



2016 Seed Catalog

Farmer Direct Seeds from Virginia

"Know Your Seed Grower"



Bushel Basket

Thai Bottle

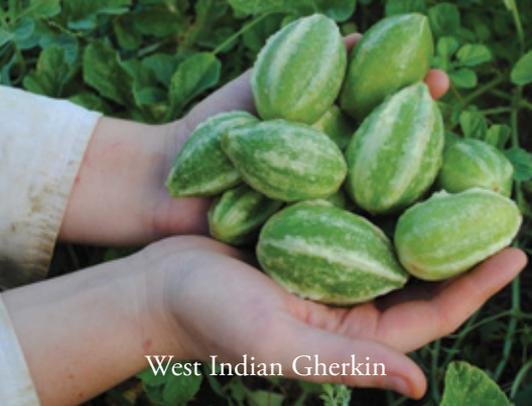
Tarahumara Dipper has excellent Downy Mildew resistance! More DMR varieties and trial results inside.



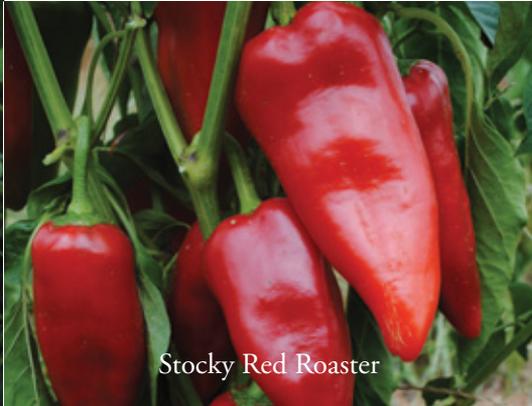
Seminole-Waltham Evaluation



Barnes Mountain Orange



West Indian Gherkin



Stocky Red Roaster



Grits Tasting - TN Red (top),
Floriani Flint, Bloody Butcher



African Drum Gourd



DMR 264

DMR 264 (above) and Marketmore
76 (below) in Twin Oaks Downy
Mildew Trial. 8/28/2014

We are excited to be releasing our second seed catalog! In the 2015 growing season we were able to reap many of the harvests pointed to by our 2014 research, and some from 2015 research (especially hand-pollinated gourds and winter squash).

We're offering 29 new varieties this year! Many of them are unavailable commercially anywhere else. Most of them are quite notable in terms of disease resistance, regional adaptation, productivity, eating quality and other important traits. Many are standouts from our variety trials. All are grown and assessed on our farms in Virginia.

Identifying and developing varieties resistant to Cucurbit Downy Mildew is a priority for us, and an area where we stand out. We carry over 20 varieties of cucumber, melon, gourd, watermelon and squash with high levels of Downy Mildew resistance. Over half of these are not commercially available elsewhere.

In 2015 we continued research and breeding work with cucumbers, winter squash, and tomatoes, and started new research with hardshell gourds and summer squash. We are applying for several grants to continue this work in 2016 and beyond. Please see page 24 for more details.

Last winter was Common Wealth Seed Growers' first full retail sales season. A lot of you were excited about the seeds and the project, and we enjoyed connecting at winter and spring farming conferences. Despite a few problems, including a small percentage of misprinted catalogs, things went smoothly overall and we sent out a lot of good quality seed.

This winter is bringing a lot of change for Sapphyre and me, as we are moving to a new farm in Botetourt County, Virginia – about 120 miles southwest of where we've been farming in Louisa County. We plan to be doing similar seed growing, research, breeding and vegetable production to what we've done at Twin Oaks. River Oneida will be taking over management of Twin Oaks Seed Farm. Please note that we've changed our mailing address, though mail sent to our old address will still be forwarded. Thank you River, Nina and everyone else I've worked with over the past eight years on Seed Growing crew at Twin Oaks.

We would love to hear more feedback, positive and negative, about the CWSG varieties you are growing. It will help us know what to prioritize and will improve our variety descriptions.

Thank you for your interest in this project. Have a healthy and productive 2016 growing season.

Edmund Frost, Director, Common Wealth Seed Growers

How to Order

ALL PACKETS COST \$3.50. SEE DESCRIPTIONS FOR BULK SIZE PRICES.

Order online at www.commonwealthseeds.com. Our website has color pictures for all varieties, as well as planting information, variety trials reports, seed saving information, farm pictures and more.

Order by mail using the instructions on page 32 of this catalog.

Mail to: Common Wealth Seed Growers; PO Box 1157; Buchanan VA 24066

Email us at commonwealthseeds@gmail.com or leave a message at 540-223-5861 with any questions you may have. We do not have regular phone hours, but will get back to you in one to two business days.

Cover Photos: From left to right: Betsy Trice, Rosa and Debbie Piesen, William Hale, Edmund Frost, Lyndsey Walker, and Sapphyre Miria. Below: Sapphyre Miria taking Downy Mildew foliage ratings in our 2015 gourd trial. On a 1-9 scale for DM severity on August 29th, Thai Bottle scored 7.5, Bushel Basket scored 7, and Tarahaumara Dipper scored 3. Read more about our Downy Mildew trials on page 26, in various variety descriptions, and at commonwealthseeds.com/research.

About Us

Common Wealth Seed Growers is a new retail seed company and seed growers cooperative from Virginia. We grow and sell regionally-adapted, regionally trialed, open-pollinated, organic seeds for a limited number of outstanding varieties.

Farmer Direct: We grow all the seeds we sell, and we only sell what grows well here. We are committed to full seed source transparency. All of our seeds are labeled with the name of the farm where they were grown. Note that this is not a full service vegetable seed catalog – we are a group of farmers selling seed types that we know how to grow well. We are committed to only selling what we grow, even if that means that we won't have any carrots, peas, spinach, cabbage or onions. That said, we're interested in learning how to grow new kinds of seeds to offer in the future.

Open-Pollinated and Regionally Adapted: Open-pollinated seeds keep farmers and gardeners in control of what they grow. Unlike hybrids, they can be adapted to regional and even farm-specific conditions. We have been selecting and adapting many of our varieties for several years, for disease resistance, productivity, appearance and flavor in our conditions. Part of our mission is to encourage and support other growers to do the same.

Variety Trials and Breeding: We are committed to ongoing variety trials to identify outstanding open-pollinated seedstocks from many sources. Read more on page 24 and at commonwealthseeds.com/research. We are also engaged in breeding work. Our cucumber and squash breeding projects focus on Downy Mildew resistance, productivity, flavor and fruit quality.

Organically Grown: Disease and insect resistant varieties are especially important for organic farmers and gardeners because our options for disease and insect control are limited. Our seeds are chosen and selected for good performance in low-input organic conditions. **All our seeds are grown using organic methods – most are certified organic. Labels and variety listings indicate which varieties are certified organic. All our seeds are untreated and non-GMO.**

Germination Testing: All our seed lots are tested according to Association of Official Seed Analysts procedures, and found to exceed federal germination standards. Contact us if you need germination results on a particular seed lot.

Non-GMO: We GMO test all our corn. All corn seedstocks we sell tested negative for GMOs in a PCR Qualitative Analysis test at Genetic ID labs in Iowa. We also support the Safe Seed Pledge, which you can read at councilforresponsiblegenetics.org/help/takeaction.aspx.

Bulk and packet sizes: We offer bulk sizes for most varieties, as it is our goal to serve both commercial growers and gardeners. All packets cost \$3.50. Bulk prices vary by variety. See variety descriptions for bulk prices and quantities, and for packet weights. *We use grams as well as ounces for measurement. There are 28 grams in an ounce.*

Planting Information and Seed Saving Information: Please visit our website for planting information and seed saving information on each of the crop types we offer. For more information on seed saving we recommend Jeff McCormack's online seed saving guides for the mid-Atlantic and Southeast, which can be found at savingourseeds.org. Organic Seed Alliance is also a great resource: seedalliance.org.

Variety Descriptions: These are mostly written by Edmund Frost. Days to maturity are based on our experience, but we consider them a relative and approximate measure. Our days to maturity listings are usually shorter than those given by seed companies in more northern areas. Listed seed counts are based on 100-seed weights, and are not exact.

Liability: As is customary in the seed trade, we limit our liability to the purchase price of seeds. Let us know if you encounter a problem with seed quality and we'll do our best to make it right.

Feedback: We want your feedback! We want to know what works well for you and why; and we want to know if you have problems with any of our seed lots so we can address them as soon as possible.

Meet the Growers!

Edmund Frost managed Twin Oaks Seed Farm from 2008 through the end of this growing season, producing certified organic vegetable seeds on six acres in Louisa County, Virginia. Edmund and Sapphyre are currently starting a new farm in Botetourt County, Virginia, where he will continue to focus on vegetable seed production, research, and breeding work, especially with Cucurbit crops. Edmund has worked as an anti-GMO activist and is committed to building functional alternatives to corporate control of our food, farms and seeds.

Debbie Piesen has managed seed growing at Living Energy Farm since 2010, growing seeds and produce on three acres of certified organic land just outside of Louisa, Virginia. LEF is a project to build a self-sufficient farm, community and education center that uses no fossil fuels or grid electricity. She is passionate about identifying and stewarding varieties that really work well for homesteaders and gardeners who grow most of their own food, as well as for market growers.

William Hale owns and operates All-Farm Organics farm in Louisa County, Virginia. He has 22 years of experience growing organic grains, and for the past several years has been producing certified organic popcorn and cover crop seed. William also runs a commercial composting operation on the farm.

Sapphyre Miria worked in the Twin Oaks seed growing business for several years and is now starting a farm in Botetourt County, Virginia with Edmund Frost. She believes that it is essential for farmers, gardeners and eaters to control food and seed systems, rather than corporations like Monsanto. Her favorite crops are corn, gourds and squash, and she plans to delve into growing and working with medicinal herb crops on the new farm. She bottom-lines IT, accounting, germination testing, and order fulfillment for CWSG.

Lyndsey Walker has grown vegetable seed crops and produce on her farm in Buckingham County, Virginia for two seasons. Before that she worked for several years on the seed growing crew at Twin Oaks.

Betsy Trice grows seed crops and produce at Peacemeal Farm, which she runs with her husband Chris Trice in Hadensville, VA. They also raise meat goats and laying hens. In addition to farming, Betsy is an instructor at Reynolds Community College where she teaches Sustainable Agriculture.

Common Wealth Seed Growers will be exhibiting at Virginia Association for Biological Farming (VABF) and Southern Sustainable Agriculture Working Group (SSAWG) conferences this winter, as well as Organic Growers School and Mother Earth News Fair in Asheville this spring. Come say hi! Edmund will also be speaking about cucurbit breeding and trialing at Organic Seed Alliance's biennial conference in Oregon in February.

Collards

Even'Star Landrace Collards *Brassica oleracea var. acephala* (Living Energy Farm, Certified Organic by QCS) Bred for tenderness, cold tolerance and vigor. Does very well planted in September for a fall/winter/spring crop. These came through the cold winter of 2013/2014 uncovered with no trouble and looking healthy and good to eat. Then they set a healthy seed crop (we often have trouble with mold on collard seed crops). To have a healthy regional seed system, we need varieties like this one that not only grow well to eating stage here, but produce a good seed crop in our humid climate. Bred at Even'Star Farm in Maryland. 215 seeds/g. **2g packet; 14g \$10**

Corn

We are committed to GMO testing all of our corn growouts. We want to make sure we're not passing on GMO contamination, and we want to make sure we are good stewards of the varieties we work with. We only sell varieties that have tested negative for GMOs (by Qualitative PCR test at Genetic ID Labs in Fairfield, Iowa). Guarding against GMO contamination is a burden that organic and non-GMO farmers have been unjustly saddled with, as government regulators and judges side with the interests (and the high powered lawyers) of GMO seed corporations. Each GMO test costs \$203. We welcome any contributions to help us in our work of maintaining GMO-free corn seedstocks, and of finding and maintaining additional GMO-free varieties.

Dent Corn

Bloody Butcher Dent Corn *Zea mays* (All-Farm Organics, Certified Organic by QCS) Traces to 19th century Virginia. Large deep red ears on productive 14 foot stalks. Kernels resemble pomegranate seeds. Occasional yellow/blue ears. Great tasting cornmeal and grits. Taste testers on corn muffins say no equal. Old timers highly regarded this corn for its feed quality. Tested free of GMOs in a 10,000 kernel PCR qualitative test (accurate to 99.99%). 120 days. 75 seeds/oz. **1.5 oz packet; 8 oz \$8.50; 1 lb \$13; 5 lb \$55; call about larger quantities**

Tennessee Red Cob Dent Corn *Zea mays* (Twin Oaks Seed Farm, Certified Organic by QCS) Sturdy plants produce medium-large ears with white kernels. Ears fill out well. Debbie of Living Energy Farm says it makes good cornbread, good hominy, and very good grits. A 120-day, long-season dent corn. Lodging has not been a problem for us. We've been growing and selecting this for three years and continue to be impressed with its productivity in both wet and dry conditions. Tested free of GMOs in a 10,000 kernel PCR qualitative test (accurate to 99.99%). 120 days. 75 seeds/oz. **1.5 oz packet; 8 oz \$8.50; 1 lb \$13; 5 lb \$55; call about larger quantities**

Flint Corn and Popcorn

Glass Gem *Zea mays* (Twin Oaks Seed Farm, Certified Organic by QCS) Do you love opening presents? Then you will love this corn! Each ear is a surprise, waiting to be adored. The colors will never cease to amaze, ranging from deep blues, greens and purples to light, translucent shades of pearl, pink and grey. This is the second generation grown from stock obtained at Native Seeds/SEARCH. This variety was bred by Carl Barnes, a Cherokee farmer and breeder from Oklahoma. Glass gem is a popcorn, with wide variation in ear size, ranging from 3 to 8 inches in length. Can be ground into a delicious cornmeal. 7-8 foot stalks, 2 ears per stalk. Tested free of GMOs in a 10,000 kernel PCR qualitative test (accurate to 99.99%). 100 days. 185 seeds/oz. **¾ oz packet; 8oz \$12; 1 lb \$20.**

Pennsylvania Dutch Butter Flavored Popcorn *Zea mays* (All-Farm Organics, Certified Organic by QCS) Old fashioned large white popcorn. 8-foot plants bear two ears each in moderately fertile ground. Selected for nearly a decade for good standing quality. Pops well and grows well. Tested free of GMOs in a 10,000 kernel PCR qualitative test (accurate to 99.99%). 100 days. 195 seeds/oz. **¾ oz packet; 8 oz \$10; 1 lb \$16; 5 lb \$65; call about larger quantities**

Floriani Red Flint Corn *Zea mays* (Living Energy Farm, Certified Organic by QCS) Italian heirloom corn that William Woys Weaver made famous with an article in Mother Earth News. The beautiful red ears have slightly pointed kernels. They make a yellow and red cornmeal that has rich flavor and high protein content. Good production for an early flint corn. Tassels quickly, making this variety a good candidate for time isolation to prevent GMO contamination. Tested free of GMOs in a 10,000 kernel PCR qualitative test (accurate to 99.99 %). 100 days. 100 seeds/oz. **1.5 oz packet**

Sweet Corn

Top Hat *Zea mays* (Twin Oaks Seed Farm, Certified Organic by QCS) A new release from Oregon farmer Jonathan Spero, Top Hat is a Sugary Enhanced open-pollinated sweet corn. Top Hat was notable for good cold soil emergence, flavor and sweetness in Living Energy Farm's 2014 sweet corn observation trial. We were impressed with it this year at Twin Oaks Seed Farm as well. Breeding an OP sweet corn is difficult because of the need to maintain large population sizes to prevent inbreeding depression. Top Hat is an OP success story, with vigorous plants and sweet flavorful yellow ears that maintain sweetness longer than standard sweet corn. Plant height and ear length are somewhat variable. *Top Hat is part of the Open Source Seed Initiative, a project that aims to counter the privatization and patenting of seeds. Those who grow this variety are asked to agree to the OSSSI pledge: "You have the freedom to use these OSSSI-Pledged seeds in any way you choose. In return, you pledge not to restrict others' use of these seeds or their derivatives by patents, licenses or other means, and to include this pledge with any transfer of these seeds or their derivatives."* See www.osseeds.org for more information. Tested free of GMOs in a 10,000 kernel PCR qualitative test (accurate to 99.99 %). 64 days. 130 seeds/oz. **1 oz packet; 8oz \$13**

Hawaiian Supersweet #9 Silver *Zea mays* (Twin Oaks Seed Farm, Certified Organic by QCS) Hawaiian Supersweet #9 corn is an open-pollinated tropical supersweet – not related to mainland supersweet varieties. It comes in white and yellow strains, this being the white one. Vigorous 10-foot plants produce large white ears that are very sweet and that have a chewier texture than most sweet corn. 2015 is the first time we tried this variety, planting at Twin Oaks Seed Farm at the end of June for a late crop. We were impressed by its drought resistance, as it made it through a completely dry August without trouble. We feel that we need to try Hawaiian Supersweet #9 Silver again, likely as an early planting, before we can be fully confident recommending it. But we've got it GMO-tested and ready for you all to try out. We would love to get your feedback. Tested free of GMOs in a 10,000 kernel PCR qualitative test (accurate to 99.99 %). 80 days. 210 seeds/oz. **3/4oz packet; 8oz \$13**

Texas Honey June *Zea mays* (Living Energy Farm, Certified Organic by QCS) Outstanding earworm resistance, even in comparison to other varieties selected for earworm resistance. Bears two small ears per stalk on medium-sized plants. Very good tenderness and sweetness, and one of the best varieties in Living Energy Farm's 2014 trial. A late sweet corn, which is good for staggered harvests, and for time isolation from other sweet corns (for seed saving). Tested free of GMOs in a 10,000 kernel PCR qualitative test (accurate to 99.99 %). 84 days. 260 seeds/oz. **¾ oz packet; 8oz \$12; 1 lb \$18**

Cucumber

Twin Oaks Seed Farm conducted extensive cucumber variety trials in 2013, 2014 and 2015, with a focus on evaluating Downy Mildew resistance and productivity. The varieties below have demonstrated good to excellent DM resistance. See page 24 to read about the 2015 trial, and page 26 for more information about Downy Mildew. See commonwealthseeds.com/research for full trial results.

DMR-264 *Cucumis sativus* (Twin Oaks Seed Farm, Certified Organic by QCS) Excellent Downy Mildew resistance, surpassing any other green slicing cucumber that we know of. A new release from Cornell University. Bred by Michael Mazourek, whose breeding program at Cornell focuses on breeding for organic conditions. DMR-264 has been a top performer in Twin Oaks' Downy Mildew trials, yielding three times more than Marketmore 76 under conditions of heavy DM pressure. 10-15 days later than Marketmore 76. This variety makes cucumber production possible in August, September and October when other varieties die from Downy Mildew. These are smaller than a standard slicer and should be picked at 5 inches. 70 days. 35 seeds/g. **1.5g packet; 14g \$15**

Jin Yang (From USDA Plant Introduction 618907) *Cucumis sativus* (Peacemeal Farm) This Chinese trellising cucumber was the best yielding of hundreds of varieties in NC State's 2008-2009 Downy Mildew-focused cucumber trial, and one of only two that did as well without fungicide as with it. See cuke.hort.ncsu.edu/cucurbit/wehner/articles/art147.pdf. Also good yields and foliage in Twin Oaks' 2014 cucumber Downy Mildew trial. Foot-long dark green curved fruits with good crisp flavor. Makes good pickles when picked young, or if you only use the neck. Not otherwise available commercially. 60 days. **1.5g packet (approx. 50 seeds)**

Suyo Long *Cucumis sativus* (Twin Oaks Seed Farm, Certified Organic by QCS) We've been growing this at Twin Oaks for several years, selecting for fruits that don't have skinny necks. Productive with moderate to good Downy Mildew resistance in our trials. Fruits are sweet and tender up to 15 inches long, and usually curved. Good as a slicing cucumber, or for pickling if picked small. 61 days. 35 seeds/g. **2g packet; 14g \$9**

Luzon 15 (PI 426170) *Cucumis sativus* (Edmund Frost Home Garden) A pickling cucumber that showed moderate to good Downy Mildew resistance in Twin Oaks' 2014 trial, producing significantly better than the two standard "resistant" picklers we trialed (Homemade Pickles and WI 2238). Handsome green and white fruits that make crisp pickles (some plants have green fruits and some white). Stem ends are bitter for a majority of the fruits and need to be cut off before eating or pickling. Very productive, with a high percentage of

female flowers. From the Philippine province of Luzon, via the USDA's North Central Regional Plant Introduction Station in Ames, Iowa. 50 days. **0.75g packet (24 seeds)**

Mouse Melon (Mexican Sour Gherkin) *Melothria scabra* (Twin Oaks Seed Farm, Certified Organic by QCS) Free of Downy Mildew in our garden. The fruits look like tiny watermelons, and are about the size and shape of grapes. They taste like cucumbers but with some tartness - like a cross between a cucumber and a gooseberry (don't try it Monsanto!). Native to Mexico and Central America. Sold by the pint at farmers markets. We grew them on the flat in 2014 but would recommend using a trellis for ease of harvest. The seeds are small, so the vines start small, but then grow vigorously. 75 days. 365 seeds/g. **0.4g packet; 3.5g \$12**

West Indian Gherkin *Cucumis anguria* (Lyndsey Walker) Another Downy Mildew resistant cucumber-like crop. Pick the green and white fruits when 1-1.5" long, before any seed development starts, and they make good crisp pickles. Flavor is similar to cucumbers. Shaped like a tiny football, with length-wise ridges. These are different from another West Indian Gherkin seedstock we have seen in that they usually have smaller spines. Seedstock came from Baker Creek. 65 days. 115 seeds/g. **1g packet; 7g \$12**

Gourds

Hardshell Gourds (*Lagenaria siceraria*) are possibly the oldest known cultivated crop, grown and used traditionally by most of the world's cultures. They are native to the Americas as well as Africa, Europe and Asia. They are used for containers of all kinds and likely would be much more central to us today if we didn't have plastic. Also used to make drums and stringed instruments, and for fine carving and crafting. We've been somewhat surprised to find that gourds are some of our most popular seeds, but then again we have also fallen in love with them (at least Edmund and Sapphyre have). There is something intrinsic about gourds that draws people.

We trialed 29 kinds of gourds this year, especially looking for Downy Mildew resistant varieties. DM pressure was intense, and only a handful of varieties made it through to October with viable foliage. Below you will find several varieties that showed outstanding DM resistance in the trial (the first four listings). See page 24 for more details on the trial.

Gourd Processing: Harvest after frost and cure for 2-3 months before processing. Curing in a heated space can expedite the process but is not essential. Gourds are ready when they have mostly lost their green coloring, or when the seeds rattle (or at least slosh) when shaken vigorously (doesn't work for all varieties). Some mold is okay. Use a hole saw to drill holes for birdhouses, or use a hand saw to cut off tops or to cut in half, etc. Many gourds can be cut with

a sharp knife before they have fully dried down. With patience and innovative use of kitchen utensils seeds and pulp can be removed through small openings. Putting water in the gourd and shaking can help.

Bule *Lagenaria siceraria* (Edmund Frost, Home Garden) Clearly the most Downy Mildew resistant gourd in our 2015 trial. Good production of volleyball-sized gourds on vigorous vines. The plants stayed beautiful and green until frost, when over 2/3 of the varieties in the patch had been dead for over a month. These are covered with warts like an Osage Orange fruit; when dried and washed they turn an attractive chestnut brown. The shell is exceptionally thick and is good for making sturdy wooden-like bowls. We used a band saw to cut them in half, but you can also use a hand saw. The contrast of the smooth inside and the warty outside is striking. They also make nice vases and containers. Takes a long time to cure – most aren't ready till January or February. Original seedstock came from Seed Savers Exchange. 140 days. 110 seeds/oz. **3.5g packet; 14g \$10**

African Drum *Lagenaria siceraria* (Twin Oaks Seed Farm, Certified Organic by QCS) Very large (20-24"), round to slightly flattened gourds. Some are dark green in the field and some are light green. We got seedstock from Suzanne Ashworth through Seed Savers Exchange. This variety is one of five seedstocks that really held up to Downy Mildew and grew well into October in Twin Oaks' 2015 trial of 29 gourd varieties. Hand pollinated, so quantity is limited. 150 days. **7 seeds per packet**

Mayo Bule Warty *Lagenaria siceraria* (Twin Oaks Seed Farm, Certified Organic by QCS) Remarkable Downy Mildew resistance – this variety is one of five seedstocks that really held up to Downy Mildew and grew well into October in Twin Oaks' 2015 trial of 29 gourd varieties. The teardrop shaped gourds have thick walls. They come in light green and dark green, with varying degrees of wartiness (none are completely covered). About 12" by 9". We got seed from Suzanne Ashworth through Seed Savers Exchange. Hand pollinated, so quantity is limited. 140 days. **7 seeds per packet**

Tarahaumara Dipper *Lagenaria siceraria* (Twin Oaks Seed Farm, Certified Organic by QCS) This came to us as Tarahaumara Short-Handled Dipper (from Native Seeds/SEARCH), but some of the gourds have long necks. Remarkable Downy Mildew resistance – this variety is one of five seedstocks that really held up to Downy Mildew and grew well into October in Twin Oaks' 2015 trial of 29 gourd varieties. However, there were only 5 out of 23 usable fruits (with thick enough shells). Fortunately, we did an especially good job with hand pollination of this variety, having successfully pollinated three of the five good fruits. This should give us a good start in the process of selecting for better fruit thickness and usability. Tarahaumara Dipper might benefit from a longer grow-

ing season. A mix of short and long handles (up to 20 inches) on 7-inch bulbs. Hand pollinated, so quantity is limited. 150 days. **9 seeds per packet**

Chickasaw Bogue *Lagenaria siceraria* (Edmund Frost, Home Garden)
Elongated birdhouse gourds (or short dipper gourds) with tapered, slightly curved necks. Fruits are light green on the plant, and light brown once dried. Good for making sturdy bottles and containers. Our 2014 growout had productive and vigorous vines that held up moderately well to Downy Mildew and produced good gourds. However, Chickasaw Bogue did not produce any usable fruits in the intense DM pressure of our 2015 trial, even though the plants showed better than average foliage resistance to DM. Gourd dimensions vary but are approximately 8"x18". From Bill Skinner of Marengo County, Alabama. 130 days. 190 seeds/oz. **3.5g packet; 1 oz \$12**

Bradshaw's Birdhouse Gourd *Lagenaria siceraria* (Lyndsey Walker)
Birdhouse gourds with short necks. Vigorous and productive plants that have grown and produced well for us in 2012 and 2014, but showed only slightly better than average Downy Mildew resistance/susceptibility in our 2015 trial. Selected over many years by David Bradshaw of Clemson University for use as Purple Martin birdhouses. Size is variable and some will be better for smaller birds. Good for containers, luminaires and other crafts. 125 days. 190 seeds/oz. **3.5g packet; 1 oz \$12**

Miniature Bottle *Lagenaria siceraria* (Lyndsey Walker and Twin Oaks Seed Farm)
Tiny bottle gourds, good for making whistles or potion bottles. Kids love playing with them. We are selecting for gourds with a bulge in the neck, though up to 1/3 may have straight necks. We were very impressed with the vigor and Downy Mildew resistance of this variety in 2014 at Twin Oaks Seed Farm. It showed moderate Downy Mildew resistance in Twin Oaks' 2015 gourd trial, but still succumbed to the disease in mid-September. 130 days. 21 seeds/g. **1g packet; 14g \$14**

Zucca *Lagenaria siceraria* (Twin Oaks Seed Farm, Certified Organic by QCS)
Very large oblong or vase-shaped gourds that we like best for making drums (just cut the top off with a saw and clean; to use, hold loosely and hit the side of the gourd with your hand). They produced a good crop at Twin Oaks Seed Farm in 2014, but showed only average Downy Mildew resistance/susceptibility in our 2015 trial, not producing any usable fruits. This variety is grown in British Columbia for use as a food crop. Gourds are harvested when still green; scoop out the gelatinous interior to use as a thickener for jams or pies (we haven't tried this yet). 125 days. **12 seeds per packet**

Luffa *Luffa cylindrica* (Lyndsey Walker) Also called dishcloth gourd, luffas are used as sponges, washcloths, and to make strainers and filters. Lyndsey has selected for two years for early maturity and sponge strength. Harvest when skin starts to turn brown, or at frost, and soak in water for several days to allow skin to break down so it is easy to remove. Then shake out the seeds. Immature fruits can also be eaten and are a popular vegetable in many parts of the world. Luffas are naturally resistant to Cucurbit Downy Mildew. 130 days. 230 seeds/oz. **3.5g packet**

Lettuce

Sierra *Lactuca sativa* (Twin Oaks Seed Farm, Certified Organic by QCS) Batavian type summer lettuce renowned for its bolt resistance. Medium-large heads with slightly ruffled bright green leaves. This variety was released by Vilmorin in 1992 and had a PVP patent until 2010. It was the only summer head lettuce grown at Food Bank Farm in Hadley, Massachusetts, where Edmund apprenticed. Seed produced in a high tunnel at Twin Oaks Seed Farm. 50 days. 800 seeds/g. **0.5g packet; 3g \$10**

Melon

Twin Oaks Seed Farm conducted extensive melon variety trials in 2013 and 2014, with a focus on evaluating Downy Mildew resistance. The following varieties demonstrated good to excellent DM resistance. See page 26 for more information about Downy Mildew, and visit commonwealthseeds.com/research for more about the trials.

Trifecta *Cucumis melo* (Twin Oaks Seed Farm and Living Energy Farm, Certified Organic by QCS) A new release from Cornell, Trifecta combines sweetness, keeping quality and disease resistance. Firm, aromatic, deep orange interior is excellent for fruit salads. One of the sweetest and best in Twin Oaks' 2014 Downy Mildew trials. Uniform fruits are moderately ribbed and have light tan exterior with light netting. Bred by Michael Mazourek, whose breeding program at Cornell focuses on breeding for organic conditions. Sapphire's favorite melon. 83 days. 34 seeds/g. **1.5g packet; 14g \$15**

Seminole *Cucumis melo* (Twin Oaks Seed Farm, Certified Organic by QCS) A small, sweet orange netted cantaloupe, and the most downy resistant entry in Twin Oaks' 2014 melon trial. Developed from a volunteer plant at the University of Florida Agricultural Experiment Station in Sanford, FL and released in 1960. Otherwise unavailable commercially. We learned about this variety from Michael Mazourek at Cornell. Fruits average 2.5 pounds. 88 days. 28 seeds/g. **1.5g packet; 14g \$14**

Edisto 47 *Cucumis melo* (Twin Oaks Seed Farm, Certified Organic by QCS) Netted 3-4 pound fruits that keep well and hold up well in the field. Very sweet medium orange interior. The standout in Twin Oaks' 2013 Downy Mildew melon trial; in the 2014 trial we found varieties with more resistance, but Edisto 47 still did well. We've been growing this variety at Twin Oaks for three years, selecting for sweetness and good appearance. Longer season than many melons. From Clemson, 1965. 88 days. 33 seeds/g. **2g packet; 14g \$9; 1 oz \$15; 4 oz \$35**

Okra

Cajun Jewel *Abelmoschus esculentus* (Living Energy Farm and Twin Oaks Seed Farm, Certified Organic by QCS) Dwarf 3'-4' tall plants are a good choice for small gardens, or market production. Productive and early. Pods are intermediate between slender and stocky, and can be picked up to 6 inches long. Good flavor and texture. Introduced by Southern Exposure Seed Exchange in 1989. 52 days. 15 seeds/g. **5g packet; 1 oz \$8; 8 oz \$30; 1lb \$50**

Burmese Okra *Abelmoschus esculentus* (Living Energy Farm, Certified Organic by QCS) We like this one because it's sweet for an okra and good to eat raw in the field as a snack. A somewhat variable population – some plants have longer and more curved fruits than others, though none are stocky. Plants don't make as many leaves as most full size okras, which makes picking more pleasant. Tender up to 7 inches. 55 days. 14 seeds/g. **5g packet; 1 oz \$8**

Sweet Peppers

Sweet Bullnose *Capsicum annuum* (Twin Oaks Seed Farm, Certified Organic by QCS) A red bell pepper that is consistently sweet and citrusy, but not at the expense of productivity, appearance, keeping quality or size. Twin Oaks Seed Farm has been selecting stock seed for three years with noticeable improvement for our conditions. Original seed from Baker Creek. This is the best-tasting red bell pepper we have found. 88 days. 115 seeds/g. **0.5g packet; 3.5g \$15; 14g \$35; 1 oz \$60**

Stocky Red Roaster *Capsicum annuum* (Peacemeal Farm) A prolific red Italian pepper that stood out in Twin Oaks' 2014 sweet pepper trial for its flawless fruits, productivity and sweet flavor. Bred by Frank Morton of Philomath, Oregon for thick walls and smooth sides, in addition to productivity and flavor. *Stocky Red Roaster is part of the Open Source Seed Initiative, a project that aims to counter the privatization and patenting of seeds. Those who grow this variety are asked to agree to the OSSI pledge: "You have the freedom to use these OSSI-Pledged seeds in any way you choose. In return, you pledge not to restrict others' use of these seeds or their derivatives by patents, licenses or other means, and to include this pledge with any transfer of these seeds or their derivatives."* See www.osseeds.org for more information. 73 days. **195 seeds/g. 0.5g packet; 3.5g \$14; 14g \$35**

Karma *Capsicum annuum* (Peacemeal Farm) One of the favorites in Twin Oaks' 2014 pepper observation trial for productivity, sweet flavor, and flawless fruits. Bred by Frank Morton of Philomath, Oregon, Karma is a brighter shade of red and has a slightly wider shape than Stocky Red Roaster. *Karma is part of the Open Source Seed Initiative, a project that aims to counter the privatization and patenting of seeds. Those who grow this variety are asked to agree to the OSSI pledge: "You have the freedom to use these OSSI-Pledged seeds in any way you choose. In return, you pledge not to restrict others' use of these seeds or their derivatives by patents, licenses or other means, and to include this pledge with any transfer of these seeds or their derivatives."* See www.osseeds.org for more information. 73 days. 175 seeds/g. **0.5g packet; 3.5g \$14; 14g \$35**

Doe Hill *Capsicum annuum* (Twin Oaks Seed Farm, Certified Organic by QCS) These small (2") bright orange pimiento peppers are sweeter than any other pepper we've tried, including in Twin Oaks' 2014 pepper observation trial. Thick walls, small plants, healthy long-lasting fruits, beautiful color. The variety is an heirloom from the town of Doe Hill, in Highland County, Virginia. 70 days **0.4g packet (50 seeds)**

Greygo *Capsicum annuum* (Twin Oaks Seed Farm, Certified Organic by QCS) Large (3-4") red pimiento peppers that we liked in Twin Oaks' 2014 pepper observation trial. Good sweetness, and a hint of smokiness in the flavor; fruits hold up well and make it to the red stage without problems. Moderate corking (russeting) on ripe fruits. 75 days **0.4g packet (48 seeds)**

Super Shepherd *Capsicum annuum* (Living Energy Farm, Certified Organic by QCS) Produces good yields of thick-walled, medium sized (4-6 inches long) red peppers with very good flavor and sweetness. Resists mold in the seed cavity that can be problem in bell peppers. Triangular shape. Earliest fruits sometimes get sun scald, but later fruits are beautiful and defect-free. We have grown this for seed for three years, selecting for appearance, flavor and productivity. 70 days. 180 seeds/g. **0.5g packet; 3.5g \$12**

Midas Touch *Capsicum annuum* (Twin Oaks Seed Farm, Certified Organic by QCS) A slightly elongated, medium-sized bright yellow bell pepper that holds up well in the field and keeps well. Productive and attractive. Bred by North Carolina pepper breeder Doug Jones. 83 days. 125 seeds/g. **0.5g packet**

Corona *Capsicum annuum* (Twin Oaks Seed Farm, Certified Organic by QCS) An orange bell pepper that holds up much better in the field and keeps better than Orange Bell or Kevin's Early Orange. Good productivity, with mild and sweet flavor. 80 days. 112 seeds/g. **0.5g packet; 3.5g \$15**

Hot Peppers

Beaver Dam *Capsicum annuum* (Lyndsey Walker, and Edmund Frost Home Garden) Beautiful bright red peppers with mild to medium heat. 6-7 inches long, 2-3 inches at the top and tapered. These didn't get a drop of irrigation water in 2014. They produced through the dry weeks without shriveling or damage - unusual for a pepper in Virginia. Very sweet in addition to being hot, and mild enough that you can use a lot of it without overpowering the dish. We got seedstock from Christopher Hoetschl, through the Seed Savers Exchange yearbook. 75 days. 125 seeds/g. **0.5g packet; 3.5g \$13; 14g \$30; 1oz \$50**

Chinese Five Color *Capsicum annuum* (Twin Oaks Seed Farm, Certified Organic by QCS) Fully ripe peppers are red, and peppers in other stages are orange, yellow, white and purple. Very productive, healthy and attractive plants grow to about four feet. Peppers are small (inch-long) and oblong to triangular in shape. They grow on upright stems, often held above the foliage. These are hot, somewhere between a Habanero and a Jalapeno. 72 days. 180 seeds/g. **0.5g packet; 3.5g \$13; 14g \$30**

Early Jalapeno *Capsicum annuum* (Lyndsey Walker) Classic medium-hot peppers. Selected for productivity and earliness. We got seedstock from Fruition Seeds in Upstate New York. 55 days green / 75 days red. 175 seeds/g. **0.5g packet; 3.5g \$12**

Spice Peppers

Brazilian Orchid *Capsicum baccatum* (Twin Oaks Seed Farm, Certified Organic by QCS) These spectacularly shaped red peppers are very sweet and crisp, with just a little spice near the seeds (spiciness varies a bit between plants, but all are mild as far as hot peppers go). 4-5 foot plants need most of the growing season here in Virginia. Edmund got seeds from Tom Frothingham, who had them at a seed swap at the 2013 SSAWG conference in Little Rock. 115 days. **0.5g packet (60 seeds)**

Aji Dulce *Capsicum chinense* (Twin Oaks Seed Farm, Certified Organic by QCS) These look like habanero peppers but with only a touch of heat. They have a similar fruity and aromatic smell and taste to habaneros and are similar in size (about 1 by 1.5 inches). We like them pickled. Productive 3-4 foot plants require a long season, growing slowly at first but catching up in the summer. Seedstock from Southern Exposure Seed Exchange, originally from Venezuela. 90 days. 235 seeds/g. **0.5g packet; 3.5g \$12; 14g \$28; 1oz \$45**

Rutabaga

Gilfeather Turnip (Rutabaga) *Brassica napus var. napobrassica* (Twin Oaks Seed Farm, Certified Organic by QCS) Attractive rutabagas with green shoulders instead of the usual purple. Sweet, good textured and cold tolerant. Uniform rutabaga shape. Plant in late August for winter harvest. Overwinters in the ground in Virginia. Stock seed from Frank Morton of Oregon; the variety is originally from Vermont. 270 seeds/g. **2g packet; 14g \$10**

Winter Squash and Pumpkins

Twin Oaks Seed Farm conducted an extensive winter squash variety trial in 2014, with a focus on evaluating Downy Mildew resistance. (See commonwealthseeds.com/research for the full trial results. See page 26 for more information about Downy Mildew.) We included many varieties from tropical and subtropical areas where Downy Mildew is endemic. While Waltham butternut was nearly defoliated by late August, many of these varieties grew vigorously till frost. In 2015 we evaluated several crosses made in 2014, took another look at some of the 2014 standouts, and did selection work with several seedstocks, including Seminole-Waltham, Soler, Jamaican Tropical Pumpkin, and Cuban Neck Pumpkin.

There are three ways we measure winter squash eating quality. One is to take brix (% soluble solids – usually corresponds to sugar content) readings with a brix meter. Second is to measure dry matter content by weighing small slices of squash, dehydrating them, weighing again and calculating the % difference. Higher dry matter often corresponds to better eating quality, at least for baked squash eaten straight. We also bake the squash and taste test for flavor, sweetness and texture. Sometimes there are squash with high dry matter and brix readings that just taste a little off. Sometimes squash with moderate readings have notably good taste. Lastly – it is important to recognize that there are many ways to cook and use squash besides baking. Less sweetness may be better for use in savory dishes, and lower dry matter may be better for some uses as well.

Common Wealth Seed Growers has submitted a new SARE grant proposal for winter squash breeding, selection and evaluation work in 2016. Part of the project is that we will seek farmer feedback on our winter squash varieties to help set breeding goals. We want to hear about your experiences growing our varieties in 2015 and 2016, as well as your articulation of needs and challenges regarding winter squash production. We find out if we get the grant in late February.

Note that several of the varieties listed below are being sold in limited quantity. These seeds were either hand pollinated or are part of active evaluation and selection work, generally both. We look forward to doing larger growouts and offering larger packet sizes and bulk amounts in the future.

Seminole Pumpkin *Cucurbita moschata* (Living Energy Farm and Twin Oaks Seed Farm, Certified Organic by QCS) Small tan pumpkins on Downy Mildew resistant vines. Sweet flavor and deep orange interior, though with a rather large seed cavity. The exterior ripens to a deep tan color, but they taste good and sweet even when harvested partially green. Good keepers. Good as summer squash when picked light green. 4 years of selection for sweetness and keeping quality. Average 3 pounds. 110 days. 280 seeds/oz.

3.5g packet; 1 oz \$10

Seminole x Waltham F5 *Cucurbita moschata* (Twin Oaks Seed Farm, Certified Organic by QCS) Downy Mildew resistant butternut made from a cross between Waltham butternut and Seminole pumpkin. In Twin Oaks' 2014 trial the F3 generation of this cross had DM resistance comparable to Seminole, yields about 60% higher than Waltham and 20% higher than Seminole. In 2015 Edmund trained and evaluated each of 70 F4 generation plants separately. This seed is from the best ten plants. He selected for productivity, Downy Mildew resistant foliage, good flavor, high dry matter and brix readings, and butternut shape. This is not a finished project – there will still be variation – but you can expect good yields of excellent quality squash with mostly butternut shapes on plants that resist Downy Mildew much better than Waltham or other standard butternut varieties, and that yield much better in conditions of high DM pressure. Also resists Black Rot (which shows up on butternut as grey scabs) and keeps well. 110 days. 240 seeds/oz. **2g packet (approx. 15 seeds); 14g \$18**

Crowning (Chinese Tropical Pumpkin) *Cucurbita moschata* (Twin Oaks Seed Farm, Certified Organic by QCS) 3-6 pound pumpkins with deep ribs. Fine textured, bright orange, and very rich and sweet interior is of excellent quality, showing high dry matter and brix readings. Downy Mildew resistant and productive in Twin Oaks' 2014 trial. Exterior is mottled orange and dark green, usually ripening to a dark orange-tan in storage. Crowning was developed at Known-You Seeds in Taiwan, and is sold as an F1 hybrid. We got F2 seeds from Glen Teves of Molokai, Hawaii, and have not seen the segregation one expects from F2 and F3 seed. I think this will become a market favorite, especially in the mid-Atlantic and Southeast. Hand Pollinated, so quantity is limited. 120 days. **9 seeds per packet**

Cuban Neck Pumpkim *Cucurbita moschata* (Twin Oaks Seed Farm, Certified Organic by QCS) Vigorous, productive and Downy Mildew resistant plants produce neck pumpkins of varying shapes and sizes (approx. 7-15 pounds). Some are deep orange-tan and some are mottled tan; some have straight necks and some curved. Eating quality is good: they generally have good sweetness and dry matter, and creamy texture. Some plants yielded over 70 pounds in 2015. We've selected against splitting, a problem in the seedstock we started with, and for eating quality. They are long season but there hasn't been any problem maturing the fruits here in Central Virginia. From three plants that Edmund self pollinated and selected in 2015. Hand pollinated, so quantity is limited. 135 days. **9 seeds per packet**

Soler *Cucurbita moschata* (Twin Oaks Seed Farm, Certified Organic by QCS) This is the common variety of tropical pumpkin grown in Puerto Rico, where it is a daily staple cooked with beans and served over rice. 12-25 pound flattened, ribbed, dark green fruits are often sold in wedges. Like acorn squash (which they somewhat resemble in taste and texture), fruits develop an orange spot on the underside when ripe. Extremely productive and Downy Mildew resistant. One of the five-plant entries in Twin Oaks' 2014 trial yielded 445 pounds. Not quite all the fruits will ripen on time in Central Virginia - give them the whole season to grow. We don't recommend Soler for baking (at least not to eat plain), as dry matter and sweetness tend to be moderate or low. Also a beautiful and ornamental pumpkin that gets people talking. Selected for improved flavor. Not otherwise available commercially. Hand pollinated so quantity is limited. 140 days. **9 seeds per packet**

Jamaican Tropical Pumpkin *Cucurbita moschata* (Twin Oaks Seed Farm, Certified Organic by QCS) This came to us as a variable landrace with shapes ranging from shortneck to longneck to oblong, ribbed to smooth to warty, and with generally excellent but also variable productivity and Downy Mildew resistance. 7-15 pound green-tan-orange fruits have thick skin and good keeping quality. Bright orange interior and rich earthy flavor with moderate sweetness and moderate dry matter content. We are working on selections from the population: for earliness, eating quality, Downy Mildew resistance and productivity. We're offering a mix of these selections from self-pollinated plants that we liked in 2015. Hand pollinated so quantity is limited. 140 days. **10 seeds per packet**

Thai Kang Kob Pumpkin *Cucurbita moschata* (Living Energy Farm, Certified Organic by QCS) A Thai variety with good Downy Mildew resistance. 4-8 pound pumpkins are circular and flattened, with deep ribs and bumpy skin. Color ranges from tan to speckled green to dark green. A LOT of pumpkin flavor, and also sweet, with high dry matter when harvested at full maturity. These are good cut in half, baked and then cut up like a pie. The flavor is so rich it feels like you're eating pumpkin pie without the work (or the sugar, gluten, dairy etc)! Not high yielding. 125 days. 210 seeds/oz. **3g packet; 1 oz \$14**

Pennsylvania Neck Pumpkin *Cucurbita moschata* (All Farm Organics, Certified Organic by QCS) William Hale found this traditional landrace squash at a roadside stand in Pennsylvania. Attractive 10-20 pound tan fruits are variable in shape – about half have necks. He has grown it for two years, selecting for good keeping quality, eating quality and large size. Vigorous and productive; small seed cavity. 110 days. 240 seeds/oz. **3.5g packet**

Choctaw Sweet Potato *Cucurbita moschata* (Edmund Frost, Home Garden) These caught my attention in Twin Oaks' 2013 observation trials because of their ability to resist Downy Mildew. 10-20 pound oblong fruits are sweet and bright orange on the inside (tan outside), but have low dry matter content. They are good as summer squash when picked at about 6-8 inches long. Note that moschata squashes don't get vine borers. A family heirloom from Randy Baker in Mississippi, whose family has grown it for a long time. I got seeds from Charlotte Hagood of Sand Mountain Seed Bank. 115 days (75 days for summer squash). 220 seeds/oz. **3.5g packet; 1oz \$12**

Uncle David's Dakota Desert Kabocha x Candy Roaster (F3) *Cucurbita maxima* (Twin Oaks Seed Farm, Certified Organic by QCS) The goal of this cross is a squash with the high dry matter and creamy taste and texture of a Kabocha, and the vigor, hardiness and Southeast adaptation of a Candy Roaster. Edmund grew about 25 F2 plants in 2015 and selected two to save seed from, based on eating quality, productivity, and keeping quality. Limited quantity available. 105 days. **8 seeds per packet**

Summer Squash

We planted two *Cucurbita pepo* summer squash trials this year. The first one was wiped out by vine borers at about the time of first harvest. If you have vine borers, it is advisable to use row cover on *C. pepo* summer squash until first bloom, or to use *C. moschata* varieties, which are naturally resistant. The second trial, which we covered, fared much better with vine borers. This trial was planted very late, in the height of Downy Mildew season. While DM impacted some of the varieties, most were not highly impacted, leading us to think that DM is not the central issue with summer squash. We are just getting started with summer squash research, and look forward to finding out more next year. Edmund is starting a project to breed a moschata-species, vine borer resistant zucchini, so stay tuned.

Golden Bush Scallop *Cucurbita pepo* (Twin Oaks Seed Farm, Certified Organic by QCS) These yellow patty-pan squashes are sweet and flavorful. Pick at 3-4 inches for best eating quality and production. Doesn't seem to be as affected by wilting diseases or vine borers as other summer squashes. Moderate to good resistance to Downy Mildew. 62 days. 370 seeds/oz. **3.5g packet; 1 oz \$12**

Dark Star Zucchini *Cucurbita pepo* (Lyndsey Walker) Bred by Bill Reynolds of Eel River, California for dark green color, straightness, lack of spines on leaves and stems (which keeps fruit from getting scratched), and open foliage to facilitate easy picking. It is also reported to have good drought resistance and some frost tolerance. Dark Star has become an industry standard in the West and Southwest in the last few years, which is currently unusual for a farmer-bred open-pollinated variety. I was pleasantly surprised in 2014 to see that it is also a strong and hardy plant in Virginia conditions. Like many pepo summer squash varieties, Dark Star has moderate to good Downy Mildew Resistance. 55 days. 260 seeds/oz. **3.5g packet; 1 oz \$12**

Choctaw Round *Cucurbita moschata* (Twin Oaks Seed Farm, Certified Organic by QCS) A selection from Choctaw Sweet Potato squash made by Charlotte Hagood of Sand Mountain Seed Bank. These start setting a little earlier than Choctaw Sweet Potato. Vigorous vines are resistant to Downy Mildew and wilt. Vine borer resistant. Light green and dark green fruits are round to slightly oblong. Pick when 5 inches in diameter. Sweet and flavorful. Not recommended for use as a winter squash. Hand pollinated, so quantity is limited. 70 days. **12 seeds per packet**

Tomatoes

Barnes Mountain Orange *Solanum lycopersicum* (Twin Oaks Seed Farm, Certified Organic by QCS) Rich, sweet flavor and beautiful orange color in large beefsteak tomatoes. Very little cracking and splitting, and only very slight green shoulders. Small seed locules make it good for slicing. Great on a sandwich. Edmund's favorite tomato. 75 days. 280 seeds/g. **0.2g packet; 2g \$10; 10g \$30**

Rosella Purple *Solanum lycopersicum* (Lyndsey Walker) Purple beefsteak tomatoes on dwarf plants that grow to 3-4 feet, making this a good choice for container gardens. Very good flavor – especially for slicing and sandwiches. Tomatoes look and taste similar to Cherokee Purple but with less cracking and less green shoulders. Released in 2011 by the Dwarf Tomato Project, a collaborative breeding program between farmers in Australia, Europe and the U.S. We got the seed from Craig LeHoullier. 65 days. 285 seeds/g. **0.2g packet; 2g \$10; 10g \$32**

Quadro *Solanum lycopersicum* (Lyndsey Walker) Small red paste tomatoes that were the most productive variety in Living Energy Farm's 2014 tomato trial (both in terms of total yield and marketable yield). They also stood out for Early Blight and Septoria resistant foliage. Good flavor, and good for making sauce. The round-to-oval fruits are somewhat prone to radial cracking, but the cracks heal well. This variety was bred in Germany by Harmut Spiel, as part of

a Biodynamic vegetable breeding initiative. We got seedstock from Adaptive Seeds of Sweet Home, Oregon. 72 days. 300 seeds/g. **0.2g packet; 2g \$10; 10g \$30; 1 oz \$55**

Ozark Pink *Solanum lycopersicum* (Lyndsey Walker) 5-6 ounce round pink tomatoes that resist splitting and cracking. Good flavor and productivity, and a standout in Living Energy Farm's 2014 tomato trial. 70 days. 340 seeds/g. **0.2g packet; 2g \$9; 10g \$25**

Cherokee Purple *Solanum lycopersicum* (Twin Oaks Seed Farm, Certified Organic by QCS) Purple tomatoes with flavor that helped launch the heirloom tomato boom. Original seed came from John Green of Sevierville, Tennessee through Craig LeHoullier and then Southern Exposure Seed Exchange. We got original 1993 seed stock from Southern Exposure Seed Exchange and have been growing from that for three years. Plants are shorter than most heirlooms. Very productive, but there will be cracking, splitting and green shoulders. Small seed locules make it good for slicing and putting on sandwiches. 70 days. 270 seeds/g. **0.2g packet; 2g \$10; 10g \$30; 1oz \$60**

Cherokee Green *Solanum lycopersicum* (Twin Oaks Seed Farm, Certified Organic by QCS) Selected by Craig LeHoullier from Cherokee Purple, this is a green-when-ripe beefsteak tomato. Very good flavor. Sapphyre's favorite tomato in the 2013 season. 70 days. **0.2g packet (60 seeds)**

Matt's Wild Cherry *Solanum lycopersicum* var. *cerasiforme* (Twin Oaks Seed Farm, Certified Organic by QCS) If you want a plant that stays healthy and productive right up to frost, this is the one. Resists foliage diseases including Early Blight, Septoria and Late Blight. Sweet, flavorful ½ inch diameter cherry tomatoes in clusters on vigorous and very disease resistant plants. Great for snacking, especially for kids. Tomatoes will not keep when detached from the stem, so harvest by clipping ripe clusters or picking individually with stems on (unless you're eating right away). Readily self sows. 58 days. 980seeds/g. Since this is a wild variety we've had trouble with dormancy in our seeds, but this is such a good and notable tomato we're still offering it. Only 35% of seeds will germinate in a timely way. Volumes are increased to compensate. **0.5g packet; 5g \$9**

Garden Peach *Solanum lycopersicum* (Twin Oaks Seed Farm, Certified Organic by QCS) With only a little imagination these really do look and feel like small peaches. The yellow fruits have fuzzy skin and blush pink when ripe. Surprisingly rich flavor. Resistant to splitting and can be left on the plants a long time. Plants had the second most disease resistant foliage in the Twin Oaks seed garden in 2014 (after Matt's Wild Cherry). 70 days. 610 seeds/g. **0.2g packet; 2g \$9; 10g \$25; 1 oz \$50**

Watermelon

There are many strains of Cucurbit Downy Mildew and most don't affect watermelon. Our experience in Central Virginia has been that watermelon DM is less of a problem than DM in cucumbers, gourds, winter squash and melons. That said, watermelons still get it – it just shows up late, giving May-planted watermelon crops time for full development and production, but limiting the option for a later harvest window. In Twin Oaks' 2014 late-planted watermelon observation trial, we found that many of the varieties we were working with don't resist Downy Mildew very well. This includes Amish Moon and Stars, Yellow Moon and Stars and OrangeGlo. We also found several varieties that did show good Downy Mildew resistance, including Klondike Blue Ribbon. DMR in watermelon makes later plantings and later harvests possible. We will be growing and offering more of these varieties in the future.

Klondike Blue Ribbon *Citrullus lanatus* (Lyndsey Walker) Notable in Twin Oaks' 2014 watermelon observation trial for productivity, sweetness and Downy Mildew resistant foliage. 10-20 pound melons are oblong, striped green on a white background, with red interior and light brown seeds. May be more susceptible to cucumber beetles than other varieties, so consider using row cover when plants are young. 83 days. 14 seeds/g. **3.5g packet; 1 oz \$12**

Amish Moon and Stars *Citrullus lanatus* (Living Energy Farm, Certified Organic by QCS) Produced the best watermelon crop of all of our farms in 2013, a cool and wet year. Oblong fruits are medium to large (20-25 pounds) with sweet red flesh. Most are covered in attractive moons and stars, some fruits more than others. We've been selecting this melon for sweetness, for more stars, for good size and oval shape for three years. Does best when planted on the early side as it is not resistant to Downy Mildew. Introduced by Southern Exposure Seed Exchange in 1987. 90 days. 215 seeds/oz. **3.5g packet; 1 oz \$8;**

Yellow Moon and Stars *Citrullus lanatus* (Lyndsey Walker) These watermelons are like large, magical dinosaur eggs. Lots of stars and moons, overlaid on a faint netting. Inside color ranges from light yellow to bright orange. Seeds are white. 25-30 pound oblong fruits. Not Downy Mildew resistant so plant on the early side. 90 days. 230 seeds/oz. **3.5g packet; 1 oz \$10**

OrangeGlo *Citrullus lanatus* (Living Energy Farm, Certified Organic by QCS) Exceptional color, sweetness and flavor, "like orange soda without the chemical weirdness," says one of the workers at Living Energy Farm. Early and productive with 15 pound fruits. Not a storage melon; larger fruits often have hollow cores, a trait we are working to select out. Not DM resistant so plant on the early side. The first variety to ripen in Twin Oaks' 2014 watermelon observation trial. 75 days. **3.5g packet (24 seeds)**

Sunflower

Beach Sunflower *Helianthus debilis cucumerifolius* (Twin Oaks Seed Farm, Certified Organic by QCS) This is a wild sunflower that grows along the Gulf and Atlantic coasts in the Southeast US. Hardy 6-foot plants with 3-inch flowers on multiple branches that keep blooming until frost. Birds, especially Goldfinches, prefer the seeds over other sunflowers. Also known as Cucumber Leaf Sunflower, this is a different species from most sunflowers and in our experience does not cross with them. 56 days. 170 seeds/g. **1g packet; 14g \$12**

Herbs

Resina Calendula *Calendula officinalis* (Twin Oaks Seed Farm, Certified Organic by QCS) Native to Southern Europe, Calendula was brought to North America for its many medicinal properties. It is chiefly known for its wonderful antiseptic medicine for skin wounds. This particular variety produces an excess of the medicinal compounds, resulting in extra sticky flowers and leaves. Direct seed in April and, if you keep it watered during the dry part of the summer, you will have blooms starting in May and lasting all the way until the first hard freeze and beyond. Calendula goes well in bone broths, helping to further boost the immune system. It is a great addition to any farm or garden as it also attracts many beneficial pollinators. 40 days. 100 seeds/g. **1g packet**

Stinging Nettles *Urtica dioica* (Betsy Trice) Nettles are experiencing a comeback as folks realize the many benefits of this plant. Easy to grow, edible and medicinal. Cooked nettle leaves make an excellent pesto. Dried nettles used in a nourishing tea infusion offer a more readily absorbable source of vitamins and minerals at a fraction of the cost of those purchased from the store. Nettles are an excellent blood cleanser and blood builder. They also do a wonderful job of attracting beneficial insects, accumulate a large amount of nutrients, and if composted can be a valuable fertilizer for your farm or garden. Herbaceous perennial; sow seeds in the fall through very early spring for spring germination. Prefers moist or irrigated soil, in the sun or shade. 1700 seeds/g. **0.3g packet; 3.5g \$13**

Variety Trials

Common Wealth Seed Growers is a new project and we rely on grant funding and other support for variety trials and breeding work. Please consider donating to help us with this work. Contact us for more details at 540-223-5861, commonwealthseeds@gmail.com, or PO Box 1157, Buchanan, VA, 24066.

Many thanks to Mark, Lori, Carrol, Nina, River, Elizabeth, Martha, Edmund, Molly, John, Debbie, Madge, Scott, Olive, Pax, Jack, Alberta, Hawina, and everyone who donated through rally.org for your support, funding and help with our 2015 research work.

This Spring Edmund submitted the final report for Twin Oaks Seed Farm's 2014 SARE-funded project "Identifying and Marketing Quality Open-Pollinated and Organic Cucurbit Seedstocks for Virginia." The project included winter squash, cucumber and melon variety trials, with a focus on evaluating Downy Mildew resistance. See commonwealthseeds.com/research to read the full report and see all the data.

In 2015 (at Twin Oaks Seed Farm) we did a follow-up cucumber trial, a gourd trial (focused on Downy Mildew), and a summer squash trial, as well as tomato, cucumber and winter squash breeding growouts. More details about many of the following projects will be posted at commonwealthseeds.com/research this winter.

In the cucumber trial, we tested a handful of new Downy Mildew resistant cucumber breeding lines from Cornell. We were especially impressed with two of the lines, which produced much earlier than DMR-264, had longer fruits, and showed almost as good foliage resistance as DMR-264. We plan to do more observation next year and may release one or more new DMR lines from Cornell. We also looked at F1 and F2 plants from crosses made based on the results of Twin Oaks' 2014 trial. Several plants showed excellent productivity and DM resistance, but due to excessive September rain we were not able to save any seeds. We plan to try again with this F2 selection in 2016.

The follow-up to the 2014 winter squash trial included a large planting and evaluation with the F4 generation of the Seminole – Waltham cross (see variety description on page 17); F1 plantings of many crosses including Spanish Butternut x Thai Pumpkin (a favorite in taste tests this fall); and evaluation / selection of plantings of Cuban Neck Pumpkin, Crowning, Jamaican Tropical Pumpkin and Soler. Common Wealth Seed Growers has submitted a new SARE grant proposal for winter squash breeding, selection and evaluation work in 2016. We find out if we get the grant in late February, so wish us luck. Part of the project is that we will be seeking farmer feedback on our winter squash varieties to help set breeding goals. We want to hear about your experiences

growing our varieties in 2015 and 2016, as well as your articulation of needs and challenges regarding winter squash production.

We grew out and saved seeds from a number of first generation tomato crosses this year (including several Matt's Wild Cherry crosses aimed at improving Septoria and Early Blight resistance). We hope to evaluate and select from several F2 populations in 2016.

We trialed 29 kinds of hardshell gourds (*Lagenaria siceraria*) in 2015, especially looking for Downy Mildew resistant varieties. DM pressure was intense, and only a handful of varieties made it through to October with viable foliage. Varieties whose foliage showed outstanding DM resistance included Bule, African Drum, Tarahaumara Dipper, Mayo Bule Warty (Suzanne Ashworth seedstock), and Mayo Warty Bule (Native Seeds/SEARCH). Varieties showing moderate DM resistance included Dinosaur, Extra Long Handled Dipper, Indonesian Water Bottle, Chickasaw Bogue, Miniature Bottle, Mayo Giant Bule, and Bule (Smooth Offtype). As of mid December we have done one round of fruit evaluation, by pressing on fruits to see which ones are thick enough to be usable. 10 varieties had no usable fruits. Entries with high percentages of usable fruits include Bule, Indonesian Water Bottle, Mayo Bule Warty (Suzanne Ashworth seedstock), Mayo Warty Bule (Native Seeds/SEARCH), African Drum, Dinosaur and Extra Long Handled Dipper. Tarahaumara Dipper yielded only 5 usable fruits out of 23, despite its outstanding foliage ratings. We plan to do another evaluation of shell thickness for the usable fruits that passed the first test. Please visit commonwealthseeds.com/research for updates this winter.

We planted two *Cucurbita pepo* summer squash trials this year. The first one was wiped out by vine borers at about the time of first harvest. If you have vine borers, it is advisable to use row cover on *C. pepo* summer squash until first bloom, or to use *C. moschata* varieties, which are naturally resistant. The second trial, which we covered, fared much better with vine borers. This trial was planted very late, in the height of Downy Mildew season. While DM affected some of the varieties, most were not highly impacted, leading us to think that DM is not the central issue with summer squash. We are just getting started with summer squash research, and look forward to finding out more next year. Edmund is starting a project to breed a *moschata*-species, vine borer resistant zucchini.

Common Wealth Seed Growers is a participant in a lettuce evaluation SARE grant proposal led by Organic Seed Alliance. If we get the grant (we'll know in February) we will be conducting several lettuce trials over the next three years, with a focus on assessing and developing lettuce seed production techniques that work well in our hot rainy climate. There will also be variety evaluation and selection work, likely focused on heat tolerance.

Downy Mildew Basics: Cucurbit Downy Mildew is a fungus-like disease that affects the leaves of cucumber, melon, squash, gourd and watermelon plants. It starts with yellow spots that turn brown and often kill affected leaves within a few days. Spores reproduce and spread from infected leaves. It often kills entire plants of susceptible varieties.

Downy Mildew does not survive freezing temperatures, but blows north on the wind each year from South Florida and Mexico to infect cucurbit fields throughout the Southeast, mid-Atlantic and often much of the Midwest and Northeast as well. It has become a bigger problem recently. The DM resistance of many varieties has been overcome in the last 15 years due to mutations in the pathogen. DM is also spreading over a wider area. Cucurbit Downy Mildew is generally not a problem in the western US.

Identifying and breeding DM resistant cucurbit varieties is a priority for Commonwealth Seed Growers. We have a handful of the most resistant cucumber, melon, squash and gourd varieties available, and several that can't be found elsewhere.

Powdery Mildew, which shows up on leaves as a grey or white powder, is a different disease, and one that we have had much less of a problem with here in Central Virginia.

There are other forms of Downy Mildew that infect basil, lettuce, hops and impatiens. These organisms are related to Cucurbit Downy Mildew, but do not affect cucurbit plants and vice versa.

Why Farmer Direct Seeds?

Thanks to a growing consciousness about food production and increasing media coverage in movies and books like *Food, Inc.* and *The Omnivore's Dilemma*, many people are thinking about how and where their food is grown. People are recognizing that convenience and low cost of manufactured food products come at a high price: rising obesity and diabetes rates, exploding health care costs, loss of diversity in the produce section, etc. The local food movement has grown by leaps and bounds in the last decades as a result of rising consumer consciousness. People flock to locally produced food for a variety of reasons: exceptionally tasting, fresh and nutritious produce rather than produce raised for its ability to ship long distances; a desire to strengthen the local economy by choosing to support endangered family farmers rather than large corporations; a drive to steward the land in healthier ways by choosing local organic farming systems thus reducing fossil fuel consumption and pollution. There really isn't a good reason not to participate in a localized food system. Out of all of the discussions regarding a local food system, there appears to be one element missing. How strong is a local food system if there isn't a local seed system? In other words, why does farmer direct, regionally adapted seed matter?

Preserving seed for the next season has been a fundamental rule of survival in human history. Almost all seed prior to the 1930's was organic, regionally adapted and open-pollinated. Farmers and gardeners knew how to save seed, and they traded and shared these seeds with their neighbors. A variety stewarded in this way has a genetic makeup that gears it towards optimal survival within local and bioregional growing conditions. This regional adaptation of seed stocks allowed for a diverse, secure food supply for any particular bioregion. This began to change with the advent of hybrid corn varieties in the 1930's. Farmers started trading in their ability to save next season's seed, adapted to their growing conditions, for seed purchased from the seed company. In the years since, using hybrids became standard practice even for plant types that don't benefit from hybrid vigor (which is most of them); farmers and gardeners continued to lose their seed-saving knowledge and stewarded varieties; industrial food systems replaced local food systems and industrial seed systems replaced localized seed systems.

Throughout this process, seed has moved away from being the common wealth of humankind and joined the long list of public resources appropriated by the private sector. The results have been devastating. Most of farming in the United States today relies on proprietary seed stocks, whether they be hybrid (F1), plant variety protected (PVP - a limited patent for open pollinated (OP) varieties), or genetically modified (GMO), the most extreme form of seed privatization. According to Organic Seed Alliance's State of Organic Seed 2011 report, the seed industry is now dominated by a handful of transnational biotechnology/chemical firms with 60% of the world's commercial seed owned by 5 companies. What's worse is that these corporations have no interest in supporting sustainable organic agriculture or organic crop breeding as their profits rest on breeding crops that rely on agricultural chemicals (which they also sell). They have everything to gain by commandeering the seed supply through market consolidation, discontinuing more seed varieties with each corporate merger and leaving fewer varieties available to organic farmers. These giant ag-corporps will pursue all means to secure their profits: the draft for the Intellectual Property section of the proposed Trans Pacific Partnership (think NAFTA on steroids) is literally written by and for Monsanto. The Manifesto on the Future of Seeds (written in 2006 by the International Commission on the Future of Food and Agriculture) aptly points out: "The global seed industry misuses the concept of "common heritage of mankind" to freely appropriate farmers' varieties, convert them into proprietary commodities and then sell them back to the same farming communities at high costs and heavy royalties. Such privatization through patents and intellectual property violates the rights of farming communities and leads to debt, impoverishment and dispossession of small farmers." A consequence of this privatization and increased reliance on hybrid seed stocks has been not only a loss in the amount of open pollinated varieties available but also a loss of quality, suitability and traceability in OP varieties. Most of commercial dry seed production takes place where the climate suits the seed

production, like the Pacific Northwest and Israel. That's great in some ways, but how will those varieties grow in an opposite climate like the southeastern United States? Colorado is a good place to produce cucurbit seed without much of the disease pressure experienced in more humid climates. But over the long run how will those seed stocks hold up to Downy Mildew and Bacterial Wilt? Seed producers are incentivized towards quantity of seed rather than quality. Plant breeding and selection- working towards varieties that are disease resistant, pest resistant and regionally adapted - is discouraged by this system and rarely prioritized. So, what's the local organic farmer to do? Take a chance on poorly stewarded OP's and potentially lose income? Turn towards a better stewarded yet proprietary hybrid variety that also may not be well suited to their climate and that could disappear at the whim of a far-off company? Herein lays the greatest insecurity to our local food system: dependence on commercially-sourced, commodified seed.

The political landscape surrounding seed is dire and reveals the vulnerability in our local food systems. Yet, there exist many beautiful seeds of potential to turn the tide of corporate control over our food supply and return food sovereignty to the hands of the people. It is at the local level that the new paradigm of seed is being formed. Communities that prioritize local spending, farmer co-operatives, food hubs, farmers' markets and CSAs are also becoming the breeding grounds for a new local, organic, open-pollinated seed movement. We're excited to be a part of it! We at Common Wealth Seed Growers are all farmers, working together to revitalize and rebuild a localized seed system in Virginia and in the greater Southeast and mid-Atlantic regions. We grow, save, clean and pack all the seed we sell. We test new and old varieties in our trials. We practice ongoing selection and adaptation, under organic conditions, as we work with varieties over time. We have several breeding projects in progress. Our new seed growers' cooperative is actively building a local and regional network of skilled organic seed producers, and developing educational programming on seed saving. We believe that organic farmers and the communities in which they exist are best served when they have access to well stewarded, 100% source-transparent, regionally adapted, GMO-free, organic, open-pollinated seed varieties. Farmer-direct seed - farmers growing seeds for themselves and directly distributing to other farmers - is the clearest path away from the global commodity seed market and towards reestablishing seed as the common wealth of humankind.

Sapphyre Miria, Twin Oaks Seed Farm

Seed Terminology, And Some Seed Politics

Open-pollinated (OP) varieties are stable and more or less uniform populations. Seeds can be saved and re-grown from year to year and the plants will look the same each year. OP varieties do contain some genetic variability however, which allows for continued selection and adaptation over time. In this way varieties can be adapted to new conditions without the step of making crosses with other populations. OPs, at least as much as hybrids, require careful stewardship because they always have the potential for change. OPs lend themselves to democratic and horizontal power dynamics, and are not conducive to commodification. Farmers and gardeners can save, steward and control their own seeds, thus retaining sovereignty over what they grow.

Landraces are stable but variable populations – more variable than most modern OP varieties – that are usually developed and maintained on a local or regional basis. Maintaining greater variation in a population makes it more likely that some of the plants will do well even in a difficult year. The greater variability also makes it easier to select and adapt landrace varieties to changing conditions.

Hybrid (F1) varieties are the first generation after a cross between two different OP parent varieties. The parents (called inbred lines) are generally bred for strict uniformity, resulting in uniform hybrid varieties. Seeds saved from F1 plants and replanted are called the F2 generation. F2 plants are anything but uniform, displaying the characteristics of both parents, everything in between, and more. It takes several years of selection to create a stable OP variety out of an F1 cross. Proprietary hybrids are hybrids for which the parent lines are not known to the public. Hybrid seed is an extra-legal mechanism that allows for proprietary control of varieties. F1 hybrids can also be seen as step one in the process of breeding new OP varieties.

Genetically Modified (GMO) varieties are created in labs by splicing DNA from different, unrelated kinds of organisms into the plant's DNA. The resulting genetics are then the sole legal property of the corporation that created them. There is no role for farmers or gardeners saving seed, and they are forbidden to do so. Even farmers whose seedstocks have been contaminated accidentally can be sued for possessing proprietary genetics. The process of making GMOs is unprecedented in nature; GMO plants contain proteins and compounds entirely unprecedented in the natural world, but are being released without serious assessment of their effects on our health and the environment.

OSSI: Open Source Seed Initiative is a new project that aims to counter the privatization and patenting of seeds. Those who grow OSSI varieties are asked to agree to the OSSI pledge: “You have the freedom to use these OSSI-Pledged seeds in any way you choose. In return, you pledge not to restrict others’ use of

these seeds or their derivatives by patents, licenses or other means, and to include this pledge with any transfer of these seeds or their derivatives.” See www.osseeds.org for more information. We’re offering three OSSI varieties: Karma and Stocky Red Roaster peppers, bred by Frank Morton of Philomath, Oregon, and Top Hat sweet corn, bred by Jonathan Spero of Grants Pass, Oregon. We expect to work with more OSSI varieties in the future.

PVP: The Plant Variety Protection Act of 1970 established the option for a limited 20-year certificate (not technically a patent) on a plant variety. Those who grow PVP varieties can save and regrow their own seeds (but can’t sell these), and can use them to breed new varieties. It used to be that farmers could sell PVP seeds to each other but that’s no longer the case. A big down side to PVPs is that the certificate costs a lot to obtain, putting them out of reach for most farmer-breeders and even most small seed companies that come up with new varieties. Unlike GMOs and utility patents, the PVP model holds that intellectual property laws should strike a balance between incentivizing innovation, and the public interest. However, in practice PVPs are inaccessible and unhelpful to most of the world’s farmers and plant breeders. They are one of the tools used by corporate interests to assert control over our collective heritage of plant and seed genetics.

Utility Patents allow for patenting of a process or an idea. Starting in 1985, utility patents became available for plants. Monsanto was just granted a utility patent for “a method of producing a cucumber plant having resistance to Downy Mildew comprising the steps of (a) crossing a cucumber plant of accession PI197088 with a second cucumber plant having at least one desired trait; and (b) selecting at least a first progeny cucumber plant resulting from the crossing that comprises resistance to Downy Mildew and the desired trait” (google.com/patents/WO2009129314A2?cl=en). Which is to say, Monsanto has patented the use of PI 197088 as a source of DM resistance.

PI 197088 is part of the USDA germplasm bank and was collected in India in the 1950s. Its DM resistance was documented by the University of Wisconsin in 1989; resistance to the new (post-2004) strains of Downy Mildew was documented starting in 2005 in NC State’s Downy Mildew trials; the goal of those trials was to find resistant seedstocks that could be crossed to create new DMR cucumbers. Cornell and Twin Oaks Seed Farm have both trialed PI 197088 and documented its DM resistance. Enabled by patent lawyers and judges, Monsanto just privatized use of this seedstock. They could do the same with any variety – any kind of seed or plant.

The US government is not considering honoring intellectual property rights for the small farmers who developed PI 197088, or any other plant variety. Utility patents on plants are a theft of the commons, a collaboration between government and corporate power to commit blatant theft and exploitation.

They exemplify arrogance and denial. Monsanto's patent on PI 197088 made it through the 'patent pending' stage unnoticed by the organic seed community. We need to develop ways to monitor pending plant patents, to object to them before they are granted, and to challenge them once granted. We need a plan of action for challenging and changing this kind of patent abuse as a whole.

The Trans Pacific Partnership, or TPP, is a proposed trade agreement between the U.S. and 12 other Pacific Rim countries including Japan, Mexico, Canada, Vietnam and the Philippines. Calling it a trade agreement is misleading since its 30 chapters touch on and make new rules for just about everything, from healthcare to patents to media and internet. The agreement was written with the help of hundreds of corporate advisors, but kept secret from the public until just recently (November 2015).

TPP's investment chapter allows corporations to sue member countries' governments (including state and local governments) for passing laws or enacting policies that might affect their potential profits. This could include a school district that decides to prioritize sourcing local food for lunches, or a state that votes to approve a GMO labeling law.

The General Provisions chapter mandates that member countries join the International Convention for the Protection of New Varieties of Plants 1991, which imposes rules similar to PVP and requires repeal of laws that protect against biopiracy (whereby corporations take and patent wild plants and plants developed or stewarded by indigenous communities). The Mexican communities and peasant farmers that steward corn varieties developed by their ancestors will not be gaining any recognition or intellectual property protection through the TPP. Really, the TPP and International Convention for the Protection of New Varieties of Plants 1991 serve to enable corporate biopiracy.

TPP will likely be coming up for a vote in Congress in 2016.

Instructions for Ordering by Mail

- ▶ Make a list of varieties, making sure to write the size, quantity and price for each item. All non-bulk packets cost \$3.50. Bulk prices are listed in the variety descriptions.
- ▶ Total your purchases.
- ▶ Add shipping and handling cost. For orders that are all packets or that total less than pound, add \$4 for shipping. For orders over one pound add \$2 for each pound. Please contact us for shipping and handling prices on orders heavier than 8 pounds, or order online.
- ▶ Include a check or money order, with the total purchase price plus shipping and handling price. Alternatively, include credit card information: Name, billing address, card number, expiration date and security code (3 digits on the back).
- ▶ Write down the address that you want seeds shipped to, and include a phone number in case we need to contact you.
- ▶ Mail to:
Common Wealth Seed Growers
PO Box 1157
Buchanan, VA 24066
- ▶ We ship by USPS and UPS ground.

Please email us at **commonwealthseeds@gmail.com** or leave us a message at **540-223-5861** if you have any questions or problems with your order. We do not have regular phone hours, but will get back to you in one to two business days.

Please consider ordering online at **commonwealthseeds.com**. Our website has color pictures for all varieties, as well as planting information, variety trials reports, seed saving information, farm pictures and more.





Tennessee Red Cob



Klondike Blue Ribbon



Cuban Neck Pumpkin



Brazilian Orchard



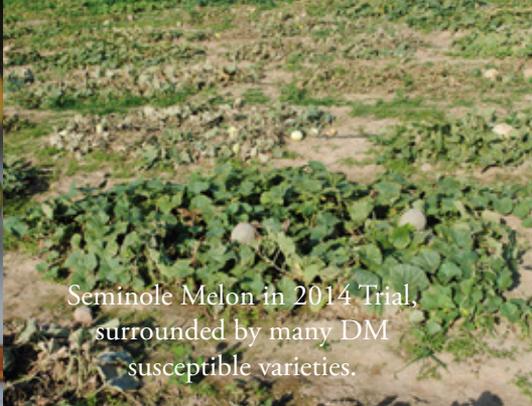
Top Hat



Crowning



Seminole Melon



Seminole Melon in 2014 Trial, surrounded by many DM susceptible varieties.



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