

VEGETARIAN NEWSLETTER

A VEGETABLE CROPS EXTENSION PUBLICATION
UF/IFAS - HORTICULTURAL SCIENCES DEPARTMENT

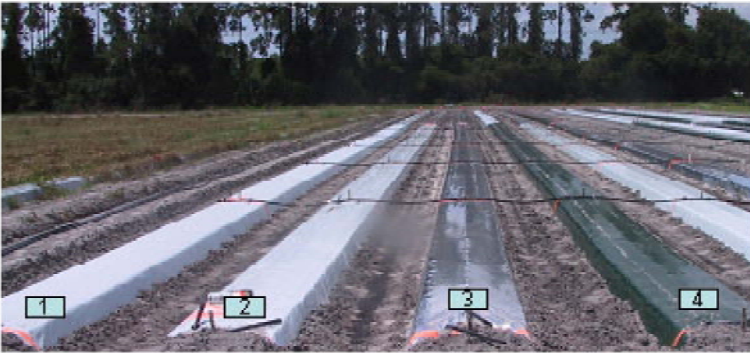
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POLYETHYLENE MULCH FILMS - WHAT'S IN A NAME?

More and more names are being tossed about these days, especially in the discussions concerning methyl bromide (MeBr) rate reductions with various plastic mulch films. LDPE, LLDPE, HDPE, High Barrier, and VIF - - just how do they differ? To begin with, the polymer resins used to produce the mulch film determine the physical characteristics of the finished product. Traditionally, two major types of polyethylene resins are used to produce plastic mulch films, each having a different polymer chain structure. High-density polyethylene (HDPE) is a more linear polymer and results in a stiffer and stronger plastic. Low density polyethylene (LDPE) is a more highly branched polymer, resulting in a more flexible plastic. Because HDPE is stronger than LDPE, it's possible to get a thinner gauge plastic, allowing for more plastic on the roll which reduces costs and speeds up field operations. The down side is it may require modification of equipment to accommodate the stiffer plastic. It does not hug the bed as tightly as LDPE. More recently, linear low-density polyethylene (LLDPE) has come on the market. Reportedly, greater film strength allows for high puncture and tear resistance; however, it is difficult to find anyone in Florida who has experience with LLDPE. One comment heard is that it 'balloons' out too much, probably due to the greater flexibility or 'stretchiness'. A blend of LLDPE and LDPE reportedly can give the desirable amount of stretch and is being used by at least one manufacturer.

Confusion exists when the terms 'high barrier' and virtually impermeable film (VIF) are used interchangeably, implying they are the same product. This is not the case. High barrier films refer to polyethylene films that are less permeable to MeBr than standard LDPE. Reductions in fumigant emissions typically range from 20% to 60% but are dependent upon soil and ambient temperatures. Permeability increases 1.5 to 2 times for every 18°F increase in air temperature. Virtually impermeable films are multilayered films that include polymers other than polyethylene in the center layer that are gas impermeable. Polyamide, or nylon, is commonly used in VIF films to create the impermeable barrier. The standard for MeBr permeability of VIF is provided by the French government, who state that to be classified as VIF, the film must have a permeability factor of no more than 0.2 grams of MeBr per square meter of film per hour. By contrast high barrier films have a permeability factor between 5 and 8 grams MeBr per square meter of film per hour, according to the California Environmental Protection Agency. The use of the term 'high barrier' was initiated in California in response to efforts to force the agricultural industry to convert to VIF. In actuality, the permeability differences between HDPE and LDPE are small when compared to the permeability of VIF. Reportedly, Telone emission rates under LDPE and HDPE are nearly identical. In testing done in Florida, vapor studies compared the percent transmission across a film in a given period of time. Preliminary results indicated the standard black LDPE allowed 45% transmission in 81 hours compared to 38% for metallized mulch film and 4% for Klerck's VIF over the same time frame. Similar work by Yates with USDA/ARS in California showed that MBr emission in bare soil was 87%, emission with HDPE was reduced to 67%, while emission under VIF was less than 5%. In work at Bradenton, metallized mulch was slightly more retentive than high barrier by the same company, and gave slightly better nutgrass control. In addition, soil temperature was lower and air temperature higher with metallized mulch, but there was no difference in plant growth. Growers have complained about the handling characteristics of VIF materials. Some of the newer VIF materials coming out do allow faster laying speeds without sheer and are "whiter", more like the standard white on black LDPE. Benefits from the use of VIF are the ability to significantly reduce, by at least 50%, the amount of MeBr used, a feature which will become more important as the industry works within the availability and regulatory constraints of MBr issues, and the ability to improve the performance of alternative fumigants, such as Telone C-35. As with any new technology, adoption rates of VIF will depend on how a grower perceives the need. Once the benefits are substantial enough, ways will be found to make it work.



1. Plant high barrier white on black; 2. IPM Promonstop white on black VIF; 3. Plant Metallized film; 4. Klerks Hytbar green VIF in trials at GCREC, Bradenton, 2003.

(Phyllis Gilreath, Manatee County, Jim Gilreath, GCREC-Bradenton, Dan Chellemi, USDA/ARS, Ft. Pierce - *Vegetarian 04-08*)

HOME VEGETABLE GARDENS GO LOW CARB

Better pass up the apple pie, skip the chocolate cake and head right to the broccoli, cucumbers and spinach if you are avoiding carbohydrates. Commonly referred to as carbs, they are the topic of almost every meal especially if you are sticking to one of the trendy diets.

Perhaps you haven't thought of vegetables full of water, vitamins and all the good stuff your body needs as a source of carbohydrates but one five inch sweet potato stacks up to a three inch slice of apple pie with about 36 grams of carbs each. A cup each of boiled potatoes and southern peas are not slackers either also packed with 23 and 30 grams of carbohydrates respectively which is more than one dinner roll.

"Dieters can reduce their carbohydrate uptake significantly by eating the low carb vegetables," say Dee Wilkins (cq) nutrition specialist with the University of Florida IFAS Extension in Orlando. She says carbohydrate are one of the major nutrients that every body needs consisting of sugars and starches used by the body to produce energy. Excess amounts are stored as glycogen in the muscles or converted to fat.

But don't cut back on your vegetables to reduce fat warns Wilkins, just be more selective as to the types you eat. Vegetables also contain fiber, lots of vitamins including A and C, plus minerals needed for good health.

"Variety is the secret – Don't eat the same thing every day. The greater the variety of vegetables you eat the better the chance of getting the needed nutrients."

So, what are some the really low carb vegetables? Dieters could eat three cups of vitamin A filled carrots, seven cups of vitamin C containing cauliflower, or five cups of iron rich spinach before equaling that slice of apple pie.

Probably no one is going to eat this much of any one vegetable at a sitting, as a half cup is usually considered a normal serving. Still these and many more vegetables are low in carbs but high in other nutrients your body needs. But what about corn weighing in with 31 grams of carbs to a cup or a medium baked potato at 32 grams? You could eat less or you could hope for a miracle like a low carb potato?

Your request has been granted says Chad Hutchinson (cq) vegetable specialist with the University of Florida IFAS Horticultural Sciences Department in Gainesville. Starting in January a 'low carb spud' produced by Florida growers arrives at the grocery store.

"It's one of the higher carb vegetables that doesn't get much respect from dieters," says Hutchinson. "Hopefully the new potato is going to let people eat potatoes and have a little less guilt."

The yet unnamed variety with thirty percent fewer carbs arrived at the Florida research center via the Netherlands and has been evaluated for five growing seasons. Hutchinson says it's a good producer yielding up to fist size six to eight ounce potatoes with a cream colored skin and light yellow flesh.

Low carbs is just one claim to fame as this potato is a good baker and boiler. When compared with the variety Sebago which Hutchinson says is the "gold standard for flavor – folks feel it's better or equal in flavor."

Late summer and fall begins a new growing season for all of Florida's vegetables whether in commercial fields or small gardens. Growing your own low carb vegetables might be a good reason to start home plantings to include beets, broccoli, snap beans, carrots, cauliflower, celery collards, cucumbers, eggplant, lettuce, peppers, radish, spinach, summer squash, tomatoes and turnips.

Another good reason to plant is because fresh vegetables taste better – there is a remarkable difference, says John McQueen (cq) agriscience (cq) teacher at Meadow Woods Middle School in Orlando. He also notes fresh vegetables smell better too.

"When you pull a fresh carrot you get a special aroma. You don't get this when you go to the store and buy them in a bag. When growing your own, there is a stronger connection between you and the food."

He also explains you don't need a lot of space to have a good garden. In one 60 square foot area tended by students enough greens were raised to feed 80 people every two weeks. The harvests included cut and come again lettuce, arugula and mustard greens. The plantings lasted for three cuttings before they began to decline and were replanted.

"Some students took to the gardening project from the start while others were less enthusiastic -- some didn't want to get their hands dirty," says McQueen. "But in the end they all liked the harvests."

McQueen teaches organic gardening techniques and says the sands are a real shock to first time gardeners. "They are not used to what we call soil. They think of it as beach sand."

Sands do produce good crops and have excellent drainage. McQueen suggests small plot gardeners enrich the sands with manures and compost. They should also use a mulch to help keep the soil cool, retain moisture, replenish the organic matter and supply some nutrients.

Florida gardeners can begin nine months of planting in August with the warm season crops of eggplant, peppers, tomatoes, okra, squash, cucumbers and more. About the time these produce their yields in October and November the cooler weather arrives and broccoli, carrots, cauliflower, cabbage, turnips and greens can be added to the garden.

McQueen reminds us and his students, gardening takes a little time. "If you are not going to give it attention your not going to get good yields." Follow are a few tips he says should ensure a harvest.

- Check the soil frequently for moisture; dig down an inch or two and when dry it's time to water.
- Fertilize every two weeks with an organic product like fish emulsion.
- Pull weeds and use a mulch to prevent them from competing with the crops.
- Control pests by hand picking or natural soap sprays.
- Get to know the good bugs and allow them to remain in the garden.
- Gardening is also fun, it provide good exercise, gets you out in the fresh air and is a family activity. One thing McQueen says gardening probably won't do is save you lots of money. He adds the quality of what you grow is much more important.
- "You cannot buy the food you raise because it's so fresh and nutritious. It's hard to put a price on vegetables harvested fresh from the garden."

(Tom MacCubbin, Orange County - Vegetarian 04-08)

WATERMELON VINE DECLINE AND FRUIT ROT – UPDATE

This spring, Southwest Florida watermelon growers have been hammered by a disorder currently being called watermelon vine decline. The problem was first seen in the spring of 2003 in southwest Florida and fall of 2003 in west central Florida, when a number of growers reported problems with watermelon vine collapsing as the crop approached harvest or soon after first harvest. Initial symptoms appear as a slight yellowing or weak area in the field, followed by wilting of the vines, scorched and brown leaves, defoliation, and rapid mature vine collapse. In most cases progression of symptoms is quite rapid with a week to 10 days between the onset of symptoms and destruction of an entire field. In a high proportion of affected fields harvested fruit displayed a greasy necrosis (brown) on the interior portion of the rind that rendered the fruit non-marketable. In almost all cases fruit quality was greatly reduced.

It is estimated that approximately 60% of the watermelon acreage in the Immokalee area was affected this spring with losses ranging from 30% to near total depending on the field. Estimates of losses to growers range from \$25 to over \$50 million dollars.

The disease is particularly vicious in that it manifests itself after growers have made their maximum investment in bringing the crop to maturity. In cases where fruit necrosis is present the disease is even more devastating as a grower loses additional money in the form of harvest and transport cost to market as well in addition to loss of confidence of the buyers who have had to turn back loads.

Under the leadership of Dr. Pam Roberts Pathologist at UF/IFAS-SWFREC, in Immokalee, investigations on the disease and its occurrence are under way thanks to an emergency grant from the Assistant Vice-President and the Deans of IFAS. With grant funds Dr. Roberts has recruited three plant pathologists who are worldwide-recognized specialists in melon declines and other disorders to help look into the problem.

Since the disease first appeared in 2003 numerous samples and field visits have been made. To date, results obtained so far are inconclusive but indicate that there are nutritional deficiencies in most fields tested, for both plant tissue and soil nutrients. The most frequent soil deficiencies on the samples we collected are K and S, with some fields having B, Mn and Fe deficiencies as well. A number of the tissue samples were deficient in K and S most frequently, but some showed deficiencies of N, P, Mg, Cu, and Mn.

Although nutrient deficiencies have been detected, it is believed that they simply may have contributed to weakening the plants, thus increasing susceptibility to disease and allowing for some pathogenic organism to invade the plant.

There seems to be no consistency regarding soil moisture as it varies from very wet (> 20%) to very low (< 3%) in the various sampled fields. It does appear that wetter areas are affected first, but then the decline spreads over drier areas of the field.

Microorganisms including fungi and bacteria were isolated from symptomatic tissue. The predominant fungus recovered was *Fusarium* spp.; however, *Rhizoctonia* and *Pythium* spp. and additional isolates were recovered using selective and semi-selective culture media for commonly occurring root pathogenic fungi and bacteria. Further isolations are now being made from special media. Symptomatic fruit tissue is also being tested for recovery of pathogens. Isolates and bacterial cultures are being maintained for pathogenicity screening in the next few months. The ability to cause similar symptoms by planting in soil from infested fields will be investigated in greenhouse studies.

Samples are also being examined for transmissible agents by electron microscopy and recovery of double-stranded RNA and indicator plant inoculations for further investigation of viruses/viroids, especially those that could be transmitted by insects. Screening of plant tissue for known viruses by serological testing has not yielded any viruses other than those commonly found in watermelon fields in South Florida.

In summary, considerable effort and resources are being directed towards finding the cause of the problem and avoiding it in the future. However to date all studies are inconclusive, and no firm conclusions can be made. Recently the Florida Watermelon Association offered to contribute additional funds to help identify the causal agent and possible remedies.

(Pam Roberts, SWFREC-Immokalee, Rosa M. Muchovej, Gene McAvoy, Hendry County and Phyllis Gilreath, Manatee County - Vegetarian 08-04)

ORGANIC VEGETABLE SEED

According to the National Organic Standard, organic growers must use organically produced seeds and transplants. There are three basic rules that apply to seeds, seedlings, and planting stock.

The first basic rule is: organic seed and planting stock must be used in organic production. If an equivalent organic crop variety is not available, untreated conventionally grown seed and planting stock may be used.

The second basic rule is that transplants used to produce an annual organic crop must have been organically grown. A variance to use conventional seedlings may be granted only if the original transplants were destroyed through drought, wind, flood, excessive moisture, hail, tornado, earthquake, fire or other business interruption.

The third basic rule is that seeds, annual seedlings, and planting stock used in organic production may not be treated with prohibited substances. The only exception is when the application of those substances is a requirement of Federal or State phytosanitary regulations.

Organic growers have the responsibility to ensure that no genetically modified material is used including GMO pollen contamination. Conventional seed treatments using fungicides which are not approved for organic production are prohibited.

Allowed treatments include natural materials such as biological inoculants and synthetic substances that are on the National List. Examples are seaweed extracts and the inoculation of legume seeds with rhizobium bacteria.

Organic seed requirements also applies to cover crop seeds, but some certifiers treat this as general guidance and consider cover crop seed as plant materials for managing soil fertility. As in all cases, be certain as an organic grower, you understand your certifier's views on all matters.

Understanding terms: Equivalent variety is a cultivar of the same type with similar plant characteristics when compared to the original preferred variety. Example: type refers to the basic plant type, head lettuce type vs. leaf lettuce type; characteristic refers to factors such as color, pest resistance, and maturation.

Commercially unavailable would be if an organic supplier could not be located or if the organic supplier could not provide seed in the quantities needed, or if the available seed quality were substandard. Higher seed cost of organic seed and propagation materials are not considered acceptable reasons for using nonorganic seed. Your certifier ultimately makes the final decision on whether the use of nonorganic seed or planting stock is justified.

The term 'seeds' is self-explanatory. Annual transplants are seedlings of annual crops that have been removed from their original place of production and replanted elsewhere. Planting stock is any plant or plant tissue other than annual seedlings including rhizomes, shoots, leaf or stem cuttings, roots or tubers used in plant production or propagation. Planting stock includes sweet potato slips, garlic cloves, white Irish 'seed' potatoes, and flowering bulbs as well as tree seedlings, strawberry plants, and blackberry root cuttings. (Most of this information came from NCAT's Organic Crops Workbook, A Guide to Sustainable and Allowed Practices, ATTRA, Fayetteville, AR).

Sources of Organic Seeds

W. Atlee Burpee & Co., Warmister, PA 18974, 888-333-5808, www.burpee.com

Fedco Seeds, PO Box 520, Waterville, ME 04903-0520, 207-873-7333, www.fedcoseeds.com

Heirloom Seed Project, 2451 Kissel Hill Road, Lancaster, PA 17601, 717-569-0401 ext 200, www.landisvalleymuseum.org

Johnny's Selected Seeds, 310 Foss Hill Road, Alvirton, ME 04910, 800-437-4290, www.johnnyseeds.com

Seeds of Change, PO Box 15700, Santa Fe, NM 87592-1500, 888-762-7333, www.seedsofchange.com

SeedWay, Organic Grower Vegetable Seed Catalog, 1255 Zeager Rd, Elizabethtown, PA 17022, 800-952-7333, www.seedway.com

Territorial Seed Company, PO Box 158, Cottage Grove, OR 97424-0061, 541-942-9547, www.territorialseed.com.

The Cook's Garden, PO Box 535, Londonderry, VT 05148, 888-457-9703, www.cooksgarden.com

Harris Seeds, 355 Paul Rd, PO Box 24966, Rochester, NY 14624-0966, 800-544-7938, www.harriseseeds.com

High Mowing Seeds, 813 Brook Rd, Wolcott, VT 05680, 802-888-1800, www.highmowingseeds.com

The Maine Potato Catalog, Jim and Megan Gerritsen, 49 Kinney Rd, Bridgewater, ME 04735, 207-429-9765, www.woodprarie.com

Seed Savers Exchange, 3076 N Winn Rd, Decoran, IA 52101, 563-382-5990, www.seedsavers.com

Sow Organic, PO Box 527, Williams, OR 97544, 888-709-7333, www.organicseed.com

Veseys Seeds, PO Box 9000, Calais, ME 04619-6102, 800-363-7333, www.veseys.com

(J. M. White, MFREC-Apopka - *Vegetarian 04-08*)

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