

White Cedar Farm: Diversification and Flexibility for Resilient Farming

White Cedar Farm is a 202-acre property in Kingston, NH. 16 acres are currently in production, with 6 of those in vegetable production.

Farmers: Dave and Shelly Smith bought the land two years ago. They work the farm along with Lis Schneider, a farmer and fellow business partner. Prior to starting White Cedar, Dave and Lis worked for several years at Heron Pond Farm. Dave has over eight years of farming experience.

Production: White Cedar currently grows a mix of fruit and vegetables, produces pork sausage, and is home to over two hundred laying hens. They also have sheep and goats, which they plan to use for meat and wool. Business comes mostly from farmers markets and Community Supported Agriculture shares, with a small percentage from wholesale accounts at local restaurants.

Practices: White Cedar Farm is a no-spray operation, meaning that they follow even stricter practices than organic. With organic certification, farmers are allowed to use approved pesticides.¹

Climate Impacts Seen

The effect of climate most noted by the farmers at White Cedar is erratic weather. Weather has varied significantly from year to year, ranging from drought one summer to a damp and overcast season the next. This observation follows the projected trend for Southern New Hampshire of increasingly extreme weather events.² These conditions are expected to continue in the coming decades.



The land was not in operation when Dave and Shelly bought the property, and they have worked hard to establish the farm. The surrounding area of Kingston, NH is rich in small farms, which means there are many resources but also much competition.

The unpredictability of these events makes it difficult for the farmers to plan. For example, last year in 2013 there was a killing frost on May 31st, and everything that had been planted was lost. “As a small farm, those crops are important,” explain Lis and Dave. “We can’t really afford to replace all those plants.” This year, the farmers were cautious in planting outside, and as a result are far behind where they might have been.

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Mid winter thaws due to erratic weather in December and January have led to snow cover loss. This snow cover loss means the soil is less protected and freezes more deeply. Soil freezing can damage the root systems of crops and overwintering shoots.³ Crops, such as garlic and some carrot varieties, which do better under snow cover, don't come up as well. Soil freezing impacts microbial activity, soil moisture, and water availability as well,³ so even small changes in snow cover could have a noticeable effect on production. In New Hampshire, snow cover days have been decreasing on an average of 2 days per decade.²

Changing snow patterns can make the timing of planting cover crops tricky. This year, the farmers at White Cedar said that they lost the advantage of their cover crop, oats, because it didn't snow soon

enough. Oats typically have a winterkill,⁴ meaning that they are expected to die off in the cold weather. However, if they freeze and die when they are still very small, as happened at White Cedar due to unprotected frozen soil, the benefit of biomass cover and nutrient scavenging is lost.

Dave and Shelly remarked that the tomato hornworms appeared earlier this year, either from overwintering in the greenhouse or early arrival. Tomato hornworms are known to devour tomato leaves, but can be controlled through tilling, which kills the larva in the soil⁵ All of the soil was tilled at White Cedar so the farmers think it is unlikely the pests overwintered. Hornworms usually appear in June, but this year have been noticed since May.

With 260 acres, White Cedar farm is more than twice as large as the average farm in New England, by acreage. In New Hampshire, there are over 500 farms of a comparable size (between 180 and 499 acres). In New England, White Cedar is among over 4,300 similar sized farms.⁶ The farmers at White Cedar are also examples of beginning farmers (current business under operation for less than 10 years). New England has some of the highest percentages of beginning farmers in the country.⁶

Response

It is not all bad news, and White Cedar has certainly benefited from some effects of climate change as well. For example, milder winters in recent years allows them to produce in the greenhouse without paying costly prices for heating. They use the greenhouse throughout the year, producing greens in the winter and tomatoes in the summer. This means a bountiful supply of produce all year round, and one more source of income.

Basic infrastructure also helps, especially in times of severe weather. White Cedar is hoping to get irrigation equipment as soon as possible. Thus far, they have been limited by the cost. They would also like to construct a new greenhouse. While most of their farm decisions are not driven currently by climate change, any steps to make the farm more resilient and economically viable will also help them adapt to the changes expected for New Hampshire. Many tools that farmers in New Hampshire are already using to extend the growing season, such as hoops and plastic row covers, are now being used just to have a normal season. Hoops and row covers

help create a more consistent and controlled climate.

What is the farmers at White Cedar's most important advice to others looking to adapt to changes in climate? "Don't put all your eggs in one basket! You must have a plan B if a crop fails," says Shelly, and with all of this crazy weather, you definitely cannot count on everything you put in the ground. That means diversify. For no-spray and organic farms, diversity is especially important; unlike conventional farmers they cannot resort to heavy use of pesticides to combat increased weeds, pests, and humidity.

Farmers also have to be flexible. At White Cedar they might plant a field knowing they ultimately may have to till everything under and replant if there is a drought. Always being prepared for good weather, but being able to cut your losses is part of farming. Dave learned from other farmers to start large batches of seeds in the greenhouse, more than they might expect to plant. If they have good weather early enough, all of the plants can go in and they can take advantage of a great season. If not, there is little loss as the price of seeds is low.

White Cedar Farm (Continued)



White Cedar Farm has farrowing, or birthing houses, for the sows

Challenges

One of the biggest struggles facing small farms such as White Cedar is the difficult access to capital. With bank loans often out of the question, White Cedar farmers say that they could benefit greatly from help finding investors. They work with Extension and Natural Resource Conservation Services (NRCS), but many federal grant programs are geared towards larger operations that already have a history of

success. Small farms need more community support, and an understanding customer base. As Shelly says, it all comes down to capital. If farmers can get ahold of the right equipment and infrastructure, farms will be able to adapt to any weather or pest situation. For the most part, the technology and the knowledge exist, but economic pressures remain a hurdle.



The chickens have free range of the farm, and mix with some of the pigs during feeding time.

Needs and Opportunities

The farmers at White Cedar identified some tools and resources that they think would be helpful in making the sector more resilient. In particular they see opportunities for applied use of technology to help with networking and information sharing.

- A website where farmers can log on and mark the date and location where they see particular insects or weeds. This could help track the changing appearance and patterns of pests
- A centralized website where farmers can find information about available grants and support programs.
- A network of local financiers willing to work with small food and agriculture enterprises

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Resources:

- Information on business plans and financing for farms and producers from New Hampshire Community Loan Fund; <https://www.communityloanfund.org/how-we-help/business/how-we-can-help-you/farm-food/offer>
- Climate Assessment for Southern New Hampshire; https://climatesolutionsne.org/sites/climatesolutionsne.org/files/unhsi-csne-southernnh_climateassessment_june_4_2014.pdf
- Online template that Shelly and Dave used to create their business plan: <https://www.agplan.umn.edu>



White Cedar relies on an understanding customer base that shares a commitment to no-spray. Greens may have a few bite marks from pests, but they can be assured that there will be no chemical residues.

References:

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Climate Change and the New England Food System Case Study Series

This case study was researched and written by UNHSI's 2014 Thomas W. Haas Climate Fellow, Ruby Woodside. Ruby's fellowship focused on documenting and communicating climate impacts and adaptation strategies for New England farmers and fishermen. Ruby is currently working on a Masters of Environmental Science and Policy as well as an MBA in Sustainability at Clark University. The fellowship is based at the UNH Sustainability Institute, and hosted in collaboration with Food Solutions New England (FSNE). FSNE is a regional, collaborative network organized around a single goal: to transform the New England food system into a resilient driver of healthy food, sustainable farming and fishing, and thriving communities. Learn more at www.foodsolutionsne.org.