



Farm Profile

Ann, Walker and Zoe Miller, The Happy Berry Farm, Six Mile, South Carolina

by Stephanie Campbell
CFSA's Outreach Coordinator

"The story of this farm begins 10,000 years ago," says Walker Miller of The Happy Berry Farm when I ask him about his farm. "These lands were grasslands with buffalo, woolly mammoth, and saber tooth tigers. The woodland people were hunter-gatherers and used fire to manage the savannah – control weeds, recycle nutrients, encourage grazing species and maintain clear vistas and edge habitat to facilitate hunting."

"Grasses grew to ten, twelve, even fifteen feet high. The managed fires produced charcoal which was trampled and became biochar," Walker explains to me. "There were four to five feet of rich soils on this land."

Walker patiently and passionately walks me through the rest of the history of the land, through the years of the Cherokee and then the arrival of the white man, agriculture, cattle and hogs, corn, and cotton. In 1914, when the Conservation Service was born, the soil was gone.

Walker, a now retired professor of plant pathology and physiology at Clemson University, and self-proclaimed "subsistence" farmer with his wife, Ann, and daughters, Betty Ann and Zoe, began restoring the soils on this land in 1979.

When Walker began growing blueberries here, virtually all blueberries were being grown south of Wilmington. He believes that perennial crops are the key to the future of farming. "When you plant perennials," he says, "the plants



Zoe, Betty Ann, Ann and Walker Miller
The Happy Berry Farm

themselves build carbon networks and consistently build humus in the soil that has a half-life of thousands of years, augmenting a healthier, for earth, carbon cycle."

Berries are a frost susceptible crop so Walker spent four years looking for suitable land and worked with an ag meteorologist at Clemson to identify this site which is 9 degrees warmer on frosty nights than just a half mile up the road.

Walker and his family have been working ever since to steward this land. "Ultimately," Walker states, "our belief is that local farms like ours provide an essential environmental service for the future of our planet."

The Farm

The Happy Berry is a pick-your-own farm on twenty-two acres in the Upstate region of South Carolina. The main crops are blueberries, blackberries, figs, muscadine and seedless table grapes.

In recent years additional frost tolerant crops have been added such as goji berry, persimmons, dwarf black mulberry, and seedless muscadines. The farm maximizes the harvest season by planting several different varieties of each crop so berries can be picked from June 1 until early October.

Pre-picked berries and fruit can also be purchased on-farm and at four local farmers' markets: Greenville TD, Clemson, Six Mile, and Anderson. Walker is quick to point out that "no farm is successful until it is marketed - the real deal is my wife and daughters who market the farm!"

Ever looking to find ways to care for the land and diversify farm income, nine varieties of pussy willows are grown in the winter in riparian areas to help with water management. Pollination is always a concern. Honey bees are invasive and they compete with the native bees which are necessary for blueberry pollination. Flowers and forage have been planted all over the farm to attract and sustain native bees.

The First Blueberry

"They call me the first blueberry," Walker's daughter Zoe shares. "I was born in May of the first year of production on the farm. I'm the same age as the farm – thirty-five."

Zoe grew up on the farm and, after

- continued on page 7

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from a farmer who shares your values

CAROLINA FARM STEWARDSHIP ASSOCIATION

CFSA is a membership-based organization of thousands of farmers, consumers, foodies, businesses and organizations in North and South Carolina. Our mission is to advocate for fair farm and food policies, build the systems that organic family farms need to thrive, and educate communities about local, organic farming.

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From the Director

Imagining Our Food and Farming Future

I recently participated in a focus group on the subject of 'responsible innovation' in the field of biotechnology. In addition to CFSA, the group included representatives of conventional ag and natural resource associations, biotech industry groups, ag chemical companies, and biotech entrepreneurs from the ag and medical fields.

The basic question we were asked to discuss was how great a role the public should play in guiding biotech research. You may not find it surprising that this group as a whole didn't think the public should have very much of a role at all.

The majority view seemed to be that democracy is too slow, too messy, and the public too ignorant, to be allowed to direct biotech research priorities and that the brilliance of risk-taking scientists, motivated to solve the world's problems by their genius, competition and the prospect of profit, and financed by risk-taking venture funders and corporate capital, is sufficient for society to rely upon in determining what problems biotechnology addresses and how it does so.

More than once it was asserted that the public can 'trust in the process' of the existing biotech regulatory scheme and that we should accept the leadership of these highly risk-tolerant parties to make decisions that lead to brighter futures. The precautionary principle-guided processes in other countries were panned.

Fortunately, there are beginning to be signs that more scientists' views are evolving to appreciate the role of transparency in the governance of genetic engineering (GE). This spring the National Academy of Sciences published a wide-ranging meta-analysis of the state of agricultural biotech. While this report doesn't find any evidence against the safety of GE, it does find ample reason for academia and government to conduct greater assessment of the technology's direct and indirect social, economic and biodiversity impacts, and



Roland McReynolds, Executive Director
for the involvement of the public in those assessments.

The critical value of transparency is not news for the sustainable agriculture community; in fact it's our reason for being. The right of farmers and communities to determine how to address the challenges of providing all people with healthy food, providing fair livelihoods for those who toil in agriculture, and preserving the natural world has been the fundamental tenet of this movement.

We strive to engage everyone affected by the choices in our food system and to confront the problems inherent in attempting to achieve sustainability in agriculture. And those imperatives grow more urgent as the progress of climate change continues and we look toward a certain future of fewer days of sub-freezing temperatures and greater weather extremes worldwide, with the attendant threats of widespread scarcity and social, economic and environmental disruptions.

Farmers tend to be deep thinkers about the future. If you are committing yourself and your family's livelihood to a piece of ground and the natural resources it includes, you have to be able to appreciate a long view of how your actions will affect and be affected by the weather and market trends.

The featured farmers in this edition of Stewardship News, Ann, Walker and Zoe Miller at the Happy Berry, are an outstanding example of a farm applying long-term thinking to the challenge of making their farm resilient to climate change. They have experimented with new perennial crops, agroforestry con-

- continued on page 3

From the Director
(continued from p. 2)

cepts, and sustainable management practices, and are mapping their role in a food supply chain that could be drastically altered by climate change.

Creating a sustainable food system that will buffer environmental shocks and enhance the health of people and communities will require the rest of us to follow the example of foresightful farmers and apply the same approach to reimagining the entire food chain and our roles in it.

For the CFSA staff it is a privilege to be working for a membership that embraces this challenge, and I am excited that this year's Sustainable Agriculture Conference (SAC) is on the horizon because it is always a fertile incubator for ideas and action to help our movement lead society to a brighter future.

Instead of scientists and venture capitalists behind lab doors making decisions for the rest of us, SAC is a place where openness and cross-pollination of ideas thrives. From in-depth explorations of soil life and how to partner with it, to frank conversations about making our food system racially just, to new crops and production strategies, to increasing local and regional self-sufficiency, this year's program provides a forum for continuing imagination about our food and farming future.

SAC is a welcome and needed antidote to the interests that would rather democracy not interfere with their plans. I look forward to seeing you there!



Save the Date

31st Annual Sustainable Agriculture Conference

November 6-8, 2016
Durham, NC

Register by August 17th for the nicely discounted members-only early bird rate.



Mark Dempsey, CFSA Farm Services Coordinator, leading a session at the First Annual Lomax Field Day, May 3, 2016
- photo courtesy of Stephen Nix

Association News

CFSA Annual Meeting

The Annual Meeting of CFSA is open to all members and will be held at the Sheraton Imperial Hotel and Convention Center, 4700 Emperor Blvd., Durham, NC, on Sunday, November 6, 2016 at 12:45 pm (immediately following the Sustainable Agriculture Conference).

Recommend a Board Member

Do you know someone who would be a good candidate for the CFSA Board of Directors? Would you like to know more about serving on the Board? Contact Elizabeth Read, Communications and Development Director, Elizabeth@carolinafarmstewards.org. Candidate suggestions will be provided to the Board of Directors.

10th Annual Upstate Farm Tour was a rousing success!

Twenty-three farms and almost 924 people participated in the tour this year, making a grand total of 4,801 farm visits!

Many thanks to co-sponsor, **Whole Foods Market**, and all the volunteers who make the farm tour a

success year after year. The biggest thanks goes out to the farmers for opening their farm gates and sharing the work they do to grow local and organic food for our communities.

Free Consulting to farmers growing in Seasonal High Tunnels

Although high tunnels offer new opportunities, efficient and sustainable management can be difficult to achieve. You may experience issues with planting dates, pest pressure, and variety selection; soil disturbance during the grading and installation process, as well as changes in runoff; and issues with irrigation and soil moisture that affect production and plant growth.

CFSA now has a technical service provider on staff who can help you find success growing in a high tunnel. To qualify for this service, you must:

- be a current CFSA member,
- have a high tunnel already constructed,
- be gaining income or planning to gain income from farming.

An application is available online at: www.carolinafarmstewards.org/high-tunnel-consulting/

The Tool Shed

Considerations for a Fall Cover Crop

by Mark Dempsey
CFSA Farm Services Coordinator

It's mid-season in the Carolinas, and for growers this typically means spring crops are finished, summer crops are keeping you busy, and you're starting fall crops. This is a good time to consider whether to plant cover crops in some fields this fall instead of all cash crops.

Most growers in the Carolinas take full advantage of our climate by growing three seasons out of the year, sometimes with a short-season winter cover crop sown in the late fall. While maximizing the time cash crops are in the ground is a common sense approach to maximize revenue for your farm, it minimizes the benefits from cover crops, which don't always come with a return in dollars – at least not immediately. So, when should you swap a fall cash crop for a fall-planted winter cover crop?

The answer to this question is never simple and depends on a constellation of factors such as crop price point, input costs, tillage practices, pest pressure, and more. While you can be pretty certain that not growing a fall crop will reduce revenue in any given year, when you substitute a cover crop there's potential to earn some of that "lost" revenue back, and earn much more in other benefits that aren't easily converted to dollars. Perhaps the best way to answer the question of whether to swap a cash crop for winter cover crop is to answer a few other questions:

- **Have you seen signs of soil erosion this year or last year?**

Soil erosion rates often exceed rates of soil building, potentially making erosion a big problem. A well-established winter cover crop can reduce erosion by covering soil, and more importantly by holding onto it with roots. Winter cover crops play a particularly important role in the fall when rainfall outpaces evapotranspiration, quickly leading to saturated soils and a good chance for erosion.



Winter cover crops in flower by mid-Spring
Note the bare fields in the background - land not taking advantage of the many months between cash crops
- photo courtesy of John Wallace at Pennsylvania State University

- **Have you been tilling intensively, or are you growing in a low-organic matter soil?**

Intensive tillage, such as roto-tilling or multiple passes with a plow and disk, can decrease soil organic matter by stimulating its decomposition by microorganisms. The loss of this organic matter is concerning because, in its many forms, soil organic matter is critical in maintaining soil health. Replacing the organic matter that's decomposed or building organic matter in a low-organic matter soil is important for maintaining crop productivity. Cover cropping can help increase organic matter because cold-hardy cover crops take advantage of the few months of the year when cash crops aren't in the ground, allowing for plant biomass (i.e. organic matter) to be produced when it wouldn't otherwise have been, and all that biomass is inevitably returned to the soil.

- **Do you grow crops with a high nitrogen (N) demand and invest substantially in fertilizer?**

Organic fertilizers, in the form of manure, mined minerals, or plant/animal by-products, are often the most expensive input – apart from labor – when growing crops that have a high N demand. Growing a winter legume cover crop such as

hairy vetch or crimson clover can add 50-100 lbs N/acre, depending on time allowed to grow. Most of that N is available to the subsequent crop. On the flip side of this, if you suspect that you lose a lot of N to leaching (where water-soluble N is washed below the root zone of your cash crop) then an N-scavenging winter cover crop such as a grass or radish can help recover some of that N.

- **Is weed pressure high or getting worse?**

Winter annual weeds can be a problem in spring crops, and many of them germinate in the fall. Establishing a cover crop in the fall can prevent weed seed germination and more importantly can suppress weed growth in the spring.

If you answered "yes" to any of these questions you should consider ways to incorporate cover cropping into your operation.

Cover Crop Considerations

The type of cover crop you choose to grow, and how you manage it, is largely determined by your goals, but your priority for a good winter cover crop should always be to get it established early and to let it grow into the spring as long as possible.

- continued on page 5

The Tool Shed
(continued from p. 4)

Grasses can be planted later (about 2 weeks) than non-grasses such as legumes and brassicas because grasses are quicker to establish (Table 1).

Early establishment means good cover and root development before winter, reducing soil erosion. Further, because it's better developed when spring arrives, an early-planted cover crop puts on more biomass, contributes more fixed N (if a legume), scavenges more soil N (if a non-legume), and better suppresses weeds in the spring compared to a late-planted cover crop.

This is precisely why a fall cash crop may have to be sacrificed to achieve early cover crop establishment. There may be opportunity to inter-seed a cover crop into a fall crop, provided that the cover crop spans row-to-row and can survive the maintenance and harvest of the fall crop. After winter, the longer that cover crop termination is delayed in the spring (up to flowering) you should expect greater benefits from your cover crop.

Selection of the cover crop is dependent on your individual goals. Consider whether you want to fix N vs scavenge N and other nutrients. Legumes will do a good job of fix-

Table 1. Fall cover crop planting dates by region – ideal for good establishment before winter.

	Mountains	Piedmont	Coastal Plain
Grasses	Late Sept	Early Oct	Mid Oct
Non-grasses	Mid Sept	Late Sept	Early Oct

ing N, but not necessarily scavenging nutrients, while non-legumes are great nutrient scavengers, but do not fix N.

An additional consideration is how quickly a cover crop forms a canopy, for soil coverage or weed suppression. Fast-growing cover crops such as oats, rye, and radish, will cover the soil quicker than other cover crops.

A final consideration is winter-hardiness: rye, barley, hairy vetch and many clovers are considered winter-hardy in the Carolinas, whereas oats, peas and radish will winter-kill during prolonged freezes. Winter-killed cover crops are useful if you'd like to no-till plant a spring crop; otherwise winter-hardy ones provide greater benefit.

There are many tradeoffs inherent in planting a fall cash crop versus a cover crop. The major drawback to

swapping a cash crop for a cover crop is the lack of revenue from the cash crop, however some of that lost revenue can be recouped the next season by reducing fertilizer use and time spent weeding.

The many other benefits of using a cover crop are hard to quantify in dollars and it's possible that rebuilding lost or degraded soil is an investment that will payoff only after many years of practice.

Ultimately, the choice is up to you, and depends on how much you can afford to lose (revenue or soil), how bad your weed pressure and nutrient problems are, and how well you can incorporate winter cover crops into your rotation.

*Additional resources for growers can be found at carolinafarmstewards.org/forgrowers/ and by subscribing to our monthly e-newsletter for sustainable and organic farmers, *The Grower's Toolbox*.*

Save the Date

Organic Commodities and Livestock Conference

March 6, 2017

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Your gift to the Dow Scholarship Fund will have a profound impact on the future of farming the Carolinas.

Back in 2011 when Marie received her scholarship to SAC, she and her husband, William Lyons, were struggling to establish Bluebird Farm in Morganton, NC. "The cost of registration to SAC equaled a whole section of fence we needed," Marie explains. "We simply couldn't afford it."

Marie credits the breadth of workshops at SAC and the CFSA network of farming professionals with providing the essential technical knowledge AND the peer support essential to establishing a successful farming enterprise.

Your gift of any size will mean that we can provide twenty-five beginning farmers like Marie with the opportunity to attend SAC.

Join us in investing in the future of farming in the Carolinas by investing in beginning farmers and ranchers today!



*Marie Williamson, Bluebird Farm
(with husband and farm partner William Lyons)*

"It was a defining moment," Marie Williamson shares about attending the Sustainable Agriculture Conference (SAC) on scholarship.

"SAC has had a profound impact on me as a farmer and has been integral to the success of our farm."

North Carolina Farmers Poised to Begin Growing Industrial Hemp in 2017

*by Rochelle Sparko
CFSA Policy Director*

Members of the NC General Assembly revised a law they passed last year that legalized growing industrial hemp for the first time in decades. The major changes to the law include expanding the Industrial Hemp Commission from five to nine members, giving the Commission authority to issue rules more quickly, and expanding the criminal penalties for growing marijuana amidst a crop of industrial hemp.

Changes to the law mean that the Industrial Hemp Commission could issue licenses in time for farmers to plant hemp in the spring of 2017. This change has created a lot of excitement among farmers, whether conventional or organic, large or small scale. Many farmers see industrial hemp as a low-input addition to their existing business model, whether growing it on a larger scale for fiber or on a smaller scale for seed. There's still a lot to learn about how this crop could impact farmers' bottom line, and a lot of infrastructure to be developed to get the crop to market.



Kanaf Trial Field in Eastern NC, Summer 2016
- photo courtesy of Fen Rascoe

Even with all the questions still to be answered, farmers are lining up to give hemp a try. "North Carolina is blessed with ideal soil, climate and confident farmers poised and ready to become national leaders in industrial hemp production next year. However, time is of the essence as farmers, like any business, must proactively plan ahead. There are considerations that farmers need to take into account this fall, like field rotation and operating loans, if they're going to grow hemp in 2017.

"Therefore, members of the Industrial Hemp Commission need to be appointed quickly, draft rules, and begin issuing licenses as soon

as possible," said Fen Rascoe of BioRegen Innovations Cooperative. BioRegen Cooperative is an enterprise of farmers, seed breeders, and industry experts seeking to propagate industrial hemp for a growing North Carolina bio-economy. They hope to bring aspiring hemp farmers, both conventional and organic, into the cooperative as the market grows.

Interested in keeping up with what's happening with industrial hemp in North Carolina? Be sure to sign up for CFSA's monthly online publication, The Buzz, and for CFSA's Action Alerts by visiting bit.ly/axnalerts.

Farmer Profile

(continued from page 1)

a few years away from the farm as a young adult, she has been a full partner and hopes to continue the legacy her parents have established. Her sister, Betty Ann, was fifteen when the farm began and worked her way through college on the farm. She continues to be a part of the family farm as she handles the website and online marketing for the farm from her home in Waynesville and brings granddaughter, Sarah, to the farm on weekends.

Zoe enjoys that the farm is an integral part of the community and seeing how many people love being on the farm. "There's a joy families experience," Zoe says, "when they spend time outdoors around growing things and picking delicious and healthy food for their family table." She loves seeing children with "big smiles and blueberries running down their cheeks."

Both Zoe and Walker insist that transparency with their customers, educating them and sharing with them the whole truth so they know how you care for the land, is essential to the trust and support they have built in the community. Walker rattles off a series of stories of methods, techniques, research and trials he has undertaken on the farm and he honestly shares both the failures and the successes.

A shade cloth research project testing yield on primo cane bearing blackberries, funded by SARE, was one of the "failures" and is detailed on the farm website. As a result of that research, though, a new experiment is underway, planting pine trees (Loblolly, Italian Stone, and Long Leaf) in E-W rows among the orchards (passive frost protection, slowing down violent thunderstorms) as well as sequestering carbon above and below ground.

After attending a CFSA presentation on bio-char, Walker began studying it and envisions a batch kiln to make bio-char from the pruning's which will then be sprayed under the bushes allowing the nanoparticles to move down through the soil.



The Happy Berry Farm, Six Mile, SC

Note the E-W rows of pine trees just becoming visible in the photo planted to address global warming by cooling the plants and customers, sequestering more carbon, and providing passive frost protection.

- photo courtesy of Barnard

"Is it practical to do?" asks Walker. Don't know yet."

"Dad always told us," Zoe shares, "that the worst thing you can do as a farmer is to get comfortable. You need to be always progressing, always learning and trying new things."

The Future of Farming

"It is plain that global warming is happening and is being driven by the use of fossil fuels and how we do agriculture," Walker states in his report, Climate Mitigation and Adaptation Action Plan. "In 2016," he notes, "over seventy percent of us know we must transition away from fossil fuels but only a few of us grasp that the 12,000 year old (paradigm) way we do agriculture must change!"

Walker recommends several resources which are shaping his thinking and planning for the future. Wes Jackson, at The Land Institute in Salina, Kansas, is developing perennial crops which Walker agrees are key to the future. Laura Lengnick's book, Resilient Agriculture, and Mark Hertsgard's, Hot Living Through the Next Fifty Years on Earth, prompted Walker to write out his own farm action plan.

Walker doesn't mince words as he explains that "all economic sys-

tems require through-put - natural resources including our soils - and currently we are exploiting other countries and cultures as well as our own for these natural resources." He believes that we must learn to live within the resources of our bioregion and pay attention to the direct bio-feedback regional farming and natural resources provide.

Walker cites Molly Scott Cato's book, The Bioregional Economy: Land, Liberty and the Pursuit of Happiness, to support his understanding that "current economic systems are not sustainable and when they collapse it's going to be farms like this one which the world will need."

Walker is proud to have been named CFSA Farmer of the Year in 2014. He constantly continues to experiment, learn, lead and share what he has learned with the farming and food network.

"It seems unlikely, in the grand scheme of things," he says, "that our efforts here on this farm will have a major impact, but perhaps we can be an example for others and contribute to a resilient and sustainable future for farming, and for the earth."

To learn more about The Happy Berry Farm and links for reports, go to www.thehappyberry.com.

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