

Organic Fall Cole Crops

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Fall Cole crops have been the most consistent homerun group of crops our farm has produced over the last twenty-five years. We attend two large farmers markets in the Providence area, have a 300 + CSA program and sell to several chain stores the largest amount going to Whole Foods. Just when the farmer's market sales begin to wane for Tomatoes and other heat loving produce, our fall broccoli and cauliflower displays knock consumers socks off with the sheer volume, color and texture. Yes, you will still make more money per square foot growing lettuce or parsley but there is an attraction consumers have for Cole crops in the fall that is palpable and very financially rewarding.

We begin with the **greenhouse plug production**: Our choice has been a 98 cell trays, we use 'landmark' because it fits our vacuum seeder (the Berry Seeder Co.) Our soil is from 'Vermont Compost Co.' we use their "lite" mix which has a ratio of 25% compost mixed with peat moss and perlite. We dibble the soil filled trays with the under side of one of the 98 trays themselves. This provides an ample reservoir for the seed to drop into from the vacuum seeder. Once the seed is in the dibbled hole we cover it with a thin layer of vermiculite from the Whitmore Co. be sure to get the extra fine grind; coarse won't work. We feel the first watering and soil temperatures are critical. The first day we make sure the trays are double watered and if it is over 90 degrees the trays maybe stacked in a cool barn for 48 hours till the germination has begun. This is a great solution to germination problems during the dog days of summer, but only if you are disciplined enough to be sure and get those trays back in the greenhouse and spread out well in advance of their emergence. Shade cloth over greenhouses helps but we find there is always a week or so when we still need to put our lettuce and Cole crops in a cool germination area for the first 48 hours. Once the seedlings are up we immediately start a constant feed program. Since we are using organic feed that means we are dealing with hydrolyzed fish and seaweed blends. "Organic Gem" works well as does "Squantos' Secret". There is no way to put these oily fish blends through a dosmatic..etc..They will gum them up almost immediately. A watering can is a pain as well and as too inaccurate. We invented a ten gallon bucket with a sump pump at the bottom that splits at the top; one going out to a hose fitting the other going back into the ten gallon bucket to keep the mix agitated. Now we can feed with a regular garden hose and due 500 trays at a wack. We feed every third watering and always use the same ten-gallon system. That way the system is self-flushing and we don't have to worry about cleaning it out. Every fourth watering we throw in some oxidate 1: 200 to give the plugs a cleansing to avoid dampening off" and to avoid algae from growing on the top surface of the plug (this is actually quite a problem). As soon as the plugs have one true leaf they are out in the staging area or cold frames. This allows the wind to stiffen them up and seems to help with root growth vs. top growth. These last two items are quite important in our system because one of our key organic weed control measures is our first cultivation, which is a blind cultivation with a 'Lely' or 'Ein boc' wire weeder. For this system to work the plugs need to have a very healthy root system that immediately grasps enough field soil to hang in there when the wire weeder goes over the top of it. If not the broccoli plug will get flicked out of the soil along with every other

weed in wire weeder's path. **Back to Field Prep:** we don't like the transplants to get too mature. We are constantly looking at the root development in the plugs and don't pay so much attention to the top leaves. We want to see roots that are evenly spread throughout the cell without starting to circle at the bottom. This is the optimum size; not a big leafy plug that is pot bound. Those plugs will suffer from transplant shock and will most likely be torn out of the ground by the wire weeder. Another preplant protocol for us is to always treat the whole group with some form of BT spray to combat cabbage loopers etc. We use 'Dipel' with an organic sticking agent. We have gone to adding Pyganic (a Pyrethroid) to this concoction to give us a leg up on flea beetles (a worsening problem pyganic has a marginal effect on)! The last step before the field is a seaweed concentration dip (Seacom PGR from Johnny's). We let the trays soak for three minutes before they go on the tractor. I am embarrassed to say we still plant with a water wheel, of course without the water (as that would create muddy spokes in a minute). The well watered plugs go in fine and a day later we are out there with a 200 gal water tank and a kid at the end of a hose putting a well placed shot of water right over the plug. We do six acres of Cole crops this way. We are actively seeking a good carousel planting unit. We had heard the best system is one made by the 'Lannen' company (Market Farm Implements). In an ideal world you do not want it to rain for the next six days. The somewhat powdery freshly prepared field is germinating weeds like mad that are unseen. That is why day seven is the time you bring out the 'Lely' or Wire Weeder. This blind cultivating tool is great! Be sure to spend the extra money on a set of gauge wheels. No matter how good you are, all fields have swales and bumps. The 'Lely' will not gouge out as many plugs if you have these add-on wheels. Depending on rain and flea beetle pressure, you must gauge how soon you go back in with sprays. Until four of the true leaves are ten inches long, flea beetles can ravage your plantings and set a whole host of diseases upon thy crops. About day twelve we get out our 'Reigi Weeder' from Univerco in Canada. We have the two-row unit but the new off set single row looks great too. We love this unit. It does what no other cultivator will accomplish and is top dog at keeping your early planting as weed free as possible. It does a great job dodging in and out between the plants while it pushed a small inch of soil up against the young transplants. We also justify the 'Reigi's' expense by using it to keep the sides of our plastic beds weed free. Depending on rain, by day 18 we are going in with our John Deere 900HC. It is a high clearance single row cultivator from the seventy's with a side dresser. We put down the North Country Organics 'Cheap Cheap' fertilizer. It is important to keep this ultra dry so it flows well through the side-dressing unit. This is the first cultivation when we try to start hilling either side of the plants. If tractor speed and spades are set right it adds a inch + to the row center and buries any weeds. By now the broccoli plants are 14" height and starting to shade the in row weeds. After this we take runs through with a deerborn cultivator, or the like, to keep the between rows clean. About a week before the broccoli start setting their crowns we go in and spin spread on about 90lbs per acre of rye seed. With any moisture this will slowly germinate and be a well-established cover for the winter. At this late a date in the crops maturity this does not take any energy away from the plants.

All of the above procedures apply to our Cauliflower, Kale & Collard crops. With cabbage we added an additional cultivation with a long beet knife that cuts under the wide cabbage leaves to under cut any low growing galinsoga type weeds. In the cabbage we hand apply the winter rye so they do not get lodged in between the leaves. We need to mention the importance of the soils **boron** adjustment. For years we looked at our soil

tests and looked at the Knott's book of vegetable production and felt that our levels didn't warrant the extra expense of making a boron adjustment. Yet year after year we have had crop indicators (hollow stem broccoli etc) that we, in fact, were deficient in this important brassica micronutrient. Our solution has been to use 'Solubor' in our boom sprayer and put on just enough to get us through the season. This is applied just prior to the last harrowing and field preparation. We also try and manage our rye fall cover crops to have a 25% vetch component. This gives our Cole crops a fertility boost and allows us to back off on side dressing amounts. A late spring oat/field pea crop actually is even better if one can find the time to get it done in the crazed late May to do list.

Spacing thoughts: We plant fall Cole crops with 36" between rows and 18" in the row. But recently we have experimented with some alternatives. Since we plant in pairs of rows, we now add 4" or 40" between the paired rows. We find this allows us to run the late cultivation tractors at a greater speed. This throws soil further for burying those nuisance weeds that come in the last leg of the production period. Another idea for a mid summer crop, we have played with tightening the in row spacing down to 12" and the between row spacing to 28". We are trying to establish quicker shading of weeds like galinsoga. Our best Brussel Sprout crop was done this way. Though with galinsoga on the rampage we are looking to put Brussel Sprouts on black plastic next season.

A word about **Alternaria:** We were blind to this brassica disease for years. In our early years, when we saw it we thought it was kind of benign, somewhat like the inevitable leaf spots that accompany most beet crops. However, alternaria is far more insidious and potentially a very bad long-term problem. With more farmers growing fancy brassica based greens mixes (Tatsoi, Chinese greens, Mustards, Mizunna, etc...) it is becoming more difficult to give our fields a rest from **all** forms of brassicas. It is therefore becoming imperative that we manage our crops and quickly dispose of them when they are complete or (most importantly) if they have failed and are languishing. The postponement of disposal is just breeding more spores that will come back to haunt you in ever increasing number for years to come. It is estimated that these spores can carry forward for up to four years. All these conclusions also apply to Black Rot another brassica problem. Being vigilant about flea beetles and giving your crops adequate water will lessen the impact of these pathogens. Fungicides (organic or otherwise) will also help keep these diseases in check. Though there is still no substitute for a healthy planting for fending off a multitude of bugs or disease.... A list of preferred varieties will be available at my talk or by emailing me. Skippaul@wishingstonefarm.com For more info brassicas seek out 'umassvegetable@umext.umass.edu' this is an excellent biweekly email update on crop conditions and the latest extension research happening in New England. An indispensable tool for all growers!