

GROWING SQUASH AND GETTING CLOVER

By Gavin Dandy

Here at Everdale Farm, squash works very well as a pioneer crop. We use it at the beginning of our crop rotation when we're breaking new ground, such as old hay fields, or when we're tackling fields with heavy weed pressure including twitchgrass (i.e. quackgrass) and other perennial weeds.

Our squash growing method is very versatile. It can be scaled up for larger farms or scaled down for gardens. It can also be used for crops other than squash. As with most farming and gardening techniques, the steps I describe have been developed to meet the needs and peculiarities of a specific farm—in this case, Everdale Farm near Hillsburgh, Ontario. If you decide to try this method, you would probably want to adapt it to your circumstances. I encourage you to experiment. The overall concepts are important, not the specific techniques.

I highly recommend our method for three reasons:

- 1) it builds organic matter and overall soil fertility;
- 2) it requires much less weeding work (both tractor and hand) than other methods we've tried; and,
- 3) it 'cleans up' the field for subsequent crops.

It also yields bumper crops of great squash (I almost forgot that part!). When the harvest is over, you have a solid field of nitrogen-fixing red clover to play with. We leave the clover as a winter cover crop and then plow it under the following spring before planting the next vegetable or grain crop.

Step one: eradicate the weeds

The first stage is eradicating perennial weeds. This begins in spring as soon as the land is ready to be worked.

If we are breaking old hay ground, we use our chisel plow to break the sod and then follow this with timely cultivations with the off-set disks and the S-tine cultivator. If we are breaking fields that are less established than old hay, we might skip the chisel plow and just start off with the cultivator. Either way, it's not the exact nature of the equipment that matters. We use those implements because that's what we have. You can use whatever you own or can borrow. In a garden you could do shallow passes with a rototiller. The goal is to exhaust the field's resident plants and thereby eradicate them. It's important to end up with a clean slate.

The drawback to all of this soil disturbance is that it depletes the soil's organic matter and it takes time and fuel (yet another vote for draft horses and other fossil fuel-free methods). As for soil damage, the temporary depletion caused by cultivation is more than offset by gains in organic matter and overall



The squash field showing the rows of squash with the oats/clover in between.

soil tilth later in the season. As for the time you spend cultivating, doing a thorough job at this stage will be re-paid many times over in this and subsequent years. You are laying the foundation for a successful multi-year crop cycle. As for the fuel use...we've all got to work on that part. At Everdale, we're working on a local growers' biodiesel co-op which may yield some solutions.

The key with the spring cultivation is timing. Keep a close eye on the field between cultivations. Be prepared to cultivate again as soon as you see the weeds re-emerge through the soil's surface. If your timing is good, you'll exhaust the weeds quickly since they won't get a chance to photosynthesize and replenish their store of energy. You'll also reduce the number of times you have to cultivate. The trick is to find the balance between cultivating too much and too little. Too much and you do excessive damage to your soil; too little and you don't eradicate the weeds. It takes practice and careful observation.



Hoeing between the squash plants and incorporating the clover seed. The oats and clover that were seeded a week earlier between the squash rows are starting to emerge.

Step two: planting

The second stage is planting. In our area, this happens in the first week of June. We plant transplants that were started four weeks earlier in our hoophouse. We sow three or four seeds in each four-inch pot. The hoophouse is heated at night, when needed, to keep the temperature from dropping below 10°C.

We prefer transplants to direct seeding for two reasons. First, unlike with field seeding, when we start the seeds in the hoophouse

we don't have to depend on costly field irrigation or a timely rainfall to get the seeds to germinate. Second, putting a sturdy four-week-old transplant in the ground gives the plant a running head start on the season. These plants are more resistant to mid-season drought since they get their roots down more quickly. If you prefer direct seeding that's fine too.

We have found that we don't have much of a problem with cucumber beetles if we have really healthy transplants, and if we're careful when we plant them to water them well and not damage the roots.

We use a simple water wheel transplanter* from Rain Flo which marks the correct spacing for our planting holes and then dumps enough water into the planting hole to keep the plants happy even if there is no rain in the next month or so.

* Lorenz Eppinger of Greenfields Farm introduced me to the water wheel transplanter. It's a beautifully simple piece of equipment that works for all kinds of transplanting. Thanks Lorenz! www.greenfieldsfarm.ca

Everdale's organic farm is dedicated to training new organic farmers and developing local food systems. Everdale's fifty-acre (20-ha) property is located near the village of Hillsburgh, one hour northwest of Toronto and a half hour east of Guelph. Everdale's educational programs include the *Future Farmers* internship, a curriculum-linked school program called *Farmers in the Schools*, and public workshops and tours on topics such as farming, renewable energy, and alternative building methods. Everdale also hosts special events that promote sustainable agriculture and local food systems. In September 2007, Everdale is hosting *Feast of Fields*. For more information on Everdale's programs and events, go to www.everdale.org or phone 519-855-4859 ext. 104.

The key with planting is to choose a row spacing measurement that matches your equipment. Sometimes planting time arrives and we haven't managed to fully eradicate the weeds. In this case, we go ahead and plant but we leave enough space between the rows so that our 10-inch S-tine cultivator can still squeeze in there for another pass or two. These last passes work best when we throw just enough soil on top of the squash plants to smother emerging weeds without damaging the squash. Ideally the weeds will have been eradicated by planting time. In this case, we can plant the rows a bit closer since we only need enough room for our bushhog to get in and do some mowing later on. In both of these scenarios, the bushhog (or any other mowing device you have) is the key to success.

Step three: cover crops

The third stage involves establishing cover crops. Once we have planted our squash and eradicated the last of the perennial weeds, we plant our cover crop.

We usually plant oats and red clover. We borrow a grain drill with a clover spreader for this.** However we've also had success

Our method is used for winter squash including:

- Jet acorn
- Cornell's Bush Delicata
- Metro F1 Butternut
- Early Butternut
- Sweet Dumpling
- Sunshine Kubocha Orange
- Turk's Turban
- New England Pie Pumpkin
- Cinderella Pumpkin



The tractor pulls the water wheel transplanter slowly so that there's lots of time for the two people sitting on the back to do a good job of planting into the watered holes.

just broadcasting the seed onto the soil surface and lightly incorporating it using a cultivator (to achieve better seed-soil contact and higher germination rates). The objective is to establish a thick stand of oats and clover between the squash rows.

Step four: weed control

The fourth stage is controlling the annual weeds. Our tractor and bushhog mower do the lion's share of this work. Weeding is as simple as driving the mower over the avenues of oats and clover that carpet the soil between the squash rows. This works beautifully because annual weeds are killed by repeated mowing while the oats and clover thrive under a mowing regime.

As you can imagine, it gets more difficult to mow if the squash plants start vining out into the oat/clover avenues. It helps to use

** Thanks to Johann and Maggie Kleinsasser at Whole Circle Farm!
www.wholecirclefarm.ca

squash varieties that don't vine too much (bush-types). It also helps if you seed the oats and clover early enough so that you have time to mow once or twice before the squash vines start making things difficult. On average, we mow three times between planting and harvest. We rarely mow in August and never in September. The main weed pressure occurs in June and the first half of July, so that's when we've got to get on the mower and take care of things.

The fourth stage also involves some hand hoeing (there's always a catch!). But I can honestly state that this is a walk in the park. The weeds that grow up among the squash plants need hand weeding. Like all successful weeding, timing is the key. We go in with a crew of half a dozen people in mid- to late-June when the weeds are in the sprout stage. Hoes with nice long shafts and thin blades are the tool of choice. It takes us no more than two hours to walk through about four acres (1.6 ha). Every



Volunteer and journalist Mia Greene, Everdale Future Farmer interns Jenn Kazda and Megan Clifford (left to right). Oats are planted in between rows of bush varieties of squash.

once in a while, we have to bend down to pull out a larger weed that escaped cultivation in the spring. In some really rough fields we may have to do a quick hand weeding in late July to grab a few stray weed monsters. But this has become unnecessary over the past few years as we've become better at implementing this system.

When we hand hoe, we also hand-broadcast red clover seed on the areas that didn't get tractor-seeded earlier. We scatter clover seeds on top of the squash rows so that clover seedlings will grow underneath the squash vines. This step ensures that we'll have a solid clover field established once the squash harvest is complete. We broadcast the clover seeds before we hoe the weeds. That way the scraping action of the hoes as they work out the weeds also acts to incorporate the red clover seeds into the soil.

When the squash harvest is finished in the fall, we are left with a lush and productive field of red clover to carry the field through the winter and into the following year. By the time the oats are winter-killed they will have added hundreds of pounds of organic matter to the soil and their fibrous root systems will have significantly improved soil tilth.

Gavin Dandy farms and lives with his wife Karen and their three daughters at the Everdale Environmental Learning Centre. Gavin is also a member of the board of directors of Canadian Organic Growers. Photos provided by Everdale.

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