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Dear Great Lakes Grazier,

I would like to take this time to welcome the new subscribers and say hello to those of you that have been around for a while. This newsletter has always been a great way for us graziers to stay connected, and I hope that it continues to be that way. Please feel free to share this with your friends and ask them to sign up to receive it.

As most of you are aware, lots of things have changed in our lives in the past 3-4 months. Those changes vary depending upon what region you live in, and what occupation you have. It is safe to say that the changes have affected us all in one way or another. The same is true for those of us at Michigan State University Extension. It is true that MSU Extension cannot make farm visits right now and won't be holding in person meetings until September 1st. This is a big change from how we usually operate, but please do not think we are not here to help. We are here for phone calls, emails, text message; please continue to communicate with us because we want to help! We are creating virtual field days and online resource for emerging issues, so stay tuned. As soon as I can come on farms, I look forward to meeting more of you and getting to know those of you that I have not met, and catching up with those that I already know.

In our last newsletter, I wrote about the Great Lakes Forage and Grazing Conference, little did I know, this would be my last face to face meeting with producers and colleagues for quite a while. I also wrote about an upcoming Advanced Grazing School, which I was very excited to be able to offer, that for the foreseeable future has been put on hold. The good news is, that everything is in place for that to happen when time allows, and we are keeping it on the back burner until such a time exists. There are other events like the Beginning Grazing School that was scheduled for July that is moving to an online platform. Please stay tuned for those announcements.

I would encourage all of you to take time to get to know what podcasts, YouTube Channels, and other things that are out there to keep you all informed or teach you something you didn't know. MSU Extension has been hard at work putting together many online learning resources for you and will continue to do so. Please see the list of items available that are in this edition of the Great Lakes Grazing Newsletter. Get out there and enjoy the grazing season, and for those of you making hay, make it while the sun shines!

Kable Thurlow
MSUE Beef & Grazing Educator



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Management for Forage Production from Cover Crops

Brook Wilke

Cover crops can be a great source of forage for ruminants. We can argue about whether it is still called a “cover crop” if it is harvested for feed, but nonetheless, our cropping systems in Michigan leave us with multiple options to acquire the multiple benefits provided by cover crops. However, I want to stress that management decisions can make a big difference in the overall benefit of using these cover crops for forage, so let’s dive into that a bit deeper.

First, let’s be honest about the most realistic opportunities to add cover crops for grazing into our typical crop rotations. It can be very difficult to obtain significant cover crop growth following corn and soybean grain harvest, so we need to reduce our expectations with those crops, but also realize that there are possibilities. Following are some potential cover crop for forage entry points:

- After or inter-seeded in small grains (wheat, barley, oats, etc..)
- After vegetable crops
- After corn silage
- Inter-seeded into corn or soybeans

For each of these opportunities, I want to explore some management tips to improve forage production.

After Small Grains

It’s probably no surprise that small grains offer a great opportunity to incorporate cover crops. We have four really great strategies following these crops including:

1. Frost seeding clover in the late winter
2. Planting fast growing summer annuals after harvest
3. Planting winter annuals after harvest
4. Mixing summer and winter annuals together to provide multiple forage opportunities through the following spring.

It’s important that management (species, seeding rates, fertilizers, planting ASAP) is considered for each of these strategies, but I really want to highlight #4. I see a great opportunity for the grazer / forage producer to plant a cover crop blend where summer annuals provide high volume of feed in the fall, and winter annuals survive underneath to provide forage the following spring. A simple example would be to mix 10 lbs / acre of sorghum-sudan with 10 lbs / acre of annual ryegrass and 5 lbs / acre of red or crimson clover. Drill this mixture ASAP after small grain harvest at ½” deep. Spring harvest of annual ryegrass and clover can occur in late April or early May, which is soon enough to plant another full season cash crop after. This basic mixture has become a routine entry into our small grain rotation at the Kellogg Farm.

After Vegetables or Corn Silage

Regarding late summer or early fall harvested crops such as some vegetables or corn silage, **planting timing and fertility are extremely important** if you are targeting forage production later that fall or the next spring. The pictures below were taken on April 24, 2020 in two adjacent fields at the Kellogg Farm. Both were planted with cereal rye in the fall of 2019. One field (on the right) was in mid-September after

corn silage with slurry manure applied at planting, while the other was planted in mid-November after corn grain harvest without any fertilizer or manure. On April 24th, biomass in the early planted field was already over 1 ton / acre, whereas biomass in the later planted field was lower than 0.05 tons / acre. Many winter cereals (rye, wheat, barley, triticale) will work in this system, but they will all benefit from timely planting and fertility at planting when targeting a forage crop.



Figure 1. Photos of two cereal rye cover crops in adjacent fields at the Kellogg Farm on April 24, 2020. The field on the left was planted in late November, 2019 after corn grain harvest with no fertilizer. The field on the right was planted in mid-September, 2019 with slurry manure applied at planting.

After Corn or Soybean Grain

As seen in Figure 1 above, planting cover crops after corn or soybean grain harvest may provide some soil health and other benefits, but it's unlikely that you will grow enough forage to make it worth harvesting prior to May of the following spring. There are some other creative strategies that can be utilized in these systems to get cover crops planted earlier, but you still need to temper your expectations because the corn and soybeans provide some competition with the inter-seeded cover crops until they are harvested.

1. Airplane inter-seed cover crops such as rye, radish, clover in late summer. The target timing is just before leaf drop in soybean, or late August / early September in corn.
2. Inter-seed cover crops between V4-V7 in corn with an air seeder or cover crop inter-planter. This strategy can be difficult depending on moisture and herbicide programs, and seed to soil contact is important for establishment.
3. For both strategies above, plant corn in wider rows to allow for more sunlight to reach cover crops. We are experimenting with 60" corn rows at the Kellogg Farm, and found the first year that cover crop growth was improved, but corn yield was reduced by about 10% when comparing 60" rows to 30" corn rows.



Figure 2. Fall 2019 pictures of cover crops aerially seeded into corn (left) and inter-seeded into 60" row corn at V6 (right).

Cover Crop Grazing Strategies

I'm coming to the conclusion over time that when grazing cover crops, we shouldn't make it overly complicated, especially the grazing is only going to occur once before planting the next crop, and we aren't expecting any regrowth. Thus, I would not recommend going to a lot of work to strip graze or subdivide these fields, but realize that it's OK to fence off whole fields and let the animals graze the whole area until they've eaten the forage that's available, or until conditions, such as snow or mud, require you to remove them. This is in contrast to perennial pastures where we are expecting regrowth and where rotational grazing can result in many benefits. Depending on the time of year for small ruminants, you may want to consider a rotation for parasite reasons but evaluate the growth cycle of the parasites under different weather conditions to evaluate how short this rotation needs to be.

Ultimately, the success of cover crop production depends on 1) Establishment (seed to soil contact, moisture), 2) Growing degree days, 3) Fertility and 4) Timely grazing. With the shorter periods of opportunity, management becomes even more important to maximize the forage production from these cover crops.

Think like a Plant to Maximize the Potential of our Perennial Pastures

Brook Wilke

If you haven't already made or completed your grazing plans for the year, there's still time to integrate in some tactics that will help you get the most forage possible out of your pastures. To do this, let's go on a journey to think like a perennial plant, and identify what the plant needs in order to produce the largest number of green leaves possible over the year. If we take care of our plants, animal performance will follow suit.

If I'm a Perennial Pasture Plant... I Grow Fast in the Spring

At the MSU Pasture Dairy Center (PDC), we've been measuring pasture growth rates across the season continuously over the past 8 years. There are no exceptions to the rule that the perennial pastures grow really fast in mid-spring, usually peaking at twice the rate compared to the high point the rest of the year. We often see growth rates of over 100 lbs/acre/day in May, whereas the best we see during the rest of the year is around 55 lbs/acre/day. These high growth rates result in the opportunity to reduce rest time between grazing each pasture, and also allow for us to harvest some of our pastures for hay or silage. Give yourself some flexibility to reduce your grazing rotation interval if the growth rates are high and harvest extra pastures.

If I'm a Perennial Pasture Grass... I want to Reproduce in Late Spring

The cool season perennial grasses that are common in the pastures of our Great Lakes Region generally initiate a reproductive period in late spring. In southern Michigan, this period is from mid-May to mid-June depending on the species and variety. The stems and flowers of perennial plants are much less palatable and nutritious for ruminant livestock; they contain high amounts of fiber and lignin needed to support the stem growing high into the air. Unless we are looking for the pasture to "re-seed" itself, we don't need these perennial grasses to produce seeds. Luckily, if we time it right, we can cut off these stems and flowers by mowing and urge the plant to give up on reproducing and just keep producing leaves for the remainder of the year. This can be accomplished either through harvesting the field for stored feed during this period, or mowing the pastures immediately before or after grazing.

If I'm a Perennial Pasture Plant... I Need to Keep my New Leaf Growth

The most nutritious part of a perennial pasture plant is the brand-new leaf growth that begins immediately after grazing or mowing. Ruminant animals love to seek out these new leaves and eat them as close to the ground as possible. However, this is terrible for the plant so don't let the livestock have the opportunity to choose these leaves. Grazing or harvesting forage removes important nutrients from the plant, and we need to give the plant enough time to grow again to replenish its reserves before we harvest it again.

Protecting the plants during this sensitive period means we need to:

- Avoid grazing a particular area for more than 5-7 days in a row.
- Commit to a threshold amount of biomass before grazing a pasture. At the PDC, our extreme minimum is 2,200 lbs/acre for ryegrass base pastures, and higher for other mixtures.

- Adjust your rotation interval to account for growth rates.
- Supplemental feed during slow growth periods to slow down the rotation and allow for adequate regrowth.

If I'm a Weed in a Perennial Pasture... I Like to be Left Alone

Weeds are most successful in perennial pastures when they can avoid being damaged, while simultaneously have all the plants around them harvested or grazed. Have you ever noticed how well weeds do in fence-rows where there is no harvesting or animal traffic? Have you also noticed that weeds seem to be more of a problem in areas that are overgrazed?

Considering the health of our desired pasture plants is step number one to control weeds, because our pasture plants will be healthier and more competitive against weeds. Weeds also don't like to be trampled by animals in mob grazing situations, and they also don't usually like to be mowed by a machine. There may still be a few successful weed plants out there after following those practices, so be prepared to treat individual plants with a shovel or herbicide to keep them from spreading their seeds. However, avoid spraying the whole pasture with a broadleaf herbicide to control "weeds" because the herbicide will also kill desired legumes and forbs, and you will need more nitrogen fertilizer without legumes in your pasture. If weed pressure is that bad, it would be better to rotate out of the perennial pasture to an annual crop for a couple of years, and then re-seed the perennial pasture.

So, in summary, think like your perennial plants this upcoming grazing season. Be flexible to adjust your plans based on the weather and growth rates of your plants.



The Heads and Tails of Coronavirus Food Assistance Program (CFAP) Guidance for Livestock and Wool Producers

Melissa GS McKendree, and Aleks Schaefer, Michigan State University

Current as of 05/30/2020

From March 26 through August 28, 2020, farmers are able to sign-up for financial assistance under the [Coronavirus Food Assistance Program \(CFAP\)](#). Cattle, hogs, sheep (lambs and yearlings only), and wool are included as eligible commodities. This article explains the eligibility requirements and program benefits to livestock producers under CFAP and provides a series of step-by-step examples for how to complete CFAP applications.

CFAP Eligibility Requirements

- *Eligible producers:* A producer (either a person or a legal entity) must have an average adjusted gross income of less than \$900,000 for tax years 2016, 2017, and 2018. The \$900,000 limit does not apply to producers for which 75% or more of adjusted gross income comes from farming, ranching, or forestry.
- *Eligible commodities:* Commodities that did not experience a price drop of 5% or more are ineligible for CFAP payments, though the USDA may reconsider excluded commodities in light of credible evidence of a 5% price decline. Livestock presently eligible for CFAP include:
 - Hogs¹
 - Pigs (< 120 lbs.), and
 - Hogs (≥ 120 lbs.).
 - Cattle
 - Feeder Cattle (< 600 lbs.)
 - Feeder Cattle (≥ 600 lbs.)
 - Slaughter Cattle: Fed Cattle
 - Slaughter Cattle: Mature Cattle
 - All Other Cattle (not including livestock used, or intended for, dairy production)
 - Sheep
 - Lambs and yearlings less than 2 years of age.
 - Wool
 - Graded, clean basis
 - Non-graded, greasy basis

Payment Calculation

¹ Note that a contract grower who does not own livestock is eligible if the contract allows the grower to have price risk in the livestock.

Livestock producers will receive a single CFAP payment, which consists of two components: (i) a Coronavirus Aid, Relief, and Economic Security (CARES) payment component and (ii) a CCC payment component.

- For hogs, cattle, and sheep producers, these components are calculated as follows:
 - *CARES Payment Component*: the number of animals sold between January 15 and April 15, 2020 multiplied by the CARES payment rate per head (Table 1), and
 - *CCC Payment Component*: the highest inventory number between April 16 and May 14, 2020 multiplied by the CCC payment rate per head (Table 1).
- For wool producers, a single payment will be made based on 50 percent of the producer's 2019 total production or 50% of the unpriced 2019 inventory as of January 15, 2020 (whichever is smaller), multiplied by the commodity's applicable payment rates (Table 1).

Table 1: CFAP Livestock Payment Rates

Eligible Livestock	CARES Payment Rate	CCC Payment Rate
	<i>(per head)</i>	<i>(per head)</i>
Hogs		
Pigs (< 120 lbs.)	\$28	\$17
Hogs (≥ 120 lbs.)	\$18	\$17
Cattle		
Feeder Cattle (< 600 lbs.)	\$102	\$33
Feeder Cattle (≥ 600 lbs.)	\$139	\$33
Slaughter Cattle: Fed Cattle	\$214	\$33
Slaughter Cattle: Mature Cattle	\$92	\$33
All Other Cattle	\$102	\$33
Sheep		
Lambs and Yearlings (< 2 years old)	\$33	\$7
Wool		
	<i>(per pound)</i>	<i>(per pound)</i>
Graded, clean basis	\$0.71	\$0.78
Non-Graded, greasy basis	\$0.36	\$0.39

Payment Limitations

- *Payment Caps*: The total amount of CFAP payments is limited to \$250,000 per person or legal entity across all eligible commodities. Corporate entities (corporations, limited liability companies, and limited partnerships) may receive up to \$750,000 based on the number of shareholders, up to three at \$250,000 per shareholder. To qualify, a shareholder must be contributing at least 400 hours of active person management or personal active labor.
- *Payment Structure*: Producers will initially receive 80% of their estimated total payment.
- The remainder of the payment may be paid at a later date, depending on available funding.

Application Guidance

- *Farm Service Agency:* Producers should apply through their local Farm Service Agency Center, and applications can be submitted electronically.
- *USDA Payment Calculator:* The USDA has developed an online [CFAP Payment Calculator](#) (under the CFAP application heading) to assist with the application process. The Calculator allows producers to auto-populate the application form. The USDA has also created a [video](#) explaining how to use the CFAP Payment Calculator.
- For further information, visit the [USDA CFAP livestock page](#), or view the [USDA CFAP livestock factsheet](#).

Cattle Operation Examples

There are 5 groups of cattle covered under CFAP (Table 1). Payment rates for cattle sold between January 15, 2020 and April 15, 2020 vary by type, while payment rates for April 16 - May 14 inventories are a flat \$33 for all unpriced cattle (i.e. not under a forward contract). Note that beefalo, bison, and animals owned for dairy production are excluded (with the exception of dairy cull cows).

a. Cow-calf producer example

Assume a cow-calf producer, Farmer McKendree, owns a cow-calf operation and more than 75% of her adjusted gross income (AGI) comes from ranching. She is the single owner. Therefore, Farmer McKendree's maximum payment is \$250,000. Assume that Farmer McKendree's operation sold 80 weaned calves weighing on average 750 lbs. on March 16th and 5 cull cows for slaughter on April 1st. The maximum inventory on the farm between April 16th and May 14th, 2020 consisted of 100 cows, 95 unweaned calves, and 4 bulls.

Figure 1 demonstrates how Farmer McKendree would fill out the CFAP calculator. The weaned calves are classified as "Feeder cattle: 600 Pounds or More" and the cull cows as "Slaughter Cattle: Mature Cattle." The cow and bull inventory are grouped together under "All other cattle" and unweaned calves as "Feeder Cattle: Less Than 600 Pounds." Farmer McKendree is eligible for \$18,147 total; \$11,580 under CARES and \$6,657 under CCC. However, only 80% of this amount is paid initially, or \$14,517.60 --- this value is reported by the CFAP calculator.

Figure 1. Example CFAP calculator input for cow-calf producer McKendree

Part 3: Livestock Information						
<i>Livestock</i>	<i>Unit of Measure</i>	<i>Jan 15, 2020 - April 15, 2020 Sales of Owned Inventory as of Jan 15, 2020 & Any Offspring From Owned Inventory</i>	<i>Inventory (Highest Between April 16, 2020 - May 14, 2020)</i>	<i>80% Estimated CARES Gross Payment before payment limits and other reductions</i>	<i>80% Estimated CCC Gross Payment before payment limits and other reductions</i>	<i>80% Estimated Total CARES & CCC Gross Payment before payment limits and other reductions</i>
<i>Feeder Cattle: 600 Pounds or More</i>	Head	80	0	\$8,896.00	\$0.00	\$8,896.00
<i>Slaughter Cattle: Mature Cattle</i>	Head	5	0	\$368.00	\$0.00	\$368.00
<i>All Other Cattle</i>	Head	0	104	\$0.00	\$2,745.60	\$2,745.60
<i>Feeder Cattle: Less Than 600 Pounds</i>	Head		95	\$0.00	\$2,508.00	\$2,508.00
				\$0.00	\$0.00	\$0.00
				\$0.00	\$0.00	\$0.00
				\$0.00	\$0.00	\$0.00
				\$0.00	\$0.00	\$0.00
				\$9,264.00	\$5,253.60	\$14,517.60

b. Feedlot example

There is a weight restriction for fed cattle. Two important definitions from the [CFAP final rule](#) (pages 26-28) are:

- “Slaughter Cattle—fed cattle means cattle with an average weight in excess of 1,400 pounds which yield average carcass weights in excess of 800 pounds and are intended for slaughter.”
- “Feeder cattle 600 pounds or more means cattle weighing more than 600 pounds but less than the weight of slaughter cattle-fed cattle as defined in this section.”

Assume Farmer Schaefer owns a feedlot. Between January 15, 2020 and April 15, 2020 he sold 200 fed steers weighing 1,450 lbs. each and 100 fed heifers weighing 1,250 lbs. each. These cattle would be eligible for CARES payments, with fed cattle weighing over 1400lbs receiving a payment of \$214/head and those weighing between 600 – 1,400 lbs. a payment of \$139/head. Farmer Schaefer’s highest inventory of cattle between April 16, and May 14, 2020 was 500 fed cattle with 100 weighing 1,450 lbs. and 400 weighing less than 1,400 lbs. All 500 head would be eligible for the CCC payment of \$33/head. Figure 2 shows the CFAP calculator for Farmer Schaefer. His total payment would be \$73,200, but he is only eligible for \$58,560 initially.

Figure 2. Example CFAP calculator input for feedlot producer Schaefer

Part 3: Livestock Information						
<i>Livestock</i>	<i>Unit of Measure</i>	<i>Jan 15, 2020 - April 15, 2020 Sales of Owned Inventory as of Jan 15, 2020 & Any Offspring From Owned Inventory</i>	<i>Inventory (Highest Between April 16, 2020 - May 14, 2020)</i>	<i>80% Estimated CARES Gross Payment before payment limits and other reductions</i>	<i>80% Estimated CCC Gross Payment before payment limits and other reductions</i>	<i>80% Estimated Total CARES & CCC Gross Payment before payment limits and other reductions</i>
<i>Slaughter Cattle: Fed Cattle</i>	Head	200	100	\$34,240.00	\$2,640.00	\$36,880.00
<i>Feeder Cattle: 600 Pounds or More</i>	Head	100	400	\$11,120.00	\$10,560.00	\$21,680.00
				\$0.00	\$0.00	\$0.00
				\$0.00	\$0.00	\$0.00
				\$0.00	\$0.00	\$0.00
				\$0.00	\$0.00	\$0.00
				\$0.00	\$0.00	\$0.00
				\$45,360.00	\$13,200.00	\$58,560.00

MSU Extension Farm Stress Program partners to connect farmers with mental health services

Farmers can now access counseling with licensed therapists via teletherapy.

Eric Karbowski and Paul Gross, Michigan State University Extension

Michigan State University Extension's Farm Stress Program is now equipped to connect farmers experiencing stress and mental health issues with online counseling. Through this pilot project, MSU Extension can link farmers with a licensed mental health therapist via teletherapy. What is online counseling? Online counseling or teletherapy provides mental health and counseling services through the internet rather than in-person. Traditional therapy is typically conducted during face-to-face meetings in an office. Teletherapy is a counseling session that is completed through video chat between mental health care providers and clients. This advanced approach provides flexibility for people to access behavioral health supports in the comfort of their own environment. Even with the current "Stay Home, Stay Safe" executive order in Michigan, farmers can access behavioral health services.

The pilot project does have funding limitations. Primary insurance plans with behavioral health coverage will be billed to offset costs. Those without insurance or without behavioral health coverage still qualify for participation. Farmers will be supported on a first come first serve basis while funding is available. Farming is a demanding and stressful occupation. There are characteristics and demands of the agricultural industry that are unique to farmers. Through this partnership, therapists will have a connection with the agricultural community and an understanding of farming practices and lifestyle.

There are two ways farmers can access services with the pilot project. You can reach out to Eric Karbowski, MSU Extension farm stress educator, at 989-317-4079 or karbows8@msu.edu, or self-refer for services by calling 866-852-4001. Please note that self-referrals must state "MSU Extension Teletherapy" to qualify for the pilot project.

UPCOMING ONLINE MEETINGS

Virtual Breakfast - weekly (Thurs mornings, 7am) Free ZOOM meeting for all farmers growing field crops. 15 minutes on crop topic + 15-minute state ag weather updates. The July 9 Virtual Breakfast will focus on insects taking flight, the featured speaker will be Dr. Christina DiFonzo

<https://www.canr.msu.edu/events/field-crops-virtual-breakfast-13>

Farm Employee University - Farm Employee University provides a training platform accessible to all dairy employees and employers. Please visit our webpage for enrollment instructions. All current courses are free. <https://www.canr.msu.edu/farm-employee-university/>

Cabin Fever Conversations - Join MSU Extension and friends every Friday from 10-10:30 a.m. for lighthearted, educational garden conversations

https://www.canr.msu.edu/home_gardening/resources/learning-online

Mid-Michigan Livestock Network – This producer lead group was started by Kable Thurlow and Central Michigan Farmers in 2012. Topics are producer picked, and the group typically meets monthly throughout the year. To receive notices of the programs, copy and paste this link into your browser

<http://eepurl.com/gq-j8b>

RECORDED PROGRAMS AVAILABLE ON-LINE

Mid-Michigan Livestock Network – Understanding a Forage Analysis with Dr. Richard Ehrhardt

https://mediaspace.msu.edu/media/MMLN+April+meeting+with+Ehrhardt.mp4/1_bi6apb1t

COVID-19 Pandemic Response for Agriculture (MSU resources)

<https://www.canr.msu.edu/agriculture/Rapid-Response-for-Agriculture/covid-19-pandemic-response-for-agriculture>

Agribusiness Resources for Novel Coronavirus – Web page featuring articles and resources to help your farm stay up to date on Federal assistance programs, and to keep your workers and yourself safe.

https://www.canr.msu.edu/farm_management/Agribusiness-Resources-for-Novel-Coronavirus/

Beginning Farmer Webinar Series - 100+ archived videos from MSU Extension educators, specialists, ag organizations, and private farmers on wide variety of topics for beginning farmers.

https://www.canr.msu.edu/beginning_farmer_webinar_series/index

Field Crops Webinar Series - One-hour recorded webinars offered in winter 2016-2019 (2020 recordings to be added soon). Feature MSU Extension specialists addressing topics of interest to crop producers across Michigan.

https://www.canr.msu.edu/field_crops/field-crop-webinar-series

My Horse University <https://www.myhorseuniversity.com/>

2020 MSU Tree Fruit Webinar Series - Recorded 1-hour programs for commercial fruit growers from April 2020. Available through May 2020. <https://www.youtube.com/channel/UCY0fCxPAEJN-EsK-iPjg1Dw>

Virtual Breakfast archive - See description above, https://www.canr.msu.edu/field_crops/virtual-breakfast/

Virtual Coffee Break with the MSU Dairy Team - Archives of our weekly (Wednesday mornings, 10 am) Podcast and Zoom meetings for dairy farmers. Approximately 20 – 30 min. each. <https://open.spotify.com/show/4xkwxOzbtUomxwsdAc68eu>. Some sessions are also available on the MSU Dairy Team YouTube channel: <https://www.youtube.com/channel/UC5zgDnjQ-cxRgp20rRUu06g>

Smart Gardening with Vegetables 101 - Online, self-paced course, \$15 registration fee through May 15, then \$30.

Article and registration link: <https://www.canr.msu.edu/events/smart-gardening-with-vegetables-101>

Pollinator Champions - online, self-paced course about pollinators and how to support them. Always available for free or you can become a certified Pollinator Champion for a small fee

Registration link: <https://pollinators.msu.edu/programs/pollinator-champions/>

MSU Apiculture Team Webinars - recorded webinars for beginning and intermediate beekeepers. Available for free

<https://pollinators.msu.edu/resources/beekeepers/webinars/>

Integrated Pest Management Academy, Desire to Learn Course \$10 fee, self-paced multi-part program worth 6 pesticide applicator recert credits

https://www.canr.msu.edu/ipm/agriculture/integrated_pest_management_academy

FOR KIDS

4-H Livestock Learning Video Series

https://www.canr.msu.edu/animal_science/Resources/livestock-learning-videos

H.O.M.E.S. at Home - Fun half-hour videos about Great Lakes (H.O.M.E.S. = Huron, Ontario, Michigan, Erie, Superior) topics. Produced by Michigan Sea Grant Extension staff in March and April 2020.

<https://www.michiganseagrant.org/educational-programs/h-o-m-e-s-at-home/>