

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

# The Garlic Press

[www.garlicseedfoundation.info](http://www.garlicseedfoundation.info)

ISSUE #54

LATE WINTER, 2017

## The True Seed Issue

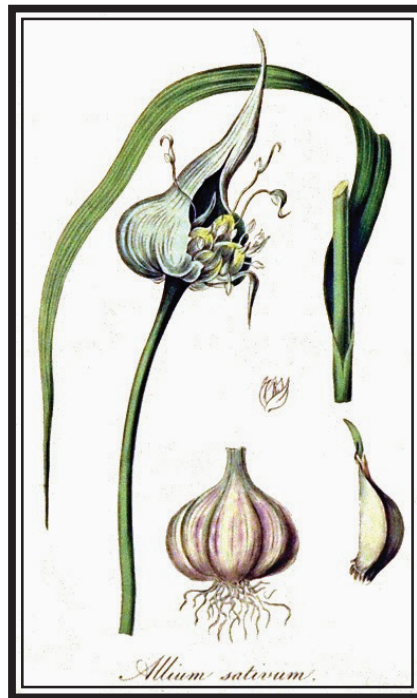
As most of you folks know **The Garlic Seed Foundation** has cleared the thirty year mark and not only are we still here but we are growing in many ways. There is one topic, however, that has caused a bit of confusion over the years and both David and I have addressed it many times while speaking at various places. Put simply, it is implied in our name and we are talking about garlic seed. The original concept was to create a space to share and explore the many varieties of garlic that we and our friends had gathered and to go from there. This is many years before we became a 501(c)(3) non profit educational group and we thought we were cool. We had pot lucks and farm tours of what we were doing and exploring and slowly had to explain to the uninitiated that this seed that we are talking about was in actuality a vegetative clone, you plant a clove of variety x and you get a plant and bulb of that x variety. We worked with a Cornell professor in those days, Roger Kline (RAK). And we hooked up after a while with the folks from Pullman WA, where the USDA garlic collection was maintained. Our members started to send bulbs of various types to them to expand the collection and then...

In those days it was a common perception to state that one could be a part of the solution or else one became part of the problem. Well we did not yet

solve the issue of what the heck we were doing in regard to this. I remember for example sending in a variety from a local garlic hero called Mohawk. He

was not a Native American and the name had stuck from his youth but there was a new garlic to add and I had called it Mohawk of course to honor the source. Well, long story short is the collection in Pullman grew to about 350 cultivars and as glamorous as it may appear it still meant that a small handful of professors and grad students had to plant and segregate and maintain these. Inadvertently, we had become part of the problem, at least for the folks in Pullman, yet neither of us knew that of course. So when we would gather or talk with folks or groups it was standard to explain about the seed thing and clones and vegetative propagation etc. In the year 2000

David and I were invited to Tulsa, OK for a large gathering of garlic experts and nuts and the folks from Pullman and Seed Savers Exchange etc and a woman named Maria Jenderek (USDA researcher) presented on her work of developing seed from the flowers that she would expose as she removed the bulbils. WOW! We were all impressed for sure and she actually found it beneficial to make small cages and used flies to pollinate the purple flowers with yellow anthers. Maria made in the neighborhood of a million seeds before she was unfunded and moved to another project. The hard part was



# THE GARLIC PRESS

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## ISSUE #54

Press #54 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 is Editors Bob Dunkel and David Stern, Karen Kerney (layout) and Janet Cawley (data input). 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 and wouldn't do this alone!

## MEMBERSHIP

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

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All submissions for **The Garlic Press**  
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All medical references are for educational purposes and any recommendations should not preclude consulting with a health practitioner.

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getting these tiny black seeds to germinate and grow and the time and lack of consistency led to the end of that project. In my mind, I believe that the purpose was to patent that seed by one of the conglomerate big industry guys and since it was a specialty crop with little financial impact, in the bigger picture, the project was dropped but a seed of another type was sown!

Fast forward now to the time years after this where we did become a non profit and had to use our name the GSF as a dba. We were told that we were not a foundation like the Ford Foundation and even the term seed was problematic. Therefore we became officially THE FRIENDS OF GARLIC but continued with the GSF as that was how we were known. Anyway in the Northeast where we originated there were grants available for sustainable agriculture/ SARE grants and we were given 65 thousand dollars to begin DNA studies and profiles on the government collection. Part of the grant was to develop a website/ *Big News For Garlic* where we reported on the project over the next few years. David Stern and a wonderful friend, Dr. Gayle Volk published a paper about the results which can be referenced here:

<http://hortsci.ashspublications.org/content/44/5/1238.full>

The short synopsis was of 211 cultivars or varieties in the garlic collection there was a tremendous amount of duplication. In fact the isosome studies showed ten distinct cultivars that were found. So for the last ten years at festivals and to various groups we have sought to teach growers to identify their unique garlics as members of one of these ten cultivars to simplify for consumers and others the real story of garlic and its geographical dispersion.

So now as editor of the *Press*, I have decided to take this issue forward and discuss the issue of true seed and how it is interfacing slowly with our community these days. For me personally, I am a late comer to this and my part of this story did not begin until 2011. David and other members played with the concepts and had some fun but again, almost like growing from bulbils, this was the long way to do things and we did not see many folks going forward in this direction. So in 2011 the phone rang: the voice rang out "*Hello, I am Ivan Buddenhagen, the Indiana Jones of bananas and since my retirement I have been playing with garlic...*" He went on to tell me that he had played with some rocamboles from the USDA collection but was a believer in letting Nature take its course and had for a number of years watched these garlics and had let them be pollinated in his backyard. No flies in cages for him! He said that as he was in his 80's and wanting to sell off some of his new crosses and in the end, I was able to purchase his collection of 35 new garlics. The folks from Pullman were skeptical and because he did not strictly document parentage (etc.) was unable to vouch for what he had created. Ivan was from UC Davis but was doing the garlic work in Oregon so I had them sent to Upstate NY and began to grow them out. The first transition year from the west coast produced the longest garlic leaves I had seen. Almost as long as my arm they actually would fold and hang down from mid-point! After five years that is no longer the case but they are adapted to our hard winters. At this point I will begin the process of letting a few voices speak from articles on the process of obtaining true seed and hope you enjoy it! -bd

# VARIETAL DEVELOPMENT IN GARLIC: BREEDING VERSUS CLONAL PRODUCTION

Philipp W. Simon, U.S. Department of Agriculture, ARS, Department of Vegetable Crops Research Unit, Department of Agriculture, University of Wisconsin, Madison, WI 53706.

Written February, 1996

Records of garlic consumption go back thousands of years as this was one of the first crops mentioned in early Egyptian, Biblical, Indian, Chinese, and other ancient literature. Evidence for garlic consumption includes ancient dried bulbs from sites such as the tomb of King Tut. Like most crops, little is recorded about early varietal development, but all indications are that garlic has always been clonally propagated, as it is today, from cloves. Furthermore, there is no record of the "varieties" or "types" of garlic in use until recent times, so we have no clear idea of how many varieties of garlic exist or how they came to be maintained and produced.

In some recent research we have been investigating the genetic make-up of garlic and methods for genetic improvement of this important crop. With modern laboratory techniques we can estimate the breadth of genetic variability of garlic now produced around the world. We have also collected "wild garlic" in Central Asia (Uzbekistan, Kazakhstan, Kyrgyzstan, and Turkmenistan) to determine how variable this crop is in its native habitat. We have had success in producing true seed of garlic. This opens up the prospects for 1) combining a range of useful traits (e.g. bulb characteristics, disease resistance, earliness, flavor) found in several varieties into one improved variety, and 2) possibly propagating garlic from true seed in the more distant future. Finally we have performed some evaluations of variation among garlic clones for an aspect of eating quality, namely pungency. A brief review of each of these topics is as follows.

As a crop, how viable is garlic? By evaluating variation in enzymes (isozymes) and DNA (RFLPs and RAPDs) it is possible to estimate the breadth of genetic variation in a crop. Some crops, such as cu-

cumbers and tomatoes, have relatively little variation by these measurements while others, such as corn, carrots, and potato are much more variable. These measurements reflect the breadth of garlic variation in the crop as it was domesticated. Garlic is surprisingly variable for isozymes and RAPDs. This suggests that many forms of garlic were collected by our ancestors as they began growing garlic as a crop.



There are several ways that modern garlic is classified. The chief character for classifying varieties is whether they flower (hardneck/ ophioscorodon types) or not (softneck/ sativum types). A non-flowering group from the Orient with broader leaves is sometimes recognized as the pekinese type. Based on storage ability, bulb color, clove arrangement, leaf characteristics, flavor and several other attributes, subdivisions within these 2 or 3 subgroups of garlic are made. It has been our experience that varietal classification is valid only within a relatively narrow range of growing and climatic conditions. Because of temperature and photoperiod effects, a garlic clone which flowers in higher latitudes, for example, may not flower closer to the Equator. Since garlic is grown in virtually all agricultural production areas of the world, comparisons between varieties can be made within such a region but not necessarily between regions. Protein and DNA markers are more uniform among garlic varieties of a given physical appearance in a certain region but substantial variation still exists.

How variable is wild garlic? Wild true garlic (*Allium sativum* L.) occurs in Central Asia, south of Russia, north of Iran and Afghanistan, and west of China. In collecting wild garlic in 1989 we observed what

looked like a wide range of variation. Upon evaluating our collections in the field and laboratory, these initial observations were substantiated. Apparently wild garlic strains are still being collected and brought into domestication today by local peoples. We can hope that stability will come to that part of the world to help assure a future source of new garlic varieties.

Can garlic produce seed? In our research in Wisconsin, we have investigated several hundred garlic varieties from around the world. In one study of 200 clones, approximately 60% formed flower stalks, 25% produced mature flowers, and 10% produced viable (stainable) pollen. With evidence for viable pollen, we attempted to produce seed. To obtain seed, we 1) use fertile clones, 2) remove topsets or bulbsets (small bulbs produced among the flowers), and 3) remove flower stalks from the growing plants (cut off above leaves after flowers are well developed) and placed them in water. The third step may not be essential but the first two must be included for success. Since 1988 we have produced several hundred seeds. About 75 seeds were viable (produced plants) and they exhibited a broad range of variation in plant characteristics (leaf and bulb size and shape, vigor, earliness, flowering ability). Virus infection was apparently low initially in seed-produced plants. It will take years of testing to identify new, improved varieties from seed but the prospects are excellent.

What about garlic production from seed instead of cloves? This may be a possibility, but not in the near future. Good success in garlic seed production has been achieved by several researchers. However, to be economically feasible, several criteria must be met: abundant seed production, varietal uniformity, and very rapid seedling establishment. Freedom of virus is a major attraction of seed propagation. Options for efficient use of transplanting techniques will be useful for seed propagation of garlic, yet garlic is likely to be propagated from cloves for the near future.

Why do, and should, people consume garlic? For many consumers, the flavor of garlic is its main attraction. For others it is garlic's main distraction. In a study of 18 garlic clones, we found more than a 2-fold range in garlic pungency (as estimated by standard pyruvate analysis) from 41 to 106mM. For

comparison, onion ranges from 2 to 30mM, while one elephant garlic (*Allium ampeloprasum*) we tested had 27mM. Garlic consumers are well aware of variation in flavor among varieties and they may seek strong flavor. For those less adventurous, uniform milder flavor may be a way to encourage more garlic consumption. These include reducing atherosclerosis and high blood pressure, preventing cancer and slowing aging, and even helping fight colds and other contagious diseases. Several compounds found naturally in garlic have been clearly implicated as part of these healthful attributes but much work remains to be done. Odor-free extracts of garlic are commercially available. These are purified compounds such as allicin or more complex mixtures of health-promoting garlic constituents. For those consuming garlic, though, it appears that more flavor may be associated with more healthy effects since all these compounds come from a common origin: alkene(yl) cysteine sulfoxides, when garlic cells are broken (e.g. chewed or sliced).

It is not clear whether the flavor or the healthy nature of garlic attracts consumers, but garlic consumption in the U.S. is rising. Ten years ago, commercial production was 0.4 to 0.5 kg per capita per year for fresh garlic and approximately the same for dehydrated garlic. Today commercial production and local sales are not well-reported but are also apparently on the rise. The future of garlic, and its consumers, is bright.

#### ADDENDUM

To add an historical perspective to the discussion of true seed production, I include this paper Phil Simon wrote in 1996 to share at meetings we attended in Toronto, Ontario and in Ithaca and Geneva, New York. During our miles and hours of travel, he explained his process to produce true seed. In 1989, Phil had been on a research trip into Central Asia to collect wild *Alliums*. He brought these back to Madison, Wisconsin and then developed a technique to help the plant produce true seed.

The following year I followed his instructions and produced seven small black true seeds. Six failed to germinate, and one grew into a non-bulbing allium that looked and tasted like a leek.

I recently spoke with Phil and am happy to report that he is still working on this issue and, in 2004, returned to Uzbekistan to collect more wild material and continue his research. The Asian plants grow well in Madison and he continues to work on seed production. He has promised to give us an update in Press #55.

Phil is also the father (breeder) of my very favorite table carrot: "Sugarsnax." (DS.com)

# LANDRACE GARDENING

## TRUE GARLIC SEEDS

Joseph Lofthouse Reprinted by permission of author. Garden@Lofthouse.com-

### DESCRIPTION:

A group of forward thinking gardeners are working to develop new varieties of garlic and reverse the effects of thousands of years of cloning.

### TEXT OF POST:

A cloned crop like garlic has limited potential to become localized to a particular garden. The glorious success of landrace gardening happens because genetically diverse crops are subjected to survival-of-the-fittest and farmer directed selection. After a while, the varieties get closely aligned to the local environment, the farmer's way of doing things, and the culinary habits of the community.

In the 2011 growing season I was chatting with a few other plant breeders. We decided that we should be growing garlic from pollinated seeds so that we can create new varieties of garlic that can be regionally adapted. It's a daunting task, because very few varieties of garlic make seeds any more.

### WHAT'S WRONG WITH GARLIC?

Garlic is a crop that has been grown primarily through cloning for perhaps ten thousand generations. When scientists did genetic analysis on garlic they found that plants with the same genetics were being offered under many different names. This indicates that there are far fewer varieties of garlic being grown than it would appear by looking at a list. Cloned crops create a food-security risk, because when a pest finally overcomes a variety's defenses, it overcomes the defenses of every clone of that variety. Entire crops can be lost in a single season. Genetically diverse seed grown crops are much less susceptible to crop failures.

As a result of being cloned for eons, the small amounts of normal chromosome damage – that are typically eliminated through sexual reproduc-



Garlic Flower



Garlic Fruits



True Garlic Seeds

tion – have accumulated in garlic. The vast majority of varieties have accumulated so much damage that they have lost the ability to flower or to produce seeds. Some people use the term “seed garlic” to describe the cloning process. They are dealing with bulbils or cloves: Vegetative parts of the plant. When I use the term “true garlic seeds” I am referring to pollinated seeds in which a pollen grain fertilized an ova in a flower. Growing plants from seeds instead of cloning also tends to reduce virus contamination.

### FINDING FERTILE GARLIC

Before starting this project, I was already growing many types of garlic. My collaborators sent others. [1,2] Rather than removing the scapes I allowed them to attempt to flower. Then I screened them for the ability to set seed. I collected a total of three seeds from a couple thousand garlic plants. Germination rate of first generation garlic seeds is very low, so I didn't get any plants from those seeds.

Dr. Maria Jenderek helped us to identify and Barbara Hellier (USDA, Pullman, WA) helped us to acquire accessions from the Agricultural Research Service that are known to produce at least a few seeds from time to time. These varieties were mostly collected in the USSR. They are from near the center of origin of garlic and have retained more of the ancestral traits including an ability to make a few seeds if conditions allow.

Ted Jordan Meredith and Avram Drucker [3] helped us to identify and acquire other varieties that have produced seeds in their gardens. Ivan W. Buddenhagen [4] shared pollinated seeds grown in his garden in Oregon.

We have had the most success with varieties that are classified as “purple striped” or “marbled purple

striped". Last growing season, a couple of growers reported stunning success with Chesnok Red and with a perhaps renamed Rocambole called Quebec.

## REMOVING BULBILS

In a garlic scape, flowers intermingle with bulbils. The bulbils tend to strangle the flower stems. A few seeds might be formed anyway on some varieties. We have found that more seeds form if we limit the competition by removing bulbils from the flower stalk. I do this with my fingernails by raking out the bulbils. Others prefer to use tweezers. The ease of the process varies widely between varieties. Some have lots of little tiny bulbils. Some have a few larger bulbils. Whether small or large some are tightly held while others fall out easily. So far my most seedy variety, PI 540319, has large bulbils that are easy to remove. The best possible scenario.

## OVERCOMING FERTILITY AND OTHER BARRIERS

Some varieties of garlic are female sterile, and some produce sterile pollen, or only partially viable pollen. In an attempt to overcome these barriers I plant different varieties close together, hoping that the pollinators will spread fertile pollen between plants. I am also weeding out varieties that completely fail to even go through the motions of flowering.

I never would have imagined when we started this project that the biggest obstacle to overcome would not be related to genetics, biology, or growing conditions. We have experienced widespread opposition to our efforts from government bureaucrats who have went so far as to confiscate plants and interdict shipments of seeds. The beautiful plant with 3 foot long leaves shown in the photo growing in a pot was destroyed by a government bureaucrat. I have sometimes thought of gardening as a subversive activity. It appears that growing new varieties of garlic is even more so. A word of caution to those joining our effort: Perhaps public posts about sharing seeds or bulbs isn't the most prudent activity. And people clamoring for seeds or bulbs may be doing so under false pretenses.

## GERMINATION

We have had good success sowing garlic seeds in mid-winter. Cold-frames or the Winter-Sown method have produced the best germination rates. I highly recommend sowing into weed-free potting mix, because garlic start off slowly and it's easy to

lose the seedlings in a weedy soil.

## SUCCESS!

Last growing season I grew 8 new garlic varieties from pollinated seed. I collected 26 seeds. More than that were produced, but I dropped the bowl containing the seed into the lawn... It's been a ton of work to obtain a few new varieties. But they are varieties that have never before been grown in the history of the world. That's something to smile about.

## CONCLUSION

We have identified varieties that produce true garlic seeds, and we are learning and sharing methods for growing garlic from pollinated seed. Eventually we expect to be creating hundreds or thousands of new garlic varieties per year. At that point they can become locally-adapted landraces. This is part of the reason why I believe that landrace gardening is a path towards food security through common sense and traditional methods.

## REFERENCES

[1] HomeGrown Goodness Plant Breeding Forum: True Garlic Seed  
<http://alanbishop.proboards.com/thread/5471>

[2] Seed Savers Exchange: Growing Garlic from True Seed  
<http://forums.seedsavers.org/forum/gardening/alliums/4524-growing-garlic-from-true-seed>

[3] Growing Garlic from True Seed, Meredith & Drucker  
<http://garlicseed.blogspot.com/p/growing-garlic-from-true-seed.html>

[4] Ivan's New Garlics  
<http://www.ivansnewgarlics.com/>

[5] Links to Scientific Papers On My Web Site  
<http://garden.lofthouse.com/true-garlic-seed.phtml>

## BIO:

Joseph Lofthouse grows vegetables in a cold mountain valley where he practices the art of landrace gardening in order to feed his community more effectively.

## ADDENDUM:

We have no doubt that there are people, corporations and agencies that oppose the production, breeding or dissemination of genetic material, techniques or communication thereof, as in this Press. We also recognize the good and important work of the people and agencies that have helped this industry. Plant material coming in and out of this country is subject to inspection by the USDA/APHIS (Animal and Plant Health Inspection Service). Transport of plant material from state to state is under the regulation of the State Department of Ag (and Markets). We encourage everyone with concerns in these matters to learn your rights and the laws regarding these matters, and to take the actions you need to protect your work, material and communications, and also to protect your neighbors and others in this industry. (Bob and DS.com)

# Shattering The Matrix / We Sleep No More!

## *An ancient healing tonic*

### How to Make Your Own Thieves Vinegar: Boosting Total Immunity

Posted by rose on 4/8/15 at 15:30 in Nature's Gifts for Health. Back to Nature's Gifts for Health Discussions

BY CHRISTINA SARICH

POSTED ON APRIL 8, 2015

Have you ever heard of the healing tonic known as Thieves Vinegar? This DIY healing wonder has an interesting history, named after four thieves in Marseilles, France who used it to avoid sickness during a pestilence cursing multiple cities in Europe in 1910, but you can make your own today with some simple ingredients.

Vinegar itself already has multiple healing properties, and apple cider vinegar (ACV) is used for everything from preventing coughs and colds to ridding the skin of eczema and acne. This is due, in large part, to the enzymes present in ACV that help the body to eliminate toxins and absorb nutrients from other foods you eat. As you may have heard, most Americans' diets are devoid of the proper enzymes they need for optimum health today. When you add some antimicrobial herbs to an already-healthy vinegar (containing the power of fermentation), you end up with a health tonic that is referenced in the Bible and the writings of Ancient Greece.

The "Thieves" name comes with many stories. Some argue that condemned criminals were sent out to bury the dead during the plague, and only those who drank vinegar infused with garlic lived to tell about it. Others say that thieves were robbing the homes and corpses of those that had died, but one particular group of thieves survived. When they shared the secret of the herbal vinegar blend they used to protect themselves from the plague, they were granted leniency in court for the crimes they had committed. The name "Forthave's Vinegar" was used to describe the vinegar tonic of Richard Forthave.

At first I thought this recipe was an urban legend until I heard about different versions of it at a local natural wellness fair recently. It does have some colorful history, after all, but it turns out the myth behind



the mystery is quite accurate. This is quite the healing brew – and the best part is you can use whatever 'healing' herbs you want to add to the mix.

Consider this recipe and then augment it to make it your own:

#### INGREDIENTS FOR FOUR THIEVES VINEGAR

- Several peeled garlic cloves
- Several lavender blossoms
- Several whole cloves (they have one of the highest ORAC values (measurement of antioxidant) of any known food)
- Rosemary (handful of leaves or a tablespoon of the ground, organic spice found in health food stores)
- Thyme (same as Rosemary)
- Sage (same as Rosemary)
- ½ teaspoon organic peppercorns

16 ounces of raw, organic Apple cider vinegar (ACV) make sure it contains the mother. Don't use the highly processed kind that is clear. It lacks all those great enzymes.)

Any other healing herbs growing in your garden or that you have easy access to.

#### DIRECTIONS

Warm (don't boil) the ACV and carefully pour it into an airtight jar. Add the herbs and close the lid by placing a piece of parchment paper on top of it so that the metal doesn't touch the mixture. Allow the herbs to extract into the vinegar for at least four weeks. During that time, keep the jar or jars in a cool, dark place. After a month has passed, enjoy a teaspoon a day as a preventative, or several sips a day if you are feeling under the weather. Try it, and let us know what you think.

Read more: <http://naturalsociety.com/how-to-make-your-own-thieves-vinegar-boos...>

(Editor Note: The low pH of vinegar prevents botulism for the long term storage of garlic. -DS.com)

# KIMCHI...EASY AND EASIER... ALL GOOD

## EASY-KIMCHI

<http://www.maangchi.com/recipe/easy-kimchi>

### INGREDIENTS

Baechu (napa cabbage 10 pounds), salt, sweet rice flour, sugar, water, garlic, ginger, onion, fish sauce, squid (optional), hot pepper flakes, leek, green onions, carrot, radish.

### DIRECTIONS

Trim the discolored outer leaves of 10 pounds of napa cabbage.

Cut the cabbage lengthwise into quarters and remove the cores. Chop it up into bite size pieces.

Soak the pieces of cabbage in cold water and put the soaked cabbage into a large basin. Sprinkle salt.

\*tip: 1 cup of salt will be used for 10 pounds of napa cabbage

Every 30 minutes, turn the cabbage over to salt evenly (total salting time will be 1½ hours).

1½ hours later, rinse the cabbage in cold water 3 times to clean it thoroughly.

Drain the cabbage and set aside.

### MAKE PORRIDGE:

Put 3 cups of water and ½ cup sweet rice flour (chapssal garu) in a pot and mix it well and bring to a boil. Keep stirring until the porridge makes bubbles (about 5 minutes).

Add ¼ cup sugar. Stir and cook for a few more minutes until it's translucent.

Cool it down.

### MAKE KIMCHI PASTE:

Place the cold porridge into a large bowl. Now you will add all your ingredients one by one.

Add 1 cup of fish sauce, 2.5 cups of hot pepper flakes (depending on your taste), 1 cup of crushed garlic, 1-2 tbs of minced ginger, 1 cup amount of minced onion.

\*tip: much easier to use a food processor.

Wash and drain the salty squid. Chop it up and add it to the kimchi paste.

\*tip: how to prepare salty squid is posted on the FAQ above!

Add 10 diagonally-sliced green onions, 2 cups amount of chopped leek, 2 cups of julienned Korean radish, and ¼ cup of julienned carrot.

### ACTION! MIX THE CABBAGE WITH THE KIMCHI PASTE!

Put the kimchi paste in a large basin and add all the cabbage.

Mix it by hand.

\*tip: If your basin is not large enough to mix all the ingredients at once, do it bit by bit.

Put the kimchi into an air-tight sealed plastic container or glass jar.

You can eat it fresh right after making or wait until it's fermented.

I usually put all my kimchi in the fridge except for a little bit in a small container. I like fresh kimchi, so this way the kimchi in the fridge ferments slowly and stays fresh, while the smaller container ferments faster and gets sour. I use this sour kimchi for making things like kimchi jjigae where sour kimchi is better. Then,

when the small container is empty, I fill it up again with kimchi from the big container. It takes a little management, but experiment and you'll get the hang of it!



### HOW DO YOU KNOW IT'S FERMENTED OR NOT?

One or 2 days after, open the lid of the Kimchi container. You may see some bubbles with lots of liquids, or maybe sour smells. That means it's already being fermented.

## EASIER PALEO KIMCHI

from Paleo.com

Not only does it taste amazing, as a fermented food, Kimchi is really good for gut health – a great inclusion in a Paleo diet.

### KIMCHI INGREDIENTS

1 large Chinese cabbage

4 litres (1 gallon) of water

100g (1/2 cup) of Celtic sea salt (though any salt would be fine)

One clove of garlic, peeled and crushed

One 6cm (2 inch) strip of ginger, peeled and grated

100ml (1/2 cup) Korean chilli powder (I found this in an Asian supermarket)

Dash of coconut aminos



Small bunch of spring onions, cut into strips  
 1 radish, peeled and grated  
 1 teaspoon of honey (this is needed to get the fermentation going – and the duration of the fermentation determines how much sugar remains in the end product)

**HOW TO MAKE KIMCHI**

Chop the cabbage into rough pieces, discarding the tough stem.

In a large bowl or stock pot, fully dissolve the salt in the water. Once dissolved, immerse the cabbage pieces in the water, using a plate to keep them submerged. Keep the cabbage underwater for two hours.

In another mixing bowl, mix together all of the other ingredients.

Once the cabbage has been underwater for two hours, remove it, drain it, rinse the salt water off and dry it thoroughly.

Now, mix all of the ingredients together.

Spoon the Kimchi into a clean glass jar and cover it firmly. Keeping the jar in a cool dry place, leave it alone for two days.

After a day or two, check the Kimchi. If it is bubbling, it is ready and can be eaten – or stored in the fridge. If not, it's not quite ready, so leave it for another day and check again.

When it's ready make sure you store it in the fridge. I'm sure there won't be any left after a few days – but it's best to eat it within two or three weeks before it becomes "too" fermented!

**REVIEWS, TESTIMONIALS AND FAKE OPINIONS  
 THE GARLIC FARMERS COOKBOOK**

"These bozos can't even put out a newsletter...who really published this book?"  
 –J. Sessions / D.C.

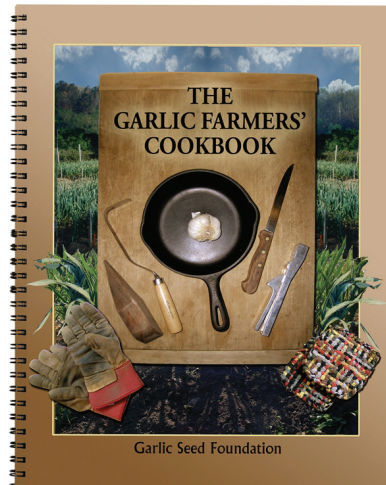
"I must have 50 cookbooks and this is the first time I've heard of using an electric iron to make a grilled cheese sandwich, a can lid to chop garlic, and how to slow cook on a radiator!"  
 –Mrs. A. Porrum / Florida

"Bob Dunkel's wonderful, clever verses aren't the only poems in this book."  
 –JJJJJ/ NY

"This is a great deal at the farmer's market when we bring our crop and start to sell."  
 –BO Vine/VT

I like the information, graphics, poetry, songs, tidbits and photos—as complex as the garlic itself.  
 –M & BO/ IL

"These people shouldn't be allowed to write this stuff! They're third-rate losers, total losers! I don't use a cookbook. Never! Don't have to—I'm great in the kitchen, great! Just like I'm great in the bedroom, great! This piece of garbage is overrated and FAKE. It's a FAKE cookbook, FAKE. Don't waste your money! What's so great about garlic? Why do they eat it? I don't eat much



garlic, but if I did, it would be grown in the USA, on American soil, by immigrant labor.  
 –DJT#1 / DC

"This is a celebration of our favorite immigrant plant, brought into America from Central Asia. Look what it's done to the American palate!"  
 –Ms. Bella Dombroski Garcia / NYC

"The page paper is too white and too textured and holds the stains of dirty hands. Next time, use light brown, smooth paper. Olive oil spilled on page 77 bled through to page 83."  
 –A. sativum / AL

"Organic Cooking" magazine got it right; it's an alternative fact. This book stinks."  
 –Kelly Anne / DC

"I gave a copy to my mother and a copy to my daughter and got a smile, hug and kiss from each!"  
 –A. Vineale / CA

"Is this great! Really great! Can you believe how good this book is! These folks are great. I've known them for years! Great writers, great cooks, great book! Never made it to Oprah's book club—but it's great and we're on the road to great again."  
 –DJT#2 / DC

**SEE PAGE 31 FOR GREAT DEALS ON COOKBOOK**

# GARLIC IN POPULAR MUSIC



Ahoy! I was stunned to discover that no one up to now has compiled an authoritative list of songs about garlic – so I did it myself. I write a pop music history blog, and my latest piece – Garlic in Popular Music – is one of my favorite works of research about something I love with every fiber of my being:<http://www.zero-to180.org/?cat=1565> Fortunately, this list arrives in plenty of time for garlic festivals around the country. Hope this information is useful for you and the world's other garlic lovers. Very truly yours, Chris Richardson-Silver Spring, MD  
*Zero to Here* is the one I sing at some garlic fests / thanks again!

<http://sniff.numachi.com/pages/tiGARLC.html>

## IVAN'S NEW GARLICS

<http://www.ivansnewgarlics.com/>

I started 12 years ago to try to obtain true seed from flowering heads of garlic. I started with many varieties from the USDA collection at Pullman, WA and from others obtained widely. By a certain manipulation in early flowering, some clones produced true seed, with sexual recombination. These were germinated through embryo rescue and new, virus-free garlics were created. These were selected for fertility, vigor and bulb and clove characters. Several generations of seed production were followed by clonal selection. The breeding and selection were carried out in Southwestern Oregon.

So, now, year 2011, I have 29 different clones, put into 10 groups for release and sale for the very first time!

These garlics appear to fit in the Rocambole group and they have a rich, well-rounded outstanding flavor. Their scapes become very tall and develop several loops. They are robust, vigorous and appear virus-free. Some have giant cloves, with few per bulb. Others have smaller, but more numerous cloves. All are hardnecks. They are identified by groups, A-J, and by numbers within each group. A photo of representative samples of each group can be seen on this site.

Quantities are limited, some more than others.

These selections are being released so that growers, breeders, collectors, etc. will have a new source of garlic germplasm to establish new clones! I would be interested to know how they develop under your care and in your locations!

**HEY! FAT-ASS LAZY WHITE PEOPLE!**

Our new immigration policy offers you employment opportunities in

# AGRICULTURE



Learn the internal parts of our chicken, pig and bovine friends! Enjoy working with a knife? This job's for you! Climate controlled comfort.

The high-tech world of the modern Milking parlor: get paid to work with Warm fuzzy teats all day! Inside comfort!



Exciting adventures with fruits and vegetables (such as garlic). Climb a tree, walk a trellis, or play in the dirt! Get in shape and enjoy the great outdoors!

**DON'T DELAY  
IMMEDIATE ENTRY  
POSITIONS:**

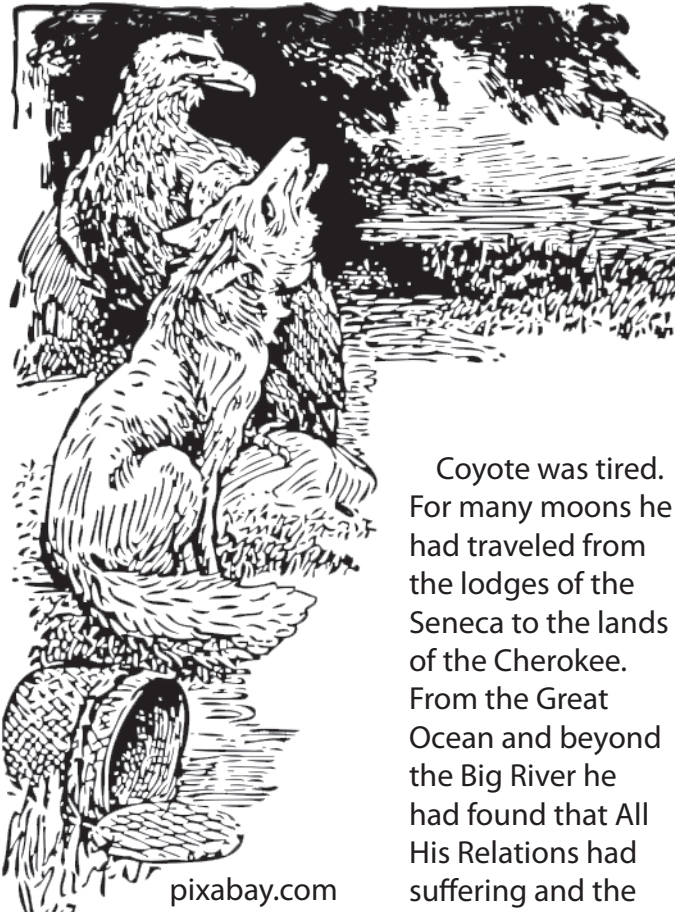
Do you enjoy working with your hands and contributing to a team? Here in Rural America, we value hard-working hands that keep America over-fed, and great! Special wage rates. Enjoy the right to work! Additional positions in food processing, nurseries and greenhouses, packing and shipping. We speak English. Anti-discrimination clause: No fat-ass, lazy white person shall be discriminated against on the basis of sex, religion, age, nationality of grandparents, or sexual orientation.

Note: In the likely event that the USA loses export markets due to changes in international trade agreements, this offer will no longer be available.

Political satire by DS.com

**IT'S TIME TO RAISE MORE HELL AND LESS GARLIC.**

# HOW COYOTE BROUGHT GARLIC TO THE PEOPLE



pixabay.com

Coyote was tired. For many moons he had traveled from the lodges of the Seneca to the lands of the Cherokee. From the Great Ocean and beyond the Big River he had found that All His Relations had suffering and the sweat lodges were full of petitions and prayer flags asking for help from Great Spirit. Long ago The White Bearded Ones, whose eyes were the color of sky, had come from the lands of the North and also from across the Great Ocean. In their medicine pouch they had carried something that none of the tribes had seen before. It had the smell of the rampsons that graced the wooded forests in spring and yet, was still different. The Woman of The Snows had sent them from the lands beyond the Great Waters and their medicine was strong. Held together even stronger than the Confederacy of the Iroquois that had formed, were the pieces of this Earth crystal, each one bringing the fire of The Mother to heal those whose hearts were pure and in need of cleansing. Each piece indeed was of a magical form, not unlike a teardrop wrapped in skin. The White Bearded Ones said that when Great Spirit heard the cries of those who were suffering and had made heartfelt petitions to the seven directions, it had brought tears to his eyes and where they fell this medicine of hope had taken root.

Coyote, being still weary from his journey from the

villages of the two leggeds to the burrows and dens of the four legged ones, had sat to rest, and in his heart he called to the Eagle, asking him to come and sit by him at his fire. Gathering his pouch of tobacco, he pinched some to give to The Mother and prayed to the seven directions for help. With Eagle by his side he shared the sacred pipe. As they smoked and watched their prayers lifting to Great Spirit he knew what must be done! "Eagle, my brother, we must join forces and together we must travel across the Great waters to the lands of great snows where this medicine grows." With coyote holding firmly on, Eagle lifted off and began to fly to the lodge of the Sun, far beyond the borders of their lands, and up to where the clouds would lead them to the Great lodge of The Woman of the Snows.

Knowing that Great Spirit was guiding their hearts, they flew for many days and nights until they came to the mountains that touched the sky. Taller than the tallest peaks of their homelands were these pillars that rose to the clouds, and in a whirling wind they descended to rest awhile and again to make a sacred fire and smoke. Opening their hearts they asked to be led to the lodge of The Woman of the Snows. As the fire roared, the snows about them began to melt and beneath them a circle of grass exposed itself. As if by magic, the Woman of the Snows appeared and sat amongst them at the sacred fire. She told them that she had come, knowing their hearts were pure and that the medicine they sought was close at hand. Coyote and Eagle rejoiced, but by then had come to also realize that they were quite hungry and though they could quench their thirst from the melting snow, they prayed to the Earth Mother to give them sustenance. Knowing that time was not what

they had thought, the Woman of the Snows took forth from her medicine pouch a tiny capsule of white. It was the crystalline tear of Great Spirit that had brought them now so very, very far from their homelands.

"In the time of no time I will show you this medicine", said the Woman of the Snows. Raising her finger to the sky she prayed for the healing of All Our Relations, and said that she would show them that which they sought, if they would take it to the four corners of the Earth as a gift from Great Spirit and the bosom of the Earth Mother. She touched her finger to the earth and a small hole appeared. Taking the plant crystal from her pouch she gently placed it into the hole with the tip of the seed pointing upwards. Then she covered it up with a blessing of soil. Joining Coyote and Eagle by the fire, she sat, looked into their eyes and said "in this time of no time I will show to you the life cycle of this medicine". Then in a slow but wondrous motion the ground spread and a green shoot emerged and as if unfolding in time lapsed photography did first two then other sets of leaves form until from the top arose a spiraling shaft that itself formed a capsuled top piece in which were encased tiny seed sized plant crystals in great number. "Remember this teaching Coyote" the Woman of the Snows ordered.

"This timeless medicine holds the lesson of Time itself. Within the Earth Mother is buried this

medicine bundle, the beautiful leaves rise and stretch and spiral upwards, 'til in fullness they flower. Because your heart and the intention to heal All Your Relations is selfless, I will give you this capsule from this healing plant for you to spread as far as the Great Sky stretches. From these smaller plant crystals will great and powerful ones soon grow within the Earth Mothers precious soil. When

each medicine bundle within its cluster is taken from the soil you must always remember to save one to again plant, and the rest may be used to strengthen and heal All Your Relations. Like the past, the seed of this plant we call garlic, holds the memory of all that has gone before. As you spend all your moments watching this wondrous plant grow you must remember to always be here now and to give thanks. That which will be yielded forth from the spire of this plant is your future, Coyote. Take it forth now!"

With that the Woman of the Snows was gone, yet around the neck of Coyote appeared a medicine pouch filled with the time capsules from the medicine plant. Coyote and Eagle again smoked the sacred pipe and giving thanks to the

seven directions they looked skyward and were aloft, knowing that they had been to the heartland of this medicine named garlic. So to this day, in the lodges and hogans, in caves and small homes, the story of Coyote and Eagle is told, so that seven generations will remember to keep the medicine alive in the sacred soil of the Earth Mother and will be used to heal All Our Relations! -bd

**She touched her finger  
to the earth  
and a small hole appeared.  
Taking the plant crystal  
from her pouch  
she gently placed it  
into the hole with the tip  
of the seed  
pointing upwards.  
Then she covered it up  
with a blessing of soil.  
Joining Coyote and Eagle  
by the fire,  
she sat, looked into their  
eyes and said "in this time  
of no time I will show  
to you the life cycle  
of this medicine".**

# GARLIC TIPS FOR YOUR GARDEN

from microgardener.com

For any pest or disease problem in the garden, first and foremost, I believe in looking at the source of the problem and working with nature to avoid it, rather than reaching for a quick fix spray remedy – even if it IS organic.

There are consequences for every action and whilst recipes and sprays abound in books and the internet, it's wise to understand what you are dealing with first.

I've only ever had to use an organic spray very sparingly on a few occasions in my garden – as a last resort strategy to avoid losing a crop. For the most part, I've found if I have healthy soil, I don't have major pest or disease issues.

**COMPANION PLANT:** The primary way I use garlic in my garden is as a beneficial companion plant (with a few exceptions including peas and beans). Interplanting it with other crops can be a useful pest management strategy. It can help deter both air and soil-borne pests including leaf eaters, spider mites and fruit flies. I've found garlic is most effective when the leaves are more developed.

**CROPS:** The smell of garlic and other allium family members helps confuse pests like carrot flies and white cabbage butterflies by masking the smell of host plants where the mummies want to lay their eggs for their little darlings to hatch out and eat. So, interplant your carrots and brassica crops between garlic, leeks, onions or chives to use this strategy. Interplant with raspberry canes for protection from grubs.

**TREES:** Try planting garlic around the base of peach/nectarine trees to reduce curly leaf infection and around roses to improve fragrance and growth. Planted around trees, garlic can deter borers, mites and weevils and is a much safer alternative to harmful chemicals. The active ingredients in garlic include complex organic sulphides and garlic's antimicrobial properties means it can be effective against a range of pests and diseases particularly



*"Where you find garlic,  
you find good health."*

– Old Spanish proverb

as a fungicide. Its strong scent and flavour make it unpalatable (to insects & some animals) and a natural short-term repellent.

**POSSUM REPELLENT:** Garlic spray (works on smell & taste): Add 2 tablespoons freshly crushed garlic to 1 litre of hot water (or add 2 tablespoons freshly crushed hot chilli). Allow to stand overnight. Strain. Spray on foliage. Remember sprays are best used in the cool of

the day to avoid burning your plants and will only last a few days.

**TREAT POWDERY MILDEW:** Garlic contains high levels of sulphur, an effective fungicide. A few crushed cloves in water (and strained) can be used to make a homemade spray. For effective control, timing is important. Spray at the first sign of powdery mildew and repeat every week or two until it is under control. Some squash and melon varieties may be sensitive to garlic so an alternative is to spray upper leaves and undersides weekly with a solution of baking soda (1 tsp baking soda + a few drops liquid soap in about 1 litre of water). Test a few leaves first. Baking soda increases the leaf surface pH – an environment powdery mildew spores won't grow on.

**CAUTION:** Garlic spray can be used as a general purpose insecticide and fungicide but be aware it kills your friendly little beneficial insects as well as plant pests and diseases so use carefully, and please consider other options you have before using any spray even if it is organic.

**CHOOK (CHICKEN) HEALTH:** Adding finely chopped garlic to your little ladies' food and water monthly (during the full moon cycle) is a good natural worm preventative. It also stimulates digestive organs, treats intestinal infections and bacteria, is a wonderful disinfectant, alleviates catarrh and benefits the liver and gall bladder. Your chooks will thank you!

# WEEDS, MAGGOTS AND WHITE ROT IN ALLIUMS...OH NO!!!

Three of the most common problems most California onion growers face on an ongoing basis are white rot, weed control and maggots. Some of these issues have been compounded by reports of resistance to commonly used insecticides, such as Lorsban. Researchers, however, are in the process of experimenting with new materials and timings to control some of these problems.

Non-organic/conventional by Lisa Lieberman

In California, there are two different types of maggot species that can cause problems. The onion maggot, which feeds on allium crops, can knock down large onion stands in a grower's yield if they get out of hand. The flies are attracted to decaying organic matter and onion culls. After the flies lay their eggs, the larvae will push up from the soil and feed on the emerging onion seedlings through the second leaf stage. As a result of this, the plants end up dying—which reduces plant stands. "This can result in yield losses as much as 50 percent," says Rob Wilson of the UC Intermountain Research & Extension Center in Tulelake, Calif. The onion maggot accounts for about 70 percent of maggots in onion fields across California. In Tulelake, in northern California, there's also a corn seed maggot that feeds on a variety of vegetable crops as well as onions and garlic. The seed corn maggot generally comes out in early to mid-May while the onion maggot comes out from mid-May to early June. "It's been a long-standing problem," Wilson says. "What growers usually do is apply an insecticide at the time of planting as a preventative strategy. It's not like they can wait and say they have a bunch of maggot larvae on the seedlings because by then it's way too late." Growers traditionally use Lorsban as a treatment. However, according to researchers and grower reports, Lorsban hasn't been working as effectively. In very heavy pressure areas, growers who use Lorsban can still get 20–30 percent yield losses. Recently, researchers have been looking

at using insecticide treatments on onion seeds before they get planted. Some materials, including Spinosad, have turned out to be more effective than Lorsban, and, in fact, have been approved for organic use. "It's one of the most effective alternative chemistry products," Wilson says. The only drawback of the product is that it's more expensive than Lorsban. "But we've often found in testing that we get a 20–30 percent increase in yield when we use this alternative product, so it makes up for the extra cost," Wilson says.

In terms of weed control, growers have ongoing difficulties with kochia, which is an annual weed which grows alongside ditch banks. "There's not that many herbicides that are effective on that weed," Wilson says. "And if growers can't get good weed control, their only alternative is hand weeding, which can cost hundreds of dollars per acre and really cut profitability." Prowl H2O has been available for a long time and is registered as a loop application for kochia. "We tried applying it as a delayed pre-emergent, and that seems to be even more effective," Wilson says. Wilson is in the process of trying to get the chemical registered as a delayed pre-emergent so growers can get more control over these weeds.

On top of kochia and maggots, the biggest problem growers face throughout the state is white rot. The problem with white rot-afflicted fields is that there has never been an easy cure for it. Once

a grower discovers white rot in his fields, he usually stops using it for onions or garlic. Over the past few years, researchers have been experimenting with using Diallyl disulfide (DADS) in combination with certain bio-stimulants such as garlic powder and garlic juice to combat white rot. The thought was that these materials could “trick” any white rot in the soil into germinating in the absence of an active crop. The idea was that once the white rot germinated into an empty field, there would be no food source to sustain it and that eventually it would die out. These days DADS is no longer available to growers, which means that researchers have had to become more creative. Recently, researchers came up with a two-pronged approach that involves using garlic oil on a field one year to stimulate germination of white rot. In the second year, for the sclerotia that do not germinate, researchers use a fungus suppressant called Tebuconazole, which used to be known as Folicur.

When the material is used at 20.5 fluid ounces per acres and applied in the furrows, it seems to make previously infected fields clean enough to start replanting allium crops. A number of growers have retrofitted their planters with drop nozzles to spray three- to four-inch bands of the fungicide after the seed has been planted in small furrows, before it gets covered up with soil. The onion industry is also working on getting one more fungicide by Dupont registered to combat garlic rot, Wilson says. “There’s still a lot of research in the making. Last growing season in fields with white rot where we used these treatments, we got healthy onion yields of 25 tons per acre and an infection rate of less than 15 percent in the bulbs. Normal yields in healthy fields are 30 tons per acre. This was a significant improvement in fields with white rot. We’re hoping we’ll be able to continue with that,” Wilson says. - from Onion World May/June 2014

## LOOK AT THIS GROUP

This group of men and women have these characteristics:

36 have been accused of spousal abuse

7 have been arrested for fraud

19 have been accused of writing bad checks

117 have directly or indirectly bankrupted at least 2 businesses

3 have done time for assault

71 cannot get a credit card

14 have been arrested on drug related charges

8 have been arrested for shoplifting

84 have been arrested for drunk driving

So who is this group? The NBA? The NFL?

No, it is the U.S. Congress!



# GARLIC INJECTION COULD TACKLE TREE DISEASES

Injecting trees with a concentrated form of garlic might help save trees in the UK from deadly diseases. Operating under an experimental government licence, a prototype piece of technology to administer the solution is being trialled on a woodland estate in Northamptonshire. Widespread use of the



injection process is impractical and expensive. But it could potentially help save trees of historic or sentimental value. Garlic is one of nature's most powerful antibacterial and antifungal agents. It contains a compound called allicin, which scientists are interested in harnessing. The experimental injection device is made up of a pressurised chamber and eight "octopus" tubes. The pressure punches the solution through the tubes and through special injection units into the tree's sap system. The needles are positioned in a way to get allicin evenly around the tree. The moment the active agent starts to encounter the disease, it destroys it. The poison is organic and isn't rejected by the tree. The treatment could potentially help save trees of historic or sentimental value. It is pulled up the trunk out along the branches and in to the leaves by the process of transpiration - the flow of water through a plant. Tree consultant Jonathan Cocking is involved with the development and deployment of the treatment. "Over the last four years we have treated 60 trees suffering badly with bleeding canker of horse chestnut. All of the trees were cured. This result has been broadly backed up by 350 trees we have treated all over the country where we have had a 95% success rate." Oak trees with acute oak decline - which eventually kills the tree - have improved after being treated. In laboratory conditions allicin kills the pathogen chalara which is responsible for ash dieback. The solution is made by a company in Wales. "Organic cloves of garlic are crushed," said Mr Cocking, "and a patented method is used to amplify the volume

of allicin and improve the quality of it so it is stable for up to one year. Allicin in the natural world only lasts for about 5-10 minutes. If you go back to the tree the day after, and crush a leaf that is in the extremity of the crown, you can often smell the garlic." The goal is to get a commercial licence

by the beginning of next year. According to Prof Stephen Woodward, a tree expert at Aberdeen University: "The antibacterial properties of allicin are well-known in the laboratory. I have not heard of it being used in trees before, but yes this is interesting. It could work." However Mr Woodward cautioned about such methods of "biological control". "Despite being plant-based that doesn't mean it can't harm an ecosystem. For example cyanide is plant-based." Many conservationists also caution against such drastic intervention. Dr Anne Edwards from the John Innes Centre was one of the first to identify ash dieback in a coppice wood in Norfolk. She said that this treatment would not be effective for ash dieback: "In a woodland setting we really have to let nature take its course. It's very depressing," she explained. The Woodland Trust also favours a different approach. The organization is investing £1.5m in a seed bank. The idea is to grow trees that are fully traceable and therefore free from foreign disease. Austin Brady, director of conservation and external affairs, said: "Our native woodland needs to build its resilience to disease and pests. By starting from the beginning of the supply chain we can ensure that millions of trees will have the best possible chance of survival in the long term." In recognition of the threat posed by current and future tree and plant biosecurity, Defra recently appointed a Chief Plant Health Officer, and has earmarked £4 million for research in to treatments.

*By Claire Marshall, BBC environment correspondent  
Garlic Injection Could Tackle Tree Diseases*

# ORGANIC WEED CONTROL

## IN ORGANIC ONIONS AND GARLIC IN CALIFORNIA

Weed control in organic onions and garlic requires special attention to preventing weed problems before they start. Any method that reduces the amount of weed seed will reduce subsequent weeding costs during crop production. One of the best ways to prevent weed problems is to control existing weeds before they go to seed. Onions and garlic present particular challenges to weed control because they do not effectively shade the ground, even when mature. As a result they are subject to weed germination and growth during their entire lifecycle. Emphasis must be placed on locating plantings in fields with low weed pressure or on techniques that reduce weed pressure before planting. It is particularly important to avoid fields with perennial weeds such as field bindweed and yellow or purple nutsedge. It is also important to locate fields away from areas infested with weeds with windblown seed such as groundsel, sowthistle, and horseweed. The goal of organic weed control techniques is to reduce weed pressure in order to produce the crop in an economical fashion. The first step in developing a weed management program is to identify the weeds infesting the planting site. Become familiar with each weed's growth and reproductive habits in order to choose the most effective management options. See the weed photos linked to the weeds in the list of common and scientific names of weeds.

### **WEED MANAGEMENT BEFORE PLANTING**

Soil solarization can significantly reduce viable weed seed in the top layer of the soil. Soil solarization traps the sun's energy beneath a layer of clear plastic, increasing the temperature in the top foot of soil to levels lethal to many weed seeds as well as vegetative structures of perennial weeds. However, solarization does not control perennials as effectively as it controls annuals. Seedlings of bermudagrass, johnsongrass, and field bindweed are controlled, but not the plants. Yellow nutsedge is partially controlled while purple nutsedge is not significantly affected. Effective soil solarization begins with preparing a smooth seed bed so that the plastic can be placed as close as possible to the soil surface. Disc to break up clods and then smooth the soil. Remove any material that will

puncture or raise the plastic sheets such as rocks and weeds. Irrigate before or after applying the plastic because wet soil conducts heat better than dry soil. Cover the soil with plastic as soon as possible after irrigating. It is possible to irrigate after laying the plastic by installing the drip system before planting. Use clear plastic that is 1.5 to 2 mils thick and impregnated with UV inhibitors to prevent premature breakdown of the material. Bury the sides of the plastic along the sides of the bed to create a seal on the soil; this also helps prevent the plastic from being blown away by wind. Machines that lay down the plastic are available to automate the process. The plastic must remain in place for a minimum of 4 weeks (length depends on the amount of solar radiation), and removed immediately before planting the crop. For some crops, growers burn holes into the plastic mulch and transplant directly into them, however this practice may be of limited value for high-density plantings of onions and garlic. In the desert and Central Valley, the plastic should be in place from June through August and can remain in place until planting begins. Solarization may not be as effective in cooler coastal areas as it does not heat the soil as deep. In these areas, apply plastic in fall when there is less chance of fog (i.e. August and September). Cultivate solarized soil less than 3 inches deep to avoid bringing viable weed seeds to the surface where they germinate. Preplant weed germination involves the use of irrigation or rain to stimulate weed seed germination before planting onions or garlic. The emerged seedlings are then killed by shallow cultivation, flaming, an organic herbicide, or a combination of these treatments. This is done as close as possible to the date of planting to ensure that the weed spectrum does not change before planting the vegetable crop. Changes in the weed spectrum may occur because of changes in the season or weather. The time of year, irrigation system, and the interval between irrigation and weed control all affect the efficacy of this technique. Waiting 14 days from irrigation to controlling weeds with shallow tillage can provide up to 50% control of weeds in the subsequent crop. If time permits, preplant weed germination can be repeated to further reduce

weed populations. In addition, flaming or organic herbicide treatments can also be used to kill the flush of weeds anytime between the seeding of the crop and its emergence. However, flaming and organic herbicides are less effective on grass weeds. For all weed control methods, timing is important because small weed seedlings are more easily killed than larger weeds. Deep plowing is a tillage technique that buries weed seed or propagules of perennial plants below the depth at which they can germinate. The viability of buried weed seed declines over time. A relatively long interval (3-5 years) is preferred between deep plowing and subsequent deep plowing in order to avoid bringing up large numbers of viable weed seed back to the soil surface. Cover crops are a key cultural practice in organic production, and they provide a variety of benefits to crop production. However, cover crops also have the potential to both increase or decrease weed pressure in vegetable production systems. Unfortunately, annual weeds frequently become established at the time of the cover crop, and depending upon the species of weed, they can grow in the cover crop and set seed unnoticed. Often weed plants decompose before the end of the cover crop cycle making their detection difficult. In such cases, the cover crops act as nurse crops to weeds making substantial contribution to the seed bank. Slow-growing winter cover crops can be particularly problematic for aggravating weed problems. For instance, many legumes and cereal/legume mixes allow substantial weed growth and seed set early in the growth cycle of the cover crop. Fast-growing winter cover crops include cereals and mustards that provide complete ground cover in the first 30 days of the cover crop cycle. Competitive cover crops varieties include Merced rye (*Secale cereale*), white mustard (*Sinapis alba*) and Indian mustard (*Brassica juncea*). Adequate seeding rate is also an important factor in providing for rapid ground cover. It is important to monitor your cover crops, particularly in the first 40 days following seeding to make sure that they are not creating a weed problem for subsequent plantings of onions and garlic.

#### **WEED MANAGEMENT AFTER PLANTING**

Cultivation is one of the most effective post-planting cultural practices. On double row 40-

inch beds it is possible to cultivate 80% of the bed (assuming a 4-inch wide uncultivated strip is left for each seedline). However, planting configurations of onions typically utilize more than two seedlines per 40-inch bed, and the effectiveness of cultivation is greatly reduced. The first cultivations cut weeds out with coulters and knives, and later cultivations throw soil against the base of the plant to bury small weeds. The goal of cultivation is to cut weed seedlings as close to the seed row as possible without disturbing the crop. New precision guidance systems for cultivation (i.e. EcoDan®) can help improve the accuracy of cultivation operations. More precise cultivation allows for reducing the width of the uncultivated band and thereby removing a higher percentage of the weeds. Uncontrolled weeds in the seedline are removed by hand or other mechanical means.

**HERBICIDES-** There are a few organically acceptable herbicides available for use in organic onion and garlic production. All of the organic herbicides are nonselective contact materials that contain various essential oils. Their best use is as a burn down treatment of the weeds before the emergence of the crop. The efficacy of all these materials is dependent upon the stage of growth of the weeds (i.e., less than 1-2 true leaves) and the rate of application. Higher ambient temperatures improve their efficacy.

**MULCHES-** Dark-colored plastic mulches (i.e. black, brown and green) prevent light from reaching the soil surface, thereby preventing weed germination. Mulches are used to provide some weed control in organic crops such as peppers, tomatoes, and melons. They would be expensive to use in high-density crops such as onions and garlic, but could be justified where the crop receives a high premium.

**HAND HOEING-** Hand hoeing is generally necessary in organic onion and garlic production. It is difficult because of the close plant spacing and the multiple seedlines per bed. Successful employment of the above mentioned techniques can help make handweeding operations less time consuming and more effective.

<http://ipm.ucanr.edu/PMG/r584700511.html>

# INTERNATIONAL GARLIC SEMINAR

Kiev, Ukraine Åke Truedsson



In December 2016, the Ukrainian company “Best Garlic” held their 3rd international garlic conference in Kiev. Earlier conferences had been in Batumi, Georgia and in Lviv, Ukraine.

Around 100 people participated from many different countries, mainly from Eastern Europe. Most of them were garlic farmers, but many scientists from many Universities also participated and shared their latest research results. (See photo) Many of the speakers used the Russian language, with direct translation to English.

The Ukrainian *Best Garlic Company* grows only one variety of garlic. It is a well-colored Purple Stripe type called “Liubasha” with very large bulbs and cloves. It was selected from many types found in the south east of Ukraine. They use mainly bulbils in their production for seed-garlic and this is sown like wheat by machine and harvested by machine like potatoes. In their good soil and with good weather, they harvest single clove bulbs about 1 inch in size – perfect to plant. In my experience with those single clove bulbs, the dried, cleaned bulbs weigh up to 200 g (7,05 oz) each.

This year we observed a rather heated discussion between Ukrainian speakers that use chemicals to get results and those who like to use eco-growing practices with living soils and use of mycorrhizae fungi to support garlic plants.

The main international speakers were myself (from Sweden) talking about garlic growing and garlic types, and Collin Boswell from *The Garlic Farm* on the Isle of Wight, south of mainland England. They use garlic for all kinds of products and have a popular garden shop offering many types of garlic and garlic products, including Elephant Garlic (*Allium ampeloprasum 6x*). They also have a restaurant where garlic dishes of many kinds are served. He shows the way the western world can handle garlic commercially and is always an interesting speaker, often sharing his garlic trips to different parts of the world.

Another popular speaker was Rina Kamenetsky from Israel. She is participating in a great program to produce garlic true seed to get normal breeding also for garlic. Her team has made several trips to the origin area in Kyrgyzstan, Uzbekistan, Tajikistan and south east corner of Kazakhstan (origin place for garlic) to collect wild and local garlic and clean it from virus so they today have a huge collection and seed production from crossbreeding of different types. It is always interesting to listen to Rina and learn about their advances in their research. In the future it will be very interesting to see what comes out of that project in the end.

The conference lasted 3 days and it was interesting to listen and to meet all those garlic lovers from other parts of the world.

# Growing Garlic in Sweden

## My Experience Åke Truedsson

I live in the south of Sweden (56 degrees N) in Northern Europe and have been growing garlic for more than 40 years. The climate here is Maritime, with summer temperatures around 15- 25 degrees C (59-77 F) and winters fluctuating between +8 and -15 degrees C (46-10 F), with sometimes rain, sometimes snow. We get some precipitation every month of the year, but in total only about 550 mm/year (22 inches).

I am a chemical engineer by education and work for an international company, but am now semi-retired. Now I keep myself busy growing a lot of fruit, berries and vegetables on our small farm, where we grow most of our food. I also chair a club for tomato growers, maintaining 800 varieties and a garlic club. My knowledge of chemistry helps me optimize conditions for our crops. My job for an international company has taken me around the world, with many visits to Russia where, of course, a lot of my garlic varieties come from. The origin garlic area was within the old USSR borders (Kyrgyzstan, Uzbekistan, S.E Kazakhstan, Tajikistan) and horticulturalists there have for sure made a lot of trips to collect local and wild garlic in that area. It is said that Russia maintains 700 garlic varieties, but I suppose some are the same with different names. However, the large collection in the Moscow Botanical garden is unfortunately gone. Though I do not know for sure, there should be collections in Tomsk and Novosibirsk in Siberia.

Growing your own garlic is a very interesting and rewarding garden activity, and in the kitchen, garlic enriches the flavors of our food and strengthens our health. We eat garlic in some way every day in our family, and in fact I never catch cold or influenza, except for once in the nineties, when the

company I was working for brought a nurse to our office and vaccinated all the “strategic personnel.” That gave me influenza for 3 days – the only time I can remember having it. Garlic helps us stay healthy, together with other organically grown food.

To grow garlic, understanding and knowledge are important. So to have success and get a really good harvest, there are some things to think about. Below I share some of my experience. What

I do might not be the absolute best way, but I produce a lot of bulbs that weigh over 100 g (3.5 oz.) (dried cleaned bulbs) and get a high yield per acre.

### SOIL

Raised beds for good drainage are an important advantage for growing garlic and this is especially important in winter

time. Without those raised beds you may lose your crop due to wet or icy root conditions.

If your soil has been used for conventional agriculture before, with the use of pesticides and fungicides, and you would like it to be cleaned up before growing eco-garlic, it is important to add a lot of organic matter (compost, green manure, organic fertilizer, wood chips) and to add limestone or dolomite (magnesium limestone) powder to get a pH between 6.5 and 7.5. Those additives will, blended with your soil and some water, create the best conditions for breaking down unwanted chemicals.

In the autumn, soil preparation should include adding minerals (limestone, wood ash (to get pH 6.5-7.5), stone meal and some fertilizer, but not too much nitrogen. Nitrogen promotes growth, but makes cells larger and more susceptible to attack



My garlic beds (June)

from fungus. To our soil, which is not too heavy clay, we add a thin layer of horse manure and about 1 deciliter (1 cup) wood ash/m<sup>2</sup> before digging to prepare for planting. We also normally add some stone dust from granite or volcanic rock – a shovel/m<sup>2</sup>.

Our raised beds are not compacted by man or machine and contain about 40-50 cm (16- 20 inches) deep, loose, blended soil. Beds size are 1.5 m (60 inches) at base and 1.3 m (50 inches) at top and they are about 25-30 cm (10-12 inch) high above ground level.

If large bulbs and high yield is the goal, there are two elements that are very important in your soil and they are potassium and sulfur, which could easily be added as potassium sulfate (a natural salt) or in other ways (ground gypsum, sea weed, wood ash). Mix and prepare your beds just before planting in October-November so they are ready when the soil temperature comes down to + 10 degrees C (50 F). In this way they are weed free and the soil is loose and nice to work with.

## PLANTING

We grow around 60 named varieties of 15 types of garlic. For our own use and for selling, we mostly grow type Purple Stripe and Porcelain and some Artichoke and early Turban and Pekingese. Other types are maintained mostly as a gene bank and for educational purposes in my garlic courses.

Always use garlic for planting that has been stored above +8 degrees (46 F) between harvest and planting. If garlic has been stored at lower temperatures, the garlic's inner clock stands at springtime and it would like to grow immediately. If so it may winter out. The best storage is 12-17 degrees C (54-63 F) and with relative humidity 45-60 %. Those conditions are also good for garlic to eat.

Always use good planting bulbs, as clove size has a great impact on the harvest result. The size of the bulbs also has an impact, but not as dramatic as for the cloves. Always use garlic that is free from diseases, especially white rot and nematodes. Best is certified and virus free garlic. In Finland they found 13 different viruses in garlic when tested. Garlic cleaned by meristem and thermo-therapy normally gives 25-50 % higher yield and is highly

recommended. In Europe, France is providing such seed garlic of the types Artichoke, Creole and Silverskin to growers. If you do not have this possibility, I would recommend you go together with other garlic producers and with a university and start with virus cleaning of the best garlic types with meristem and thermo-therapy. Grow the first generation in insect-free net houses and then sell these elite bulbs to farmers so they can start with virus and disease free garlic to increase yield and profit.

Planting should be done not too early, with a soil temperature around 10 degrees C (50 F). We plant in our raised beds rather dense with 20 cm (8 inches) between rows and 15 cm (6 inches) between plants. We plant in 8 cm deep holes, leaving the top about 5 cm below the surface. We made a tool to make the planting holes, repurposing a wooden handle from a garden tool, to which we nailed 8 cm long pegs with pointed ends at the desired row distances. This tool requires 2 persons to handle, one on each side of the bed, and we make 6 holes each time. Hole-making is really fast and precise using this tool. If your soil is clay, hole-making is best done on a sunny day when it is not too wet and sticky.

Break up bulbs into cloves just before planting. It would be good to soak the cloves in an eco-friendly mix of anti-fungi and anti-nematode compounds before planting. There are some in products on the market.

After planting we rake out the soil on top to fill the holes, and cover the beds with about 1.5 cm (0.6 inches) of stone meal (1-2 mm) to block light from the weed seeds to prevent them from germinating. Our stone meal is purchased from a nearby quarry of crushed stone. It is also possible to cover with weed seed-free compost or soil, and also with cut straw, the latter in a slightly thicker layer. (The straw layer will delay the garlic from coming up in spring by some days because black soil is warmed up faster in spring compared to soil beneath reflecting and isolating straw.)

## SPRING GROWTH

Garlic has an inner clock and at around 8 degrees C (46 F) the garlic clove wants to put out its roots, but not sprout if stored correctly. In moist conditions

it may root at higher temperatures. At 0 degrees (32 F) and below, garlic goes to sleep and does not mind frozen soil and low temperatures. (It is grown in Siberia where winter temperatures can drop to -50 degrees C (-58 F) and ground can be frozen 2 m (6 feet) deep.) Too much nitrogen added in the fall reduces the garlic's ability to handle deep cold.

Winter cold (below +8C) (46 F) is absolutely needed to initiate clove building and the flower stalk for most garlic types. In March, already at a soil temperature of +3 degrees C (37 F), the garlic will sprout and grow fast. (The plant must be completed before summer draught – where it came from in Central Asia).

In April, when garlic is about 15 cm high (6 inch) we give a booster dose of pelletized chicken manure to feed with nitrogen and other elements plus organic matter. Seaweed liquid is also good as a fertilizer and mineral complement. The chicken manure we use is sterilized and free from weed seeds.

From April to June you have to water every week if it does not come from above. Weed if you have weeds in your beds. Garlic does not like weed competition. It is important to look through your garlic and take away any plant with deformed leaves, yellow spots on leaves or other disorder. Use them as an early delicacy in the kitchen.

Chinese growers start harvesting garlic scallions in early to mid May without bulb and use it as a leek. It has a mild garlic taste and is absolutely delicious and could open a new market possibility. If growing garlic for this purpose, it can be planted close, at 5 cm/2 inches apart.

In June, the scapes should be removed, but I have found that if taken early, during curling, this reduces storage time for the garlic and may disturb bulb formation. If taken when the scapes start to

de-coil, it is better. Garlic scapes can be chopped up and used fresh in soups, salads, stir fry, steaks etc. and can be frozen in plastic bags or dried and used ground as a powder.

In July we shall harvest and harvest time depends on where you live, how the weather has been during the growing season and what type of garlic you grow. The earliest types are Turban and Pekingese. Latest up from ground is Silverskin. For

me it is about 20 days between the first and last.

We take up the garlic gently from the ground, count 4 leaves and take away the outer leaves and layers with soil, ending up with clean nice bulbs. This work is demanding and takes some time, but the result is very clean, nice garlic. Roots can be removed later.



Liubacha garlic

After harvest, we store the garlic above the ground on a net in a breezy, sunny place or hang in small bunches in a wooden structure. Avoid rains – cover with tarpaulins if needed. If your conditions are not dry enough, continue to dry the garlic with fans and dehumidifier in a barn, shed or old empty greenhouse. Dry gently and not too fast, so the whole bulb dries and not just the surface. Do not over-dry.

Just after harvest it might be a good idea to select out the absolute best garlic bulbs with large cloves for your own planting in October-November. This may help you prevent degeneration of your future crops.

There is always more than one way to do something right, but maybe this little article can stimulate some ideas for your own garlic-growing.

Åke Truedsson

# ALL THE BEST PLANS

After the full moon of October  
While the fields were soft and fluffy  
The trials again were returned to safety.  
Our time to play with them had come to an end  
So back to the Mothers womb they were taken  
Implanted in that incubator which defies the dying daylengths.  
Fattened cloves reintroduced to their winter beds  
Seem to sigh in relief as they are gentled down and covered  
We bid them sweet dreams and tuck them in with a prayer:  
May you be protected little ones from the harshest of days  
And breathe slow and steady on the longest of nights  
For another cycle is nigh and we trust in your wisdom to wait  
Let your mighty roots be spread far and deep  
And in that sleep of no sleep may the tiniest rootlets sing to you  
Of the minerals that await your rising....

November has come, but not in its usual fury  
Few days of snow but plenty more of sun and rain  
The snow geese are off and others remain  
The roses have new buds and the kale is bright..  
Enough to make one worry and wonder?  
Just what has been happening to the weather  
Does the garlic remember times like these  
Long before we came around?  
Then why oh why do I visit the field and find  
All of it two inches above ground?

- bd





# NO MATTER WHERE YOU ARE IN LIFE, DON'T EVER LET THAT GARLIC RIDE END

Ed Fraser

It's 1970, I am in High School and learning Spanish at a rapid pace with hopes of some day traveling to a Spanish-speaking country. At home I am

helping with the cooking and adding lots of this stuff called garlic into the dishes...excellent taste! Graduating in 1972, was given the opportunity to go to rural Mexico, live with a Mexican family and eat lots of garlic-laden foods. I really didn't know much about the stinking rose back then, other than people in many places used it a lot and considered it essential to their cuisine. Spent another 4 years in and out of Mexico studying in various institutions and living from time to time in some of the more remote indigenous outposts. Finally returned to the US and completed undergraduate studies through Empire State College. While working toward that end, I was able to land a job at a community college to teach English on the island of Puerto Rico in 1980. Whoa, more garlic in the cuisine. Yes you have to use sofrito to flavor the beans etc. and you can't have sofrito without garlic. It's a must! You have to "adobar" meats like pork and chicken with garlic or it just won't come out right. Never occurred to me to find out where the garlic came from...the store I guess. Returned to US a year later to work with Hispanic communities in Western New York. (I am a northern guy and Puerto Rico was a little too hot for me). Roll ahead to 1992, I get married, buy a farm and start growing garlic, and other less stinky vegetables, certified organic. The learning curve just begins and now in 2017 I well know that this learning curve and adventure will not end until I do.

It's the summer of 2016 and my good friend, Petra Paige Mann, owner of Fruition Seeds in Naples, NY says, "Hey Ed, three years ago I started a seed

saving project in El Cercado, Dominican Republic with 16 organic farmers. I am going in December to check on things and my dream is to take a Spanish-speaking organic farmer with me."

For the last two years I had been successfully growing some Caribbean vegetables on my farm in Upstate New York, and I wanted to expand the list. "Here's my chance," I thought. "Yes, Petra, I will travel to El Cercado with you and the team" El Cercado is very rural, located in the mountains near the border with Haiti. The people are happy, welcoming, fun, loving, hard working and just generally full of life. My kind of place to be. We were in the fields every day with the farmers, listening and making recommendations where appropriate. So, day four comes along and I am asking them to take me to see the planted garlic. "We don't have any planted. We tried a couple of years ago, but the seed that came in from the US did not grow. We have to buy our garlic from Haiti and the US and it is very expensive!"

Well folks, that's all I had to hear! I asked if they would like me to help them find the right cultivars and techniques for growing garlic in their climate so they would be able to provide enough to feed their community. I got the unanimous "Sí Señor!" I am flying back to New York and every time I close my eyes, I see images and hear the voices of my new-found farmer friends. I am making plans in my mind about how to proceed and I am excited! The holidays pass and I am on the phone with an old acquaintance, Bob Anderson from Gourmet Garlic Gardens in Bangs, Texas. Good choice as Bob has been into garlic for a very long time and knows a lot of garlic people all over the world. We

talk for a long time and he gives me an excellent contact: John from Forever Yong Farm in Arizona. John is the “Creole Man” as I see it. John really likes the project and is willing to help out. We are planning to get a couple of hundred pounds of Creoles and Turbans into the Dominican Republic early next Fall. I can communicate techniques for vernalization, planting, harvesting, post harvest handling, and saving seed for future plantings. Many thanks to the Garlic Seed Foundation for urging me to write this tale for the Garlic Press. If anyone out there has information about growing great garlic in southern climates, feel free to contact me.

Submitted with garlic on my breath and in my veins by Ed Fraser, Fraser’s Garlic Farm, [www.frasergarlic.com](http://www.frasergarlic.com)

#### **.ADDENDUM:**

To all GSF members: How can we help Ed with this project? Who’s got the knowledge, information, experience, ideas or a little extra moola to share? Call Ed.

What could the GSF do? Contact Bob or David.

The GSF will support the garlic-related projects our members endorse. We contribute when and where we can...cookbooks, T-shirts, paltry cash grants for public research, and other stuff.

And we always want your articles and ideas for the Press.

On second thought, maybe we could get Ed to organize a January Caribbean beach-side holiday for us old northern garlic farmers... (DS.com)

## **WHY I’M FIGHTING FOREIGN GARLIC GROWERS AND THEIR U.S. ALLIES Our little New Mexico garlic patch is raising hell in law firms and government offices**

**Stanley Crawford /  
OPINION / May 11, 2016  
/ Web Exclusive / High  
Country News**

For over 30 years, I’ve grown garlic on a small farm in northern New Mexico, selling most of it at farmers markets in Santa Fe, Taos and Los Alamos. I now grow it on about an acre, which yields about a ton of garlic annually.

We are a tiny David compared to Harmoni Spice of Zhengzhou, China, the largest importer of Chinese garlic, and Christopher Ranch in Gilroy, California, the primary distributor of Harmoni’s garlic. Harmoni and Christopher Ranch are the Goliaths of our industry.

But our little garlic patch – in collaboration with Avrum Katz’s Boxcar Farm in a neighboring town -- is raising hell in law firms and government offices in places as far away as New York City, Washington, D.C., and Los Angeles, not to mention China.

All we did was file a formal request with the U.S Department of Commerce for an administrative review of Harmoni Spice’s anti-dumping rate, which is “zero.” Duties are imposed in this country on some 300 products to raise the price of imported products so that they are closer to domestic prices. A rating of “zero” means that no duty is imposed.

At over 19 million metric tons a year, China is now the world’s largest producer of garlic, while the United States is down to a mere 175,000 metric tons. Currently, the wholesale price of garlic in China is \$1 a kilo, and this has enabled Harmoni Spice, the only garlic importer that pays no duty, to undercut U.S. producers for the past 10 years. Anti-dumping duties, which can run as high as \$4.71 a kilo, would serve to level the playing field for U.S. producers, bringing the price of imported garlic in line with U.S. wholesale prices.

Harmoni maintains its zero duty rate through a loophole in Commerce Department regulations, which allows an “interested domestic party” of “like product” to ask for an administrative review and then to withdraw its request for that review. This is where the loophole comes in.

Every year for the past 10 years, the California-based Fresh Garlic Producers Association, of which Christopher Ranch is the largest player, has first requested administrative reviews of a number of Chinese garlic importers, and then, just at the deadline, withdrawn Harmonie Spice from the process. The result is that Harmoni's zero rate gets rubberstamped without review. Until now, no other growers have contested the situation, presumably for fear of tangling with the garlic Goliaths.

Ted Hume, a trade attorney with 40 years' experience, moved to Taos with his artist wife last summer, after staying in the B&B on our garlic farm. On my behalf (and later with Boxcar Farm), he filed a request for administrative review.

We expected pushback, but Harmoni's lawyers have buried us in some 2,000 pages of filings with the Department of Commerce. They also filed what is patently a SLAPP suit – a Strategic Lawsuit Against Public Participation—against a total of 21 defendants, including us. Recently, both Avrum and I were visited by a private investigator, who claimed he wanted to grow garlic in Texas. We didn't believe him.

The lawsuit and Harmoni's filing with the Department of Commerce are attempts to get us to withdraw our review request and thereby enable Harmoni to retain its zero anti-dumping duty rate.

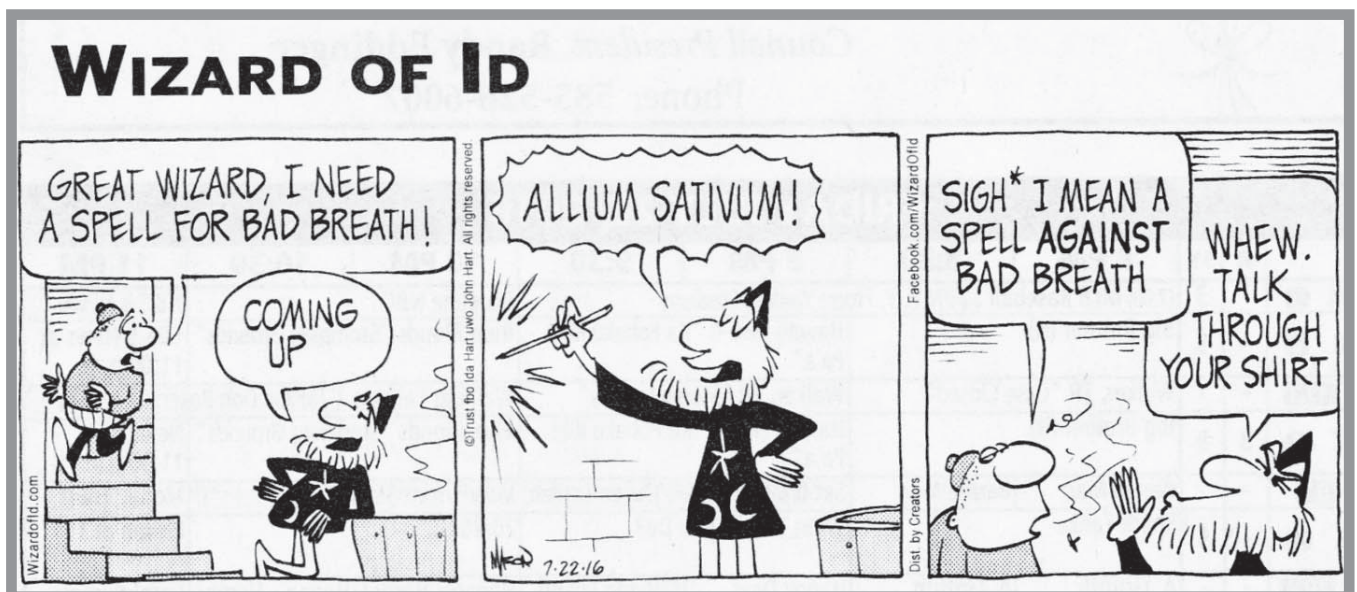
We think Harmoni is attempting to interfere with our constitutional right to petition the government for redress of grievances. And we realize that this may be a long, drawn-out battle, but we're hoping it will end in a level playing field for U.S. garlic growers.

Perhaps a larger issue is that other U.S. producers have gamed the import duty system in a similar way, allowing them to profit from the funneling of cheap Chinese goods, both agricultural and manufactured. The Department of Commerce, in short, may be allowing millions if not billions of dollars to slip through taxpayers' fingers, destroying countless jobs in the process.

As trade attorney Bill Perry told the Los Angeles Business Journal, "The whole system certainly smells to high heaven."

International trade law is an arcane subject, seemingly remote from everyday life. But every time you stop into a Wal-Mart or Family Dollar, you're already knee-deep in it. And it is certainly true whenever you buy supermarket garlic. Think before you shop. Garlic should add flavor to your life, not be part of a system that "smells to high heaven."

Stanley Crawford is a contributor to Writers on the Range, the opinion service of High Country News. He is the author of *A Garlic Testament: Seasons on a Small New Mexico Farm* and eight works of fiction, most recently *The Canyon*. He lives in New Mexico.



# GARLIC COULD HELP PROTECT BABIES FROM TOXIN LINKED TO FORMULA

## Two chemical compounds in pungent bulbs combat a toxin traced to infant formula production and handling

A recent study by a research team from China, Washington state and UBC reports on the benefits of garlic for killing a pathogen implicated in outbreaks of illness in formula-fed babies around the world.

Garlic added to baby formula packaging could be the key to preventing contamination from a potentially lethal toxin traced to powdered formula manufacturing and handling, a University of B.C. study shows.

While babies can't be fed garlic, packaging could encapsulate the beneficial sulphuric compounds in garlic, which might also be used to improve hygiene in the pipes where formula is made, says Xiaonan Lu, the UBC co-author/assistant professor who heads a food safety engineering research lab.

For thousands of years, the benefits of garlic have been touted — to reduce blood clotting, heart disease and even prevent cancer, Lu said. But the chemistry to explain how the compounds in garlic achieve that have, until recently, eluded scientists.

In the current study, published in the journal *Applied and Environmental Microbiology*, a research team from China, Washington state and UBC used sophisticated equipment to show how the tiniest dose of the eye-watering sulphuric compounds in garlic — diallyl sulphide and ajoene — killed a pathogen called *Cronobacter sakazakii* (*C. sakazakii*), which has been implicated in numerous outbreaks of illness (meningitis and bloodstream infections) in formula-fed babies around the world.

The World Health Organization did an 87-page report in 2008 on the issue of bacterial pathogens in formula, after several outbreaks. It found the lack of a mandatory tracking system meant there was no way to measure case numbers of *C. sakazakii* accurately. However, the WHO report documented 120 cases it did know about in infants and children up to age three.

It identified potential problems in the formula manufacturing process and also hygiene hazards when the powdered formula is prepared by home or hospital caregivers in less than the most sterile conditions.

Lu came to UBC from Washington State University last year after doing doctoral training and research there, some of it on the properties of garlic.



### GARLIC IN CHINA

"Garlic is a plant that is very popular in China, where I come from, and lots of people are fascinated with its anti-bacterial, anti-inflammatory effects," he said in an interview.

"The beneficial sulphuric compounds are what cause your eyes to water when you're chopping raw garlic, just like in onions," he said. While cooking destroys some of the compounds in garlic that have medicinal effects, the pair of compounds in the current study remain active even after being heated. Lu said he is seeking research funding for work on garlic compounds in the cancer treatment arena.

Last week, a new study showed that eating raw garlic twice a week may cut the risk of lung cancer by almost half.



they were exposed to cooking-oil fumes. Garlic also reduced the risk of lung cancer in smokers by 30 per cent, according to the study done by scientists at the Jiangsu Provincial Centre for Disease Control and Prevention in China.

Their findings were based on face-to-face interviews with 1,424 lung cancer patients and 4,500 healthy controls over a period from 2003 to 2010. Many health benefits of garlic are attributed to a compound called allicin, which has been touted as a new agent against superbugs like MRSA and VRE. But allicin is a volatile compound, destroyed when garlic is cooked in oil.

- PAMELA FAYERMAN, VANCOUVER SUN  
NOVEMBER 25, 2013

The results were published in the journal Cancer Prevention Research. The study showed that those who consumed raw garlic at least twice a week had a 44-per- cent lower risk of lung cancer, even if

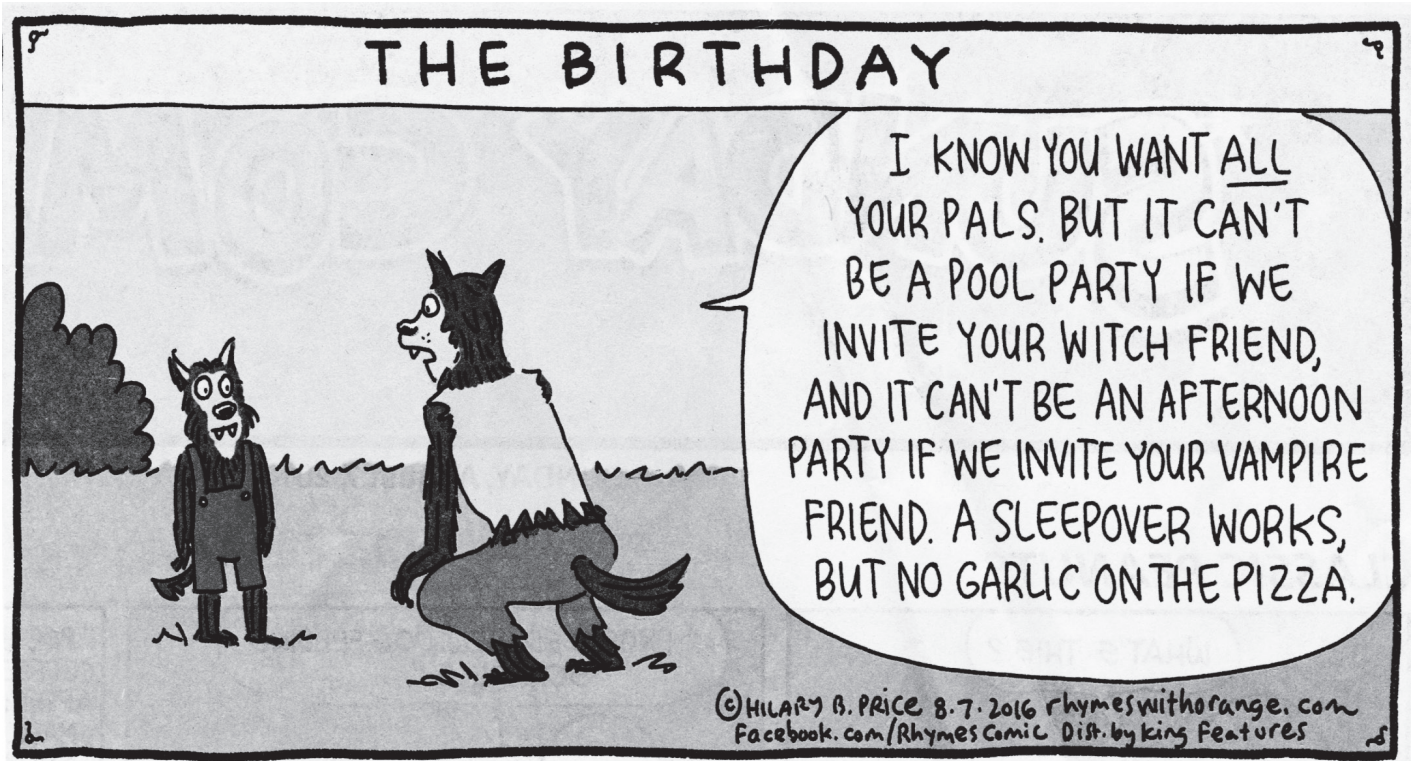


From Jim Hightower  
as reported in the AAM Reporter  
Nov. 10, 1987:

“The water won’t ever clear up ‘till you get the hogs out of the creek.”

“As we work to build a ‘Great’ nation, we must take special care to also build a ‘Good’ nation—one that embraces our fundamental values of justice and fairness, one that is inclusive of all people, one that fosters the true American ethic of a helping hand.”

“One of my farmer friends assures me that it is still possible to make a small fortune in agriculture; the problem is you have to start with a large fortune.”



## GSF MEMBERSHIP? WHAT'S THAT?

When you joined the Foundation, your initial membership was for 4 issues of **The Garlic Press**\*\*\*, and we gave you the current issue gratis in your membership packet. When and if you renew your membership, you have a choice of 8 issues for \$20 or 13 issues for \$30. The number on your mailing label is the number of the last Press you will receive unless you renew. You have issue #54 in your hands now. However, the reality is that we do not publish the Press on a regular basis and almost everybody forgets or gets confused about where they are. That's why we haven't taken anyone off the list for a couple of years. Some of you have memberships that expired with numbers in the 40's! We are going to send you a postcard to remind you to renew, and if we don't hear from you, we're going to say "good-bye."

We're slow, balding and ugly, but we plan to keep going. A renewal of \$20 for 8 issues will expire between 2020 and 2025. That's why we always need and ask for your help.  
(DS.com)

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(DS.com)

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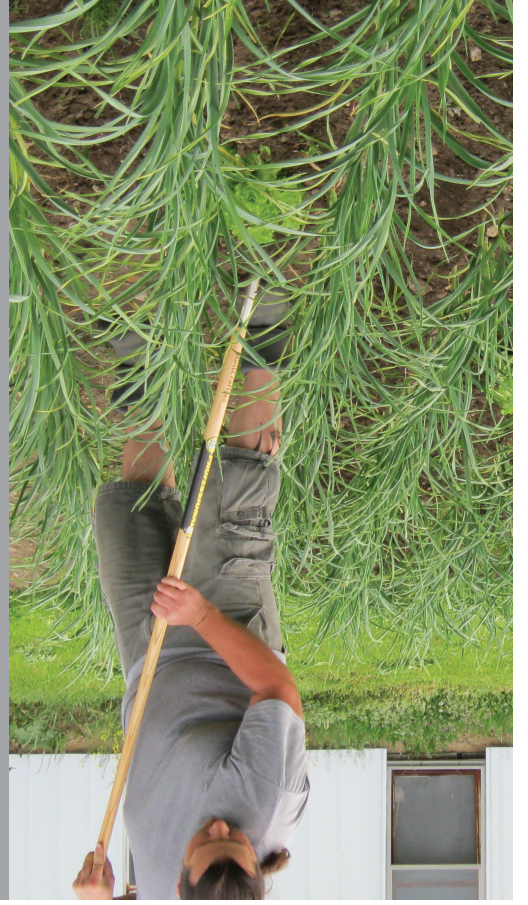
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