and we've all heard the alarming projections of **how soon the world's most productive agricultural soils will become unfarmable**.

But **what if there was a way to keep that soil on the land for five thousand years** instead of just the next fifty?

Better yet - **what if that way was already being practiced on 40% of cropland** across the Midwest?

It turns out that that's exactly the case. Recent research has shown that if a couple of already common conservation practices - no-till, and **cover cropping** - were expanded to cover 100% of farmland, the nation's soil resource, instead of eroding away over the next couple of centuries, would be secure for thousands of years to come.

A 2020 **study** measured soil erosion rates on agricultural lands worldwide. On a third of **conventionally tilled fields**, it found **erosion rates high enough to completely remove the topsoil in 200 years**. However, where practices like **no-till, contour plowing, and cover cropping** were in use, **topsoil was projected to last for five to ten *thousand* years**.

Earlier this year, another **study** focused on the U.S. Midwest put specific numbers on those rates. Under conventional tillage, researchers predicted a loss of nearly 9 billion metric tons of soil over the next century. That's with conservation practices already in place on 40% of the acreage.

However, **if conservation practices were expanded to 100% of the acreage, the next century's soil losses would drop by 95%**.

No-till and cover cropping usually get press for their short-term benefits to soil health - which are real, and important. As this research shows, though, those benefits extend much farther.

First Honeybee Vaccine Approved

Earlier this year, the USDA approved the **world's first honeybee vaccine**, for use in preventing American foulbrood (AFB).

Commercial honey and pollination operations, as well as small-scale beekeepers, have long dreaded this extremely damaging disease. Infected hives usually have to be burned.

Insects have effective immune systems, but they lack the antibody-forming mechanisms that humans and other vertebrates possess. A key breakthrough in the development of the AFB vaccine came when researchers discovered how immunity is transferred from the queen to her eggs - through an egg-yolk protein called vitellogenin.

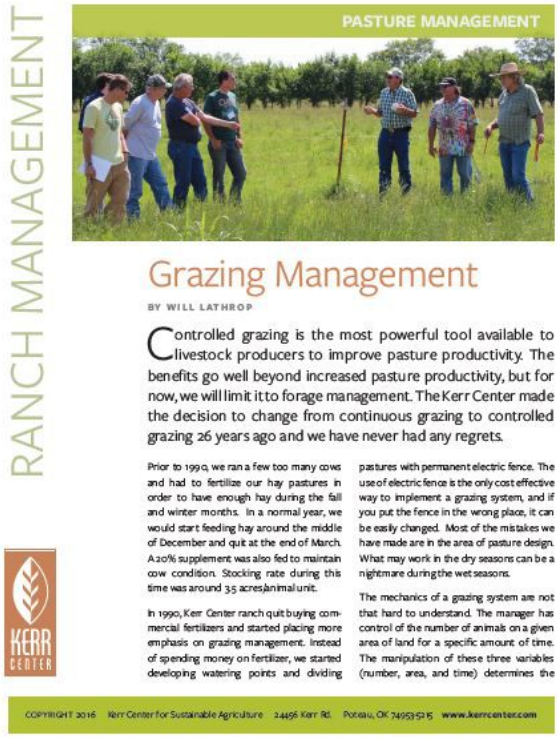
By inactivating the bacteria - *Paenibacillus larvae* - that causes AFB, and binding it to vitellogenin, researchers were able to confer immunity to the queens. The vaccine is added to the royal jelly that the worker bees feed to the queen. When the queen ingests the vaccine, the immunity is transferred to the eggs in her ovaries.

The first doses of the vaccine shipped earlier this month to a large commercial apiary on the west coast. It is expected to be widely available later this year.

According to the manufacturer, this new technology for creating insect vaccines holds potential for protecting against other diseases of honeybees, as well as applications in wild **pollinators**.

Grazing Management Fact Sheet

Have you ever wanted to know more about how the Kerr Center manages livestock, but couldn't get free for a tour or field day? Are you considering shifting to rotational grazing, but aren't sure where to start? Our **grazing management fact sheet** could be just the ticket.



PASTURE MANAGEMENT

RANCH MANAGEMENT

Grazing Management

BY WILL LATHROP

Controlled grazing is the most powerful tool available to livestock producers to improve pasture productivity. The benefits go well beyond increased pasture productivity, but for now, we will limit it to forage management. The Kerr Center made the decision to change from continuous grazing to controlled grazing 26 years ago and we have never had any regrets.

Prior to 1990, we ran a few too many cows and had to fertilize our hay pastures in order to have enough hay during the fall and winter months. In a normal year, we would start feeding hay around the middle of December and quit at the end of March. A 20% supplement was also fed to maintain cow condition. Stocking rate during this time was around 35 acres/animal unit.

In 1990, Kerr Center ranch quit buying commercial fertilizers and started placing more emphasis on grazing management. Instead of spending money on fertilizer, we started developing watering points and dividing pastures with permanent electric fence. The use of electric fence is the only cost effective way to implement a grazing system, and if you put the fence in the wrong place, it can be easily changed. Most of the mistakes we have made are in the area of pasture design. What may work in the dry seasons can be a nightmare during the wet seasons.

The mechanics of a grazing system are not that hard to understand. The manager has control of the number of animals on a given area of land for a specific amount of time. The manipulation of these three variables (number, area, and time) determines the

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The fact sheet crams a **wealth of down-to-earth, useful information** into **just two pages**, laying out the basics of **grazing management**.

There are really only **three variables** to juggle: **the number of animals, the size of the pasture, and the amount of time they spend grazing it**. Since it's generally more time and trouble to change the number of animals, the fact sheet - like the Kerr Center - puts most of its focus on balancing the other two.

Over time, our livestock program has moved toward **a larger number of smaller pastures,** creating **longer rest periods**, with the **cattle removing about half the available forage in each pasture before moving on to the next**.

The fact sheet distills **over three decades' experience with controlled grazing**. Prior to 1990, the Kerr Center livestock program used continuous grazing, with all the expensive commercial fertilizers and feeds that that entails. **The lessons described in the fact sheet are ones learned by real people, managing real animals, on a real working ranch.**

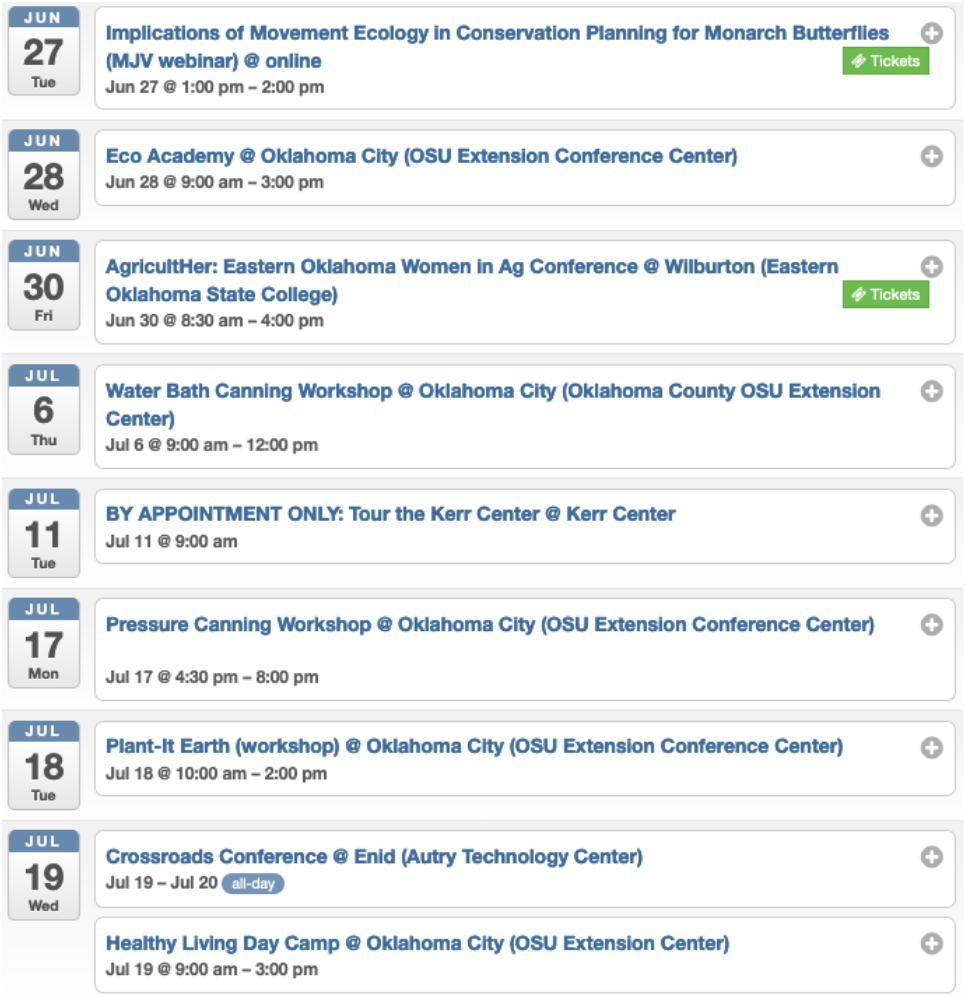
The grazing fact sheet is one of **many such practical, nuts-and-bolts guides** on all aspects of sustainable livestock management, **available free** from the **livestock library** on the Kerr Center website.

Early Summer Events: Monarchs, Day Camps, Women in Ag, Canning, Conferences....

Learn **online** about **conservation planning for monarch migration** (June 27).

OSU Extension is offering summer **day camps and workshops for kids** ages 8-12 in Oklahoma City: **Eco-Academy** (June 28), **Plant-it Earth** (July 18), and **Healthy Living** (July 19). They also have several **canning workshops** coming up, covering both **water bath** (July 6) and **pressure** (July 17) methods.

Summer **conferences** are popping up, with the **"AgricultHer" Eastern Oklahoma Women in Agriculture conference** (Wilburton, June 30), and the **Crossroads Conference** (Enid, July 19).



The **Kerr Center's tour season continues**, with our **next one coming up July 11**. Tours are second Tuesdays, by appointment - **come visit us!**

There are many more sustainable agriculture educational activities going on, and we're adding more to the calendar all the time. Get the latest on our 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.

Support the Kerr Center

Since 1965 the Kerr Center has been reaching out to folks in Oklahoma and beyond. Today, the Friends of the Kerr Center help us continue this vital work! If you enjoy reading this newsletter or visiting our website, please consider making a gift to the Kerr Center today!

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