

Soil Management Grower Profiles

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Alex Hitt, Peregrine Farm Graham, NC

Background

Alex and Betsy Hitt have been farming in Alamance County for over 25 years. They grow a mixture of vegetables and cut flowers on their 5 acre farm. They sell their produce at the Carrboro Farmers' Market and also to area restaurants.

Nutrient Management

Alex describes his soil as a sandy loam topsoil with a few areas of red clay. The Hitts soil test every field every year, pulling samples in late July - early August. They apply all soil amendments in the fall.

Alex's strategy is to "take the simplest path of least resistance." They really try and purchase amendments and supplies from local suppliers whenever possible. Local availability often dictates what they will use:

- They use dolomitic lime because it's easy to get.
- Phosphorous – in maintenance situations, they use rock phosphate. For newly cleared land with no P, they have used triple super phosphate; once the P-index reaches 50, they switch to rock phosphate.
- Potassium – they use potassium sulfate (0-0-50)
- Nitrogen – if not enough from cover crops, will supplement with feathermeal (obtained from plant in Laurinburg); feathermeal is applied at planting at a rate of 100 lbs./A for vegetables, and 50 lbs./A for cut flowers.
- Alex will occasionally fertigate tomatoes and peppers with Chilean nitrate if they start looking deficient.

They turn in cover crops one month before planting. Anything planted after May 1 (peppers, late summer flowers, winter squash) lives off just cover crop nitrogen. Anything planted before May 1 gets supplemental fertilizer since the cover crop didn't have time to produce much biomass. The day of planting, they apply fertilizer, till again, then plant.

Soil Management

Two main principles:

1. Try to turn soil over as little as possible to conserve organic matter and do everything you can to increase organic matter

2. Try to design fields and beds so everything drains as fast as possible; excess moisture is more of a problem than drought.

Anything planted before April goes on a raised bed. The raised beds drain faster and warm up faster in the spring. With raised beds, usually if you have 3 dry days he can get in, but can be up to a two week wait to get in on flat culture. Anything planted after May 1 goes on flat culture, which helps to retain moisture.

Cover crops figure very prominently in Peregrine Farm's rotations. They have to since they do not import manure or compost. They need to grow their fertility in place! Alex will precede heavy feeding crops like lettuce with two cover crops to build up nitrogen.

Cool-season cover crops:

- They plant oats and crimson clover in fields that will be planted before mid-April, because oats and clover mature faster than rye and vetch.
- Rye and hairy vetch are planted before crops that are planted after mid-April.
- Cool-season cover crops are planted in September.

Warm-season cover crops:

- Favorite mixtures include soybeans + sorghum-sudangrass and cowpea + millet.
- Warm-season cover crops are planted early June to early July.

Alex buys his cover crop seeds, lime, and potassium sulfate from Paul McBane Farm and Fertilizer.

Alex will flail mow the crop residue or cover crop, then hit it with the big disk to chop it up. He then goes through with a 5 shank springtooth field cultivator for deep ripping (12-15"). Then he will come back and disk again. Next, he will go through with a double set of tilling disks to raise the ridges, then throw cover crop seed to these ridges (nice rough seed bed) and let it sit all winter. He broadcasts leguminous cover crops using a chest spinner; for grains, he uses the PTO spinner.

In the spring, before planting, he will go through with a 4 foot wide tractor-drawn rototiller set at the shallowest setting to turn under the cover crop (tilling just the top of the bed). After 4 weeks, he applies feathermeal if needed, tills again at the shallowest setting, then plants.

Alex uses **no-till methods** for some crops for two main reasons:

1. Organic matter maintenance and preservation
2. To grow mulch and fertilizer in place

The warm-season crops are best adapted to no-till production – tomatoes, peppers, pumpkins, and winter squash. He plants rye and hairy vetch in September on flat beds. The drip tape is pre-buried about 2" deep, then the cover crop is seeded. In the spring, he rolls the cover crop using a 4' wide rototiller not turned on (rolls and crimps stems); this is done the day before or the day of planting, from early May to early June. He then cuts

a strip with a coulter and hand plants into the strip. The key to successful no-till is having a very good cover crop with high biomass production. If you don't have a good stand, it won't work.

Alex has definitely seen improvement in his soils. He has maintained and increased organic matter through good rotations, cover crops, and minimum tillage. His CECs have gone up, from 6 to 8 in the sandy loam areas, and from 8 to 11-12 in the clay areas. He tries to maintain the pH between 6-6.5.

Special Problems

Red clay! So it is important to get the raised beds up in the fall so they can go through freeze and thaw cycles. He avoids tilling when it is too wet, especially the clay areas. He always tills clay at the shallowest depth to avoid bringing up big clods that will be there all year.

Blueberries and other perennial crops present special challenges. Blueberries need low pH (5.2 for rabbiteyes, 4.5 for southern highbush). For any perennial, P is the real key – one chance to get it in. Need to start a year ahead for perennial crops, increasing organic matter, adding P, weed control. Blueberries require lots of organic matter. He put on 3" of sawdust, P and S to lower pH.

Ken Dawson, Maple Spring Gardens Cedar Grove, NC

Background

Ken Dawson bought his Orange County farm in 1990. It was a former tobacco farm and had been in a tobacco and wheat rotation for many years. Today, Maple Spring Gardens is a certified organic farm producing vegetables, berries, and cut flowers for the Carrboro Farmers' Market.

Soil Management

When Ken bought the farm, the sandy soil was dead and had no earthworms, so he knew he had a huge task ahead of him. He brought in horse, cow, and poultry manure, spreading some fresh and composting the rest. He started planting cover crops. Ken farms about 10 acres, 4.5 of which is in cash crops (about 3 acres of that under plastic mulch), the rest in cover crops.

Most of the land was initially put in fescue and ladino clover, and some land stayed in this mix for 8 years. He started cash cropping the best land, producing 2-3 years of cash crops (and some annual cover crops) followed by a 2-4 year fescue/clover rotation.

He uses mainly rye and crimson clover for cool-season cover crops. For his earliest cash crops planted in March, he doesn't cover crop but lays plastic and drip tape in the fall. For his early season direct-seeded crops, he makes a one foot bed in December or as late

as he can before it gets too wet, and leaves it bare for the winter. Then he tills the top 4-6 inches before planting. He does this because it's too cold for cover crops to decompose in early March.

Warm-season annual cover crops include buckwheat, sunflower, sorghum-sudangrass, soybean, and millet. He is very careful about millet because if you let it go to seed it becomes a huge problem.

He uses a 58 inch PTO powered tiller to incorporate cover crops. He has a bush hog and just bought a used flail mower from the Ag Review classified section.

Ken's farm does have sloping land so he mulches row middles with straw where he lays plastic because of all the water running off the plastic. He will also sometimes sow crimson clover in the row middles.

Ken has a rototiller, a subsoiler, a chisel plow, double disk bedder, disk harrow, and a rolling cultivator. He will till, then chisel plow, then go in with the bedder, then till again.

Ken has tried no-till but didn't have much success. He heavily seeded rye, let it get very mature, rolled it down with a cultipacker, then planted winter squash. Unfortunately, then it rained about 3 inches, the mulch broke down quickly, and crabgrass took over the beds. He would like to try again.

Ken buys his cover crop seeds and amendments from Brown's Farm Service in Rougemont.

Nutrient Management

Ken soil tests annually in the fall. Composted manure used to be his mainstay but he phased it out because he no longer needs the P and calcium. He used to use a lot of poultry litter because he had a layer house nearby but it was high in P and Ca. He is certified organic so must follow the NOP standards. He sometimes still applies compost but only in the fall when laying plastic.

Ken applies all fertilizer at planting and only sidedresses a few crops like potatoes. Below is a description of his purchased amendments and fertilizers:

- Nitrogen – uses feathermeal from the Laurinburg plant. He will also use Chilean nitrate as a rescue fertilizer, but it can be difficult to obtain (at least this year).
- Potassium – sulfate of potash (0-0-50) can be used on organic farms only if from a mined source and it can be difficult to get documentation of this. He can use K-Mag but this is only 22% K at the same price.

Ken talked about choosing a good manure source. It is best to get it from animals not grazed on pasture where they ingest a lot of weeds. His best source was from a dairy farm, from the baby calf pens where they were fed a high quality grain and hay.