Cover Crop Grower Profiles

By Debbie Roos with Cathy Jones, Alex Hitt, and Ken Dawson
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Cathy Jones, Perry-winkle Farm in Chapel Hill, NC

Perry-winkle Farm produces vegetables, herbs, cut flowers, and pasture-raised eggs, chicken, and pork using sustainable practices. They sell at the Carrboro Farmers' Market, the Fearrington Farmers' Market, and to local restaurants.

http://growingsmallfarms.ces.ncsu.edu/growingsmallfarms-perrywinkle/

Perry-winkle Farm has heavy clay soils topped with sandy loam, and was previously in silage corn so has pretty poor soil. Cathy almost always plants a cover crop before a cash crop, and sometimes two cover crops before a cash crop.

Before seeding the cover crop, she prepares the soil by mowing the previous crop, then discing the field a couple of times to rough it up. You don't need a perfect seed bed for seeding cover crops, and in fact building healthy soil requires that you don't overwork the soil. They typically plant cover crops in ¼ acre and ½ acre blocks.

They use a broadcast seeder unless they are doing a larger area (over an acre). When planting mixes they seed one species at a time (because of different seed sizes) and make multiple passes over the field. After seeding Cathy drives back over the field with the disc, running it at a very shallow depth, just enough to cover the seed to provide good seed to soil contact.

Cathy uses the seeding rates from the Forage Planting Guide for North Carolina: http://go.ncsu.edu/forageplantguide

Once the cover crop has reached its maximum potential she mows it down with a bush hog – ideally you would mow a crop like winter rye, millet, or sunflowers with a flail mower but they don't have one.

Their normal timing has them mowing a cover crop one day and the following day they drive over it with the disc to chop it up a little. After a week or two they will go in and further chop the organic matter up and bury it with Cathy's favorite tractor implement: a tobacco bedder or "hiller disc".

If the cover crop is small she might start with the hiller disc, planning on three weeks from mowing the cover crop until the soil is ready to prepare the seedbed for the next crop. When it's extremely dry, it can take forever for the old stalks to break down and you might need to disc the field a couple of times to aid the process of decomposition.

Winter cover crops:

Cathy likes to use a mixture of Dwarf Essex rape and forage radish before potatoes. Rape puts on biomass before winter and is the only overwintered cover crop that has good biomass in February, when it's time to prep the soil three weeks before planting potatoes in early March; Cathy does not like to use a grass cover crop before potatoes because it can be a host for wireworms. The forage radish + rape combo is seeded in late September. A good rule of thumb is to establish brassica cover crops about four weeks prior to the average date of the first 28°F freeze (early November in central NC).

A tried and true winter cover crop is a mixture of crimson clover + hairy vetch + rye. For any cool season cover crop planted after mid-October, she will just use hairy vetch + rye and omit crimson clover because it can't germinate that late; if she plants the cover crop before mid-October she'll use hairy vetch + rye + crimson clover. Vetch planted by itself remains a low, ground-hugging plant, but when given the rye stalks to climb it will actually produce more biomass.

Summer cover crops:

Cathy likes to plant Iron Clay cowpeas + black oil sunflowers because the cowpea puts on so much more growth when it has something like sunflower to climb. Seeding rate: 30 lbs. cowpea/A + 10 lbs. sunflower/A.

The benefits of this combo are many: great soil coverage to deny emerging weeds sunlight and nutrients, the cowpeas grow more biomass, the sunflowers create an attractive habitat for beneficial insects, and if you are a cut flower grower, the sunflowers can be harvested for bouquets!

She will plant a stand of pearl millet if her main goal is to add biomass (easier to manage than sudex) and will often put the pastured chickens on it to forage. Pearl millet can also be harvested for cut flower bouquets.

Cathy gets her cover crop seeds from Country Farm & Home Supply in Pittsboro, McBane Farm and Fertilizer in Snow Camp, and Southern States in Carrboro.

Alex Hitt, Peregrine Farm in Graham, NC

Peregrine Farm produces vegetables, blueberries, cut flowers, and pasture-raised turkey using sustainable practices. They sell at the Carrboro Farmers' Market, to local restaurants, and some wholesale.

http://peregrinefarm.net

Alex doesn't have a drill so they broadcast cover crop seed with a hand-cranked seeder. Once it is seeded, he sets the rototiller depth to an inch or so and drives fast over the field in fourth gear to shallowly cover the seed. Good seed to soil contact is very important so he's considering getting a seed drill. He uses the seeding rates from SARE's Managing Cover Crops Profitably: http://go.ncsu.edu/saremccp

Winter cover crops:

For spring cash crops planted before mid-April, Alex plants oats + crimson clover in the fall because it is the earliest maturing and easiest to kill. Oats are second to rye in biomass production among the cool-season cover crops. Oats are supposed to winter kill here but never do at Peregrine but they are easy to kill (they die when you turn them under, unlike rye!). You can turn this combo under any time from early February (for lettuce, etc.) to mid-April. However keep in mind that when you turn under a cover crop early you don't get the maximum nitrogen fixation which occurs at 50% flower (early flowering), nor do you get maximum biomass production.

For cash crops planted after mid-April, he uses rye + hairy vetch because it matures later.

Crimson clover – maximum nitrogen fixation the first two weeks of April

Hairy vetch - maximum nitrogen fixation the first two weeks of May

No-till pepper production – uses rye + hairy vetch – need enough rye biomass for weed suppression and enough vetch for nitrogen. Broadcast seeding rate: 55 lbs rye/A + 25-30 lbs vetch/A. He does the no-till peppers on flat beds because it is hard to kill and crimp the cover crop on raised beds. To kill the cover crop, he rolls over it with the flail mower turned off a few weeks ahead of time to knock the rye down in the direction he wants. It doesn't die but then the vetch regrows and blooms and then he rolls and crimps the cover crops with the rototiller turned off – this is done the second week of May (or when the vetch blooms). Peppers are planted immediately after killing the cover crop. Normally he does not have to provide supplemental nitrogen because the vetch provides about 200 lbs N/A but this year with all the rains he side-dressed with feathermeal. The biggest challenge

for his no-till system is grass weeds like crabgrass. He does not have a problem with broadleaf weeds in no-till production.

If you need to plant a cover crop late in the year, use rye or barley as they can be planted as late as December (of course earlier is optimal).

Summer cover crops:

Alex has two basic mixtures he likes to use, most planted in late May/early June:

Sudex + Iron Clay cowpea: when the sudex is waist high, he mows it down to 12-18" to keep it from getting too huge and unmanageable and also to make the roots go deeper. In normal years he only has to top it once but this year with all the rain he has mowed it twice. When the cowpea starts to bloom (around 8 weeks), he kills the cover crop.

He uses sudex for crops that don't require a fine seedbed because it leaves a lot of residue.

Pearl millet + soybean (if he can get non-GMO soybean, if not he substitutes cowpea) – this mixture is not mowed.

He uses pearl millet because it doesn't reseed like other millets. If he is following the cover crop with another cover crop in the fall, he will do a coarser, harder to manage mix with sudex. But if he needs a seedbed to be ready early (September), he will use millet because it's hard to get sudex to decompose in time since it is so coarse.

He uses buckwheat sometimes for a quick cover in the sliding high tunnels before a cut flower crop.

Alex grows several crops in Haygrove tunnels and adds a fallow rotation in the Haygroves every three years. This is his rotation plan for the Haygrove tunnels:

He takes it out of cut flowers in the fall and plants rye + hairy vetch sometime between mid-September and mid-October. That cover crop gets turned under in late May/early June – he mows it first with the flail mower, then allows it to decompose for a while, then if he can tries to till it in right before a rain, then covers with clear plastic for 8 weeks until mid-August to solarize. He pulls the plastic off and plants a pure stand of sudex for maximum organic matter, lets it grow for about one month and then fences his turkeys on it to get manure for a couple of weeks until early October. Then he flail mows the sudex and incorporates it and allows to decompose for a few weeks. He then seeds wheat + crimson clover before the end of October. In mid-March he mows and incorporates the wheat + crimson clover crop and follows with planting tomatoes in mid-April. The tomatoes

come out in September and then he plants oats + crimson clover in late September-early October (no later than mid-October), followed by cut flowers again in the spring.

Sometimes Alex uses a wheat + crimson clover combo in the Haygroves because its maturity time is between rye and oats.

Alex gets all his cover crop seed from McBane Farm and Fertilizer in Snow Camp.

Ken Dawson, Maple Spring Gardens in Cedar Grove, NC

Maple Spring Gardens produces vegetables, herbs, and cut flowers using sustainable practices. They sell at the Carrboro Farmers' Market, the Durham Farmers' Market, and have a Community Supported Agriculture program.

http://www.maplespringgardens.com

Winter cover crops:

Every few years Ken takes a field out of production so in early October he will seed a mixture of fescue + ladino clover + rye + crimson clover (the annuals nurse the perennials). He lets this cover crop grow for 2-3 summers, mowing several times during the summer as needed. At the end of the fallow period he will plant a warm season vegetable crop the summer after taking it out of sod. After the summer vegetables, he will till in September and let it lay for 2-3 weeks then till a couple of times and follow with a rye + crimson clover cover crop.

There are many benefits to perennial grass cover crops – they can really build organic matter, especially since there is no tillage.

Ken's standard winter cover crop is rye + crimson clover.

He has also had success with rape + forage radish, great before potatoes. However, the past 2-3 years they have had issues with brassica diseases in the fall so he has backed off the brassica cover crops for now.

Ken has also planted a combo of rape + forage radish + rye + crimson clover in early September. The rape and the radish put on heavy growth in the fall and rye and clover put on good growth in the spring. The rape blooms in the spring which is great for pollinators. Ken thinks this combo has great potential.

Vetch puts on most of its biomass in May so good to use for late plantings of tomatoes, etc. (especially a rye + vetch combination).

For early planted spring cash crops, he prepares the beds in the fall and covers them with plastic – no cover crops. He doesn't want to risk not being able to till in the spring if he has residue to incorporate and it's too wet.

Summer cover crops:

Ken likes to use a mixture of buckwheat + sudex; the buckwheat grows and blooms fast before the sudex takes over.

If he wants good biomass and nitrogen he plants sudex + cowpea. He seeds sudex at 20 lbs./A if mixing it with another cover crop. He also uses a mixture of Iron Clay cowpeas + buckwheat + black oil sunflowers + sudex after a spring vegetable crop. The buckwheat and black oil sunflowers are great for pollinators and beneficial insects. Sunflower also produces good biomass.

Ken has used sudex as a smother crop to get rid of bermudagrass in a field – he seeded the sudex in May, let it grow for two months then tilled it and followed with fall cash crops.

For maximum organic matter he plants a pure stand of sudex. Mowing it encourages root growth. He once had a stand of sudex that grew 14' tall. He mowed it with a bushhog and it grew another 8'!

To kill sudex, he flail mows it then rototills it to 4", puts compost down with the manure spreader, rototills again, goes through with a disc bedder two passes to put beds up high so they dry quickly; once the beds are up he goes over them one more time with the rototiller then lets them set for two weeks, then adds feathermeal and amendments, rototills one more time and puts plastic down.

Ken avoids the small-seeded millets (e.g. foxtail, browntop, etc.) because it's too hard to avoid them reseeding and he has had some bad experiences.

For seeding rates, if seeding something in a mixture he generally uses 2/3 the rate (broadcasted). He drills seed if planting a large area but uses a hand-cranked broadcast seeder for smaller areas. He rolls the field with a cultipacker after seeding to get good seed to soil contact. If you don't have a cultipacker you can set a slight angle to your disc to stir up the top couple of inches of soil.

Ken gets his cover crop seed from Brown's Farm Service in Rougemont, NC.