

**Testimony of Steve Ela
Colorado Organic Tree Fruit Grower
before the
Senate Committee on Agriculture, Nutrition, and Forestry
for a hearing on**

**Farm Bill 2023: Research Programs
December 6, 2022**

Chairwoman Stabenow, Ranking Member Boozman, and distinguished members of the Committee.

I would first like to thank you for hosting a hearing on agricultural research, and for providing me an opportunity to share my experiences.

I. My Background and Introduction

I am Steve Ela, a fourth-generation tree fruit grower in western Colorado. We grow certified organic peaches, apples, pears, plums, sweet cherries and heirloom tomatoes on a 100-acre farm.¹ We pack and sell everything we grow and also have a commercial kitchen on the farm to process off-grade fruit into artisanal fruit jams, fruit butters, apple sauces, and dried fruits. We began transitioning to organic production in 1994 and became 100% certified in 2004; our commercial kitchen is also USDA certified organic—we actually just completed our annual organic inspection last week. Our marketing channels include 7 farmers markets, wholesale to smaller, individual specialty food stores, restaurants and through Community Supported Agriculture shares. We also work with Whole Foods Markets in the Rocky Mountain Region. While we are a small size farm, we have the capacity to raise over 1 million pounds of fruit in a season.

We have had our farm reviewed for our carbon footprint, and we are very close to carbon neutral, including the fuel it takes to attend our farmers markets. We have also achieved zero food waste by either selling fresh or processing all the fruit that we harvest. The fruit that is unusable for human consumption as well as the scraps from our kitchen are given to a local pig farmer for use on their farm. We are certified at the Gold Level in the Environmental Leadership Program of the Colorado State Department of Health and Environment.

I am here today to urge you to continue to fund public agricultural research programs to help us and other growers innovate and develop additional environmentally sound, climate friendly, and economically practical growing practices. I have been both a consumer of and a participant in this research, and it has and will continue to impact how our farm operates. This research isn't only important to organic growers like me, but also to conventional growers looking for smart, economical, systems-based management. Even though these programs have resulted in impactful research, they are still not meeting the needs of the growing market for organic and other sustainable products.

I ask you to increase funding for organic research to at least be equal with its market share. The systems-based research programs like the Organic Research and Extension Initiative (OREI) and the Sustainable Agriculture Research and Education (SARE) program help growers implement systems of management on their farms, but needs more support to meet the growing demand of farmers. We are facing multiple

¹ About Ela Family Farms, <https://elafamilyfarms.com/about-us/> (last visited Dec. 1, 2022)

issues at once – new invasive insects, fluctuating and extreme climates, rising input costs, and an ever-growing demand for healthy, nutritious foods. If we try to solve and research each of these problems one by one, we will never have the time or resources to keep up with the challenges ahead. Instead, we need research programs to invest in looking at these issues through an ecosystem lens. Rather than researching a single spray, fertilizer, or crop genetic trait, these programs study how we solve problems using an ecosystem-based response.

II. Our farm has participated in publicly funded agricultural research to great success

We have been involved with insect control studies, fruit thinning trials, fertility and weed control investigations, as well as economic analyses. This research has been funded by you, through SARE, through the Agricultural Research Service (ARS), via the Specialty Crops Block Funds, and through OREI. We have also utilized research funds from the EPA, NGOs, and private companies.

When I first returned to our family farm in 1990, we participated in a number of trials of pheromone disruption for codling moth, the insect that causes worms in apples. Those trials helped us replace many of our broad spectrum spray applications with a program that specifically controlled the moths through their own biological communication systems without impacting beneficial insects.² As we transitioned to organic and removed herbicides from our system, we looked at the impacts of different types of organic mulches on fertility and weed control in our trees.³ The lessons from those projects demonstrated the value of our cover crops in both providing fertility and out competing problematic weeds. I changed from trying to physically eliminate weeds to using cover crops to fill the niche those weeds might otherwise occupy. The research helped reformulate how I approach weed control and I now watch and learn every year about how we can better use our cover crops for weed suppression.

Another side of research that has benefitted us is the efficient use of labor. Fruit trees set much more fruit than they can successfully feed to obtain good size and quality. The way to reduce fruit load is to thin and that often involves skilled labor, something that is increasingly expensive and difficult to come by. The use of organic materials to reduce fruit set has helped us to save labor and given us better fruit quality.⁴ I should also point out that all research isn't biologically related. Economic impact studies have helped us analyze the differences between planting systems, how to best use our off-grade fruit, and the relative value of different marketing strategies.

Ultimately, all these research projects have changed the way I farm. In some cases, we may be using similar materials or cover crops as we were before, but we are using them differently and managing them differently so that they work together as a system.

² See L. M. McDonough et al., *Efficacy of nonpheromone communication disruptants of codling moth (Cydia Pomonella): Effect of pheromone isomers and of distance between calling females and dispensers*, 22 JOURNAL OF CHEMICAL ECOLOGY 415–423 (1996).

³ See Alan J. Franzluebbbers et al., *Adjusting the N fertilizer factor based on soil health as indicated by soil-test biological activity*, 7 AGRICULTURAL & ENVIRONMENTAL LETTERS (2022).

⁴ See R. Pokharel et al., *Efficacy of plant and mineral oils, and Tergitol on peach thinning*. Colorado State University Agricultural Experiment Station Technical Report TR09-12, 67-72 (2009)

III. Our farm, like all farms, depend on robust research and extension systems to make decisions and plan for the future

As you can imagine, we have raised fruit using many different methods over the 115 years of our farm's history. My grandfather used lead arsenate to control worms in apples before the advent of DDT – I can well imagine the excitement over having DDT. That “new” material gave excellent control of worms. As we now know, that “new” material also came with a number of environmental drawbacks. As times changed, my family used and participated in research to continue to grow top quality fruit using the best-known techniques.

When I returned to the farm in 1990, we were already working to “soften” our control programs to use methods that utilized more biological controls and created fewer problems with secondary pests due to the use of sprays that killed those biological predators. While we didn't start out with the intention of becoming certified organic, by 1994 we had changed our control programs so much that it only took a few changes to make the move to certified organic production on peaches and pears and receive a higher price premium. We continued to experiment and became 100% USDA certified organic in 2004. While the research projects we have participated in and consumed have changed my farm and helped me become a better organic grower, there is still a long way to go.

As a grower, I make decisions every day about how to best produce a high-quality crop of organic fruit. These decisions range from irrigation applications, managing cover crops for insect and disease control and fertility, tree pruning and replacement, to marketing choices. If I do my job well, I have found that by focusing on growing a variety of cover crops, building soil, and not applying materials that disrupt the ecosystem of my farm, there are only a handful of insects or diseases that I have to step in to help control. Using organic research to make those decisions makes my job easier because I don't have to guess. If that research is not available, I still have to do something and at that point I have to rely on my experience and best guesses as to how to proceed. The more I can use research to inform my choices, the more confident I am of moving forward in the right direction. For example, if I am trying to maximize nitrogen release from my perennial cover crops, at what stage do I mow those cover crops? If I am also trying to use those cover crops to encourage beneficial insects, how does mowing them for nitrogen release affect those beneficial insects? How do my irrigation applications change the way my cover crops and trees interact and do I have different results if I apply water via sprinklers or drip systems? In many cases, economic thresholds developed for when to treat insect pests assume that a single spray can be applied for control.⁵ In my organic system, I use an approach of trying to build up beneficial insect populations that will gradually decrease a pest population. That means the economic thresholds used by conventional growers may not work for me. Likewise, I am not only mowing a cover crop for ease of access to the trees as a conventional grower might do, I am also mowing it at certain stages to affect the rate of nitrogen release into my orchard system, its effect on beneficial insects, and to maximize weed control.

One of the wonderful aspects of organic farming systems is that they are adapted to their specific areas. Research conducted across multiple environments helps me understand what might be appropriate for my area. I choose alfalfa as a primary legume cover crop in my area due to its taproot that penetrates my heavy clay soils. Since I am growing the alfalfa as a perennial cover crop/mulch I am interested in a variety that is long lived rather than a short-lived maximum biomass producer. A grower with a different

⁵ An “economic threshold” is a decision-making tool; generally speaking, it is a number of insects present that indicates a pest problem that will likely result in economic injury or the value of the lost crop is worth as much as the cost of controlling the pest. *Reviewing Decision Thresholds for Pest Insect Control*, [https://crops.extension.iastate.edu/cropnews/2008/07/reviewing-decision-thresholds-pest-insect-control#:~:text=The%20economic%20threshold%20\(ET\)%20is,population%20from%20reaching%20the%20EIL](https://crops.extension.iastate.edu/cropnews/2008/07/reviewing-decision-thresholds-pest-insect-control#:~:text=The%20economic%20threshold%20(ET)%20is,population%20from%20reaching%20the%20EIL) (last visited Dec. 1, 2022).

soil type and/or cropping system might choose a legume with different characteristics. Having organic farming system trials across the country with multiple crops helps us to develop cropping systems that are best adapted to the many regional growing conditions. They will also help us to be able to look to other areas for experience and ideas as climate conditions change in our own areas.

An ecosystem approach strengthens my resiliency in the face of climate-related changes in my pest programs. It is simultaneously helping me with fertility and preventing soil erosion if we have extreme weather events. By approaching our problem solving from a systems perspective we are getting multiple benefits at once, rather than solving problems one by one. Ultimately, I don't care which beneficial insect controls a certain pest - I only care that I have multiple beneficial insects in my system. Each beneficial insect may react differently to changing climatic variables, but in my experience, at least one of them will suppress the pest species. I don't care which cover crop species I plant suppresses a problematic weed, I just care that pests, weeds, and diseases are suppressed.

Directly related to research is how farmers get access to the information in that research; support through outreach and extension has been critical to allowing us to adopt these systems of management. We live in a relatively isolated area where producers grow tree fruits, wine grapes, vegetables, corn, wheat, and graze livestock. It is impossible for our few local extension agents or technical service providers to be experts in all these crop systems. We have worked closely with our extension agents to make information sharing a two-way street. They pay attention to information they see that might be of interest to me and we help them learn about organic production methods they can then pass onto others. In many cases, we are educating the educators, which reflects the need for significant investment into these services to increase their accessibility. It costs money and time, but increasing the capacity of these services is the best way to increase the knowledge base of farmers on these systems. Facilitating organic knowledge transfer among growers would help to increase my, and every grower's, productivity.

Ultimately, Organic systems research helps me to develop systems that respond to a multitude of needs. Organic extension and outreach help me both pass along lessons I have learned and learn from the experiences of others. I am rarely trying to solve one problem with one solution. Instead, I am trying to solve problems with multiple solutions so that I have the greatest chance of success. The more research that is done, the greater the pool of knowledge I have in making farm decisions. However, that is only true if I can learn about what research has been done and the experiences of others in similar situations. Dissemination of organic research findings are critical to helping growers like me take that knowledge and use it to improve our own systems. In travel to conferences, I try to sift the organic information from the conventional information since that may be the only way I will learn about cutting edge research. Having more people steeped in organic systems disseminating information that directly relates to organic production would be of great benefit. The more I can learn about beneficial insect dynamics, the better chance I have of encouraging robust, diverse beneficial populations. The more I learn about how nitrogen moves within soil systems, the better chance I have of managing my system to move nitrogen to my trees when it is most needed.

IV. To ensure these needs are met for all farmers, invest in organic research and technical assistance

It has been important to have pools of money that allow growers and researchers of all sizes to participate. A number of our research projects were quite small and were perfect for private funding, grower SARE grants, or small Specialty Crop grants. Other projects that were multi-year needed larger funding pools. In general, organic, systems-based research must be multi-year and long-term. Systems don't normally

change overnight. Results seen in the first few years may be different than results seen in later years as the agricultural ecosystem balances and responds. For example, the use of landscape fabric for weed control under our trees gave better weed control than mulches, especially since we have some very difficult perennial weeds such as quackgrass. However, those same mulches increased tree girdling from mice since predator species could not attack those mice under the fabric. The fabric also prevented organic matter from being continually deposited in the soil from our cover crops and as a result we lost soil tilth. The short-term benefit of the weed control was lost to the long-term loss of degraded soil health and tree loss. Instead, we are now managing our quack grass issues through a diverse strategy that uses other cover crops that outcompete the quack grass and through targeted irrigation management.

Most importantly, much of the investment in organic research projects also benefits conventional growers. The use of mating disruption for the control of codling moth (worms) in apples was primarily developed on organic farms and is now used by much of the conventional industry.⁶ The research into the use of cover crops for fertility and beneficial insect management is increasingly being used by conventional growers.⁷ The use of certain cover crops instead of soil fumigants is being followed by the conventional industry.⁸ Soil health and regenerative agriculture are the new buzzwords being used by many, but these concepts have always been the basis of organic agriculture management. Investing in ecosystem management research programs, like SARE, OREI, and the Organic Transitions Program (ORG), benefits all growers.

I also ask that more research be conducted on certified organic ground. As I mentioned above, it takes time for agricultural ecosystems to reestablish themselves. Simply doing a study on conventionally managed ground, using organic techniques, may not give the same results as that same study on long-time organically managed land. For example, “economic optimum nitrogen rates” may be significantly lower on organic as compared to conventional farms due to the capacity of the soil to continually provide nitrogen to the crop through biological processes.⁹ The longer I farm, the more I realize how complex the ecosystem is that I am working with. It is imperative that rather than heavily investing into basic, single issue agricultural research, like specific chemicals or gene transfers, we embrace systems management and action-oriented research that not only enhances our understanding of complex ecosystems but helps farmers work with rather than against natural systems.

Even while current research projects have been invaluable, the research needs are ongoing and critical.¹⁰ For example, we have not even begun to understand soil ecosystems. We talk about soil health, but we have only a rudimentary understanding of what that even means in terms of soil nutrient transformations and availability. If we are really going to be discussing regenerative agriculture, and climate resiliency, investment in organic systems research is critical to our understanding of our food production systems.

Research is key to tackling the many challenges facing organic farmers. As was true in the last Farm Bill, a high priority should be placed on increased funding for organic research, to keep pace with the growing organic sector. This should include organic research priorities across USDA research and data agencies,

⁶ See Utah State University Cooperative Extension, *Codling Moth Mating Disruption*, April 2010, <https://extension.usu.edu/pests/uppd/files/factsheet/codling-moth-MD10.pdf>.

⁷ USDA Economic Research Service, *Cover Crop Trends, Programs, and Practices in the United States*, Economic Information Bulletin 222, February 2021.

⁸ Chuck Gill, COVER CROPS MORE EFFECTIVE THAN INSECTICIDES FOR MANAGING PESTS, STUDY SUGGESTS PENN STATE UNIVERSITY, <https://www.psu.edu/news/agricultural-sciences/story/cover-crops-more-effective-insecticides-managing-pests-study-suggests/> (last visited Dec 1, 2022).

⁹ Alan J. Franzluebbbers et al., *Adjusting the N fertilizer factor based on soil health as indicated by soil-test biological activity*, 7 AGRICULTURAL & ENVIRONMENTAL LETTERS (2022).

¹⁰ See Generally, Snyder et al., *2022 National Organic Research Agenda*, Organic Farming Research Foundation

including the National Institute for Food and Agriculture, Agricultural Research Service, National Agricultural Statistics Service, Agricultural Marketing Service, and the Economic Research Service. To that end, I urge these following programs to be included and robustly funded in the upcoming Farm Bill. These programs will help organic and conventional growers respond and adapt to the multi-layered challenges we are facing:

- **Increase funding for the Organic Agriculture Research and Extension Initiative (OREI) to \$100 million by end of the 2023 Farm Bill;**
- **Formally authorize the existing NIFA Organic Transition Program at \$20 million by the end of the 2023 Farm Bill, with a name change and program mission updates to avoid confusion and improve program operation;**
- **Continue to support the work of other NIFA programs that should expand their organic portfolio, like SARE, SCRI, and AFRI-SAS;**
- **Require USDA to direct ARS to increase investments into organic agriculture research, both through coordinating the ongoing and planned research while also increasing the amount of organically certified acreage ARS is operating;**
- **Reauthorize the Organic Data Initiative (ODI) to expand segregated organic data collection and analysis by the National Agricultural Statistics Service, Agricultural Marketing Service, and the Economic Research Service and require an economic impact analysis of the organic agriculture market on rural communities;**
- **Require USDA to dedicate funds annually to fund the development of cultivars and animal breeds that are regionally adapted using conventional breeding methods to address farmers' unique soils, farming systems, market needs, and changing climates; and**
- **Require USDA to appoint a Public Cultivar and Breed Research Coordinator reporting to the Under Secretary of Research, Education, and Economics to oversee collaboration between existing USDA competitive grant research programs regarding regionally adapted cultivar and breed development activities.**

As an organic grower, making daily decisions, the more information and tools I have at my disposal the better grower I can be. These programs and investments are critical for research into the agricultural systems we depend on for food and fiber production. I am amazed at the gains in organic systems understanding we have achieved with relatively little funding. That being said, increased funding will accelerate and punctuate those gains and will give me, as a grower, better tools to produce food in an environmentally friendly fashion. One of the mantras of organic growers is “continuous improvement” - the way to do that is to invest in research and extension that allows us to test, try, and investigate the way systems work.