
Sustainable Agricultural Practices for Ag Service Professionals: A Resource Checklist

Joshua Knight¹ and Dakota Moore²

Introduction

Sustainable agriculture is a broad topic with many subdisciplines, even if the discussion is limited to specific agricultural practices. Sustainable agriculture practices work to balance protecting natural and community resources with farm revenues. Agricultural Service Professionals can play an important role in supporting farmers in deepening their knowledge about these practices and the potential benefits to their whole farming system. The USDA defines sustainable agriculture as a site-specific form of agriculture which engages in practices to promote environmental stewardship, economic profitability, and social responsibility. For the purposes of this publication, we will be focusing on **specific agricultural practices which promote environmental stewardship and economic profitability**, including where to find resources related to these practices. We intend this publication to act as a checklist guide for Agricultural Service Professionals to discuss sustainable agricultural practices with growers directly in consultation or to assist in their development of programming.

The major focus areas for sustainable practices covered in this document are **Soil Health, Integrated Pest Management, Cover Crops, and Business & Farmland Management**. Though each resource relates more to a specific topic, other relevant topics are also listed in the colored columns to make referencing program areas easier. Each table also includes a QR code which links to a digital copy of the table hosted online, so the written guide can allow the user to quickly reference the digital link.

Agriculture Service Providers play an important role in our agricultural communities by providing research-backed information about agricultural practices. Table 1 includes resources and content created specifically for the Southern Sustainable Agriculture Research and Education (SARE) funded project *Creating a Specialty Crop Sustainable Production Community of Practice for Kentucky Agriculture Professionals*. Table 2 includes supplemental resources referenced by this project. This factsheet can act as a guide or checklist to help service providers support growers interested in sustainable agriculture.

For growers and providers curious about which programs are more applicable to them, the [Principles of Sustainable Agriculture Practices](#) webinar is a helpful overview. This webinar features Jackson Rolett from No-Till Growers, a family of podcasts focused on making no-till farming profitable and creating accessible resources for vegetable farmers. In his presentation, Jackson touches on implementing appropriate no-tillage, cultivating healthy, living soil, and cover cropping and mulching practices in small-scale market gardens. He also recommends *The Living Soil Handbook*, *The Lean Farm*, and *The Lean Farm Guide to Growing Vegetables* as three great resources for those interested in no-till production (Table 2).

Soil Health

In the context of agriculture, Soil Health refers to the capacity for a soil to support plant life and agricultural productivity. In this document and for agricultural production, soil health refers to conservation practices which protect the ability of a soil to provide agricultural products. Soil is a diverse habitat of organisms, living and dead, which cycle nutrients and make them available for plant uptake. Safeguarding this community is the key to sustainable agricultural production. The two webinars below provide insight into learning the mechanisms and capacity of soil for agricultural production as well as offering production method recommendations to maintain and improve soil health.



¹Joshua Knight is a Senior Extension Associate with the Center for Crop Diversification.

²Dakota Moore is the Grower Outreach Coordinator with the Kentucky Horticulture Council

Table 1. Technical resources for agriculture professionals developed as part of the *Creating a Specialty Crop Sustainable Production Community of Practice for Kentucky Agriculture Professionals* project

Type	Topic (link)	Audience	Year	Soils	Nutrients	Pests	Cover Crops	Management
Organization	Center for Crop Diversification	General	--	X	X	X	X	X
Organization	Kentucky Horticulture Council	General	--	X	X	X	X	X
Organization	Organic Association of Kentucky	General	--	X	X	X	X	X
Webinar	Principles of Sustainable Agriculture Practices	General	2023	X	X	X	X	X
Webinar	Using the New NRCS Website & Soils Tools	Provider	2023	X			X	X
Webinar	Soil Health	Provider	2022	X	X		X	
Webinar	Integrated Pest Management for Agriculture Service Professionals	General	2023	X	X		X	
Reference	Integrated Pest Management for Agriculture Service Professionals	General	2023	X	X		X	
Webinar	Beneficial Insects and Sustainable IPM	General	2023	X	X			
Webinar	When and How We Can Help Farmers with Cover Crop Systems	Provider	2022			X		
Tool	Cover Crop Calculator	General	2023			X		
Reference	Cover Crop Seeding Rate Handout	Provider	2023			X		
Reference	Benefits of Select Cover Crops	General	2023				X	
Webinar	Crop Insurance for Ag Professionals Dealing with Specialty Crops	Provider	2022					X
Webinar	Introduction to Organic Certification	Provider	2023					X
Webinar	When and How We Can Help Farmers Address Resource Concerns	Provider	2021					X
Webinar	Water Management Plans for Sustainable Production	Provider	2023					X
Webinar	Farm Design and Layout	General	2023					X



The Natural Resource Conservation Service (NRCS) offers numerous tools, resources, and programs to support farmers in improving soil health, and sometimes figuring out how to get started working with a local NRCS agent can be confusing for producers. Webinar guests Justin Pius and Steve Blanford from Natural Resources Conservation Service show professionals how to help farmers navigate recent updates and changes to the NRCS website in the [Using the New NRCS Website & Soils Tools](#) webinar. They also provide a refresher on the soil tools available on the website, including the Web Soil Survey (Table 2). These tools and resources can be the first step farmers take to learning more about the soils they are working with and eventually, how to get more out their soils. Farmers interested in conservation and accessing any of the NRCS cost-share projects should [contact their local service center](#) to talk with an NRCS agent and get started.

For growers interested to hear about soil health current research and practices they can use to improve production, the [Soil Health Webinar](#) features Dr. Shawn Lucas from Kentucky State University discussing the importance of soil health to successful crop production and how sustainable practices can contribute to a healthier soil. During the webinar, Dr. Lucas recommends the SARE publication *Building Soils for Better Crops* (Table 2) as a good resource for information on promoting soil health.

Integrated Pest Management

Integrated Pest Management refers to practices which protect agricultural activity through a multi-pronged approach to suppress disease-causing organisms which harm or interfere with that activity. These organisms can include insects, weeds and disease causing pathogens. Strategies for integrated pest management include cultural practices, physical controls, biological controls, and chemical controls. By using multiple approaches simultaneously, the ability of the pest organism to adapt is more limited than if a grower is relying on a single control. The following webinars recap IPM practices for providers and show how beneficial insects can be used by farmers of any experience level.

The [IPM for Ag Professionals](#) webinar offers a refresher on IPM principles and practices for agriculture service providers. The webinar features UK Entomology Specialist Dr. Jonathan Larson providing new IPM recommendations to build agriculture professionals' capacity for recommending IPM practices to farmers in their networks. The webinar serves as a companion to the factsheet, [Integrated Pest Management for Agriculture Service Professionals](#).

The [Beneficial Insects and Sustainable IPM](#) webinar with guest Janet Meyer from Berea College Horticulture Farm spotlights one exciting facet of integrated pest management. In the webinar, Janet introduces select

beneficial insects and covers what those beneficials feed on. Berea's organic production practices have established perpetual beneficial populations in their environment, so Janet explains their strategies and how farmers can implement some of those practices. Her recommendations for help with beneficial insect identification and cultivating strong populations, including the book *Good Bug, Bad Bug*, can be found in Table 2.

Cover Crops

Cover Crops are crops grown to protect and improve the soil for cash crop production. Cover crops are not harvested, but rather incorporated into the soil to prevent nutrient losses, add nitrogen, and prevent erosion. Cover crops can also provide for beneficial insect habitat.



In the [When and How We Can Help Farmers with Cover Crop Systems](#) webinar, Dr. Rachel Rudolph, a University of Kentucky Vegetable Specialist, instructs providers how to recommend cover crops conversationally and production best management practices. Dr. Rudolph presents on the benefits of using cover crops to cut fertilizer costs and reduce the need for herbicides and other pesticides. She also touches on how cover crops can improve yields by promoting soil health, preventing soil erosion, and conserving soil moisture.

Cover crop seeding rate recommendations are often given in pounds per acre, but many specialty crop producers plant cover crops on smaller areas. To save time and hassle for farmers, the Kentucky Horticulture Council and the UK Center for Crop Diversification created this simple and easy to use [Cover Crop Calculator](#). This calculator lets farmers choose from 16 common cover crops and will provide a seeding rate based on the area in square feet that they input.

Also, to help farmers decide which cover crops to plant, a [Benefits of Select Cover Crops](#) handout with some benefits of the different cover crops included in the calculator was created. Whether farmers need help with soil structure like erosion control and compaction relief or with pest management like weed suppression or support for beneficial insects, there are several cover crops that can help. There are even cover crops that can help with building healthier soils by scavenging for nutrients or increasing soil organic matter. [SARE's Managing Cover Crops Profitably](#) is available for free PDF download and provides detailed management strategies for farmers to consider when adding this practice to their operation.

Business and Farm Land Management

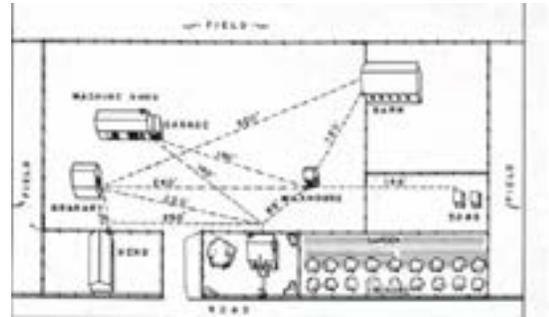
Management refers to sustainable agriculture practices including business planning, process management, and design efficiency. These resources are useful in considering whole farm management strategies and on farm resources affecting multiple enterprises. The following webinars provide a starting point for growers to protect their revenue, consider organic certification, improve water management, and more.

Specialty crop growers historically have very low participation in crop insurance programs. The [Crop Insurance for Ag Professionals](#) webinar, from speaker Dakota Moore, helps service providers better understand risk management in crop production and different programs suitable for Kentucky farms, especially small, diversified farms. In addition, the Kentucky Horticulture Council Crop Insurance Landing Page (Table 2) has resources to help farmers discover their crop insurance options as well as links to an entire YouTube series of 24 additional webinars and videos.

In the [Introduction to Organic Certification for Ag Professionals](#) webinar Shelby Wheeler from MOSA Certified Organic presents to service providers on the basics of Organic Certification. Shelby helps the participants get more familiar with organic certification programs for Kentucky farmers and what they can do to help the farmers we assist. The many resources Shelby recommends can be found in Table 2 including organic certification regulations and an organic certifier locator. Natalie Rider from the Organic Association of Kentucky also joins the session to speak about OAK's Transition Trainer Program (Table 2) which provides one-on-one assistance for farmers interested in transitioning to organic production.

In the [NRCS: When and How We Can Help Farmers Address Resource Concerns](#) webinar, Sonya Keith, Assistant State Conservationist with NRCS, speaks with providers about how to refer landowners for NRCS assistance with conservation planning and funding opportunities to implement needed conservation practices.

The webinar [Water Management Plans for Sustainable Production](#), which focuses on aspects of farm water management like cover cropping to prevent nutrients from leaching into waterways and planned grazing to prevent compaction and erosion, is geared toward ag professionals. Speaker Dr. Amanda Gumbert, a University of Kentucky Extension Water Quality Specialist, includes pointers on how to help farmers with water management issues and directing them where to create a sustainable water management plan. Links to agricultural water quality planning websites can be found in Table 2. In her presentation, Dr. Gumbert recommends One Good Idea, a landing page of “videos and podcasts featuring ideas and experiences that are by farmers, for farmers, and backed by evidence” on topics from water management to cover cropping.



Screenshot from Farm Design and Layout webinar

The [Farm Design and Layout](#) webinar features Dr. Steve Higgins, UK Extension Specialist and covers principles of good farm design to optimize production and make good use of available on-farm resources. He also discusses utilizing water catchment systems that fit any farm.

Summary

This document is not meant to be an exhaustive list of sustainable agricultural resources and practices, but can



be effectively used as a starting point for discussing these practices and recommending resources for further investigation or program development. Figure 1 is a checklist designed to be the first steps in investigating and implementing sustainable practices. Table 2 contains many supplemental resources directly related to resources in Table 1 and is recommended for consideration.

“This publication and the information contained herein would not have been possible without a Southern SARE Professional Development Program Grant (SPDP21-05 Creating a Specialty Crop Sustainable Production Community of Practice for Kentucky Agriculture Professionals). We would like to thank Southern SARE for their continued support of farmers, ranchers, academics, and agriculture professionals.”

Partnering



Reviewed by Arundathi Sharma, Extension Associate, and Alexis Sheffield, Horticulture Extension Agent

June 2023

Educational programs of Kentucky Cooperative Extension serve all people regardless of economic or social status and will not discriminate on the basis of race, color, ethnic origin, national origin, creed, religion, political belief, sex, sexual orientation, gender identity, gender expression, pregnancy, marital status, genetic information, age, veteran status, or physical or mental disability.

Table 2. Select supplemental resources for agriculture professionals working with specialty crop growers interested in adopting on-farm sustainable practices identified as part of the *Creating a Specialty Crop Sustainable Production Community of Practice for Kentucky Agriculture Professionals* project

Type	Topic (link)	Source	Year	Soils	Nutrients	Pests	Cover Crops	Planning
Reference	AGR-240 Cover Crop Benefits and Challenges in Kentucky	UK	2019	X	X		X	
Webinar	Biofertilizers: Production, Crop Performance & Economics	UK	2022	X	X			X
Reference	Building Soils for Better Crops	SARE	2021	X	X			
Reference	Cover Crops for Sustainable Crop Rotations	SARE	2015				X	
Webinar	Developing Sustainable Protection Systems for Flea Beetle Control	UK	2022			X		
Website	Good Bug, Bad Bug	Grower	2011			X		
Reference	ID-133 Winter Cover Crops for Kentucky Gardens and Fields	UK	1998	X	X		X	
Webinar	The Ins and Outs of Row Cover Use	UK	2021			X		
Tool	Kentucky Agricultural Water Quality Planning Tool	EEC	--					X
Website	Kentucky Horticulture Council Crop Insurance Landing Page	KHC	--					X
Reference	The Lean Farm & The Lean Farm Guide to Growing Vegetables	Grower	2015/17	X				X
Webinar	Management of the Brown Marmorated Stink Bug in Sweet Corn	UK	2021			X		
Reference	Managing Cover Crops Profitably, 3rd Edition	SARE	2007	X	X		X	X
Webinar	Managing Manure and Compost Nutrients	UK	2021	X	X			
Reference	National Organic Program Handbook	USDA	--					X
Website	No-Till Growers Website	Grower		X	X	X	X	X
Tool	NRCS Web Soil Survey	USDA	--	X				X
Webinar	Nutrient Monitoring of Vegetable Transplants	UK	2021	X	X			
Reference	OAK Transition Trainer Program	OAK	--					X
Website	One Good Idea	UW-Madison	--					X
Webinar	Optimizing Row Cover Systems for Cucurbits	UK	2021			X		
Reference	Organic Certification Regulations	eCFR	--					X
Reference	Organic Certifier Locator	USDA	--					X
Reference	The Organic Integrity Database	USDA	--					X
Reference	The Organic Literacy Training Center	USDA	--					X
Reference	Organic Transition Considerations and Application	OAK	2021					X
Webinar	Root Knot Nematode Management	UK	2022	X		X		
Webinar	Rotations, Rest, and Livestock Integration	Grower	2021	X	X			X
Webinar	Sanitation for Disease Management	UK	2021			X		
Webinar	Soilborne Fungi in Vegetable Production Systems	UK	2022	X		X		
Webinar	Sustainable Suppression of Weeds through Ecological Use of Cover Crops	KSU	2021			X	X	
Webinar	Sustaining Soil Health in Your High Tunnel	UK	2021	X	X	X		



Action	Assisting Organization*
<input type="checkbox"/> Contact local NRCS Service Center	USDA-NRCS
<input type="checkbox"/> Get farm number	USDA-FSA
<input type="checkbox"/> Get copy of farm soil survey	USDA-NRCS
<input type="checkbox"/> Get soil test	UK-CES
<input type="checkbox"/> Get irrigation water test	UK-CES
<input type="checkbox"/> Learn about local cover crops	USDA-NRCS / UK-CES
<input type="checkbox"/> Identify critical farm & community resources	USDA-NRCS
<input type="checkbox"/> Identify pests of concern	UK-CES
<input type="checkbox"/> Develop integrated pest management strategy	UK-CES
<input type="checkbox"/> Develop conservation plan	USDA-NRCS
<input type="checkbox"/> Develop a water management plan	UK-CES

USDA United States Department of Agriculture
 NRCS Natural Resources Conservation Service
 FSA Farm Service Agency
 UK University of Kentucky
 CES Cooperative Extension Service

Figure 1. Simplified checklist for agriculture professionals to review with specialty crop growers interested in adopting on-farm sustainable practices