

THE REGULAR, AND NOT SO REGULAR, NEWSLETTER
OF THE GARLIC SEED FOUNDATION

The Garlic Press

www.garlicseedfoundation.info

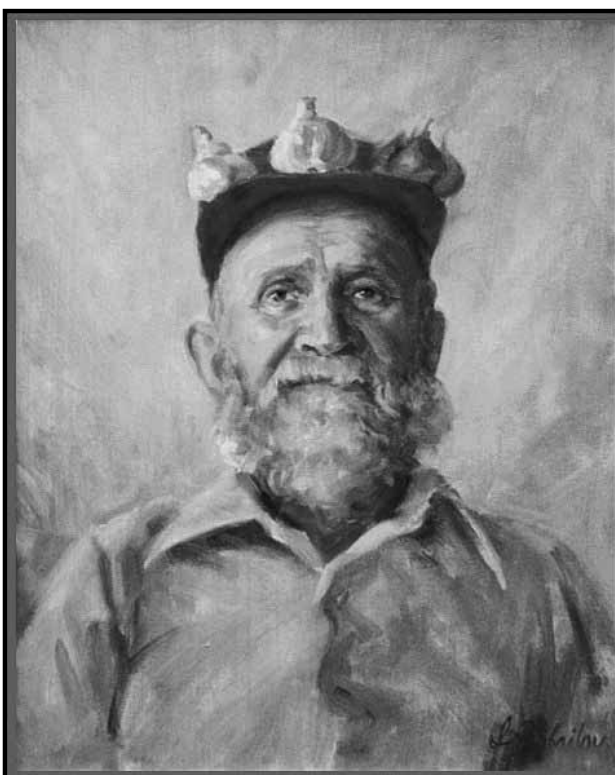
ISSUE #53

Friends and Fans Honor the Life and Legacy of Ted Maczka

Tadeusz Maczka, 83, was known throughout North America for his knowledge, expertise and garlic gospel in his bid to make Canada self-sufficient in growing the lowly bulb. He died Monday, Dec. 30, 2014 at Prince Edward County Memorial Hospital following a stroke. Maczka was always wearing his cap affixed with garlic bulbs and for many years drove his van with an enormous bulb on its roof.

Born in Tarnow, Poland, he suffered a crippling injury in a Second World War labour camp. He immigrated to Canada in the early 1950s where he worked as a tool and die machinist. An entrepreneur at heart, he developed a wholesale and retail business importing and selling European foods to small businesses across the GTA and Southwestern Ontario.

It was an article in the Financial Post discussing the millions of dollars that Canada spends on importing garlic, that prompted Maczka to make Canada self-sufficient in growing garlic. He purchased a hobby farm in Demorestville and over the next four decades won multiple awards for his garlic and travelled far and wide in North America



The Garlic Man by Igor Babailov

Igor Babailov, world-renowned portrait and figurative artist, has painted portraits of presidents, popes and royalty. The Garlic Man sat for him three times.

sharing the garlic gospel. His awards at the Royal Winter Fair were legendary and he attended and instigated Garlic Festivals all over the province.

He ate garlic, drank garlic (with vodka as Fish Lake Fire Water) and slept and dreamed of the benefits of the bulb, believing Canadians should embrace the easy growing bulb. He extolled the bulb's health benefits and healing powers.

Frequently, as a guest speaker, he would tell his audience to plant garlic with the tops high and the flat ends down, "otherwise the garlic will grow down to China and that's why they sell it so cheap." And while garlic was his life's passion, he was also well known

for his strong willed, 20- year battle with Quinte Conservation and the Ministry of the Environment over the alteration of waterways and flooding of his land.

"Ted was certainly a source of inspiration for me and my students, whenever he posed in my portrait master-classes," said Babailov. "He was the most interesting man, always up-beat and sharing stories of his life. "He was so vocal in his health mis-

THE GARLIC PRESS

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THIS ISSUE #53

Press #53 brings together a new publication crew. For over 15 years we were fortunate to work with our friend Dorothy (Geneva) who had the technical skill and artistic touch to make us look good.

The new team with Editor Bob Dunkel is Nonnie (Rochester) and Karen (Syracuse) working on data input and layout, and Gnomon Copy (Ithaca) doing the printing. Kelly (Rose) continues to keep up with GSF electronic communications, updating our membership lists and printing our mailing labels.

We couldn't do this without them!

MEMBERSHIP

Initial membership in the GSF is \$15/4 issues.

Renewals are 8 issues for \$20.

All submissions for **The Garlic Press** should be sent to:
GSF, Rose, NY 14542-0149

All medical references are for educational purposes and any recommendations should not preclude consulting with a health practitioner.

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WEBSITE

www.GarlicSeedFoundation.info

sion for garlic and criticizing pills, that it would even provoke the Canadian "pill industry" to respond. I remember him proudly sharing, that after being featured on the Canadian TV program Global News, he was even called the "Garlic King".

Ted Maczka, the Garlic Man, was an extraordinary man and he will be remembered by many." Last summer, local artist Milé Murtanovski presented a painting of Maczka to the Prince Edward County Library. The portrait was part of the artist's Field to Canvas series of farmers.

"Donating the painting to the library and having it on display for the public in perpetuity seemed like a great way to honour Ted as a significant contributor to the area's agricultural history," said Murtanovski. The painting is at the Picton branch and is also displayed on a rotating basis at each of the library's six branches. Memories of Maczka flooded Facebook. "What a great guy promoting the benefits of garlic for so many years before it was mainstream," said Sally Fulton. "I will never forget going to an Ontario Vegetable Growers conference in Toronto and as we pulled into the hotel, there was the garlic van with that enormous garlic on the roof. Couldn't believe my eyes," recalls Kathryn Ostrander. "We lost a very special person in the County," said Suzanne Dick.

In Memoriam

A SPECIAL TRIBUTE TO TED (TADEUSZ) MACZKA

The Fish Lake Garlic Man

Born: January 14, 1930 in Tarnow, Poland

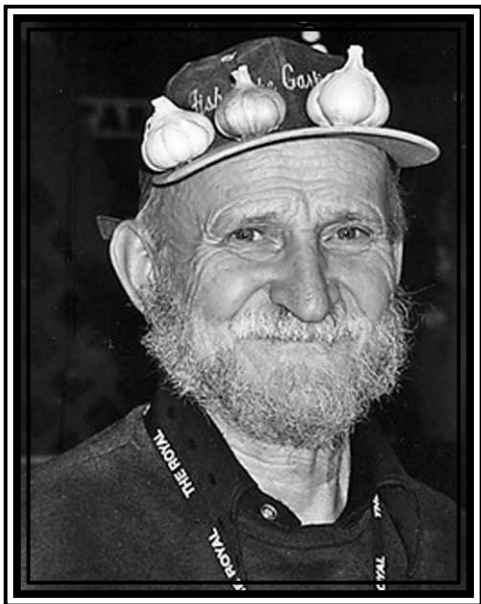
Died: December 30, 2013, Picton, Ontario

It was with regret that I learned that Ted Maczka had passed away on December 30 in hospital in Picton, Ontario

With his passing, the garlic world has lost a true pioneer of the garlic industry in Canada. Ted was Canada's bestknown garlic personality, a familiar figure at garlic festivals and events, and a darling of the news media. He drove a van with a huge garlic bulb on top and wore a hat or cap decorated with garlic bulbs. He would set up a garlic information stall and preach the gospel of garlic without a break all day. He was known by gardeners and growers across Canada, shipping his "Fish Lake Brand" of garlic varieties by mail order. His personal favourite was a Porcelain type that he dubbed "F3".

He called his farm in Prince Edward County his "Garlic Research and Experimental Station". He collected and grew dozens of different garlic cultivars and experimented with growing of garlic from bulbils.

Ted established the garlic competition at the Royal Winter Fair in Toronto and donated a grant of prize money with the hope that the competition would be continued in perpetuity. During his younger years, Ted would have a garlic information stall at the Royal, manning it for 12 hours a day for the 11 days of the fair, reaching thousands of people with the garlic message.



I recall driving to Toronto to help him with this selfimposed task and was amazed at his stamina and his high spirits, even at the end of a long day on his feet. He seemed to be energized by his talking about the

health benefits of garlic and very pleased to be able to tell beginners how to grow this most wondrous of all vegetables. Ted would talk about garlic anywhere, anytime. When he answered the phone, he would say, "May I help you?"

Articles on Ted's demise appeared starting with the Toronto Star of January 2 and then being picked up by other newspapers across Ontario. For those with Internet access, you can read these various tributes from reporters that knew of Ted simply by googling Ted's name.

Ted was predeceased by his wife Wilma. He is survived by his son, Taj, his daughter, Barbara, granddaughter, Ally, and four great grandchildren.

Ted had been admitted to hospital on Boxing Day from a stroke and didn't recover. He had been living in the Maples Retirement Home near Picton, Ontario since 2005 but continued to grow a bit of garlic on his farm near Demorestville in Prince Edward County.

As garlic growers, we should all be thankful to Ted Maczka, the famous Fish Lake Garlic Man. Through personal dedication and unceasing effort, he, more than anyone else, helped to create a thriving garlic growing industry in Canada. It was his drive and determination to make us self-sufficient in garlic that impressed itself on hundreds of thousands of people. If there was ever a Canadian Garlic Hall of Fame, Ted Maczka's picture and record would hold the place of honour.

—Paul Pospisil, editor
Published by Beaver Pond Estates

Dear Alexandra,

The very sad news of your grandfather's passing has just reached this farm. Ted has been a dear friend of mine, and of the garlic community in this country, for over 25 years. I am a certified organic fruit and vegetable farmer as well as the Director of this foundation of 1500 alliophiles. I first met Ted in the early 1990's when Ag-Canada brought me to Toronto for winter meetings to teach/preach on garlic production. It was at one of these sessions, during the question period, that a gentleman with a thick accent expressed his dissatisfaction with the provincial agriculture policy, which brought boisterous approval by the attendees.

That was my first exposure to this Fish Lake Garlic Man – an individual driven by passion and fearless

in expressing his beliefs. After that Toronto conference, we met many times on either side of the border, and had lots of phone discussions about garlic, WWII, family, and Ontario Water Resources. I have a 2 inch thick file in my cabinet of his articles, papers, songs and documentation of his research. We both have spent many hours and many miles spreading the good news of *Allium sativum*. As the the years rolled by, I grew to have more and more respect for him, not as "Crazy Teddy," but as a man with immense energy, a fun-loving personality and infectious smile. He was dedicated to his beliefs, he was intense and unique, and he showed respect to all people. I hope that you are as proud as I am to have known and worked with him. (continued....)

Dear Alexandra continued...

We were very fortunate that, for several years, Ted was able to visit with us at Saugerties, New York for a large Northeast Garlic Festival of 30,000-40,000 people. He was a fine ambassador from the north, standing atop his soap box, wearing his garlic print boxer shorts over his long pants, lecturing to students, selling to customers; he was in his element, and touched thousands of people. Ted also helped us put together a garlic cookbook. Alexandra, if you'd like a copy, please contact me.

I will miss him and our regular phone calls (we talked just before the holidays) and tonight I'll offer a toast in his honor with my Fish Lake Garlic Water!

My condolences to you and your family.

Sincerely, David Stern
Farmer & GSF Director of The Garlic Seed Foundation

RIP my friend . . .

Learning of Ted's passing was a sad start to 2014. Over the past 15 years Ted and I had become good friends, spending many hours on the phone and at the Saugerties festival talking garlic, farming, cooking, family and life in general.

I remember Ted arriving in Saugerties one

Friday night and seeming upset. Unusual for him so I inquired what was wrong. He had encountered a young man in a convenience store as he crossed into the USA who had loudly announced "You stink man. Get out of here". I would wager a bet that not one person at the festival noticed anything remiss about Ted or his garlic breath.

Ted's enthusiasm for the field of garlic was contagious. He radiated a genuine joy as he explained even the

simplest procedures over and over to people. I am eternally grateful to him for so patiently answering my many questions over the years.

— Emily Barrett



Out of My Out of My Head with Bob Dunkel

It has been a tough year! Here in upstate New York we had an old time winter

as the elders would say. It started in mid-November and never let up with tremendous cold and long periods of it! Only having grown garlic here since 1981, I guess I missed those hard days but now have one under my belt. The garlic was slow in emerging and almost a month late at that and then Spring brought lots of water and way more than we needed. As I write this in the end of May it looks like we may finally start getting some heat units but...a bit late! I had reports over the years of winter kill but after so many years unscathed it seemed to me that maybe it only happened when folks planted too shallow and there was a lot of

frost heaving. This year though I would guess we lost a couple thousand cloves that were just plain gone, not there when my fingers went digging through the muddied field. Some smaller growers have lost up to 50% of what they had put in and with scapes coming in the next two weeks it will be hard pressed to say it will have time to size up very much. As David, our director said to me "just be thankful you're not farming this year!"

So much for my grumbling...every year brings challenges and new means of dealing with them. We had our growers lecture series this Spring in Geneva/ Cornell and Albany, NY and covered post-harvest handling issues and also gave folks a more in depth look at a new visitor to us, the leek moth. Our thanks go out to both Crystal Stewart of cooperative extension and Dr. George Abawi for their generous time as well as Director

and Big Bulbhead David Stern who have worked hard to continue this growers schooling program. If you have a few growers located in your area it would be a good project to take on this coming winter. There should be someone you can find from extension and just getting growers together is always a good learning experience. We had a couple of our locals do slides of their storage rooms and fields and it sure sparks the conversation through a good pot luck lunch!

For those of you that are listing seed for sale to our members etc. please note that the forms will be on our website, but will not be available until mid- August each year. Folks always try to get on sooner and must be patient and understand our policy: The Garlic Seed Foundation/ Friends of Garlic cannot be liable for the quality of seed that is offered by members. We continually promote best practices and ask that if possible your seed is tested for disease or nematodes. We have worked many years to support growers around the country and to help establish markets by helping garlic festivals get going in more and more areas. It is with much chagrin that I can still hear the echo of Dr. Abawi talking about how one of the most prolific way to spread disease happens at these festivals...Just a word to the wise, Be Careful, and for example we have had to prohibit seed for sale at our Saugerties NY festival in the past when nematodes became a

serious problem in the nearby Hudson Valley area.

Finally it is with much sadness from all of us at the GSF that we announce in this issue the passing of Ted Maczka, The Fish Lake Garlic Man. Ted was a tremendous advocate for garlic in Canada and came to New York many times to meet with us and speak of his studies of bulbils at his garlic research station. He is not replaceable for so many reasons and we all will miss his smiling face and his medicine of a bottle of vodka stuffed with peeled garlic!

UPDATE AND SAD EXPLANATIONS...

It is now approaching another November and this issue is not out. We have lost our word worker Dorothy and have had a number of website issues. Seed listings went reasonably well but still many folks wanting in early and then way late? My pet peeve here is the folks that join not as members but as a way to get their garlic sold under our program which is a courtesy to members. Quite often I get two emails one to join and one to list and do not know anything else about these folks. We all need to be vigilant against the spread of less than optimum garlic as seed. Please keep checking our website for announcements of garlic classes over the winter. Tuck your seed children in well and dream of a better and more fruitful year and world!



A Compendium of Garlic Tips for Home Gardeners

By Paul Pospisil

Grow organically. Garlic thrives in rich, organic soil. No matter how small your garden, rotate your planting and restore organic matter to the soil. Avoid using pesticides and synthetic fertilizers. Use techniques like mulching for weed control and moisture conservation and raised beds for better depth of soil. Your garden and plants will love you.

GARLIC PLANTING GUIDE

Variety Cloves Per Bulb Seed Bulbs for 25' Row

Porcelain 2-6 (average 4) 12-13

Purple Stripe 6-9 (average 7) 10-11

Rocamboles 6-9 (average 7) 10-11

Artichoke 6-12 (use 8 best) 8-9

Silver skin 7-12 (use 8 best) 8-9

**The number of cloves per bulb varies with region,

climate, and soil and from year to year.

HOW MUCH TO PLANT?

Eating on average one clove a day or a bulb per week requires 60 bulbs per person per year. Garlic lovers eat more. Add another 15-20 bulbs to save for next year's seed. 80 plants need about 25' of row. For block planting, an area 4x8' will do.

VARIETY IS THE SPICE OF LIFE

To get the best choice of flavours and have fresh garlic year round, grow strains from all varietal groups. Here's a suggested assortment of strains:

Early harvest: An early Rocamboles, like Fish Lake F I, Israeli or Yugoslavian. These are ready early July for pickling needs, the BBQ and the earliest garlic. Not long keepers so use up by Christmas.

Fall & early winter use: A main crop Rocambole like one of the "Reds", Czech, German or Russian; for gourmet beauty, grow the huge Purple Stripes, like Czech Broadleaf. These last till February or March.

Midwinter use: The Porcelains. For those big bulbs, grow Majestic, Fish Lake F3 or Romanian Red; for hotter but smaller bulbs, Georgia Fire. Porcelains are generally good until March or April when they break dormancy, start to root swell and lose their sweetness.

Long keepers: These are the lovely, braidable soft necks, either Silver skins or Italian Reds. They have less heat but finer flavour than hard necks and are still juicy when you're waiting for garlic to emerge in the spring. Lorz Italian, Robust or Endurance are good picks while Fish Lake F 40 has kept well for 14 months.

FRESH GARLIC YEAR ROUND

Succession plant bulbs, rounds or small cloves every few weeks for a steady supply of garlic greens. In the winter, grow in pots on the windowsill.

BRAGGING RIGHTS?

Want to grow giant garlic bulbs to enter in the local fair? Pick a Rocambole or Porcelain, plant in the best spot in your garden in soil heavily enriched with lots of compost and manure. Late planting, even end-November, can give larger bulbs. In the spring, water with manure tea. Use fish & kelp foliar spray twice weekly from the 2-leaf to the 8-leaf stage to produce strong, healthy top growth. Water deeply when needed. Don't let the garlic dry out. Remove scapes as soon as they curl. Keep watering into July for larger bulb development. Harvest at last possible time, just before the last five leaves start to die. Like Ted Maczka, you too can grow bulbs weighing 1/2 lb!

THE THREE HARVESTS OF GARLIC

The complete garlic plant is edible and delicious.

1st harvest- the tender, young greens in May and June

2nd harvest- the scapes, from mid June to July

3rd harvest- the main crop of bulbs, from July onwards.

GROW YOUR OWN TOMATOES AND HERBS!

The number of recipes using garlic and herbs like basil are endless. Why not grow your own?

INTERPLANTING & COMPANION PLANTING

Plant your garlic near carrots or roses and you will protect them from blight. Avoid placing peas, beans or other legumes next to your garlic. It inhibits fruiting.

GARLIC SPRAY FOR YOUR GARDEN

Make a safe and effective insect spray by crushing garlic and steeping in water for several days. Strain and use in your sprayer to kill insects that attack your garden. Add

dried hot peppers when making your garlic spray for greater potency.

BEE STINGS OR INSECT BITES?

Cut a clove of raw garlic and rub on the sting. The swelling and discomfort will be gone in minutes.

NO ROOM IN YOUR GARDEN FOR GARLIC?

If you have to buy garlic due to lack of garden space, remember the rules: BUY LOCAL, BUY ORGANIC, BUY QUALITY. It's not worth the few cents you save buying cheap, imported garlic. Check the prices and decide. Here's what it costs for the best: 60 bulbs per year are about 7-10 lbs of garlic. At, say, \$8.00 per lb for top quality local garlic, that comes to \$65.00 per year, or \$5.00 a month. That's less than the price of a hamburger!



GARLIC IS WORTH GROWING. Once you learn how it grows, you'll enjoy the best garlic possible, your own garlic from your garden.

—*The Garlic News* Issue 13 Fall 2007

GARLIC SEED FOUNDATION

Rose Valley Farm - Rose NY October 29, 2009

Dear Ms. Obama,

As small farmers, we applaud your gardening efforts and calling attention to the process of growing our food. Agriculture is about to change and it will be an important skill for everyone to learn. As is keeping our connection to Mother Earth.

Garlic is a member of the Allium family (onion, leek, shallot, chives) that is planted in the fall, sets roots, then emerges in the early spring and grows with the increasing day length. It needs good soil, full sun, loves mulch and 1" of water per week. It will also protect our White House from vampires.

The Garlic Seed Foundation was founded in 1984 to research the production and marketing of garlic by small farmers; to promote consumption of garlic, to keep some "culture" in agriculture, and to have some fun. Garlic cultivation requires hand labor, so we produce a limited amount for local, seasonal markets throughout the country. Our competition used to be the industrial production in California, now it is China.

On behalf of our 1400 members, we would like to donate these bulbs for you to plant, grow and enjoy. The cultivar is "Porcelain" and it was grown in Rose, New York. For a peaceful and green Earth.

David Stern
Farmer and Director of the Garlic Seed Foundation

THE WHITE HOUSE
WASHINGTON

We would like to extend our deepest thanks and appreciation for your generous gift.

It is gratifying to know that we have your support. As we work to address the great challenges of our time, we hope you will continue to stay active and involved.

Again, thank you for your kind gift.



WWW.WHITEHOUSE.GOV



STINKY REPLIES

MEMBERS FORUM: Ron Ebel

I'm Ron Ebel and 78 years young. I have been asked to write down some of my stories for my family and would like to use Garlic Press as a start. You got me with the lines: Doctors don't bring healing...etc. I also could not resist adding my thoughts. Doctors don't bring healing-not at all, but most are no more than Pharmaceutical assassins! Lawyers don't bring justice- in our area (Wisconsin) it's just like fishing-catch and release to reoffends... Religions do not bring us closer to God. Finding God requires the longest road inward and if you aren't careful you can find yourself on the road to genetically modified organisms=GMO's=God Move Over!

Now for a brief introduction: I spent 25 years as a polluter, selling and installing floors. In 1973 at age 37 I crashed-full of chemicals-Environmental illness-no cure. I could not accept this as there had to be an answer. This was the start of my road inward, my quest! First I was led to organics, bio-dynamics, reiki healing, dowsing, plus a dozen other methods. So, as a gardener I am a combination of all these belief systems. In a good year my wife and I raise 95% of the food we eat for the year. In 2012 we lost our garden to the drought and a trip to Germany for a grandson's wedding. 2013 January I herniated a disc and had spine surgery in February that left me with dropfoot on my left foot. In August my wife was diagnosed with Alzheimers and in September I had a heart attack. It was tough but I got the garden put to bed and 400 garlic cloves planted. Now the garlic is up and we are probably planting our last garden ..

How we garden: I use organic, bio-dynamics and dowsing and plant and harvest by the moon sign. At this point I usually see the eyes roll! Then I am told "they don't have time for that" ... I use a five

year rotation, cover crops, our own bio-dynamic compost, fish and seaweed, our weed tea and paramagnetic rock powder and gypsum. I use the bio-dynamic planting calendar *Stella Natura* as a guide. It is broken down into: flower, fruit, leaf and root days for planting and a grey section for not planting, but weeding, tilling etc. It is available thru Fedco seeds or The Bio-dynamic Farming and Gardening Association...

Our area is USDA zone 5, however we are in a river bottom and have a micro-climate of zone 4. I plant in mid October and harvest in mid July. I plant in beds with cloves 8 inches apart and I mulch with 4" of marsh hay right after planting and remove mulch two weeks before harvesting. Now from a dowsing perspective: if you dig a bulb on each of the days/flower,fruit,leaf,root/ and dowse how it affects a persons energy field, the root day will have the most energy, minerals and longest storage qualities. Also, in using paramagnetic rock powders one can dowse for cosmic energies capture and while at it one should check the soil for silica levels. If you apply it for three years you can go another three years without it and then start in again.

Plants take it up like a sponge. When levels are right Colorado potato beetle will leave and return when levels are low! In regard to the weed tea: back about 1993 I dowsed my most common weeds for mineral content and some were heavy metal accumulators. If you put these weeds in your compost you will have heavy metals in your compost. If you ferment them in your weed tea they are transmuted. As we weed we put them into food grade 50Gal barrels until about full.

About mid August I add two cups paramagnetic rock powder, a pint of molasses or two cups sugar and a cup of EM1 or Rid-x and fill with water and cap, but not too tight. By October as I strip the garden and make my compost pile I take the heavy stuff from the barrels and layer it in the compost piles to jumpstart the pile. Lots of work! Once the compost is made I cap it with 4-6" of hay or straw

(organic) and turn it once the next spring and recap it until fall. I screen the two year pile and that is the base for my potting soil. Most of that is used to make soil blocks. 600 so far this year. I use the weed tea to water in plants, diluted as a foliar spray and sometimes mix fish and seaweed and for a field spray before I turn in the cover crops.

The garden I am planting in this year was cover cropped all last year from fall 2012 til August 1 with oats, then buckwheat, then daikon radish with a field spray between each crop and 160 ponds of gypsum this spring. My other garden will get the same this year.

From 1985-90 I tried to do a CSA with one acre and the time was not right. So, I cut back to two gardens just for my family-square foot wise it was a quarter acre. Now that the kids are gone we don't need as much and that lets me cover crop one each year. One is round and one a rectangle. I do one in a circle like a medicine wheel and that is our energy garden and there is a geometric equation for this referred to as squaring the circle in sacred geometry. (Do not try this if you have to go fast/this puts the brakes on fast!)

Last year for the first time my garlic did not size up. It turned out that a toxic energy line (stray voltage) moved the length of the bed. I changed the energy and planted three dozen cloves to see what would happen. The rest was planted in the circle garden. Garlic is one of my least labor intensive crops and sweet potatoes are the most labor intensive. Also gardening involves another factor when you talk about seed saving, but that's another subject...

As for what do we do? Where are we going? I don't have a clue and I sure don't like what I'm seeing! Could we use the hundredth monkey approach?....anyway hope this helps!

—Blessings, Ron

By the way I grow three varieties of garlic: Italian Red, Georgian Crystal and California White, all hard necks and storage time before they sprout is 9-10 months...

Editors note: Ron sent me some of the garlic and I have spring planted it and in this all too wet spring it has nearly caught up with my fall planted crop!



Gardening Magic of the Moon

The moon is inexorably linked with the earth and controls the tides of the oceans and seas by it's gravitational pull. It makes sense that man has been using the magic of the Moon and her phases to get the maximum benefits from his crops and garden stock. Use the time of the New Moon to plant seeds of plants that appear above ground, whose seeds appear outside the plant, such as broccoli, cauliflower, spinach and grains. The second quarter and particularly a couple of days before the Full Moon appears, is the optimum time to

plant crops which grow above ground and whose seed is inside the plant, such as tomatoes, peppers, melons and beans. The Full Moon and Waning Moon is perfect for planting bulbs, flower seed and root crops such as carrots, potatoes and onions. It's also a great time for transplanting plants.

The period just before the New Moon is an inactive one, being best for harvesting, pruning, transplanting and cutting grass.

- Excerpt from One-Vibration.com

It makes sense that we have been using the magic of the Moon and her phases to get the maximum benefits from our crops and garden stock.

PRODUCTION & GROWING

Yields? What size of the cloves should one plant?

By Ted Maczka, the Fish Lake Garlic Man

As an amateur farmer with a vision of making Canada self-sufficient in growing garlic and developing the finest garlic in the world, I decided to do it. Not knowing the basic how to grow it, all I knew that it could be grown in here. Looking back almost 30 years, there was hardly any good information on garlic growing available. The people who grew it in their backyards were not keen to share their knowledge. Eventually when I came across some information from California, it was a little baffling. It said: "plant the largest cloves, eat or throw away small one." It was something against my principles, to throw away small cloves so I decided to plant them and to plant some of the bulbils (bb) the results were very encouraging.

What I didn't realize at that time, they were growing peanut size 1 oz. bulbs and calling them large, not a 4 oz.+ (115 gr.+) which I call large. Few years later when I came across some research from India's University and Egypt's, I was doing much better, then they were.

My conclusion was that we have an ideal climate to grow garlic. What I learned later, in California they were growing mostly soft neck garlic, bulbs having 20 cloves and more. While I grew the gourmet garlic of a Rocambole and Porcelain variety, the bulbs in Fl a Rocambole variety having up to 12 cloves and in porcelain 4- 8 cloves and weight up to 160g. (6 oz.). As time went on, I increased growing many different varieties. My favourite F3, which is a Porcelain variety, is known as a Russian Red. From the tiny bb 4.015-0. 150g I have been getting different varieties of garlic. An original variety and two distinctly different varieties. In my imagination I would say they could be mother and father of F3. One would be the Porcelain type but smaller plants and bulbs and producing tiny bulbils. I named F31 and second variety is a Rocambole type F32 with a large bb. So I came to conclusion, F3 must have



been some kind of hybrid, which has been created many years back. There is an amazing thing with F3, when it is grown from the bulbils, it produces different relatives. The bulb may have four cloves, six cloves or up to eight cloves. A similar thing is noticeable in the Rocambole some bulbs may just have six cloves; the others may have up to eleven cloves. Also some may produce bulbs, containing 2-7 cloves under a single skin, which was a welcome to some large users. That what my original Fl was doing, but not consistently.

After many years of experimenting I gave up. Looking at the misleading info, where our government so called the Agriculture experts taught farmers how to go

broke by growing garlic. Plant the largest bulbs: What did they mean by a large bulb weigh 1 oz (28g)? To me it is peanut size. Looking at the plate one from the top we have F3j. J stands for the junior, a young generation bulbs grown from the F3 bulbils. I find them more productive planting seed stock, then regular bulbs, grown year after year. While planting largest cloves year after year, I noticed degenerating affect. I would get smaller yields and in many cases a smaller bulb then the clove I originally planted.

It seems to me a younger generation has more vigour to grow. Planted 3g cloves 200g quantity and harvested 2 125g. The average yield was 1: 1 0.6, or in simply English from one lb. I got ten and half lbs. The last column shows the smallest and largest bulb grown. Now, lets looks at 1 gr. cloves the average yield dropped to 1 :5.6 and the bulbs were larger. Going down to F3 23g cloves yields drop down to 1 :2.8 making very poor yields, the average bulb weight 60g (2 oz.). Of course you may get a few larger bulbs 115g + (4 oz.+) but an overall premium from sale will not be as gainful, as grown from the medium or smaller size cloves. In my many

years of experimenting with planting of the large size cloves or rounds up to 60g (2 oz.) I found them very poor yields sometimes getting smaller size bulbs what I originally planted.

Conclusion the older and larger bulbs get, they are losing a power of reproduction. Therefore, my suggestion for planting garlic, eat or sell largest bulbs, use as a planting seed stock medium or small size bulbs. This refers to some large size bulbs Rocambole type and Porcelain variety. By large I mean 115g+ (4 oz.+). As to planting and harvesting F3 garlic mechanically it is not a smart idea. This is gourmet garlic. It should be handled with a loving care and growing strictly organic. Research in England many years back found that some of the beneficial oils were missing in the garlic grown with man-made fertilizer. As to planting any bolting type of garlic with the machinery, cutting off scapes with a lawn mover mounted on the tractor, harvesting with the machinery, yes, it can be done, but can one maintain a quality? Not what I noticed so far!

Here is the best example, what they accomplished in California, the soil is riddled with disease and the largest grower of garlic quits growing and turns to import Chinese garlic. Looking at the F3B, some rounds grown from bulbils, their yields were better than cloves of the same weight. Why? It seems at the base. It has a larger perimeter of root system? F3 bulbils may weigh 0.010 - 0.165g+ I plant them in pots or a larger container filled with a black loam from the swamp and mix some wood

ash. Being crippled, it is much easier for me to weed or harvest from a taller container than ground level. Those tiny bulbils when planted proper way, in the fall or very early in the spring, will give one very good planting seed stock. One can broadcast them and cover up with the fine soil! 1 cm. (0.5 in.) Then harvest large bulbs for fall planting; rest can be harvested following years. The larger size bulb one can plant pointed part up. Spacing can be 1 cm. in all direction. If one has problems to distinguish bottom, one can soak them 2- 5 days ahead. Then you will notice white roots coming out. Make a hole in the soil with a pencil pointed end, and then drop the bulb in. Cover it up with 0.5 cm. (0.25 in.) and the loose soil. Following is an interesting experiment. F3bb, 20 each weight 0.060g were planted in some foam cups four per cup in early March.

They were transplanted into a larger container with loving care and minimum disruption to the roots. The average yield was 1:54; smallest round (bulb) 2.5 gr. making yield 1:41.6; a largest round 4.2g yield 1:70. Those are an excellent result from an amateur farmer. Those bulbs will make an ideal planting seed stock for the fall planting. Please note: results listed on drawing # 1 have been obtained by planting garlic by hand roots down. If one drops the clove or a bulb sideways in the ditch, results may not be as good. Also, keep in mind, the sun, moisture in the soil, a natural fertilizer and weeds, too much or lack, all can act positively or negatively on yields.



My Sorry Saga By Tom Frair

I started growing garlic over 25 years ago, when my neighbor gave me some of his family's unnamed heirloom. George's

grandfather had brought the stock with him upon immigrating to North America from Sarajevo, Yugoslavia in the early 20th century. When his grandfather died of black lung disease from working in the Pennsylvania coal mines, George's father and family moved north, and acquired a small homestead/farm. His garlic had been perpetuated, and I was one of the lucky recipients. It tasted great, peeled easily, and kept superbly!

As the garlic growing bug expanded in me, so did my production. I got to where I was growing one-third of my 60' X 75' garden in an intense, wide-row manner annually. I rotated growing areas each year and regenerated the soil with cover crops following harvest. I occasionally would see localized 'dead spots' in my wide row plantings, but nothing I couldn't live with.

In 2006, I attended my first garlic festival in Cuba, NY. What an amazing site, to see and learn about this whole new world of garlic cultivars! My first expansion into varieties was the purchase of five pounds of German White, because of its significant difference in appearance and taste from my

heirloom (which is likely a Rocambole). I planted the German White in a separate garden plot from my heirloom, and sat back to watch the following spring.

As June rolled around, the German White was gaining height, and I was excited. Then the aforementioned 'dead spots' started appearing in the German White, and soon the whole crop was history! Off to my local Cooperative Extension agent with some cadavers for analysis in Happy Valley (Penn State). When the verdict came back as 'White Rot' (*Sclerotium cepivorum*) with instructions not to plant any *Allium* family in that plot for at least five years, I was disheartened to say the least. But my heirloom continued to do well in my main plot, so I continued on.

Our area of north central/western Pennsylvania is called the 'Allegheny Plateau', good for growing Black Cherry trees, but not much for farming. As I found out in subsequent years, we here can 'suffer' from higher-than-normal rainfall amounts (depending on the year) because of the infamous 'Lake Effect' caused by winds across Lake Erie, and our topography of 500 to 600 foot elevation higher than lands to either the west or east of us.

I continued with my heirloom, and even added other varieties in trial amounts in my main plot, with little problems for the next two years. I continued to adhere to my rotation scheme. In 2010, I was back to the same one-third of the garden where I'd been growing my heirloom when my German White failed in 2007 in the other plot. Spring weather that year was continually cool and wet, and with the leaf mulch I had used for decades, the soil also stayed cool and wet. My crop of about 3,000 plants started showing some 'dead spots' in the wetter portion of my plot, but by mid-June, 90% of all the varieties were toast!

Little did I know that I had spread *S. cepivorum* and its persistent sclerotia throughout my main plot, probably with a combination of my rototiller, hand tools, and even my feet. Another trip to the Extension office confirmed it, and even a good beer bender didn't ease the pain! Well, I don't

give up easily, and thanks to dear friends with land, equipment and new planting stock, I started preparing a new site fifteen miles away. I got through the following season on what would be a one-year site, while I worked on my new (permanent) site, doing soil improvement work. I had recouped my planting stock to where I was able to return to planting as much of my heirloom as previously. I had also purchased other planting stock to double my total production to about 10,000 plants, while doing trials on the new cultivars to see what did well for me on the 'new' ground.

2012's crop would have been better, had I

not bit off more (work) than I could chew. The crop was good and disease free, but yield was less than I expected because those old weeds got the best of me. I selected the five varieties that I thought did best, to go along with my heirloom for the 2013 growing season.

I cut back to what I thought I could handle for 2013 (we're all getting older, you know). And then the

spring of 2013 turned out to be "déjà vu all over again" (kudos to Yogi Berra). Sure enough, even with taking what I thought were precautions like washing my tiller with bleach water, the White Rot had followed me to the new ground! Much blue language ensued!

So now I've resigned myself back to a hobbyist grower, building raised beds with new soil back at my home site, to try to grow what we can use ourselves. I've not given up completely, though, as I'm trying a half-cocked experiment on my home plot to counteract *Sclerotium cepivorum*, by spreading granulated garlic on my home plot both in 2011 and 2012 in an attempt to 'trick' the sclerotia into germinating, and then not having a host plant to attach to, allowing it to then self-propagate. Now, as long as I don't infect my new raised beds, I'll leave my plots absent of *Alliums* for at least a couple more years before I retry.

I wish there was a moral to the story, but there's not, really. Except, be very, very careful where you get any new seed stock! Ask them if they've had any experience with White Rot, and if they have, run the other direction!

...be very, very careful where you get any new seed stock! Ask them if they've had any experience with White Rot, and if they have, run the other direction!



THE GARLIC EXCHANGE - Wild Garlic

Each spring, avid harvesters of edible wild plants head for the woods in search of wild garlic. Its leaves and bulb are equally delicious. Local farmers' markets, roadside stands and specialty produce shops feature it every spring. However, this delicious native plant is on the endangered list as a threatened species. TGN encourages enthusiasts to practice restraint and conservation when picking this plant.

The "wild garlic" in this article is *Allium tricoccum* Aiton with variant, *A. burdickii* commonly called wild leek, ramp or 3-seed leek, not to be confused with other plants called wild garlic such as; *A. lollgicuspis*, the mother garlic from Central Asia; *Allium canadense*, the native meadow garlic; or *A. vineale*, the imported weed called crow or stag's garlic. The name "ramp" came from a similar plant in the UK, *A. ursinum* or Ramson's garlic.

Wild garlic grows only in eastern North America; Nova Scotia, New Brunswick, Quebec, Ontario and much of Eastern U.S.A. It formerly grew in Manitoba as well but disappeared around 1923. It is a perennial plant that grows in clusters or patches, often in maple bushes. The plant has two or three elongated, broad leaves somewhat like lily of the valley with an onion scent. The underground bulbs are also elongated, similar to a shallot or an over mature scallion.

Its propagation is similar to cultivated garlic with one notable exception -it takes about 7-10 years to develop a bulb large enough for reproduction! In late April or early May, wild garlic emerges for five to six weeks and grows to store nutrients in the bulb. In July, after flowering, the leaves die back.

In the fall, the bulbs of the larger plants will divide vegetatively, the large ones being more likely to reproduce, with each bulb usually dividing into three parts. Although it can be propagated from seed, few seeds are produced and only irregularly. Seeds take up to 18 months to germinate. Usual reproduction is by cloning or vegetative division.

Harvesters collect either the largest bulbs or dig up entire clumps. The wild garlic is not able to reproduce fast enough to keep up with unselective harvesting and the survival of the species is at risk. Quebec banned commerce in wild garlic in 1995 and only small harvests for personal use are authorized. Three other Canadian provinces and four American states now recognize *A. tricoccum* as a rare or threatened species. Despite this, over harvesting continues, causing wild garlic stands to disappear. Grazing of livestock in woodlots and cutting stands of trees adds to the loss.

We have grown a patch of wild garlic in our Small Plot Garlic Variety Trials using fresh bulbs bought at a local farmers' market seven years ago. The ten plants have yet to double in numbers, attesting to the slow process of multiplication. None have produced seed. If you pick wild garlic, dig only about 10% of any clump. Leave at least some of the largest plants for reproduction. Don't go back to the same clump for several years. Avoid pickling the bulbs. Cultivated and wild pickled garlic taste very similar and the cultivated is more abundant. Help to preserve this native plant as a spring delicacy for the enjoyment of future generations. For garlic collectors, it's worth starting a small patch to help preserve the species.

For garlic collectors, it's worth starting a small patch to help preserve the species.

Garlic Proven 100 Times More Effective Than Antibiotics, Working In A Fraction of the Time

A significant finding from Washington State University shows that garlic is 100 times more effective than two popular antibiotics at fighting disease causing bacteria commonly responsible for food-borne illness.

Their work was published recently in the *Journal of Antimicrobial Chemotherapy* a follow-up to the author's previous research in Applied and Environmental Microbiology which conclusively demonstrated that garlic concentrate was effective in inhibiting the growth of *C. jejuni* bacteria.

Garlic is probably nature's most potent food. It is one of the reasons people who eat the Mediterranean diet live such long healthy lives. Garlic is also a powerful performer in the research lab." This work is very exciting to me because it shows that this compound has the potential to reduce disease-causing bacteria in the environment and in our food supply," said Xiaonan Lu, a postdoctoral researcher and lead author of the paper.

One of the most interesting of the recent findings is that garlic increases the overall antioxidant levels of the body. Scientifically known as *Allium sativa*, garlic has been famous throughout history for its ability to fight off viruses and bacteria. Louis Pasteur noted in 1858 that bacteria died when they were doused with garlic. From the Middle Ages on, garlic has been used to treat wounds, being ground or sliced and applied directly to wounds to inhibit the spread of infection. The Russians refer to garlic as Russian penicillin.

"This is the first step in developing or thinking about new intervention strategies," said Michael Konkel, a co-author who has been researching *Campylobacter jejuni* for 25 years. "Campylobacter is simply the most common bacterial cause of food-borne illness in the United States and probably the world," Konkel said. Some 2.4 million Americans are affected every year, according to the U.S. Centers for Disease Control and Prevention, with symptoms including diarrhea, cramping, abdominal pain and fever. The bacteria also are responsible for triggering nearly one-third of the cases of a rare paralyzing disorder known as Guillain-Barre syndrome.

Diallyl disulfide is an organosulfur compound derived from garlic and a few other genus

Allium plants. It is produced during the decomposition of allicin, which is released upon crushing garlic. Lu and his colleagues looked at the ability of diallyl sulfide to kill the bacterium when it is protected by a slimy biofilm that makes it 1,000 times more resistant to antibiotics than the free floating bacterial cell. They found the compound can easily penetrate the protective biofilm and kill bacterial cells by combining with a sulfur-containing enzyme, subsequently changing the enzyme's function and effectively shutting down cell metabolism.

The researchers found the diallyl sulfide was as effective as 100 times as much of the antibiotics erythromycin and ciprofloxacin and often would work in a fraction of the time. Two previous works published last year by Lu and WSU colleagues in Applied and Environmental Microbiology and Analytical Chemistry found diallyl sulfide and other organosulfur compounds effectively kill important food-borne pathogens, such as *Listeria monocytogenes* and *Escherichia coli* O157:H7. "Diallyl sulfide may be useful in reducing the levels of the *Campylobacter* in the environment and to clean industrial food processing equipment, as the bacterium is found in a biofilm in both settings," Konkel said.

"Diallyl sulfide could make many foods safer to eat," said Barbara Rasco, a co-author on all three recent papers and Lu's advisor for his doctorate in food science. "It can be used to clean food preparation surfaces and as a preservative in packaged foods like potato and pasta salads, coleslaw and deli meats. This would not only extend shelf life but it would also reduce the growth of potentially bad bacteria," she said.

The natural substance could also be derived without artificially introducing harmful chemicals to disruptive its disease-reducing abilities. Ironically, many researchers think that antibiotics may be just one of several factors that contribute to intestinal blockage in young children.

April McCarthy is a community journalist playing an active role reporting and analyzing world events to advance our health and eco-friendly initiatives.

GARLIC SEED AND GARLIC DISEASE MANAGEMENT

Dr. Fred Crowe

I've experienced garlic from nearly every perspective possible: 30 years as public research & extension on garlic and onion diseases followed by 10 years private consulting with the very large soft neck industry in California (and worldwide) but also in and with the small to medium-sized hard neck producers in No. America and worldwide. 15 years as a producer of hard neck garlic bulbs primarily for seed usage.

Because I have a public service background but also consult and sell garlic seed, there are potential conflicts of interest when I advise people about garlic: Am I trying to help – Yes! Am I trying to sell you something – Sometimes, it depends! Just as I did when I was on university staff, I still believe in helping garlic growers to better understand and deal with garlic diseases. We are all better off by limiting garlic diseases when and where we can, especially in situations where these diseases can be seed- and equipment-borne. When my time requires only short-term interactions by e-mail

or phone, I do not charge a fee. If the interactions require extensive time, I typically will charge a consulting fee. For clients that purchase garlic seed from us at Deerfield Farm in Oregon, I provide quite a bit of assistance and advice at no charge. If a growers group wants me to speak publically on garlic seed and disease issues, I typically only require that my expenses be covered. Everything is negotiable...

Ultimately, we all want to grow garlic free of debilitating diseases. In order to do this, we must have some knowledge about what diseases already may exist on our own farms but also on those farms that produce the garlic seed we use to plant. In addition, we need to manage any and all used equipment that enters our farm, as it may carry diseases on it. Without good knowledge and management, we may take high risk of developing unacceptable disease situations. Unfortunately, we can never eliminate all risk, but we can greatly lower risk via knowledge and good decision making.

DISEASES OR PROBLEMS ASSOCIATED WITH GARLIC SEED

White Rot (*Sclerotium cepivorum*)

This soil-borne fungus permanently infests fields, and is moved between fields with soil on equipment, or with infected/infested plants. Roots are infected, and the pathogen grows toward the stem plate, frequently transferring onto root systems of neighboring plants. Leaves wilt and die when the stem



plate becomes infected, and symptomatic plants pull easily from soil for lack of intact roots. White mold on the stem plate and bulb rapidly becomes abundant, black, poppy-seed sized sclerotia that fall into soil and persist into future years. I recommend that every dead and dying plant in a garlic field be removed and inspected for White Rot. If White Rot is discovered and confirmed before it is abundant:

(1) Every White-Rotted plant and their neighbors up to two feet on either side and (2) all soil up to 1 foot deep in the same region should be removed and bagged and destroyed in some manner to avoid production and spread of sclerotia. This roguing and soil management program must be practiced annually thereafter, or else in future White Rot will become too abundant to control. Onions must be similarly inspected and managed.

Bulb Nematode (*Ditylenchus dipsaci*)

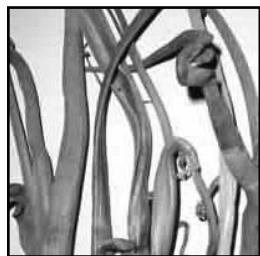
The nematode lives primarily inside plants, and is carried inside of bulbs and cloves. This species includes specialized races that mostly cause damage on a very narrow range of plants. There are races of *Ditylenchus dipsaci* that damage other crops and that do not attack garlic, and



there are other species of *Ditylenchus* that may eat only fungi. The race that infects *Alliums* does not survive in soil longer than 2 years or so without *Alliums* being present, although sometimes alternative hosts exist that can complicate control on *Alliums* during crop rotations. Dried and desiccated Bulb Nematodes can survive in garlic debris in sheds, etc... This nematode reproduces rapidly, but plant symptoms may not manifest until nematode populations become very large, at which time plants may become stunted. Near to harvest, garlic leaves near the bulb may become spongy and separate from the stem plate, at which time secondary molds (e.g. *Fusarium* and others) may continue to rot the bulb tissues. Bulbs infected with smaller populations tend to harbor this nematode in the bulbs without symptoms, and fields can become widely damaged in years in which infected seed is planted. Avoid infested seed lots; **rotate garlic (and onions) on a 3-4 year schedule**. If nematode is known to be present, do not re-plant, trade or sell that crop as seed. Clean sheds and working areas of all garlic debris.

Viruses

All garlic that has not been passed through a meristem tissue culture program has several viruses in it. Not all garlic viruses are equally damaging, but they are addressed collectively here. Garlic that came from a tissue culture program and is free of viruses typically becomes re-infected with viruses when planted in a high-aphid region. Such reinfection can be 100% within a single season. However, the benefits of virus freedom (up to 2x bulb diameter) only gradually revert during 4-6 years after reinfection. Thus, growers who replant initially-virus-free garlic seed can benefit in bulb size for several years. The only virus free hard neck garlic available in North America that I am aware of is from our Deerfield Garlic in Oregon where our aphid pressure is very low and we can sustain virus freedom for many years out of tissue culture. In addition, tissue cultured 'Music' garlic maybe available from the University of Guelph program in Canada, but seed increase from such material seed must be maintained in a low-aphid region to preserve virus freedom. Passing garlic through meristem tissue culture is expensive, too expensive unless you have the ability



to increase the seed over several generations with no or low risk of reinfection. A major advantage of passing garlic plants through tissue culture is that diseases other than viruses also are eliminated. This is an important tool that large garlic companies use in integrated pest management of multiple diseases, especially Bulb Nematode.

Botrytis neck rot (*Botrytis porri*)

This fungal disease can become serious in damp years, or especially in a series of damp years where it can build up in soil and seed lots. In dry years, it tends to disappear. Seed can harbor the fungus, but so may volunteer garlic. In addition, old garlic debris on soil can serve as sources of spores, too. Spores produced on a few infected seedlings within the crop or on nearby volunteer garlic on debris land on the necks of actively growing



garlic and create neck infections near the soil line. Worst-affected plants are very small ones very early in the season. These plants may never size up and serve to spread more spores epidemically under cool, damp, cloudy conditions. Plants infected later when larger and in warmer weather may not suffer size reduction, but neck lesions still may be present. Lesions usually show some grey sporulation, and large, black, highly convoluted sclerotia may form on neck lesions. Avoiding use of seed lots from fields with abundant *Botrytis* can help control the disease in the next planting. Rouging infected plants early in the season can help. But, if abundant, *Botrytis* can be difficult to control without fungicides.

Fusarium (various)

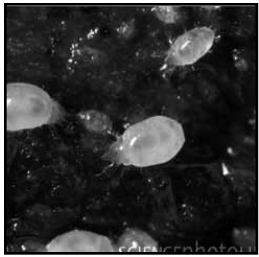
There are several species of *Fusarium* fungi that can damage garlic. Out West, a common one is *Fusarium culmorum*. It can be highly seed borne, but usually is not abundant. At times in the past, some seed lots were abandoned if they accumulated too much of this pathogen. Rouging all dead and dying plants in both seed and commercial fields can help keep



this pathogen at low incidence. In the East, there may be another *Fusarium*, perhaps *Fusarium oxysporum*, that can damage garlic, but not enough is known about this pathogen yet to indicate best management. A third *Fusarium* sometimes found in garlic is *Fusarium proliferatum*, and this fungus usually rots cloves in storage. Seed lots that have abundant storage losses might best be avoided as seed. A caution about *Fusarium* diagnoses in garlic: (1) Any and all rotting plants have some *Fusarium* in them, typically *Fusarium* types that include many non-pathogenic secondary rotters. (2) It is common for people that are experiencing but not recognizing Bulb Nematode damage to confuse nematode damage with rots such as those caused by *Fusarium* species. If you experience abundant bulb decay, you should probably have your garlic tested for Bulb Nematode to clarify the problem(s) better, perhaps in addition to testing for pathogenic fungi.

Bulb Mites (several species)

I'm tossing Bulb Mites into this discussion even though they are not disease organisms, per se. They



may be carried on and passed along in seed lots, and feeding damage on garlic bulbs can result in higher levels of clove scarring and fungal rots. There are few if any real experts on these pests. Few

modern pesticides work on them as they typically are resistant to many such pesticides. If you want to know more about bulb mites do not bother looking in the garlic literature or searching under garlic as there is very little useful information. Most good

bulb mite information is found in the literature on ornamental bulbs such as tulips, daffodils, narcissus, etc... Include these plant types in electronic searches. Some of you may have additional methods of bulb mite management, but I'll share some of what I know (or think I know) based on experience. **(a)** Some types of bulb mites are commonly carried along on bulb crops themselves. Other types are more typically associated with cereal crops sometimes used in rotation with garlic and only opportunistically get into the garlic. Crop rotations that eliminate cereals immediately prior to garlic planting will lessen the types that come over from cereal crops; crop rotations won't much effect the types that carry over on bulbs themselves. In our own seed operation in Oregon, we have mostly the cereal-types, and we have greatly reduced their impact by avoiding cereal crops just prior to planting garlic. **(b)** Seed treatment using diluted bleach or alcohol can kill many or most mites on bulbs but I cannot recommend any specific treatment, nor am I certain what is acceptable per regulations in many states or for organic usage. You might wish to experiment with various concentrations and time dosages to see what works for you. **(c)** Cleaning sheds and work areas before, during and after working garlic can lower mite populations. **(d)** Limiting bulb storage time can limit prolonged mite feeding damage. **(e)** It is important to limit bruising of garlic, e.g. during cracking and grading and moving loads...as bruising accentuates mite damage and mold development. **(f)** Mite damage seems worse on varieties that do not have tight clove leaves, so handling procedures may be more important on those varieties.

AVOIDING AND/OR MANAGING GARLIC DISEASES ASSOCIATED WITH SEED

Growers who repeatedly use their own garlic as seed on their own farms have greatly reduced risk if the seed they originally obtained was free of important diseases. They have greatly elevated risk of disease development if their original seed was infected/ infested with something important such as Allium White Rot (*Sclerotium cepivorum*) or Bulb Nematode (*Ditylenchus dipsaci*). In this case, repeated cropping builds up these diseases such that many or most plants may die. I've seen plenty of both situations. Optimal management of garlic

seed sources may not be enough. A common problem is that any disease could pre-exist on a farm prior to when a garlic grower begins to grow garlic. This is especially true of Allium White Rot disease, and especially if prior Allium production history is unknown or obscure. Even a previously-clean farm can acquire garlic diseases by more than just the seed; for example, Allium White Rot more commonly moves with soil on tillage or irrigation equipment, tires, etc... or with soil attached to any crops (potatoes, various transplants, etc...) or in any

other way soil might move. Bulb Nematode might move similarly with equipment, but is more closely associated with seed infection. Even though the nematode *Ditylenchus dipsaci* doesn't persist in soil for many years, it can persist for a few years in soil and can move with either that soil or with infested garlic debris. The practice of sharing equipment is relatively easily managed, and I won't belabor this point, even though we often forget about garlic diseases when we're thinking about other crops.... Indiscriminant purchase or exchange of garlic seed is responsible for many new infestations. Sharing farm equipment is a close second in risky behavior. While most seed and equipment exchangers are wonderful, caring people, they nevertheless are not being safe – think of safe sex! Allium White Rot becomes a permanent soil infestation, and Bulb Nematode infestation is difficult to overcome, at best. How to acquire disease-free garlic seed bulbs is a more problematical issue. For those who grow only their own seed and are free of nasty diseases, congratulations on either being very lucky or very well informed and careful. So, what precautions can be taken to be informed? Here are some possibilities:

A. Obtain seed from a source that has grown garlic for many years and which has a long track record on providing seed free of diseases, especially Allium White Rot and Bulb Nematode. Avoid sources that do not have such a track record. This approach is not without risk because diseases may only recently have arrived on the source farm, but the risks are much lower than from obtaining seed from sources without much of a track record.

B. Obtain seed from a source that inspect their fields and test their seed on a regular basis, preferably annually. For Allium White Rot, the only effective testing is by walking the entire seed field late in the season and inspecting every dead and dying plant for presence of the pathogen *Sclerotium cepivorum*. Some state agencies in Oregon, Washington, California and Nevada (and perhaps Idaho) can perform such inspection for a fee, but public inspection services are not available in other states. Occasionally, I have been hired to inspect seed fields and to train growers to do this themselves. This approach is not free of all risk, either, because even experienced inspectors can miss a few White Rot-infected plants, but is the best method available. You, as the customer might request that you be allowed to

walk the source fields of your seed providers. If so allowed, you should be prepared by knowing what the symptoms of Allium White Rot are, and you should assure your provider that you are not bringing any soil on shoes, etc.... The size of the field might require time to inspect (depending on the crop and experience, a typical inspector can walk a field and scan 4-6 rows of garlic on either side). The distance you may have to travel to see the field can be a factor. Allium White Rot field inspections are best done during the last month that seed garlic is in the ground, to maximize the likelihood of finding late-season symptoms. Alternatively, perhaps you trust your seed provider that he/she walks the seed field and provides knowledgeable inspection services. You cannot rely on soil sampling to detect Allium White Rot. Even a single survival propagule (sclerotium) of the pathogen is sufficient to infest a new field, and no soil sampling procedure can detect trace amounts of White Rot sclerotia. For Bulb Nematode, you cannot rely on field inspections. A year or more before symptoms may be noticed, *Ditylenchus dipsaci* already may have moved as symptomless infestations in previous seed lots. Plant sampling is reasonably reliable in detecting seed infestation, and is the best method possible. However, traces of nematodes may be missed by sampling and lab inspection. Thus, the best plan to avoid bulb nematodes being introduced with seed lots is a combination of (a) obtaining seed from a source with a long term track record of freedom from Bulb Nematode, together with (b) annual testing of plant samples. Your seed provider or you should sample seed fields in May or June, collecting at least 40 plants from small fields or 40 plants from each of several areas of large fields. There is no need for soil sampling, as *Ditylenchus dipsaci* resides primarily inside the plants. Dirt and roots and upper leaves can be trimmed from sampled plants. Samples should be sent to a laboratory that can wash nematodes from finely chopped plant tissues and scan for *Ditylenchus* in a microscope. For samples we collect from our garlic seed field or for large seed fields of California garlic companies for which I consult, I request that a single composite sample initially be done on parts of each of the 40 plants. If any *Ditylenchus* is detected, I may request that the lab then test additional tissue of the 40 plants individually. The latter is much more expensive, but provides better information.

You should understand that Bulb Nematodes reproduce very rapidly. So rapidly that, if present in a plant sample, nearly always many individual nematodes of *Ditylenchus* are detected – hundreds or thousands or even higher numbers.... If a lab reports such numbers, the determination is rather straightforward as a positive diagnosis of the *Allium* race of *Ditylenchus dipsaci*, and that garlic source should not be used as seed. Rarely, if only very small number is reported (e.g. 1, 2 or 3 individual *Ditylenchus*), there is a possibility that some other *Ditylenchus* species is present, perhaps one that eats only fungi rather than plants. It is in those few cases where there is an uncertain determination that I ask that all 40 plants be tested individually, just because it is so important to be as certain as possible. When all 40 plants are tested separately, many or most plants may test negative but one or two plants may reveal abundant numbers of *Ditylenchus*. In that case, the sample still is considered positive for *Ditylenchus dipsaci*. If all 40 plants test negative for *Ditylenchus*, list for further testing after harvest. If multiple 40-plant samples are taken

from a field and even one sample tests positive, then the entire field must be considered infested. In future, there may be genetic testing available for species determination, but these tests are not yet quite on line for general usage.

SHAMELESS PROMOTION

Our Deerfield Farm seed garlic operation in Oregon tests all our garlic two to three times each season for Bulb Nematode. Being very experienced with *Allium White Rot*, I personally inspect our seed lots several times each summer. We have not detected Bulb Nematode nor found White Rot in our seed lots in the entire 16 years we've grown garlic on this farm. None of our clients has ever found these diseases growing in plants grown from seed we've provided. In contrast, in this same period of time I've frequently detected White Rot in many fields in the large California industry.

!!!!!!!!!!!!!!!!!!!!!!!!!!!!JUST IN!!!!!!!!!!!!!!!!!!!!!!!!!!!!

FROM THE “TOO GOOD TO BE TRUE” DEPARTMENT: Nicotine Detox, a Garlic Testament

(from an anonymous member)

I was on the habit for 20 years, smoking Virginia Slims (yes, it kept me slim), a pack a day. I had gone to the doctor for another issue, and he asked if I wanted to quit. I said yes, and he handed me some sample medications. I read on the package: “may cause stroke.” I threw out the samples, all of my cigarettes and ashtrays, and decided to try the garlic and lemon cure that my mother had suggested.

I used store-bought lemon juice concentrate, adding it to water and sipping it through the day. The lemon helps cleanse the body of toxins. When I got the hunger, I'd eat a slice of garlic bread (again, any brand of store-bought) because the garlic flushes out the constant nicotine taste in the mouth and

body. It took three weeks of garlic bread slices every time I wanted to smoke along with the lemon juice to get the nicotine out of my system. For others, it may take more or less time, probably depending on how heavy they smoke.

IT WORKED. And I swear on it to this day. I am on no medications, which is rare for elderly persons AND have normal blood pressure every time it is checked; they cannot believe it! Personally I think it's worth a try by everyone wanting to kick the habit. People who do not stop end up with edema, high blood pressure, high cholesterol, blocked arteries, strokes and heart attacks. I run into them constantly and they are in their 50's. No way to live or die. To everyone...just try it! Until you stop!

Raw Garlic

Healing Properties and Medicinal Uses

Garlic, especially in its raw form, has been praised for its healing power and medicinal uses since ancient times. It was used for medicinal purposes by the ancient Greeks, Egyptians, Babylonians, Assyrians, Romans and Chinese. Today, numerous research studies document the extraordinary benefits of garlic on human health.

The healing properties of garlic are wide and varied, ranging from antioxidant, antifungal, antiviral and antibacterial properties to cancer-fighting and immune-boosting activity. Due to its healing properties, raw garlic has been used as a medicinal plant to prevent — and in some cases treat or even heal — various health complaints.

Although almost anyone can benefit from eating garlic, those who are looking for a natural way to reduce their risk of cardiovascular diseases, cancer, asthma attacks, bouts of cold or flu, abnormal hair loss, or some skin conditions are likely to reap the most health benefits by regularly eating garlic. In this article, we look at the extraordinary healing properties of garlic and describe the most common medicinal uses of this natural “wonder drug”.

Medicinal Use of Garlic as an Antifungal Agent

The medicinal use of garlic as an antifungal agent has been validated by numerous research papers and publications. Most of the antifungal properties of garlic have been attributed to allicin, a phytochemical that is produced when raw garlic cloves are crushed or chopped. To maximize the allicin-content of your garlic dishes, you should let the chopped or crushed garlic sit several minutes before using it. Research shows that allowing chopped or crushed garlic to sit for 10 to 15 minutes before using it can significantly increase the amount of allicin it produces.

As a result of its antifungal activity, garlic has been used to treat acne and conditions linked to the overgrowth of *Candida* yeast in the body. Some herbalists also suggest that garlic may have dandruff healing properties due to its ability to fight *Pityrosporum ovale* (*P. ovale*), a small fungus that lives on the scalp and that may play a role in the development of dandruff.

Strong Antioxidant Activity Due to Allicin

Many of the healing properties of raw garlic are linked to its strong antioxidant qualities. These antioxidant properties are largely attributable to allicin, the same compound that is responsible for the antifungal properties of crushed raw garlic. Allicin has been touted as one of the most potent antioxidants found in foods. In addition to allicin, garlic delivers antioxidant vitamins and minerals such as vitamin C, zinc and selenium.

Antioxidants in garlic help protect the body from free radicals, destructive oxygen molecules that attack healthy cells and that can cause cellular damage. Due to their destructive effects on cells, free radicals are heavily implicated in several diseases including eye disorders, dementia, rheumatoid arthritis, cardiovascular problems, diabetes, atherosclerosis, an impaired immune system, certain types of cancer, and even Alzheimer’s disease.

In addition to staving off common diseases and conditions, the free radical neutralizing proper-

ties of garlic can help keep your skin looking young by fighting premature aging of the skin provoked by excessive exposure to sunlight. When your skin is exposed to sunlight, it creates powerful enzymes called metalloproteinases which help repair sun-damaged connective tissue. However, not all metalloproteinases are good for us: some metalloproteinases destroy collagen fibers, which can lead to wrinkles and fine lines. Free radicals appear to activate these destructive metalloproteinases.

Garlic — a Natural Antibiotic?

Back in the nineteenth century, the French chemist and microbiologist Louis Pasteur examined the use of raw garlic juice as a potential antibacterial agent and found garlic to be capable of killing bacteria much in the same way as penicillin does.

Consequently, garlic was used widely as an antibacterial agent to disinfect and heal wounds during World War II. Since then, several research studies published in medical journals have confirmed the antibacterial and antiviral properties of garlic. In addition to its ability to control bacterial and viral infections, garlic has been shown to fight and heal infections caused by other microbes and worms.

Due to the healing properties of garlic derived from its antibacterial and antiviral activity, this medicinal herb has also been used in the treatment of some infections that are difficult to treat due to the presence of bacteria that have become resistant to prescription drugs such as antibiotics. However, more research is needed in this area before definite conclusions about the efficacy of garlic as an antibiotic can be made.

Anti-Cancer Effects of Raw Garlic

Still not impressed with the healing properties and medicinal uses of garlic? Well, guess what, numerous laboratory tests have also found garlic and garlic extracts to exert strong anti-cancer effects. Also several epidemiologic studies support the idea that garlic — especially raw garlic — can help prevent certain types of cancer. According to a large-scale review of epidemiologic studies, the

strongest evidence for anti-cancer effects of raw garlic pertains to stomach and colorectal cancers. This extensive review, which appeared in the American Journal of Clinical Nutrition in 2000, analyzed epidemiological studies published on stomach, colon, head and neck, lung, breast and prostate cancers since 1966.

Raw garlic appears to exert its anti-cancer effects through multiple mechanisms, including inhibition of free radical production, activation of enzymes that detoxify carcinogens, and regulation of cell-cycle arrest. In addition, garlic has been shown to induce apoptosis. Apoptosis, also known as programmed cell death, is the body's normal way of getting rid of unneeded or abnormal cells, but cancer cells employ mechanisms that allow them

to evade apoptosis so they can grow uncontrollably at the expense of healthy cells and tissues.

Benefits for Insulin Resistant People

Research suggests that a healthy diet rich in garlic may be used successfully as a complementary treatment for insulin resistance, a physiological condition

that remains a major medical challenge of the twenty-first century. Insulin resistance has been linked to a number of diseases and conditions including pre-diabetes and type 2 diabetes, excess body weight (especially around the waistline), adult acne and heart disease. In insulin resistant people, the body's cells are no longer able to effectively respond to the actions of the hormone insulin.

According to a study published in the European Journal of Pharmacology in 2005, the health benefits of garlic for insulin resistant people may be linked to the presence of garlic oil and diallyl trisulfide in garlic. In addition to having wide-ranging healing properties documented in previous studies, these two compounds appear to improve the body's ability to effectively respond to the actions of insulin and thus fight insulin resistance.



Source: <http://www.healwithfood.org/medicinal-uses/garlic-healing-properties.php#ixzz3EWQHqQkt>

The missing link How to beat cancer with garlic by S.D.Wells

(NaturalNews)

Your body has powerful infection-fighting white blood cells that are your arsenal for beating down viruses, fungi, bacteria and, yes, cancer cells. This arsenal of cancer cell killers relies on certain nutrients to have the fuel to do its job, and that is to keep you alive and winning the "cancer" war that's going on inside your body, and that goes for everybody, every day. Whether you like it or not, your body is a machine that is made to survive even the worst of odds or circumstance. Your body is built ready to use nutrients to contain, reduce and eliminate a tumor. Your body is built ready, with a very powerful immune system, but it's beaten down and "intoxicated" from birth, by vaccines, flu shots and dead, processed food. Your system can defeat cancer cells that may be developing, mutating, multiplying and going after weak tissue right now. How will you "fortify" your tissue, your blood? (<http://www.alternative-cancer-care.com>)

There is a special enzyme that the "bad guys" (mutated cells) use to multiply, and it's called "ornithine decarboxylase." You could block this enzyme, and it would be as if you were a general fighting in a war and you cut off the enemy's ammunition and supply lines. How much easier is it to win a battle or war if the enemy can't find its own fuel, weapons and food? (<http://www.cancer.gov>)

The FDA, along with the CDC and Monsanto, are suppressing the cures for cancer, because they know you might read the right research and go buy some baking soda, 35% hydrogen peroxide and organic garlic cloves.

The seven-year clinical study on garlic curing cancer

The largest study ever conducted in history on garlic supplementation was performed by Chinese researchers collaborating with the National Cancer Institute. It was a test to see if the garlic could reduce precancerous gastric lesions. For all you science folks out there, yes, it was a double-blind study and was randomized, with over 3,000 human subjects for seven long clinical

years. You want to hear the results? Cancer risk was cut by 60% for the people with the highest intake of allium-containing vegetables, including aged garlic. And that brings us to the miracle nutrient.

The miracle nutrient of the Allium genus

In 1957, researchers incubated sarcoma tumor cells with the garlic compound alliinase and S-ethyl-L-cysteine sulfoxide, then injected the tumor cells into mice. Tumor growth was completely stopped, in fact reversed, and the mice survived past six months (they only live about two years normally). Mice that did NOT get the compound died within two months!

Since human DNA is 99% the same as mice,

you are now safe to leave your doubts behind about how this affects humans. If you've ever heard of the Gerson Therapy Diet or the Miracle Mineral Supplement, then you've heard of remedies that purify the blood. It's time to "kill the fungus" and cut off the enemy fuel lines.

Your body has powerful infection-fighting white blood cells that are your arsenal for beating down viruses, fungi, bacteria and, yes, cancer cells.

Preparation and consistency are the keys

If you choose to take garlic for healing, be sure to crush it and let it sit for at least 15 minutes. This is the TIME NEEDED to release the enzyme -- alliinase -- that produces the anti-cancer compounds. There are about a dozen CLOVES per pound of garlic. Hippocrates recommended crushed garlic to his patients in large amounts to cure their cancer. He knew then. If he were here today, he would tell you to eat about half of those cloves daily, but you should be sure and check with your own naturopath. (<http://www.ncbi.nlm.nih.gov>)

If you don't like garlic or if you desire a handful of other vegetables in the Allium genus, go buy some organic onions, shallots, leeks, scallions or chive herbs. These vegetables and herbs all contain "organosulfur compounds" (allyl sulfides)

that possess antioxidant properties, just like garlic. Then take about a teaspoon of baking soda and dissolve it in a glass of spring water a few times a day. It's all just "Gerson Basics" after all! Healthy cell superpowers -- activate! Enable the body to fire on all cylinders, all the time.

When you uncover the natural remedies, you can't just talk about them and put them to use for a couple of weeks. It's your life's mission to supply and defend the "machine" -- your one and only organic body in this lifetime.

Sources for this article include:

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Chemists Explain The Health Benefits Of Garlic

A Queen's-led team has discovered the reason why garlic is so good for us.

Researchers have widely believed that the organic compound, allicin – which gives garlic its aroma and flavour – acts as the world's most powerful antioxidant. But until now it hasn't been clear how allicin works, or how it stacks up compared to more common antioxidants such as Vitamin E and coenzyme Q10, which stop the damaging effects of radicals.

"We didn't understand how garlic could contain such an efficient antioxidant, since it didn't have a substantial amount of the types of compounds usually responsible for high antioxidant activity in plants, such as the flavanoids found in green tea or grapes," says Chemistry professor Derek Pratt, who led the study. "If allicin was indeed responsible for this activity in garlic, we wanted to find out how it worked."

The research team questioned the ability of allicin to trap damaging radicals so effectively, and considered the possibility that a decomposition product of allicin may instead be responsible. Through experiments with synthetically-produced allicin, they found that an acid produced when the compound decomposes rapidly reacts with radicals. Their findings are published in the January 2009 issue of the international chemistry journal *Angewandte Chemie*.

"Basically the allicin compound has to decompose in order to generate a potent antioxidant," explains Dr. Pratt, who is Canada Research Chair in Free Radical

Chemistry. "The reaction between the sulfenic acid and radicals is as fast as it can get, limited only by the time it takes for the two molecules to come into contact. No one has ever seen compounds, natural or synthetic, react this quickly as antioxidants." The researcher is confident that a link exists between the reactivity of the sulfenic acid and the medicinal benefits of garlic. "While garlic has been used as a herbal medicine for centuries and there are many garlic supplements on the market, until now there has been no convincing explanation as to why garlic is beneficial," says Dr. Pratt. "I think we have taken the first step in uncovering a fundamental chemical mechanism which may explain garlic's medicinal benefits." Along with onions, leeks and shallots, garlic is a species in the family Alliaceae. All of these other plants contain a compound that is very similar to allicin, but they do not have the same medicinal properties. Dr. Pratt and his colleagues believe that this is due to a slower rate of decomposition of the allicin analogs in the onions, leeks and shallots, which leads to a lower level of sulfenic acid available to react as antioxidants with radicals.

The study was funded by the Natural Sciences and Engineering Research Council of Canada (NSERC) and the Ontario Ministry of Innovation. Other members of the research team are Queen's Chemistry post-doctoral researcher Vipraja Vaidya and Keith Ingold, from the National Research Council of Canada.



Garlic and Epigenetics by Susan Fluegel, PhD

You can change your genes! What you do and what you eat can change your genetics. Food, exercise, lifestyle, environment and even eating garlic can turn genes on or off. These changes can influence your risk for cancer and metabolic disorders like diabetes (Quintero-Fabián et al. 2013), affect your memory, change your children's risk for disease or metabolic disorders, and even influence the lifespan of your offspring. Eating a healthy diet that includes garlic can reverse harmful changes to your genetics by changing your epigenetics.

What is epigenetics?

Epigenetics means "above genetics." It is a system that sits on top of and controls your genetic code or genes. Genes are short pieces of DNA that contain the blueprint for a protein. Your body uses genes as a template to help build and maintain your body. When genes are switched on they produce one or more proteins such as hormones, enzymes, receptors and pretty much every other body component. This process of producing proteins is known as gene expression.

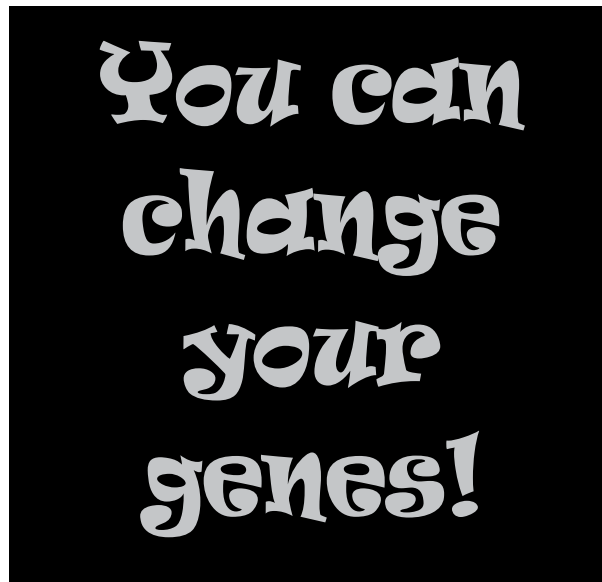
Genes are passed down from your parents. You inherit approximately half of your genetic code from each parent (Mom actually contributes a little bit more than 50 percent). People used to think that genes were stable and that nothing you do would affect them. Now however, we know that genes can be turned off (silenced), turned on (activated), slowed down, or speeded up by using epigenetic controls. This can influence your health or mental processes. Changes caused by this process can even be passed on to your children. There are two main ways that epigenetics can influence genes; methylation or histone acetylation. In methylation, a methyl group is added to the genetic code. Methyl groups are CH₃ groups found in nutritionally dense food and in nutrients, such as folic acid and vitamin B12. B vitamins act as methyl donors, giving up a methyl group to use in DNA methylation. Methyl groups can attach to genes

and either activate or inactivate them. In histone acetylation, acetyl groups (COCH₃) are added to DNA proteins. Histone acetylation increases the accessibility of the genes allowing them to be activated easier. Removing acetyl groups from DNA can inactivate or silence genes.

How does eating garlic influence epigenetics?

Garlic may help prevent cancer. In normal cells, tumor suppressor genes detect cancer-like behavior such as uncontrollable cell growth. When these genes sense that the cell is behaving badly they can trigger cell death or stop cell growth. Cancer cells grow uncontrollable because the tumor suppressor genes that recognize 'bad behavior' are turned off or silenced due to too little histone acetylation. Garlic increases histone acetylation in cancer cells which activates tumor suppressor genes. Activated tumor suppressor genes prevent cancer by halting cancer cell growth or triggering the cancer cells to commit suicide.

A recent study by Quintero-Fabián et al. (2013) identified how an active component of garlic, alliin (*S*-allyl cysteine sulfoxide), which is a cardioprotective and neuroprotective antioxidant, changed gene expression in fat cells (adipocytes). Adding alliin to the fat cells upregulated genes involved in immune response and downregulated genes related to cancer. In addition, adding alliin prevented the fat cells from increasing expression of pro-inflammatory genes. This means that alliin decreased the inflammation commonly associated with excessive fat cells, enhanced immune functioning (which may help prevent cancers from forming), and inhibited pathways that promoted cancer formation. Excessive inflammation is a major risk factor for metabolic disorders such as diabetes, central obesity, abnormal blood lipids and high blood pressure. Garlic has been shown to reduce the risk of various metabolic disorders.



The biochemistry behind garlic and cancer prevention

QUICK SCIENCE BITE: Garlic contains organosulfur compounds which give cloves their characteristic odor and health benefits. Foods rich in organosulfur compounds increase histone acetylation by inhibiting histone deacetylases, metabolites which remove acetylation from DNA (Nian et al. 2009). Histone acetylation triggers tumor suppressing genes which may decrease your chance of getting cancer. Eating garlic and other alliums have been shown to decrease the risk of cancer (Fleischauer et al. 2001, El-Bayoumy et al. 2006, Milner 2006, Myzak and Dashwood 2006, Liu et al. 2007, Millen et al. 2007, Pittler and Ernst 2007, Sener et al. 2007, Nagini 2008).

MECHANISM: Dietary garlic organosulfur compounds; including Alliin, Allicin, S-allyl mercaptocysteine (SAMC), S-allylcysteine (SAC), diallyl disulfide (DADS), diallyl sulfide (DAS), and diallyl trisulfide (DATS); are metabolized to form allyl mercaptan (AM), allyl methyl sulfide, and methyl mercaptan. AM inhibits histone deacetylase (HDAC) (Nian et al. 2008). HDACs remove the acetylation from DNA, which silences certain genes. Cancer cells have poor or inappropriate patterns of histone acetylation. HDAC inhibitors can correct this problem by activating epigenetically-silenced genes in cancer cells. This halts cancer cell growth or trigger cancer cell death. Research shows that cancer cells treated with garlic organosulfur compounds diallyl disulfide (DADS) and S allyl mercaptocysteine (SAMC) showed increased histone acetylation (Lea et al. 2001, Lea et al. 2002, Druesne et al. 2004). The metabolic conversion of organosulfur compounds to HDAC inhibitors may contribute to garlic's ability to protect against cancer (Milner 2006, Wargovich 2006).

TAKE HOME MESSAGE: Research shows that eating garlic can help protect against cancer. For more references go to www.greyduckgarlic.com

Get your ducks in a row
with Grey Duck Garlic!



Ollie carries Thermadrone garlic



Just when I thought
The last clove was planted
I remembered...
Another bundle surreptitiously hung
On a nail far away
Had promised to be different
Yet the components were the same
Everything, except the name!
Do we feel better then
When we isolate and contain
Pretending attributes spuriously the same?
Nomenclature and the Latin urge
From wholeness and the bulb emerge
For every clove like every soul
Repeats itself on down the row...
'Tis the farmers prayer in passing

While poking in and covering up
That somehow we, as much as they
Eternally remain, except the name!
We will watch it slow and begin to grow
Like grandchildren there is remembrance
Of other times like this:
Dreams of bulbs as big as fists
While making out our daily lists.
We are not things, any more than they
No term or name will suffice
Call it medicine, herb or spice
The garlic is the same
Everything, except the name!

– Bob Dunkel

Garlic Kills Brain Cancer Cells Without Side Effects

Jan 6, 2014 by DAVE MIHALOVIC

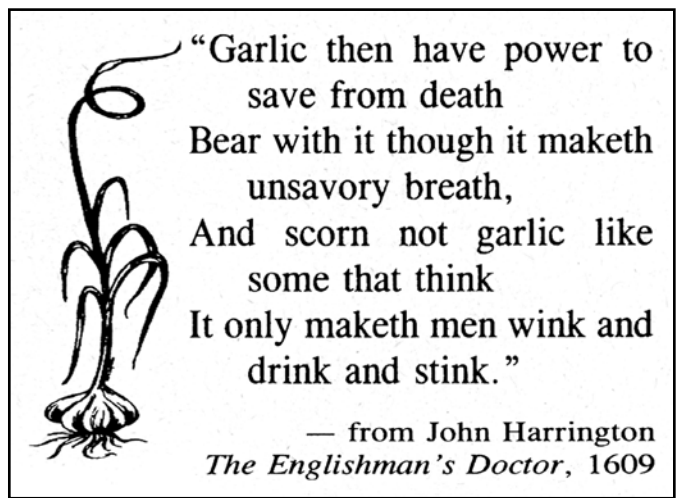
Cancer cells have a high metabolism and require much energy for rapid growth. Researchers reported in the *Journal Cancer* that that garlic compounds produced reactive oxygen species in brain cancer cells, essentially gorging them to death with activation of multiple death cascades and blocking pathways the proliferation of brain tumors.

Garlic is probably nature's most potent food. It is one of the reasons people who eat the Mediterranean diet live such long healthy lives. Garlic is also a powerful performer in the research lab. Washington State University previously showed that garlic is 100 times more effective than two popular antibiotics at fighting disease causing bacteria commonly responsible for foodborne illness.

Glioblastoma is the most common and most aggressive malignant primary brain tumor in humans, involving glial cells and accounting for 52% of all functional tissue brain tumor cases and 20% of all intracranial tumors. Treatment typically involves chemotherapy and radiation which unfortunately kills brain cells indiscriminately and offers a median survival rate of 15 months. More than 90% of chemotherapy patients also die within 10-15 years after treatment. For the first time, organo-sulfur compounds found in garlic have been identified as effective against glioblastoma, and may soon offer effective non-invasive forms of cancer therapy without the deadly side effects associated with chemotherapy.

Swapan Ray, Ph.D.(MUSC Neurosciences/Neurology associate professor), Naren Banik, Ph.D. (MUSC Neurosciences/Neurology professor), and Arabinda Das, Ph.D. (MUSC Neurosciences/Neurology post-doctoral fellow) studied three pure organo-sulfur compounds (DAS, DADS, and DATS) from garlic and the interaction with human glioblastoma cells.

The sulphone hydroxyl ions in garlic can actually penetrate the blood-brain barrier. All three compounds demonstrated efficacy in eradicating brain cancer cells, but DATS proved to be the most effective. The study was published in *American Cancer Society's journal, Cancer*. "This research highlights the great promise of plant-originated compounds as natural medicine for controlling the malig-



nant growth of human brain tumor cells," Ray said.

Ray and Banik are optimistic about the possible applications of their discovery to patient care. "Our basic studies will eventually be translated to clinics for patient care. We may have to wait several years before its application to humans, but the significance of this discovery is enormous," Banik said. "The benefits from this research to brain cancer patients will bring great satisfaction to researchers and clinicians who are trying to find a successful treatment for this devastating cancer."

A breakdown of allicin appears to be necessary for achieving maximum tumor inhibition. Allyl sulfur compounds preferentially suppress neoplastic over non-neoplastic cells (Sakamoto, Lawson, and Milner 1997). It is becoming increasingly clear that the response to allyl sulfurs relates to their ability to form free radicals rather than to serve as an antioxidant (Antosiewicz et al. 2008). Allyl sulfurs may bring about changes by influencing the genomic expression by affecting histone homeostasis.

Garlic-derived organo-sulfur compounds are small molecules that would not necessarily require complicated methods of delivery for treating brain tumor patients, the scientists said, and their natural origin would be significantly better for the human body than synthetic treatment options. To take advantage of any potential anti-cancer benefits from garlic now, certain rules apply. Ray said to cut and peel a piece of fresh garlic and let it sit for fifteen minutes before eating it. This time allows for the release of an enzyme (allinase) that produces the anti-cancer compounds.

Sources: wiley.com

Dave Mihalovic is a Naturopathic Doctor who specializes in vaccine research, cancer prevention and a natural approach to treatment.

GARLIC SCHOOLS 2015

Clove Physiology of Ophio/ topsetting garlic

David Stern, Rose Valley Farm/ Garlic Seed Foundation

Because garlic is reproduced vegetatively, the garlic clove that we plant contains all the growth and reproductive structures needed for the next generation. Botanically, the clove is a “modified, fleshy storage leaf” similar to the scale of an onion. The creamy white flesh is mostly carbohydrates which will convert to sugars and nourish the new plant until the roots develop.

The clove is covered with a tight-fitting skin: a “specialized leaf sheath” that protects the clove from insects and diseases, and prevents moisture loss. At the base of the clove is the basal plate, which is the abscission point where the clove was attached to its mother bulb. The roots will grow from the basal plate.

On the other side of the basal plate, within the clove, is the “true stem” which contains the “leaf axils” from which all the leaves will grow for the new plant, the “lateral buds” which will develop into the cloves, and specialized cells that will become the scape and umbel (the spathe, flowers and bulbils) of the garlic plant. None of these specialized cells are visible to the naked eye until they begin to grow and express their purpose.

Upon harvest of the garlic bulb, the cloves are immediately viable; that is, there is no true dormancy. However, in the northeast there is usually a 90 to 100 day delay from harvest in mid-July to planting in mid-October. At any time during this period, the clove may sprout with fluctuations of moisture and temperature.

The timing of planting is important in order

to allow for root growth to anchor the clove for the winter, but avoid any leaf emergence into the world of declining day-length. Common practice in the northeast is mid-October. The roots will emerge from the basal plate immediately (3/4” in the first 10 days) and up to 12” by eight weeks (in mid-December).

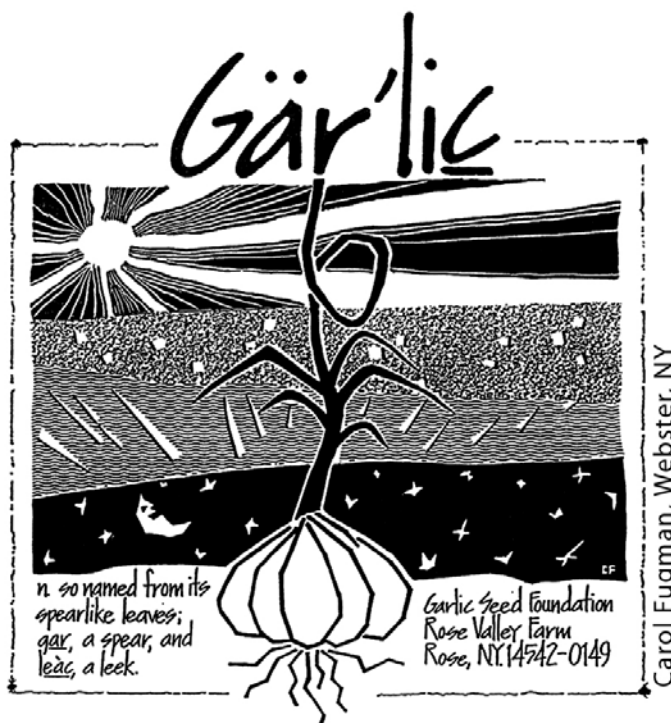
Once the roots are established, the sprout will grow from the true stem, its rate dependent on moisture and temperature. The emergence of the sprout from the clove will trigger the growth of true leaves from the true stem. The lateral buds

require a winter cold period (vernalization) to divide into the separate cloves of the next generation within the garlic bulb. The clove utilizes the fleshy carbohydrates to support growth over the winter.

NOTE: the question is often asked about spring-planting of garlic in the north. It can be done, but with the limited number of days of growth available (until 21 June), it is the fall-planted garlic, with well-established roots and sprouted cloves, that will do best. Spring-planted garlic should be

vernalized for a minimum of 40 days at 40 degrees Fahrenheit prior to planting.

Following leaf emergence above ground, establishment of the root system and the commencing of photosynthesis, nourishment from the clove flesh is no longer needed. With roots from 16-24” long and leaves developing quickly, the new plant resembles a green onion or scallion, with no trace of its mother clove. In the growth cycle of garlic, this is the “establishment stage.”



SOME IDEAS TO THINK ABOUT..

The Garlic Seed Foundation has been active in the Northeast for 30 years and has helped grow a robust garlic community using the event list below.

Our garlic is recognized as a regional specialty and is identified in the marketplace. We've had terrific support and cooperation from the Cooperative Extension community, civic organizations, our brother and sister garlic producers, and the consumer. Our objective has always been to educate with research-based knowledge, to work cooperatively, to share information, and to enjoy great garlic food at all gatherings and events, not forgetting that we are here to have some fun!

THIS IS A LIST OF EVENTS WE'VE ORGANIZED THAT HAVE BEEN SUCCESSFUL. I have listed them from "easy" to "complex" as to the amount of labor or resources needed. Don't forget that we've done this for a long time, have lots of experience to share, and are willing to assist you.

FIELD DAYS: Locate four or five garlic-producing farms willing to open their doors, and within an easy transport from one to the next, and throw a potluck meal in the middle or end. I've never seen two garlic growers doing the same thing, and we all learn through our eyeballs, so this works well: equipment, cultivation, spacings, drying, markets, etc. Respect the fact that some folks don't choose to open their farms; that's their choice. Have someone collect names and a couple of dollars for the next event. The GSF can help.

RESEARCH: Got a problem? Question? Idea? Two growers or 10 growers can pool resources, design a plan to isolate and look at a specific issue: a pest? a new piece of equipment? a cultural practice? Whatever you need. We've had great support from Extension Agents who can help with design and often, technical support. There are state and federal (USDA) resources available as well, and the GSF can help.

GARLIC SCHOOLS: The garlic is planted and waiting for the return of the sun, but the off-season is a great time for a day of lectures and sharing. Locate a church hall or community center; ask for some

help from the Ag School or Extension to discuss soil quality, diseases, marketing; find a grower to share an idea or do a photo farm tour, invite a local chef to teach cooking, leave time for visiting, add the potluck lunch and find someone to collect the attendees' names and \$20 to pay for the electric, gas, mileage, handouts, and next year's school. We can help.

FESTIVALS: A lot of work and somewhat restricted by the weather, but if there is community support and energy, and a beautiful sunny fall day, these can be magic. One of my personal "greatest moments" was standing on a hay bale amidst 20,000 people at a festival in New York's Hudson Valley: families, music, great food; everybody smiling, laughing, learning, buying; garlic in the air and on everyone's breath; an ocean of humanity having a good time; it brought tears to my eyes. For me to enjoy that moment took the efforts of many people, many hours. Farmers must work together with community organizations—be it a large or small event—both are fun, delicious, lucrative, and we can help.

MARKETING/PROMO: We all know that working together is more profitable than competition. Our goal is not to compete with China, who can sell their bulbs for 6 cents a pound. Our goal is to produce a crop recognized for its quality and sold to our community at a price that allows us to continue farming. "Cheap food ain't good; good food ain't cheap." I wish I could say that the NE consumer doesn't buy or eat the Chinese crap, but I'm far more proud to say that they know the difference and prefer to buy local quality when available. This takes time, and the GSF can try to help.

REGIONAL CONTACTS: We need to find individuals who can work with GSF Headquarters to assist with the above, write a piece for "The Garlic Press," help us understand what other parts of this small industry are doing, and get us out beyond the Northeast. (DS.com)



DAVID WOULD LIKE YOU TO READ THIS...

If you've been a member of the GSF for any length of time, you know that to call "The Garlic Press" irregular would be generous. We've ticked off more than a bunch of you, and I've apologized to many.

In all honesty, let me confess to you that I live without "screens:" no TV, no desktop computer, no watch, no laptop, none. I happen to believe in the "evils of the screen" and am fearful of the electronic tentacles that could wrap around my brain and capture my spirit...as has happened to my friends, and the world. From the outside, it's an interesting addiction to watch: the human response to an electronic stimulation. Not for me.

And you're thinking: "This guy is one of them Neanderthals! Backwoods!" and you're right. This world has gone to a new level without me, and that has become a big problem at Garlic Seed Foundation Headquarters. My friend/comrade/associate Bob Dunkel (farmer/ "Garlic Press" editor 25 years) has become very frustrated with my getting in the way: in the slow lane and obstructive. I agree with all of Bob's observations and support change in every way I can. Bob is no techie, but he knows his way around the computer from his postal career, and if he gets stuck, he's got some "hip" kids, and if they can't help, we've got

web tech AlexaCastle.com, and WE'VE GOT YOU, if you've got some time to help this Foundation help our members.

For the past 30 years, we've collected two 5-drawer file cabinets full of garlic Information and thousands of years of experience, in my barn and in our heads and muscles. What do we want to do with it? Somewhere we need to find some folks with a little time, a little interest or a question about cooking or gardening, medicine or medicinals, botany or horticulture, history or chemistry, ancestry or consumption of garlic. You wouldn't be a member of this Foundation if you weren't interested in at least TWO of these topics. Lastly, we need to find help with some of the administrative tasks in order to keep the lights on. Did I mention compensation?

There's no other way to say it: we need your help to keep the GSF alive and growing, or we need to say "goodbye." Could it be that 30 years is our life span? Garlic doesn't need us, that's for sure!

Please give this some thought. Elsewhere in this "Press" we lay out some of our ideas. Bob will be updating from the electronic front. We'd like to hear from you.

Bob: gardunk@yahoo.com
David Stern: evenings, landline 315-587-9787

WITH A LITTLE HELP FROM OUR FRIENDS...

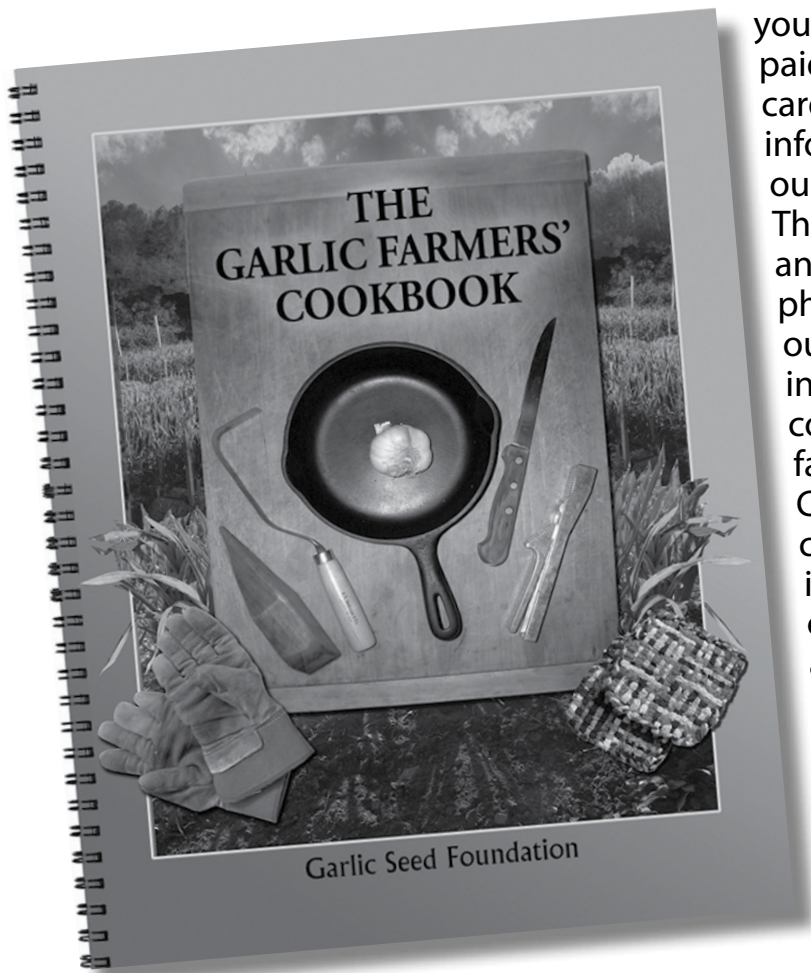
The Garlic Farmers' Cookbook

We need your help to sell 1200 cookbooks: that's one book for each member, and we have even more in the barn! It's a great book full of garlic recipes and information, and it's inexpensive.

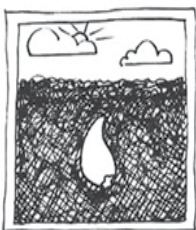
The cover price is \$20, but we can get you a case of 35 books for \$400, postage paid! Check out the enclosed marketing card. This is a delicious read, with good information and the heirloom recipes of our members.

The GSF has helped many members: answering questions by letter, email, phone and face-to-face, and sending out literature. Now we need your help in return. How about getting a box of cookbooks and selling them at your farmers' market table, or through your CSA, giving them out at the family or class reunion, at a raffle or fund-raising event for the local food pantry or co-op, as gifts for birthdays, holidays, any day—how about one for your sweetie, that love of your life.

We can sign them, you can sign them...Help us help you.



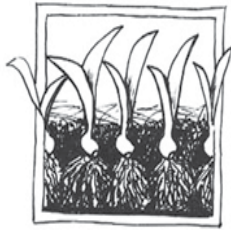
When you care enough to give the very best:
The Garlic Farmers' Cookbook



IN LATE FALL



WINTER



IN EARLY SPRING



IN MID SUMMER



BY LATE SUMMER



ALLOW TO CURE

Artwork by Karen Kenney

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GSF Cookbook is finally in print and now available.

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Garlic Seed Foundation, Rose Valley Farm, Rose, NY 14542-0145

*Members - all prices include postage and New York State Sales Tax

*Non-members - please add 15% for shipping and handling *PLEASE - U.S. FUNDS ONLY

..... Clip, copy, complete, send to GSF

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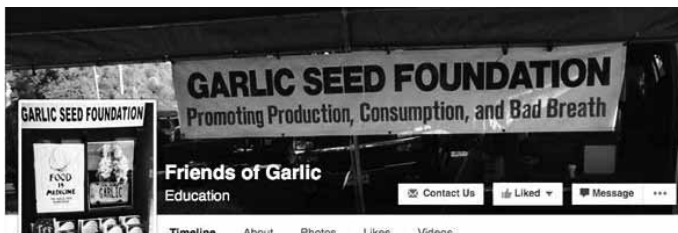
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