

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



The Garlic Press



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PRODUCTION

Planting and Care Guide for Spring Garlic Planting
For Areas of the Midwest United States

Introduction

In mid-to-late summer all varieties of garlic enter a "bulbing" stage, regardless of when they were planted. Some varieties of garlic known as hardnecks also produce a seed head at this later stage and develop bulbils (true seed) before the plant dies back. The garlic bulbs are harvested before the entire plant dies back and when the plant still has some green leaves remaining.

There are numerous strains and varieties of garlic so, for simplification, the many types can be sub-divided into three basic groups: the *hardneck*, the *softneck* and the *artichoke*. The hardneck variety, also called "rocambole garlic," produces a distinct seed stock and flower head that will eventually contain many bulbils. The many softneck varieties, also known commonly as "silverskin garlic," have lost their ability to produce seed and rarely have seed stalks and flower heads. The third sub-division of garlic, the artichoke, is also sometimes called "Italian garlic" and has numerous cloves (20 or more occasionally) and will often produce small bulbil pods along its stem in late summer, but usually never a distinct seed head.

Most all of the large fresh garlic found in stores today is of the artichoke variety, whereas your packaged or boxed garlic is primarily a softneck silverskin variety known for its longer storage life. The rocambole, or hardneck variety of garlic is often termed "gourmet garlic." This garlic is rarely seen in American grocery stores or markets as it can be rather expensive, does not have a long shelf life, and therefore does not ship as well as other varieties.

Softneck garlic varieties are most often chosen for spring planting; however, dedicated gardeners or growers can have success with any variety as long as they follow some basic intensive cultivation practices. As a rule, spring-planted garlic will not obtain bulbs the size of fall-planted stock and may only form a medium-sized single or cloveless bulb.

Spring Planting Objectives

The basic rationale for planting and intensively growing garlic through the relatively short spring and summer seasons can be many fold, however it is most commonly practiced to produce a unique and well adapted seed stock for later fall garlic production. Other reasons to spring-plant garlic are to have fresh green shoots for eating, to produce bug and rodent repellents or just to have an all-around friend of the garden. Growers also sometimes plant garlic in the spring to 'size-up' new garlic varieties thereby saving the largest cloves and 'singletons' for fall planting and using the remainder of the spring crop for fresh eating. Garlic originating of any size can eventually become tennis ball-sized, prize-winning bulbs, if cultivated properly. Your own garlic will then have become a unique strain adapted specifically to your climate and soil conditions.

Soil Conditions, Spacing and Planting

The Midwest farm belt region of the United States usually has adequate soil structure conditions for excellent garlic production. Garlic prefers a sandy clay/loam type of soil with a PH level of 6.5-7.0. It also requires good humus additions (1-part humus/2-parts soil) as well as adequate moisture during its green leafy growing stage. The garlic plant develops in two distinct stages of growth and has different needs for each. In the green-leafy stage of vigorous spring growth, garlic requires good amounts of nitrogen, as does any leafy vegetable (lettuce, spinach, chard etc...). It is a strong feeder and benefits from a side-dressing of compost or well-rotted manure after 2-weeks to 1-month from spring emergence. Soils may also be fortified with greensand and rock phosphate to maintain adequate levels of potassium and phosphorus if soils are lacking. Later in the "bulbing" stage, garlic requires less nitrogen and benefits from dryer soil conditions.

[Continued next page]

Cloves are usually spaced 4-6 inches apart in rows of 3-4 feet wide and at a soil depth of twice the clove length, usually having 1-2 inches of soil covering the clove. Similar to onion bulbs, always plant cloves vertically with the pointed end up. Garlic is very cold-hardy and can be planted as soon as the soil can be worked. Directly after planting, it is recommended to apply 2-3 inches of a good mulch cover such as straw or rotted leaves. If the weather is dry this is also the time to also apply moisture, usually about 2-3" of water. Mulching allows the soil to maintain adequate moisture levels as well as to retard weed growth around the plants. Never use wood chips for mulch as they can leach much needed nitrogen from the soil.

Weeding around your garlic plants is essential in spring planting as any competition for nutrients will mean a loss in final garlic production. Weeding and cultivation must be done cautiously however, because the garlic plant has a broad, shallow root system that can be easily damaged.

Special Practices for Spring Planted Garlic

Garlic is particularly adapted to a "raised bed" type of cultivation as these soils are usually high in humus content, well-drained, and rarely compacted. Garlic can be spaced to allow 50-60 sq inches per plant in beds of 4X12 foot dimensions. Well rotted manure or compost should be worked into the bed's soil before planting. Spring planting requires intensive gardening practices and garlic benefits greatly from the practice of foliar feeding at two week intervals. Commonly a fish emulsion (5-1-1) as well as a kelp concentrate are recommended. Another intensive organic practice is to place a teaspoon each of blood meal and bone meal around each clove as it is planted. Non-organic methods might suggest the addition of a 5-10-10 synthetic fertilizer worked into the soil, and stabilized before planting. For best garlic production your soil should be well drained and never boggy.

Knowing when a garlic plant begins bulb formation ("bulbing") is an essential part of successful cultivation. Once bulbing begins, the plant no longer requires any additions of nitrogen (side-dressings) and also requires little if any additional watering. At this point the mulch around the plant is pulled back to allow the soil to dry around the bulbs. In hardneck varieties of garlic, a seed stalk appears with its closed flower pod. In spring cultivation, this seed stalk is always severed from the plant as soon as detected or when it is 3-4 inches above the plant's leaves. If this procedure is not performed the garlic will spend too much energy on seed production and too little on bulb formation. In other varieties the lower most leaves will begin to brown off and wilt. The garlic plant needs little attention during bulb formation. With softneck and artichoke varieties the leaves of the plant can be trimmed to about 2/3 of their original lengths and one final foliar feeding applied at this time also.

Harvest and Storage

There is no set time to harvest garlic due to the fact that different varieties mature at different rates. A good rule of thumb however, is to harvest your garlic when 4 green upper leaves remain on the plant and all the lower leaves have browned down. The reason this rule works is due to the fact that every leaf on a garlic plant also represents a bulb wrapper. For garlic to cure and store properly, it needs at least 3-4 healthy skin layers surrounding the entire bulb. So once again, harvest your garlic plant when it has 4 healthy green leaves remaining. Harvest time does not however mark the end of successful garlic production. The best garlic needs to cure to develop great flavor and to obtain its maximum storability.

Once garlic is dug or 'pulled' from the soil, it is a common practice to allow the plants to lie on the ground for 3-4 days in dry conditions, or in a shed or closed area if rain is eminent. Plants are sometimes overlapped so as to cover the bulbs of adjacent plant bulbs. Attempt to avoid direct sunlight which can burn their delicate skins as they dry-down. Never wash the soil from garlic as it is curing. Next, garlic is usually hung in small bunches (10-12ea) or braided and hung in a well-ventilated shed out of direct sunlight for 3-4 weeks. After this month or so the braids or bunches can be taken down, their roots trimmed to within 1/2 inch of the bulb and their tops trimmed down to about 1 inch from the bulb to prepare them for storage.

Now your garlic will be ready for storage and is edible although it usually takes another month or more to cure completely. Softneck garlic can last for up to 8-12 months if stored properly depending on the variety. Artichoke varieties usually can be stored for about 6-8 months and your gourmet hardneck varieties for only a maximum of 4 months. Storage methods vary, but as a rule, a good root-cellar environment is ideal, having cool temperatures (50-60 degrees) and relatively high humidity (50-70%). The trimmed and cured bulbs can be placed in netted bags much like onions or layered in trays. Another method is to refrigerate garlic bulbs in papers bags for up to 6-8 months. Still another unique option is to roast bulbs whole in a hot oven, unwrap the cloves and store them immersed in olive oil and refrigerated for up to 12 months in sealed jars. [Ed/ Note: make sure it is acidified.]

If your goal is to have cloves for fall planting in October or November, no special storage techniques are needed outside of having good air circulation and temperature ranges below 85-90 degrees. It is common practice to fall plant your largest cloves while retaining the smaller ones for eating and long-term storage.

Additional Notes

There are many good sources of information on garlic cultivation available in books, on websites and from the many companies that sell seed stock. Because garlic was originally developed in cold-weather climates, many of the sources of seed stock are from areas of the country with much different environments than that of the Midwestern United States. If you can find a local source of seed stock you will have better success and spend less time adapting a certain garlic variety to your specific growing conditions.

Garlic can be used as a companion of other garden plants. It does well when spaced within a strawberry patch. It can make a great row marker for rows of beets or carrots. Garlic will also help herb plants produce more of essential oils if planted within their beds. Roses, leeks, lettuce and tomatoes are also enhanced by having garlic growing near them. Certain perennials such as asparagus however, can be affected adversely by the presence of garlic.

A spray made from garlic is an excellent bug repellent for most insect pests such as cabbage moths and Japanese beetles. Few rodent garden predators will cross a row of garlic to find other delectable plants so it makes for an effective border crop. Garlic has few enemies in the insect world and remains relatively free from the most common garden disease afflictions.

This Planting and Care Guide was written by: *John Adams*, Owner of *Adam's Acre Organically Grown Produce*, Lexington, Illinois, Specializing in garlic seed stock and seasonal fresh produce items.

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OUT OF MY HEAD

Bob Dunkel

RESPONSE ABILITY

I wish that every time a farmer died, six were born to take their place. I wish the wisdom of these elders would be multiplied in the same mathematics as garlic. Yet, it seems not to be so. The trappings of technologies, buttons and screens, all those computing things, steal away our children. It's not as simple as country kids going to city lives or vice versa. Now there seems to be an urgency to communicate, not face to face, but at a distance. They want the Earth to be flat, a leveled playing field with the illusion that people have power. None of us are that different and it's not just about generations, but about values. It puts 'a twist on the saying "out of sight, out of mind".

Banality rules and complacency drools, and no one listens to the fools!

This seed foundation is not new. It was built on dreams and aspirations, with pot luck dinners thick in the waft of sulfur and eyes tearing in laughter and chagrin. We had to learn to extrapolate. Like the onion growers of Vidalia, we grew into the Garlic Seed Foundation of New York State. We had to drive farther and carpool to the middle of the state, or meet at Cornell branches and cooperative extension buildings. We had a vision of uniting garlic farmers, gardeners and cooks and building marketplaces and networking. It was the Eighties then and everything we did was on paper, dirt smudges were a rule. Forgiving the nostalgias of then, we oldsters now saw that a Great flood was nigh. Too many chemicals flooded the fields, fluoride was introduced into municipal water systems, pharmaceuticals and fast foods replaced centuries of herbal wisdom and tried and true farming. We mobilized around an economically insignificant specialty crop, garlic. David and I met at organic meetings and few of us then were specialists or just grew one crop. Horse farmers and small guys still were safe then, for awhile... The insidiousness of chemtrails and atmospheric pollutions were just being recognized. We stood for quality and the control of greed. We understood the flood gates were being opened but we tried to stem the chemical tides and practiced the humble message to protect Our Earth, to remember that the land was for our children and that the circle of Life was sacred!

Thirty years into this process now, I see the Orwellian vision that has supplanted those dreams. Doctors don't bring healing, lawyers don't bring justice and religions do not bring us closer to God. We have forgotten our roots, changing magnetisms in markets have beached our dreams like whales and our migration pattern to sanity is askew. So, I ask you, new members, those fresh and ready for the new world that is always Now — What do we do? Where are we going? We have compromised. We have a website, an electronic and hard copy newsletter, an order form for books and t-shirts and tube mesh and seed for sale is just a click away for you now. Take a look around you, though...When is the last time you added 20 more cloves to a dish to take for potluck and discuss community? It's not just about you, but it has to be about us. No color lines, castes or classes, no boundaries and tariff wars but just us, all of us being part of something larger than ourselves.

So please: send us your designs, your stories of survival or tell us how you farm and why! Help us network in ways we have never done. Open your hearts to the rest of us that we may all grow healthier and wiser, and in a direction of not helplessness but helping one another

remember the wisdom that is almost lost: That we are strands of the web of Life, yet all connected!

Get out of your heads and into your hearts and then use your hands! May the season bring you strength and may your bulbs be strong!

EMERGENCE

We are all planted somewhere
Poked, dropped, dabbled down
Into village or country or town
Immersed awhile into community.
Hopes and dreams of generations
Are condensed into our DNA
Strategies beyond mere survival rage
As a signaling mechanism occurs.
It awakens all of us, to ask
For patience, steadfastness and adjustment
As we settle in for the long nights ahead.
A sensate consciousness responds
With feelers of roots, sentries of silk
Responding to the gravities of food and water
The densities of matter, exudates of worm
The stacked chemistries surround us.
Immensities are built in stillness
Yet transitions are whispered in winds
Long before verticalities are pondered.
The inner self in lucid dream
In all its outer ferocity becomes Mother
Like a baby chick it feeds and finds
A torus, a magic portal has formed
From inside out to outside in, here
The journey of young clove doth begin.
A timeless Time in winter clime
One day is soon forgotten.
A humming frequency then stirs:
The same sound that lifts the fog
From its tomb of mud
Gentles these souls to awaken.
This chorus of Light loosens soils
And causes all Life to arise!
The sap is singing, birds are winging
Nests are nexting, when
A chorus louder than peepers in June
To the garlic sings a tune:
The sky is calling
The sky is calling
Come forth come forth
In tip of green
Unfold your sheath
And live the dream
Emerge, emerge the hour is nigh
To see how high your flag may fly!
'Tis then we've pledged
To do our part
To open our world to them
For that emergence is NOW!

Developing New Integrated Strategies for Controlling White Rot in Garlic

Bo Ming Wu, Mike Davis and Tom Turini

Introduction

White rot caused by *Sclerotium cepivorum* Berk is a significant threat to garlic and onion industry in the United States. The pathogen produces a great number of poppy seed-sized sclerotia, which can survive in soil for many years. Populations of just a few sclerotia per liter soil can potentially cause severe disease and result in crop failure. Once the land has been infested, it is generally considered not suitable for garlic or onion production for up to 40 or more years. One of the most effective methods was fumigation with methyl bromide, but it is not cost effective and has been phased out due to its harmful environmental effects.

Sclerotia of *S. cepivorum* are dormant in the absence of an Allium crop, but a compound from Allium root exudates, diallyl disulfide (DADS), which is also recoverable from petroleum, stimulates them to germinate. The germinated sclerotia will exhaust nutrient reserves and die without an Allium crop. Efforts have been made to apply DADS in the absence of Alliums to reduce soilborne sclerotia (Crowe et al., 2007; Davis et al., 2007). When DADS was applied in commercial fields, it killed over 90% of the sclerotia within three months of treatment (Davis et al., 2007). However, the remaining sclerotia were still sufficient to cause considerable root rot and yield losses in the subsequent Allium crops. Multiple DADS treatments are considered impractical due to high cost, little gain in disease control, and the time it takes for treatment because the optimal treatment period usually occurs only in spring or fall in a year. Therefore, a new method that can be either used alone or integrated with DADS to reduce soilborne sclerotia is needed.

In a previous study conducted in Tulelake, California, flooding significantly reduced viable soilborne sclerotia to no more than 8%, but not low enough to achieve disease control (Crowe et al., 2005). This indicated flooding may be potentially employed as a measure to reduce the sclerotium density in the soil. The inadequate disease control might have been partially due to relatively low soil temperature (59-73.4°F in the summer) since sclerotia of *S. cepivorum* decayed completely within 21 days in moist soil at 80.6 and 86°F (Crowe and Hall, 1980). McLean et al. (2001) also found that sclerotial viability of *S. cepivorum* could be reduced to 10.7% in 28 days at 68°F and to 0% in 16 days at 86°F in laboratory, and when mean soil temperature in commercial fields was increased to 76.3 — 83.8°F using 501.µm thick polythene film, sclerotial viability reduced 46.7% — 91.3% compared with the uncovered control. Solarization was consistently found to reduce the viable inoculum density in the soil and provided good control of white rot of garlic in Spain and Mexico. Given the sunny weather during the summer in the main onion and garlic production areas in the U.S., solarization may increase the soil temperature above 86°F even at 8 inch depth, which is likely to dramatically reduce the inoculum density in the soil, and therefore to provide good control of white rot in garlic and onion in addition to control of other soil borne diseases and weeds.

Biological soil disinfestation (BSD), achieved by incorporating easily decomposable organic materials into irrigated soil that is covered with plastic film, has been used as an alternative of methyl bromide fumigation for controlling plant diseases caused by a wide range of soil borne fungal pathogens, including *Fusarium*, *Verticillium*, *Rhizoctonia*, and the nematodes *Meloidogyne*, and *Pratylenchus* (Melero-Vara et al., 2000; Mattners et al., 2008;

Momma, 2008). The mechanisms of BSD include a reduction of soil pH, deficiency of oxygen, and the accumulation of toxic levels of organic acids produced by anaerobic bacteria. It has been considered a promising environmentally friendly method for reducing inoculum levels of various soil borne plant pathogenic fungi.

The objectives of the study are to quantify the temporal changes in viability of *S. cepivorum* sclerotia under different soil treatments (incorporation of fresh cut oat, solarization, application of DADS, and combinations of them); and to compare the efficacy of the different treatments for controlling white rot in commercial onion and garlic fields.

Materials and Methods

A field trial was conducted in a commercial field infested with sclerotia of *S. cepivorum* at the Central Oregon Agricultural Research Center in Madras, OR. Six treatments were arranged in a randomized complete block design with 4 replications. The 6 treatments were: 1) Untreated control -the field was left fallow during the spring and summer; 2) DADS- DADS was applied at 0.535 gal/A on May 19, irrigated and left fallow during the summer; 3) Solarization: untreated in the spring, tilled, irrigated and then covered with a 2-mil clear polyethylene film since July 30; 4) incorporation of fresh cut oat: untreated in the spring, fresh cut oat was incorporated at 250 lbs fresh weight per plot (5978 lbs dry weight per acre) on July 30 and then left fallow; 5) BSD: untreated in the spring, fresh cut oat was incorporated at 250 lb fresh weight per plot on July 30, and plots then irrigated and covered with a 2-mil clear polyethylene film; and 6) DADS followed by BSD: DADS was applied at 0.535 gal/acre on May 19, fresh cut oat incorporated at 250 lbs per acre on July 30, then plots irrigated and covered with a 2-mil clear polyethylene film. The plot sizes were 20 feet x 20 feet.

An 1000-ml soil sample was collected from the top 6 inch soil in each plot monthly starting immediately before the DADS treatment in the spring, until incorporation of fresh cut oat, starting from then, samples were taken at 2, 4, 8 weeks after treatments start. A 250-ml subsample was drawn from each sample for assay (if the number of sclerotia was lower than 10, then remaining soil would also be assayed). Soil was blended briefly and sclerotia were concentrated from soil by size (sieving through screens) and by density (flotation on a sucrose solution). Remaining soil residue with sclerotia was collected and observed under a binocular microscope. The number of sclerotial bodies remaining intact was counted. If more than 50 intact sclerotia were counted, then 50 sclerotia were randomly selected and tested for viability as per Crowe et al. (1980) on water agar (Bactoagar, Difco). If 50 or fewer sclerotia were counted, then all intact sclerotia were tested for viability. Sclerotia were washed; surface disinfested for 2.5 minutes in 0.5% sodium hypochlorite, rinsed with sterilized water, cracked using forceps, and placed on water agar plates to induce growth. Sclerotia that developed characteristic mycelial growth and clumps of microconidia in the agar were identified as viable sclerotia of *S. cepivorum*. Sclerotia ungerminated in 3 weeks were considered to be dead.

Garlic (cultivar California Early) was planted in two rows per 36 inch bed at spacing of 9 plants per foot row on October 5, 2010 and irrigated as it was needed. Incidence of white rot will be monitored monthly in the spring, and the marketable yield will be determined for each plot at harvest. After harvest and tillage, a 1000-ml soil sample will be collected from the top 6 inch soil in each plot and assayed for the viable inoculum level in the soil as described above.

Results and Discussion

The results revealed that sclerotium density of *S. cepivorum* were not reduced by DADS as expected (Figure 1). The number of viable sclerotium remained high more than two months after DADS application when fresh cut oat was incorporated on July 30. By then, around 95% of sclerotia recovered from soil samples were still viable when tested on water agar. The total number of viable sclerotia ranged from 185 to 435 per liter soil (Figure 1). The possible explanations for the inefficacy of DADS treatment might include less than optimal temperature in early spring, poor penetration of DADS without incorporation, and poor quality of product used.

During solarization period, soil temperature at 2 inch depth was consistently higher in the plots covered with a polyethylene film than that in the plots without coverage, and the difference between them was 11.4°F on the average (Figure 2). Just over two weeks after covering with a polyethylene film, the number of

viable sclerotia as determined by germination on water agar dramatically declined on August 17 in all solarization plots (Figure 1) although no significant decline was detected in total sclerotial density in solarization plots (data not shown). Surprisingly, the total number of viable sclerotia came back up on the next two sampling dates, September 5 and September 30 in solarization plots compared with the numbers on August 17 (Figure 1). By then, no significant difference was detected among different treatments (Figure 1, Table 1). It was also observed that the daily maximum soil temperature declined dramatically starting from late August in solarization plots (Figure 2). It remains unclear whether the low number of viable sclerotia on August 17 was due to false negative result in the germination test. It might also be possible that many sclerotia of *S. cepivorum*, rather than being killed, had turned into dormancy in response to high soil temperature. Subsequently, they became active again after the temperature dropped back into optimal range for the fungus. Further studies are required to confirm this hypothesis and determine whether sclerotia of *S. cepivorum* can recover from a long period of high soil temperature treatment.

[For references and tables for this study please see complete PDF at http://oregonstate.edu/dept/coarc/sites/default/files/publication/11_white_rot_garlic.pdf]

The History of How a Small Commodity Board Helped Save an Industry

by Lisa Lieberman

It can sometimes take an emergency to get a group of people together and fight back against a common problem. And that's exactly what happened to the California onion and garlic industry back in 2005 when several onion and garlic growers decided to band together and fight white rot, which threatened to destroy their industry.

At the time, most onion and garlic growers had abandoned their fields in the Salinas Valley and Santa Clara, due to white rot infestations. Back then, there were no biological or chemical controls for the fungus, which could ruin entire fields and last in the soil for 20 to 30 years. So, the only solution growers could come up with was to simply start switching fields. When they ran out of room in Salinas and Santa Clara, they moved to the San Joaquin Valley. But when white rot showed up in Kings City, they knew they had a problem that wasn't going away.

Lack of interest in pursuing chemical labels

At the time, the problem with the onion and garlic industry was that there were fewer than 50,000 acres of it grown in California, thus making it a "specialty" crop.

"The chemical companies figured, 'Why waste the money on a 50,000- acre or less crop coming up with solutions when there are six million acres in corn or cotton we can be working on?'" says

Bob Ehn, the technical manager for the California Garlic and Onion Research Advisory Board (CGORAB).



From left: Trever Gourd, Lisa Lieberman, Jerod Ianhua and Bob Ehn discuss white rot issues in California

Kevin Lehar, crop production manager at Woolf Farming Co. and current chairman of CGORAB, was one of the first growers to notice white rot in Kings City and realize the danger of it spreading throughout the state.

"There was no way to control white rot at the time," Lehar says. "So, this put me on a quest with other growers to form a marketing board to get the funds we needed to do the research before any more fields got infected with white rot."

So, Lehar did the legwork to get processors, garlic growers and dehydrated onion growers on board. They need to do a referendum through the state to get the advisory board going. The measure passed by a simple majority vote.

"There was almost no opposition to it," Lehar says. "And if you see two farmers agree on the same thing, you should take a picture of it, because it's a historical moment."

Growers assessed themselves .25 cents per cwt on onions and .50 cent per cwt on garlic. Fresh onion growers don't pay the assessment because they aren't affected by white rot in the way the rest of the industry is. But sometimes, they pitch in on certain projects of interest to them.

Ehn hired as technical manager

Once the CGORAB was formed, its members brought on Ehn as technical manager.



Ehn-Herbst-Baron tour photo from 2011. Courtesy photo.

"If you want answers to anything, Bob is the answer man," Lehar says.

Ehn, who works for the Board part time, says, "What makes the program unique is that this is the first time that onion and garlic growers in the history of California have been able to band to work on a common project. Growers are generally independent, and it's hard to get them to organize together. The driving force for this, however, was for the benefit of all of them."

The onion board is one of the newest specialty commodity boards in California. The only more recent specialty board is one for California blueberries.

Ehn, who grew up on a sugarbeet farm in Colorado, was never an onion grower himself. However, as a man of "many hats", he's an expert in ag chemistry and has worked as a consultant for many chemical companies and as a liaison with various government agencies. He has also worked with the League of Food Processors. Since he got on board with CGORAB, he's helped register and get Section 18s on several chemicals, including Folicur, which has put a huge dent in white rot.

"When we got together as a group, we started coming up with both chemical controls and cultural and sanitation practices to slow down the advance of some of these diseases," Lehar says.

Folicur, in particular, was especially important.

"We started with it in the lab, and then did some small plots. Now, it's ready to go to the field level," says Lehar about the product which was registered two years ago.

Over the past eight years, the advisory board has enlisted the help of UC researchers and other scientists who have helped them battle ongoing problems. However, since they are such a small agency with limited funds, they do a lot of their own leg work and write up most of their own manuals and plans.

Significant progress made

Right now, growers seem to have a relatively good handle on garlic rot, but the advisory board is still working on finding alternate materials for garlic rust, thrips and weeds. The CGORAB's most recent accomplishment was the registration of Touch Down, an herbicide that works well on weeds like Bindweed and Morning Glory.

"This is really huge for us because dehydrated onions are harvested mechanically and Bindweed and Morning Glory grow like vines and gum up the equipment. They cause a lot of problems," Lehar says.

The next problem the Board is working on is looking at possible treatments for seed corn maggots, which have started to become a problem in the Tule Lake growing area.

"When you come out of small grains and come back with onions and garlic, it's a perfect haven for seed corn maggot," Lehar says.

Lehar and Ehn are confident they'll be able to find solutions to all of these problems. If they hadn't formed the Board in 2005, the dehydrated onion and garlic industry might have been dead in the water by now, especially since Chinese imports were ready to take over.

But because of the Board's efforts, the California Allium is pretty stable now due to the quality of garlic and onions in California, especially those grown on the west side of Fresno, which is superior to most growing areas in the world, Ehn says.

"We have soils formed by sediment from an old lake bed that make it really good for Allium crops," Ehn said.

Chinese garlic, on the other hand, is high in concentration of heavy metals, and, according to Ehn, has high arsenic levels.

"The (Chinese garlic) is below health standards, but if they get their infrastructure together, they could become a fierce competitor," Ehn says.

The future for the California Allium industry looks bright, says Ehn—most-ly because of the research it's done to stem various pests and diseases—but also because of the synergistic alliances its created with universities, chemical companies and government agencies.

Right now, the Board represents 44,000 acres of dehydrated onions and 22,000 acres of garlic. Because it is a relatively small board, Ehn believes the group was able to form a good relationship with the Federal EPA program and the USDA

Agriculture Research Service.

"The regulators are not bad people. They're sometimes just misinformed, and they're usually eager to ask us a lot of questions," Ehn says.

Developing a good relationship with government agencies wasn't the original purpose of the advisory board, but it may have helped pave the way to deal with the government for future issues that pop up along the way.

Overall, Lehar refers to the California Allium industry as a relatively small group that's been able to accomplish a lot with a small amount of resources.

"We've worked with university researchers in Canada and helped fund some research with a breeder in New Zealand to breed resistance against white rot. We also work with researchers from the University of Oregon, Washington State University and Colorado State University. We're a small player, but we've been able to accomplish a lot," Lehar says.



Involved in white research and issues in California's onion and garlic industry are, from left, Jerod Ianhua, Trevor Gourd, Fred Crowe

Shallot: an Onion With Subtlety

Shallots are like lingerie: a graceful and necessary underpinning, more appreciated in France than in America, and increasingly showing up in full view.

The shallot, a member of the onion family that can be peeled, sliced and chopped without driving the cook to tears, has long been a crucial component in classic French sauces like bearnaise, Bercy, bordelaise, beurre blanc, mignonnette, vinaigrette and marchand de vin.

Daniel Boulud, the chef and an owner of Daniel in Manhattan and a native of Lyon, France, has noticed the change in attitude toward shallots among his American colleagues. "Maybe it's because more of them are doing bistro food," he says. "But I also think they have a better understanding of the subtleties and refinements of cooking. A shallot is a step above an onion, and it will sustain its flavor better in a reduction."

Shallots "round out a dish," says Kevin Penner, another New York chef who uses them in a mussel risotto and as a confit with a buffalo fillet. "They add that onion component that defines Western cooking, but with more sweetness and less acidity than onions," he says.

Shallots were once as scarce as fresh ginger in American markets. In the first volume of "Mastering the Art of French Cooking," published in 1964, Julia Child said that the white part of scallions could be used as a substitute for shallots, or that they could even be left out entirely. But as anyone who has cooked with shallots knows, omitting their assertively sweet pungency diminishes a dish.

Most shallots sold in the United States are imported from France, where they have been cultivated since Charlemagne's time. Brittany, which grows 75 percent of France's more than 40,000 tons each year, is the world's largest producer. Exports to America from France have increased from none in 1980 to 4,525 tons last year, according to the French National Center for Statistical Research, a government agency.

Though there are dozens of kinds of shallots, the ones most frequently sold in America have tawny skins surrounding a pale mauve bulb. Lately, markets have tended to offer larger and fresher ones, with a single bulb instead of a cluster, making them much easier to peel. Shallots are often pear-shaped or rounded, but some from France are slender ovals.

They can also be pale gold, like the organic ones grown in upstate New York. *Echalotes grises*, prized in France, have a particularly rich flavor and a tough grayish skin. And big, sweet lavender oval "torpedo" shallots, a cross between shallots and onions, are imported from Belgium.

Top 10 garlic producers in 2010		
Country	Production (tonnes)	Footnote
China	13,664,069	Im
India	833,970	
South Korea	271,560	
Egypt	244,626	
Russia	213,480	
Burma	185,900	Im
Ethiopia	180,300	Im
United States	169,510	
Bangladesh	164,392	
Ukraine	157,400	
World	17,674,893	A

* = Unofficial figure | [] = Official data | A = May include official, semi-official or estimated data
F = FAO estimate | Im = FAO data based on imputation methodology | M = Data not available

Source: UN Food & Agriculture Organisation (FAO)¹⁹¹

Garlic - traditional medicine

Garlic is one of the oldest plants to be widely used as a medicine. In most corners of the world it is regarded as an aphrodisiac. Since ancient times the medical qualities have been recognized and feature widely in South Asian traditional remedies.

Garlic remedies



A medicine seller with his wares.

The bulbs are the most frequently used parts of the plant. In India they are prepared in several ways including extracting the juice or pulping the bulb to a paste. This has been taken to relieve problems such as coughs and fevers, or applied externally to prevent the greying of hairs and to improve skin conditions such as eczema and scabies. It has even been applied to the noses of hysterical girls to calm them down!

Warmed garlic juice, or a mixture made with oil and the boiled bulb has been dropped into the ear to relieve earache and deafness. In Ayurvedic and Siddha medicine garlic juice has been used to alleviate sinus problems. In Unani medicine, an extract is prepared from the dried bulb which is inhaled to promote abortion or taken to regulate menstruation. Unani physicians also use garlic to treat paralysis, forgetfulness, tremor, colic pains, internal ulcers and fevers.

Folk medicine

Extracts of the bulbs have been widely used in folk medicine. Whooping cough in children has been treated by administering a drink made with a hot water extract of the dried bulb mixed with honey, or by wearing a necklace of bulbs. Hot water extracts are also taken to kill intestinal worms. In Pakistan an extract is traditionally taken orally to settle the stomach, treat coughs and reduce fever.

Garlic bulbs have sometimes been combined with other plants to make medicines. Mixed with the leaves of the ivy gourd (*Caccinia grandis*) it is used as a treatment for rabies. An infusion of the entire plant has been combined with sugar and taken to treat fevers. Garlic has also been used in traditional

Indian veterinary medicine to treat tetanus and inflammatory disorders of the lungs.

Garlic around the world

Garlic also features in traditional medicine in other parts of the world. In Nepal, East Asia and the Middle East, it has been used to treat all manner of illnesses including fevers, diabetes, rheumatism, intestinal worms, colic, flatulence, dysentery, liver disorders, tuberculosis, facial paralysis, high blood pressure and bronchitis.

This information is provided for general interest only. It is not intended as guidance for medicinal use. Further information on using herbal medicines is available.

Garlic - other uses

Garlic is sometimes grown as a pest repelling plant by gardeners. Some companies have taken its pest-repelling properties a step further by isolating active compounds and marketing them in a spray-on formula.

Protection for plants

Garlic is often grown among flowers or root vegetables as a companion plant to protect other plants from being attacked by pests. In some small garden plots, rows of garlic are planted along the perimeter to act as a deterrent barrier.

Garlic extracts have also been used as deterrents. In Europe these extracts are freeze dried and marketed as garlic pellets. The pellets are dissolved in water and then sprayed onto plants to protect them from being attached by greenfly or caterpillars. A disadvantage of these extracts is that the active sulphurous compounds have a pungent smell and this smell can mask the perfume of roses and other aromatic plants.



Garlic Smuggling – the scourge of Europe

In Europe hackers, terrorists, pedophiles and demonstrators demanding banksters to be jailed now have competition as to what is the most heinous criminal entity in society.

The growing problem of Garlic smuggling has been ignored far too long, and the police are way undermanned to be able to handle such foes.

Evil doers of garlic smuggling have been a problem since early antiquity, but have been largely ignored, presumably to enable Gallic frog nibbling.

Victims of this criminal activity have been littering our countryside for too long and we all know of the breath of these addicts. The death penalty is to kind!

I hereby demand that the Swedish Government and the European Union take immediate action!



The new heroin

Health Benefits of Garlic Anti-Cancer Anti-infection, Detoxify, and More

by Mike Barrett

April 26th, 2012, Updated 02/20/2013, extract only....



Garlic for Detoxification

Another one of the many health benefits of garlic, this food may also be used to detoxify — an extremely important method everyone should be doing to cleanse the body of toxins. While the benefits of garlic for liver health and beyond are many, one reason for its superior effects has to do with the fact that garlic contains numerous sulfur-containing compounds that are known to activate the liver enzymes responsible for expelling toxins from the body. Another lies in the presence of both allicin and selenium, two important nutrients that play an integral role in the protection of the liver from damage.

It is also important to note that many cancers are thought to be caused by damage to DNA, which could be the result of exposure to environmental toxins. One study conducted at the Fred Hutchinson Cancer Research Center found that eating a teaspoon of fresh garlic and a half cup of onions per day could remove toxins in the blood cells due to an increased production of a key toxin-removing enzyme.

These are only some of the health benefits of garlic.

Other Health Benefits of Garlic

- **Toothache** — Among many home remedies for toothache, the use of garlic has been passed down for years to treat this issue; the antibiotic compound called allicin is what gives garlic this ability. When garlic is crushed, this compound is released, helping to slow bacterial activity upon application and ingestion. Try applying a crushed garlic clove or garlic powder to the area. It may burn, but the pain from the toothache could vanish within minutes, although it could take hours. Repeat this over a few days, and you all should be well.

- **Repel mosquitoes** — Although not conclusive, there is a long history of using garlic to get rid of many insects. Garlic has a reputation for protecting people from mosquito bites, specifically.
- **Warts** - Each night before bed, crush up a clove of garlic, rub it on the wart, and apply a bandage. Additionally, cover the wart with juice from garlic twice a day.
- **Earache** - Mix some sesame oil with a garlic clove and warm the mixture up in a pan. Afterwards, use it as ear drops. It is recommended that you allow the mixture to sit in the ear for 10 minutes or longer.
- **Cough** — Boiling cloves of garlic and drinking it like tea will not only make it easier to breathe, but it will also help to alleviate itchiness which could cause you to cough continuously. Check out other home remedies for cough here.
- **Stuffy nose or nasal congestion** — Adding to garlic benefits, this spice is one ingredient in one of the most popular home remedies for nasal congestion: tomato tea. Tomato tea is by far the most effective method as reported by peers on Earthclinic. It's hot and spicy, providing steam and pepper to clear your sinuses, as well as a wallop of vitamin C and a boost to the immune system. Combine the following ingredients in a food processor and heat over a stove until steaming.
 - 1 cup tomato juice
 - 1 tsp fresh garlic
 - 1½ tsp of hot sauce
 - 1 tsp lemon juice
 - Pinch of sea or celery salt

Fantastic Mr Fox mugs man for garlic bread

On March 9, 2012, in *Animals & Nature, Crimes & Criminals*, by Weird



A man in England related how he was shocked when a fox ran off with his garlic bread as he walked home with groceries.

Seb Baker, 29, said he was walking home from the Tesco store in Orpington on Monday evening. He was then approached by a fox.

"I turned down an alley, but when I looked round I saw it running towards me. I stopped, thinking it would run off. But the fox started circling me and then jumped up, trying to grab my shopping bag," Baker said.

"I had expected it to run away. I thought a fox would be scared of a 15-stone (210-pound) man."

The fox would not stop trying to take his shopping bags.

"Eventually I opened the bag and gave it the garlic loaf He grabbed it and ran off," Baker said.

Wildlife expert John Bryant said fox muggings are uncommon.

"Foxes are getting bolder but they are not interested in humans, they are concentrated on food," he said.

"If a fox is jumping at your shopping bag you need to shout at it and chase it off, not just give it the food. The best thing to use is a water pistol."

Bigfoot, Garlic, and Marshmallows

Cryptomundo.com, July 27, 2010

In line with my trip to Tennessee, here's another stroll down memory lane in regard to some intriguing history about a tale from that state involving alleged Bigfoot encounters, garlic, marshmallows, and more.

The following article was shared with me by Tulsa Bigfoot researcher Matt Knapp. It overviews one editor's reaction to a couple television documentaries he saw in October three years ago.



Remember, the opinions expressed in this review of these recent screenings are solely those of the following author and do not necessarily reflect that of Cryptomundo and this individual blogger.

A Tennessee grandfather teaches "Fox" to cook marshmallows over fire.



"I was going to let the Bigfoot thing alone for awhile. But two programs were on television [on October 23, 2007] at the same time that gave me more amusement than the comedy channel.

These Bigfoot stories came from Texas, Tennessee, Florida, Oklahoma and the Pacific Northwest. "They're everywhere! They're everywhere!"

My biggest laughter comes from the mountains of East Tennessee. This particular Bigfoot is a friendly sort, and one mountain woman claims to have been raised alongside a family of Bigfoot. She described how one came knocking on her door and asked to borrow some garlic. This Bigfoot spoke English. She said she thought the garlic was to help keep away ticks. She said he said "thank you" in a very deep voice. But I'm thinking it might have been the baritone singer for the Oak Ridge Boys, and her natural cures for arthritis were kicking in.

Then she went on to describe how she had watched this family of Bigfoot chase down a deer and butcher it. This commentary had a Bigfoot specialist from Russia on hand to compare notes with her. He re-enacted how the Bigfoot caught and killed the deer. Very fittingly, the Russian's name was Igor.

Given the vernacular of this account, I'm surprised this Bigfoot didn't also play the banjo.

This woman said she realized that a lot of people doubted her, especially when she said this Bigfoot spoke English. Of course my wife asked me what would I expect an American Bigfoot to

speak ... French?

Well, this mountain woman is right about the doubt. I was cutting her some slack because of the ointments she probably uses, but that ended when she said Bigfoot asked to borrow some garlic. And anyway, I would think it was for cholesterol, not ticks.

Then down in the Everglades, these fellows were searching for the "Skunk Ape." This apparently is Bigfoot's third cousin.

The boys looking for the "Skunk Ape" in Florida say they want to verify the creature's existence so they can help protect its environment. Such a noble cause.

But in Texas, the Bigfoot hunters are taking a different approach. Their spokesman said he wanted to kill a Bigfoot so he could prove to the world that they exist. And then he would seek to preserve its habitat. So instead of cameras, they — including at least one woman — go into the bush with pump shotguns. Good thing they are not hunting for one in Tennessee. I would guess that a Bigfoot that can speak English and borrow garlic can also return fire.

Then up in Oklahoma, Bigfoot searchers were gathering at a place called "Monster Central." Now get this, Monster Central is only 60 acres. That's about the size of a small amusement park — all pun intended. Now if this creature can be stealth in that small of an area, the U.S. military should be studying its techniques. But then it could be that 60 acres is all that is owned by the guy promoting monsters. Ya think?

I have a suggestion for these people. Pool all the money you are spending on beer and marshmallows for these outings and rent some thermal imaging equipment. Surely in a 60-acre patch, you can apply this technology to your advantage. We have guys who can find a golf ball in 60 acres of rough with just two beers.

One real scientist was interviewed in this entire comedy routine. He managed to keep a straight face long enough to say that there is no scientific data to support any of these claims. I think the reason he kept from rolling in the floor laughing was because no one specifically asked him about the English-speaking Bigfoot that asked to borrow some garlic.

My offer still stands, \$50 for anyone who can prove Bigfoot. Better hurry, you know the value of the dollar. by Dwain Walden, *The Moultrie Observer*, 24 October 2007.

Photographic recreation of Janice pulling out hair from Fox's hand when giving him some garlic, March 2004. This montage was made using a photograph of Janice in the same dress and position as then. After the first attempt of drawing this meeting, Janice corrected it several times until it achieved similarity to how she remembered it.



Benefits of Garlic

By Tara Parker-Pope



Garlic has long been touted as a health booster, but it's never been clear why the herb might be good for you. Now new research is beginning to unlock the secrets of the odoriferous bulb.

In a study published today in the Proceedings of the National Academy of Sciences, researchers show that eating garlic appears to boost our natural supply of hydrogen sulfide. Hydrogen sulfide is actually poisonous at high concentrations — it's the same noxious byproduct of oil refining that smells like rotten eggs. But the body makes its own supply of the stuff, which acts as an antioxidant and transmits cellular signals that relax blood vessels and increase blood flow.

In the latest study, performed at the University of Alabama at Birmingham, researchers extracted juice from supermarket garlic and added small amounts to human red blood cells. The cells immediately began emitting hydrogen sulfide, the scientists found.

The power to boost hydrogen sulfide production may help explain why a garlic-rich diet appears to protect against various cancers, including breast, prostate and colon cancer, say the study authors. Higher hydrogen sulfide might also protect the heart, according to other experts. Although garlic has not consistently been shown to lower cholesterol levels, researchers at Albert Einstein College of Medicine earlier this year found that injecting hydrogen sulfide into mice almost completely prevented the damage to heart muscle caused by a heart attack.

"People have known garlic was important and has health benefits for centuries," said Dr. David W. Kraus, associate professor of environmental science and biology at the University of Alabama. "Even the Greeks would feed garlic to their athletes before they competed in the Olympic games."

Now, the downside. The concentration of garlic extract used in the latest study was equivalent to an adult eating about two medium-sized cloves per day. In such countries as Italy, Korea and China, where a garlic-rich diet seems to be protective against disease, per capita consumption is as high as eight to 12 cloves per day.

While that may sound like a lot of garlic, Dr. Kraus noted that increasing your consumption to five or more cloves a day isn't hard if you use it every time you cook. Dr. Kraus also makes a habit of snacking on garlicky dishes like hummus with vegetables.

Many home chefs mistakenly cook garlic immediately after crushing or chopping it, added Dr. Kraus. To maximize the health benefits, you should crush the garlic at room temperature and allow it to sit for about 15 minutes. That triggers an enzyme reaction that boosts the healthy compounds in garlic. Garlic can cause indigestion, but for many, the bigger concern is that it can make your breath and sweat smell like...garlic. While individual reactions to garlic vary, eating fennel seeds like those served at Indian restaurants helps to neutralize the smell. Garlic-powder pills claim to solve the problem, but the data on these supplements has been mixed. It's still not clear if the beneficial compounds found in garlic remain potent once it's been processed into a pill.

A Strange Japanese Jesus Story

By James Donahue

Because of books and films on the subject, most people by now are aware of the story of a mythical link between Mary Magdalene and Jesus in the area of Rennes-le-Chateau, France.

But there is another story, told by the people of Shingo, Japan, that strangely links Jesus with that community. The people there not only believe this story, they have a complete legend and even grave markers to indicate that Jesus and his family lived out their lives there 2000 years ago.

The Christian story from the New Testament claims that Jesus was crucified at Calvary, rose from the dead three days later, and thus became a blood sacrifice to cover the sins of mankind.

But the Shingo story is very different. It claims that Jesus escaped the clutches of the Romans and fled to Japan where he lived a life in exile in this northern mountain village. There he married a woman called Miyuko, and they became parents of three daughters. Jesus died at the age of 106.

Two wooden crosses outside the village mark the graves of Jesus and his brother, Isukuri. There is even a museum that remembers Jesus as a garlic farmer known to the Japanese as Daitenku Taro Jurai.

Isukuri, the people say, was crucified in Jerusalem instead of Jesus. When Jesus came to Shingo he brought with him the severed ear of his brother. Apparently it is only the ear that lies buried in that ancient tomb beside Jesus.

In the museum is a scroll, said to be a copy of an original document that was the last will and testament of Jesus. The original document, first discovered in the hands of a priest in 1935, was reportedly destroyed during the war. But a copy exists and is contained in a glass case.

A sign beside the grave explains that when Jesus was 21, he came to Japan to study the divinity of the masters there. He remained there for 12 years, living somewhere near Mount Fuji, and became fluent in Japanese. When he was 33, Jesus returned to Judea and began his ministry there.

The community was called Harai when Jesus arrived. Many locals say it was a Hebrew name. They also claim a song, or mantra, recited by the people for generations, also sounds more Hebrew than something spoken in the Japanese dialect. It goes: "Na-Nee-Ya-Do-Ya-Ra."

A news clip about the community cites villager Yoshiteru Ogasaware as saying that there are other strange and unexplained customs in Shingo that may link the community to Hebrew origins.

For example, there is a strange blessing of the children with a black sign of the cross on their foreheads, even though the people are not Christians. Also many villagers wrapped newborn babies in cloth marked by the Star of David.

"Every now and then a blue-eyed baby is born and some people say that these children are the descendants" of Jesus, Ogasaware said. "Then we heard about these ancient scrolls that said Jesus had come to Japan, and we put everything together."

Apparently Jesus grew garlic and gave up his ministry when he arrived in Japan.

Some say that if the real tomb of Jesus is a marked grave in Japan, the story could be proven if the bones could be exhumed. But Japanese tradition forbids this.

Thus the Japanese people of Shingo have their legend, complete with graves and a scroll that neither proves nor disproves their story.

While Ogasaware says he does not believe the Jesus story, he notes that even before the scroll was found, the ancient tomb was said to contain someone very important, "although nobody knew who."

20 UNUSUAL USES FOR GARLIC

ecosalon.com



Pungent and powerful, garlic has dozens of health and household uses.

Chew up a raw clove of garlic and you might exhale noxious, eye-watering clouds of stink all day, but you'll also repel mosquitoes (and vampires), increase your immunity, heal cold sores, expel parasites and maybe even get in the mood. Garlic is a broad-spectrum antibiotic, killing bacteria, fungus, viruses and mold, so it's an important ally for natural health. Check out these 20 unusual and sometimes strange alternative uses for garlic.

Acne

Slice open a clove of raw, fresh garlic and apply it to breakouts as a home remedy for acne. Your skin won't smell terribly good, but the antibacterial properties of garlic will help lessen the appearance of acne, even those deep acne cysts that can otherwise be difficult to treat.

Pesticide

Whiteflies, aphids, cabbage loopers and squash bugs. All of these creepy-crawlies and more can totally decimate the beautiful organic garden you've been tending all season. Ward them off with an all-natural garlic pesticide spray. Mince three garlic cloves and let them sit in two tablespoons of mineral oil for 24 hours. Then strain out the garlic and add the oil, along with a teaspoon of liquid dish soap, to a pint of water in a spray bottle. Spray on infested plants.

Cold sore treatment

These unsightly lesions always seem to pop up at the most inopportune times, like the morning before a big date. Raw garlic may work just as well as commercial medical treatments, though the acidity may cause discomfort at first. Cut a garlic clove in half and place it directly on the cold sore for 10 minutes, several times a day. Garlic supplements in capsule form may also speed up the healing process.

Mosquito repellent

If you don't mind smelling like Italian dressing, garlic can work wonders in warding off pesky mosquitoes without the use of DEET and other potentially toxic chemicals. Try this oddball garlic mosquito spray: let a few minced cloves of garlic infuse an ounce of mineral oil for 24 hours, strain, and mix the garlic-scented oil with 2 cups of water and 1 teaspoon of freshly squeezed lemon juice. Strain again if necessary and pour into a spray bottle.

Glass repair

Did you know that garlic juice is a natural adhesive? While it's not up to any major jobs, it can be used to fill in hairline cracks in glass and hold them together. Crush a clove of garlic and rub its sticky, viscous juice into the cracks and wipe away the excess.

Weight Loss Aid

Even though its potent flavor may make you want to eat a lot of it, garlic actually has weight loss properties, according to some research. Compounds found in garlic send your brain signals of satiety, which will actually help you to feel full faster. It also boosts metabolic function helping you to burn more calories as well.

Athlete's foot

Garlic is a potent natural antifungal, making it ideal for treating fungal infections like irritating and itchy athlete's foot. Add a few cloves of crushed garlic to warm water in a foot bath and soak the affected foot for 30 minutes.

Ear infections

A common folk remedy for centuries, garlic can indeed kill the bacteria that cause ear infections. Of course, this doesn't mean you should shove a clove of garlic into your ear and hope for the best. Crush a clove of garlic with a press and place it in a teaspoon of hot olive oil for five minutes. Strain, allow to cool and drip a few drops at a time into your ear canal. You can also purchase garlic oil made for this purpose at natural health food stores.



Splinter removal

Splinters suck. They're painful to remove, and sometimes they slice too far into the skin to pull out. Instead of waiting for it to come out on its own, try this odd trick: place a thin slice over the splinter and hold on with a bandage. The garlic should help the splinter work its way out of the skin within hours.

Skin cleanser

It's not exactly common, but some women swear by using garlic as a facial cleanser to dry out acne and tighten and exfoliate the skin. It will definitely burn, so take care if you have any open wounds. Make a paste of finely minced garlic, olive oil, facial cleanser and sugar; massage into skin in circular motions, then rinse.

Gas prevention

High in sulfur, garlic can be the culprit for uncomfortable stomach-distending gas for some people, but for others, it can reportedly ease it. The trick may be consuming it on a regular basis in order to maintain intestinal health. Garlic kills harmful intestinal bacteria and promotes the growth of beneficial flora, making digestion much smoother.

Yeast infections

At the first sign of a yeast infection, many women around the world turn to a rather unusual natural remedy: raw, peeled garlic cloves (not cut), typically tied in a strip of cheesecloth and inserted with a tampon applicator. Garlic's antifungal properties go to work on the yeast, supposedly keeping the infection at bay.

Fish bait

Garlic's strong smell may repel insects, but it has the opposite effect on fish. Yep, that's right, garlic cloves are recommended by some fisherman as an unusual bait that can attract catfish, carp, trout, bass and other species. Marshmallows or dough balls made from a mixture of crackers and cat food are coated with crushed or powdered garlic and placed on a hook to lure the fish with its scent.

Psoriasis relief

The persistent tightness and itching of psoriasis could be eased or even prevented by garlic's anti-inflammatory properties. Active compounds in garlic interact with arachidonic acid, an omega fatty acid in the skin linked to psoriasis. Garlic oil may be rubbed directly on affected areas once or twice per day.

Cough syrup

Ease inflammation in the throat and clear up excess mucus by using garlic as cough syrup. Try steeping raw, minced garlic in hot water, straining it after five minutes and drinking the liquid as tea; you can add ginger and honey to make it more palatable.



Mole removal

This method is almost certainly not recommended by dermatologists, and mole removal is best left to medical professionals, especially since skin doctors can tell upon excision whether the mole shows signs of malignancy. However, many people choose to go it alone, and garlic oil —applied several times per day and covered with a bandage — is an oft-repeated DIY route.

Cold banisher

Can garlic cure and prevent colds naturally? It's been in use for this purpose for centuries, and there's a good reason for that.

Researchers believe that allicin, the main biologically active component of garlic, could block enzymes that may impede bacterial and viral infections. Eat three to four cloves of garlic per day, preferably raw and crushed, adding them to soups, stews, pasta sauces and salad dressings.



Road de-icer

Garlic is among the oddball solutions that many towns across the nation have been dreaming up to de-ice roads in winter. Ankeny, Iowa smelled awfully savory in 2008 when winter transportation crews spread garlic salt on the streets in advance of snowstorms. The salt, apparently unfit for human consumption, was donated by a local spice producer.

Hair loss help

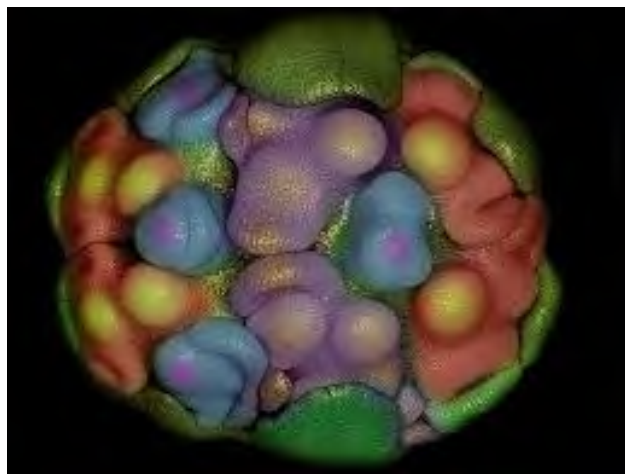
Whether you've over-dyed your hair to the point of constant shedding or you're just going bald, garlic may be worth a shot before you resort to more drastic measures (or just buy a lot of hats.) Some people believe that massaging the scalp with garlic oil stimulates hair growth.

Parasite killer

Many alternative health practitioners advise using raw garlic to expel intestinal parasites. Recommended as part of a cleansing diet that also includes raw honey, lemon juice, pumpkin seeds, carrots and beets, garlic consumed in quantities of about three cloves per day may help clear nasty organisms out of the digestive tract.

Aphrodisiac

Does garlic turn you on? You may not like the smell of it on someone else's breath, but it may incite lust once it makes its way into your stomach. Garlic has been used as an aphrodisiac since ancient times, and modern medical knowledge may have an explanation: it aids circulation, pumping blood to your extremities. This effect might even increase men's endurance.



Floral Primordia of Garlic

Garlic Becoming Good Science



The surprising direct result from all this is that garlic does attack bacteria, viruses, protozoa and fungus.

Thus it is strongly indicated for any clearly infectious ailment assaulting the body. It is probably not sufficient although that needs to be thoroughly investigated. A large dose of garlic is a daunting option but it surely needs to be better understood.

Can you imagine a bowl of strong chicken soup with several roasted garlic cloves cooked into it with a touch of miso perhaps? Perhaps the key to chicken soup was always the garlic.

The good news is that the direct benefits of using garlic are no longer lacking scientific support at all.

Medical researchers suggest that garlic may prevent the common cold

(Wednesday, August 08, 2012 by: Donna Earnest Prayer *NaturalNews*). The U.S. National Library of Medicine released a review in March 2012 of all available clinical trials involving garlic's effectiveness for the common cold. The intent was to explore clinical evidence for the popular belief that garlic "is good for" colds in humans.

Garlic has been scientifically proven to possess anti-microbial properties

Traditional, anecdotal, and even clinical research supports the fact that the allicin contained in garlic has both anti-bacterial and antiviral properties. The medical journal *Applied Microbiology and Biotechnology* published a clinical study in 2001 stating that garlic has "a wide spectrum of actions."

Garlic kills bacteria, viruses, protozoa, and fungus.

The researchers commented that because of the popularity of natural and herbal treatments for a variety of illnesses and conditions, interest in medicinal plants is now at the forefront of investigation in the field of pharmacology.

Garlic has positive effects on the immune and cardiovascular systems

In addition to its anti-microbial properties garlic has positive effects on the immune and cardiovascular systems. The *Journal of Nutrition* published a 2006 critical review which discussed the effectiveness of garlic in the treatment of cardiovascular disease. The medical journal stated that scientists have established that cardiovascular disease is helped by the consumption of garlic on a regular basis.

Garlic lowers "bad" cholesterol levels, lowers blood pressure, and provides antioxidants.

Of particular interest is the comment made by the authors in the study regarding mixed reviews in some clinical trials involving garlic. The researchers noted that many of the studies were conducted improperly, affecting outcomes. Conflicting evidence was due to several factors: a variety of garlic preparations were used, there may have been mistakes with subject (patient) selection, the study was not properly randomized, or the duration of the trial was too short.

From Wikipedia – Garlic Storage

Domestically, garlic is stored warm [above 18 °C (64 °F)] and dry to keep it dormant (lest it sprout). It is traditionally hung; softneck varieties are often braided in strands called plaits or *grappes*. Peeled cloves may be stored in wine or vinegar in the refrigerator.^[24] Commercially, garlic is stored at 0 °C (32 °F), in a dry, low-humidity environment.^{E²⁵} Garlic will keep longer if the tops remain attached.¹⁶¹



Garlic is often kept in oil to produce flavored oil; however, the practice requires measures to be taken to prevent the garlic from spoiling. Untreated garlic kept in oil can support the growth of *Clostridium botulinum* which causes the deadly botulism illness; refrigeration will not assure the safety of garlic kept in oil. To reduce this risk, the oil should be refrigerated and used within one week. According to wikihow, the garlic immersed in oil should be stored in the freezer and not the fridge.^[26]

Commercially prepared oils are widely available. Manufacturers add acids and/or other chemicals to eliminate the risk of botulism in their products.^{t²⁷} Two outbreaks of botulism related to garlic stored in oil have been reported.^{[28]E²⁹}

In 1961, Chester Lilley from Kent in England was the first person to transform garlic into a pill form for storage.^[citation needed] Although not widely accepted at the time for culinary uses, a capsulate solution for both the storage and simple dosing of garlic has become commonplace.



Historical use

Garlic has been used as both food and medicine in many cultures for thousands of years, dating at least as far back as when the Giza pyramids were built. Garlic is still grown in Egypt, but the Syrian variety is the kind most esteemed now (see Rawlinson's *Herodotus*, 2.125).

Hippocrates, Galen, Pliny the Elder, and Dioscorides all mention the use of garlic for many conditions, including parasites, respiratory problems, poor digestion, and low energy. Its use in China dates back to 2000 BCE.^[1]

It was consumed by ancient Greek and Roman soldiers, sailors, and rural classes (Virgil, *Eclogues* ii. 11), and, according to Pliny the Elder (*Natural History* xix. 32), by the African peasantry. Galen eulogizes it as the "rustic's theriac" (cure-all) (see F. Adams' *Paulus Aegineta*, p. 99), and Alexander Neckam, a writer of the 12th century (see Wright's edition of his works, p. 473, 1863), recommends it as a palliative for the heat of the sun in field labor.

In the account of Korea's establishment as a nation, a tiger and a bear prayed to Hwanung that they may become human. Upon hearing their prayers, Hwanung gave them 20 cloves of garlic and a bundle of mugwort, ordering them to eat only this sacred food and remain out of the sunlight for 100 days. The tiger gave up after about twenty days and left the cave. However, the bear remained and was transformed into a woman.



Who, What, Why: Why do criminals smuggle garlic?

BBC News Magazine, 11 January 2013 Last updated at 19:24 ET (Thanks to Chris Kudma)

Sweden has issued international arrest warrants for two Britons suspected of illegally importing 10m euros (£8m) worth of garlic into the EU via Norway. Why would criminals do that?

Swedish state prosecutors claim to have cracked one of Europe's more seemingly strange, if lucrative, smuggling rings.

They say two British men are believed to have made millions of euros smuggling Chinese garlic from Norway into Sweden.

The EU imposes a 9.6% duty on imported foreign garlic.

The supplies are said to have been shipped to Norway - a non-EU state where no garlic import tax is applied - and then smuggled into neighbouring Sweden and the rest of the EU by lorry, thus avoiding EU import duties.

It's not the first time garlic smuggling has made the headlines.

In December 2012, a man from west London was sentenced to six years in jail for smuggling garlic from China into the UK.

Murugasan Natarajan, and his assistant Lakshmi Suresh, were convicted of dodging 2.5m euros (£2m) in import duty. They had told officials the garlic was fresh ginger, which is untaxed.

In March 2012, the head of Ireland's largest fruit and vegetable producer was jailed for six years over a 1.6m euros (£1.3m) scam involving the importation of garlic.

Paul Begley, 46, of Rathcoole, County Dublin, avoided paying customs duty on more than 1,000 tonnes of garlic from China by having the shipment labelled as apples.

So when did garlic start attracting criminals?

Pavel Borkovec, from the European Anti-Fraud Office (OLAF), said "fraud and irregularities" with Chinese fresh garlic have occurred since the 1990s.

But he says the real financial implications for the EU budget started in 2001, when by a 9.6% customs duty on foreign garlic - with an additional duty of 1,200 euros per tonne was introduced.

It was meant to prevent garlic growers in EU member states from being driven out of business by Chinese farmers, who have captured large swathes of the global market by producing crops at knock down prices.

This additional duty of 1,200 euros per tonne is not applicable to imports within an annual quota of 58,870 tonnes worldwide (33,700 tonnes for China).

China produced 18,560,000 tonnes of garlic in 2010, accounting for about 80% of the world's output, according to the United Nations' Food and Agriculture Organisation.

Garlic in the EU is mainly produced in Spain, but also in Italy, France, Poland, Hungary, Romania and Bulgaria.

Borkovec says smuggling can cost the EU a "significant" amount.

"One container of fresh garlic represents a potential risk of about 30,000 euros (£24,700) in terms of customs duties," he says.

The "modus operandi" of garlic smuggling from China has developed over years, he says.

"Origin fraud" was a favourite for some time. Chinese garlic would be declared, at import, as originating in countries with whom the EU has preferential arrangements in place, where normal customs duty do not apply.

"For example products originating in Turkey, Mediterranean countries like Egypt, Jordan, Morocco, or some countries in South and Central America, may benefit from an exemption of customs duties or reduced duties," he says.

"Misdeclaration of goods" has also seen fresh garlic declared

as frozen or dried garlic, or other commodities such as apples, onions or ginger.

More recently, "real smuggling" - where no declaration at all is made when entering a country - has been occurring, Borkovec says. Garlic is also being cleared for transit through EU territory but unloaded en route to its destination.

He says the Norway case was "exceptional, in the sense that the goods were duly declared at customs in Oslo".

"At a later stage the goods were smuggled into the EU territory - no declaration whatsoever was made while crossing the Norwegian/Swedish border," he adds.

OLAF estimates that millions of euros have been lost over the years, "not to mention the indirect losses by means of unfair competition and loss of market share by EU producers".

Most members of the EU have been affected by garlic smuggling in one way or another, according to Borkovec.

But the UK, Poland and Italy seem to be particularly targeted.

Sulphur is one of the few elements that transports oxygen right into your cells.

Fact: Bad bacteria cannot survive in an oxygen rich environment.

You can literally change your health with drinking enough clean water and supplementing with sulfur. Everything from the flora in your intestines to cell regeneration is affected by oxygen.

How much water? Take your weight. Divide by 2. Drink that number of ounces of water. So let's say you are 180 pounds. Divide by 2 = 90. So 90 ounces of purified, chlorine-free water.

8 Facts about Sulfur you may not know:

1. Sulfur (chemical symbol S, atomic number 16) is one of the most important trace minerals on earth (around 5th most important) and is required for food production and a healthy body.
2. Sulfur is an essential element for all life.
3. Sulfur is required to regenerate our cells and if our body lacks Sulfur then our cells deteriorate and do not regenerate in a healthy manner, hence we become sick and illnesses such as cancer and heart problems occur.
4. Since 1954 chemical fertilizers were MANDATED by the US Government. Fertilizers containing ammonium nitrates and sulfates were used by farmers since being MANDATED however, these fertilizers lack bioavailability and appear to have broken the Sulfur cycle in those countries that use these fertilizers.
5. Since 1954 the rate of disease in the US has increased by approximately 4,000% with a resultant decline in health, wealth, mental acuity and quality of life.
6. A study referred to as "The Sulfur Study" is expected to demonstrate a connection between the lack of Sulfur and the inability of cells to regenerate in a healthy manner. Final results are expected to be released very soon, but preliminary results highlight that all modern diseases can be attributed to mineral deficiencies.
7. Diseases that never seemed to exist in our Grandparents time now grow at an unprecedented rate and the quality of our food has been greatly diminished.
8. Our bodies comprise 4% Sulfur but do not store or make Sulfur. We should be getting the Sulfur we need from the foods we eat, however, since 1954 the use of chemical fertilizers has apparently broken the Sulfur cycle.



How to Make Homemade Pickled Garlic

www.pickyourown.org

Garlic can be tough to safely can at home. Are you looking for a safe, reliable and easy recipe to make and can your own pickled garlic? Here it is, a university and USDA tested recipe, also appears in the Ball Blue Book. You can do it with basic equipment already in your kitchen - you just need a canning pot. And thanks to the vinegar in pickled garlic, you can use either a plain open water bath pot or a pressure canner (which will also let you can now acid vegetables!)

Pickling mellows garlic's pungent bite, creating a unique bite-sized burst of flavor to accent a variety of dishes. Toss pickled garlic into Italian spaghetti sauce, serve it in sandwiches, use as an antipasto or garnish for salads. Or just eat it as a tasty appetizer, with the side benefit of warding off vampires, werewolves, friends, neighbors, girlfriends, boyfriends, spouses, partners and significant "others." But the dog will still hang with you.

I haven't got many photos for this recipe yet, but I'll work on that soon!

Prepared this way, the jars have a shelf life of about 12 months, and aside from storing in a cool, dark place, require no special attention.

And for those who want a hot, spicy version, Washington State University has a recipe for pickled garlic with hot peppers and also has an onion relish recipe. This page from UC Davis has broad information about garlic preservation.

Ingredients

12 large heads garlic, which is about 1 and 3/4 lb (838.g) or whatever it takes to produce 6 cups of peeled cloves
3 cups white vinegar 5% acidity
1 teaspoon pickling salt
1 cup granulated sugar

Equipment

Jar grabber (to pick up the hot jars)
Jar funnel (\$2 at mall kitchen stores and local "big box" stores, but it's usually cheaper online from our affiliates)
At least 1 large pot (not exposed metal - either nonstick coated, ceramic, enamel or glass)
Large spoons and ladles
Ball jars (Publix, Kroger, other grocery stores and some "big box" stores carry them - about \$7 per dozen pint jars including the lids and rings)
1 Water Bath Canner OR a pressure Canner (a large pressure pot with a lifting rack to sanitize the jars after filling about \$75 to \$200 at mall kitchen stores and "big box" stores, but it is cheaper online.)

Directions for making Canned Pickled Garlic

Step 1 - Selecting the garlic

The most important step! You need garlic that are FRESH and crisp. Remove and discard any soft diseased, spotted and chewed up garlic.

How many garlic and where to get them. You can grow your own, pick your own, or buy them at the grocery store. If you want to make larger quantities, then about 12 pounds of garlic typically makes about 5 quarts or 10 pints of pickled garlic. I wouldn't use canned garlic: what's the point. Most of the flavor is gone from them, and you can always get fresh garlic.

Step 2 - Prepare the jars and canner

Wash the jars and lids. This is a good time to get the jars ready! The dishwasher is fine for the jars, especially if it has a "sanitize" cycle. Otherwise put the jars in boiling water



for 10 minutes. I just put the lids in a small pot of almost boiling water for 5 minutes, and use the magnetic "lid lifter wand" available from Target, other big box stores, and often grocery stores, and available online) - to pull them out.

Get the canner heating up. Rinse out your canner, put the rack in the bottom, and fill it with hot tap water. (Of course, follow the instructions that came with the canner, if they are different.) Put it on the stove over low heat just to get it heating up for later on.



Step 3 - Rinse the garlic!

Remove the tough outer leaves. I'm sure you can figure out how to wash the garlic in plain cold or lukewarm water using your hands. Now see if you can wash the smell off your hands. Good luck on that.

Step 4 - Blanch, then separate the cloves

To soften and loosen skins, blanch garlic cloves in rapidly boiling water 30 seconds; immediately immerse in cold water; drain and peel cloves. Separate garlic bulbs into cloves.

Step 5 - Make the pickling solution

In a large stainless steel, unbroken ceramic, porcelain, glass or Teflon pot, combine
3 cups white vinegar 5% acidity
1 teaspoon pickling salt
1 cup granulated sugar
And bring to a boil.

Step 6 - Add the peeled garlic

Add the peeled garlic cloves, boil and gently 1 minute; remove from heat.

Step 7 - Pack the jars with garlic

Pack garlic into a hot jar to within 3/4 inch (2 cm) of top rim.

Step 8 - Fill with pickling solution and put the lids and rings on.

Add the pickling solution (that they were cooked in) to cover garlic to within 1/2 inch (1 cm) of top rim (headspace). Using a nonmetallic utensil, remove air bubbles. Wipe jar rim removing any stickiness. Put the lids on and do not overtighten. Place jar in canner; repeat for remaining garlic and hot liquid.

[How to Make Homemade Canned Pickled Garlic - continued]

Step 9 - Put the jars in the canner and the lid on the canner.

Using the jar tongs, put the jars on the rack in the canner. Make sure the tops of the jars are covered by at least 1 inch of water.



Step 10 - Process for 20 minutes*.

At altitudes up to 1000 ft (305 m), process the filled jars for 10 minutes* When processing time is complete, turn heat off and remove canner lid. When boil subsides - bubbles no longer rise to surface (3 to 5 minutes) - remove jars without tilting. Cool jars upright, undisturbed 24 hours. DO NOT RETIGHTEN screw bands.

Note - This recipe was specially formulated to allow home canners to preserve a low acid food - garlic - in commonly available boiling water canners. Do not deviate from the recipe ingredients, quantities, jar size and processing method and time. Any change could affect the safety of the end product. * At altitudes higher than 1,000 ft (305 m) increase processing time as indicated.

For most people, using a plain open water bath canner, the time will be 30 to 35 minutes. The Ball Blue book has a similar recipe that uses only 10 minutes, but I'll stick with the USDA's recommendation of 35 minutes for safety. You can use either a plain water bath canner OR a pressure canner, since the vinegar adds so much acidity.

Step 11 - Remove the jars

Lift the jars out of the water and let them cool on a wooden cutting board or a towel without touching or bumping them in a draft-free place (usually takes overnight), where they won't be bumped. You can then remove the rings if you like, but if you leave them on, at least loosen them quite a bit so they don't rust in place due to trapped moisture. Once the jars are cool, you can check that they are sealed verifying that the lid has been sucked down. Just press in the center, gently, with your finger. If it pops up and down (often making a popping sound), it is not sealed. If you put the jar in the refrigerator right away, you can still use it. Some people replace the lid and reprocess the jar, then that's a bit "iffy." If you heat the contents back up, re-jar them (with a new lid) and the full time in the canner, it's usually O.K. You're done!



Chaucer's Sweet Garlic and Herb Tart Recipe

www.cookitsimply.com

The medicinal and fortifying qualities of garlic were recognized by the Greeks and Romans but it became regarded as food for the poor - for those whose work was heavy or for those who were sick. It was shunned by the wealthy - perhaps for the obvious negative effect it had on close physical relationships. Horace, the Roman poet, thought it "more harmful than hemlock ...[it] could drive one's lover to refuse to kiss and to retreat to the far side of the bed." The British, although cautious about its use, were aware of its values and Andrew Boorde, writing in the sixteenth century, states that "it doth kyll all manner of wormes in a mans body." Now that garlic haters are on the wane and garlic bread and curries are daily fare, timid cooks are willing to include more than just the odd clove. This tart is based on the reference by Chaucer to garlic in his prologue to *The Canterbury Tales*.

Ingredients (serves 4-6)

175 g (6 oz.) Plain shortcrust pastry
12 large cloves garlic (unpeeled)
2 Tablespoons olive oil, for frying
2 large onions, thinly sliced
1 teaspoon light soft brown sugar
25 g (1 oz.) butter
2 teaspoons chopped fresh thyme
2 teaspoons chopped fresh parsley
2 teaspoons chopped fresh oregano
1/4 teaspoon mace
300 ml (1/2 pint) double cream
1 egg, plus 1 egg yolk, lightly beaten (just enough to mix)
salt and freshly ground black pepper

1. Line a shallow 23 cm (9 in) tart tin with the pastry and pre-bake or bake blind. Pre-heat the oven to 190°C (375°F) and place a baking sheet in the oven to get hot.
2. Put the unpeeled cloves of garlic in a pan of boiling water and boil gently for about 10 minutes, or until the garlic can easily be pierced with a fork. Drain the garlic and squeeze the insides of the cloves from their skins. Set aside.
3. In a heavy-bottomed frying pan, heat the olive oil, add the onion and fry gently until soft and golden, stirring occasionally. Add the sugar, cover with a lid if possible and remove the pan from the heat.
4. Melt the butter in a saucepan, add all the herbs and swirl around for 1 minute. Transfer to a large bowl, add the garlic cloves and mash to a pulp.
5. Add the mace, cream, egg and egg yolk, then season with salt and black pepper and mix well, making sure that the garlic and herb pulp is distributed evenly through the cream.
6. Transfer the mixture to the pre-baked pastry case and place in the oven on the baking sheet. Bake for about 30 minutes or until golden and set.
7. Serve warm or at room temperature with a mixed green leaf and goat's cheese salad.

Garlic Soup Made With 52 Cloves of Garlic Can Defeat Colds, Flu and Even Norovirus

John Summerly, preventdisease.com (January 13, 2013)

Forget the flu shot. A soup based on more than 50 cloves of garlic, onions, thyme and lemon will destroy almost any virus that enters its path including colds, flu and even norovirus.

As we sneeze and cough our way through these dark months of contagious nasties, garlic is being hailed for its powers to halt viruses in their tracks.

It has gained its reputation as a virus buster thanks to one of its chemical constituents, allicin.

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

When the garlic is crushed, alliin becomes allicin. Research shows that allicin helps lower cholesterol and blood pressure and also helps prevent blood clots. Garlic can also reduce the risk of developing atherosclerosis (hardening of the arteries). Compounds in this familiar bulb kill many organisms, including bacteria and viruses that cause earaches, flu and colds. Research indicates that garlic is also effective against digestive ailments and diarrhea. What's more, further studies suggest that this common and familiar herb may help prevent the onset of cancers.

"This chemical has been known for a long time for its anti-bacterial and anti-fungal powers," says Helen Bond, a Derbyshire-based consultant dietitian and spokeswoman for the British Dietetic Association.

"Because of this, people assume it is going to boost their immune systems. Lots of people are simply mashing up garlic, mixing it with olive oil and spreading it on bread.... But how or whether it may actually work has still not been proven categorically."

Indeed, scientists remain divided on garlic's ability to combat colds and flu. Last March, a major investigation by the respected global research organization, the Cochrane Database, found that increasing your garlic intake during winter can cut the duration of cold symptoms - from five-and-a-half days to four-and-a-half.

But the report, which amalgamated all previous studies on garlic, said it could not draw solid conclusions because there is a lack of large-scale, authoritative research.

The problem is that pharmaceutical companies are not interested in running huge, expensive trials - as they would with promising new drug compounds - because there is nothing in garlic that they can patent, package and sell at a profit.

Modified Garlic Soup Recipe (serves 4)

26 garlic cloves (unpeeled)
2 tablespoons olive oil
2 tablespoons (1/4 stick) organic butter (grass fed)
1/2 teaspoon cayenne powder
1/2 cup fresh ginger
2 1/4 cups sliced onions
1 1/2 teaspoons chopped fresh thyme
26 garlic cloves, peeled
1/2 cup coconut milk
3 1/2 cups organic vegetable broth
4 lemon wedges.

Preheat oven to 350F. Place 26 garlic cloves in small glass baking dish. Add 2 tablespoons olive oil and sprinkle with sea salt and toss to coat. Cover baking dish highly with foil and bake until garlic is golden brown and tender, about 45 minutes. Cool. Squeeze garlic between fingertips to release cloves. Transfer cloves to small bowl.

Melt butter in heavy large saucepan over medium high heat. Add onions, thyme, ginger and cayenne powder and cook until onions are translucent, about 6 minutes. Add roasted garlic and 26 raw garlic cloves and cook 3 minutes. Add vegetable broth, cover and simmer until garlic is very tender, about 20 minutes. Working in batches, puree soup in blender until smooth. Return soup to saucepan, add coconut milk and bring to simmer. Season with sea salt and pepper for flavor.

Squeeze juice of 1 lemon wedge into each bowl and serve.

Can be prepared 1 day ahead. Cover and refrigerate. Rewarm over medium heat, stirring occasionally.



If garlic were found to be a wonder drug, consumers could simply buy it in the supermarket for 30p a bulb or grow their own in the garden.

Nevertheless, garlic has a long and proud tradition as a medicine. The Ancient Egyptians recommended it for 22 ailments. In a papyrus dated 1500 BC, the laborers who built the pyramids ate it to increase their stamina and keep them healthy.

[Garlic Soup Made With 52 Cloves continued]

The Ancient Greeks advocated garlic for everything from curing infections and lung and blood disorders to healing insect bites and even treating leprosy.

The Romans fed it to soldiers and sailors to improve their endurance. Dioscorides, the personal physician to Emperor Nero, wrote a five-volume treatise extolling its virtues.

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

More recently, researchers have unearthed evidence to show garlic may help us to stay hale and hearty in a number of ways.

Last June, nutrition scientists at the University of Florida found eating garlic can boost the number of T-cells in the bloodstream. These play a vital role in strengthening our immune systems and fighting viruses.

And pharmacologists at the University of California found that allicin – the active ingredient in garlic that contributes to bad breath – is an infection-killer.

Allicin also makes our blood vessels dilate, improving blood flow and helping to tackle cardiovascular problems such as high cholesterol.

An Australian study of 80 patients published last week in the European Journal of Clinical Nutrition reported that diets high in garlic may reduce high blood pressure.

In 2007, dentists in Brazil found that gargling with garlic water (made by steeping crushed garlic cloves in warm, but not boiling, water) can kill the germs that cause tooth decay and gum disease.

But they hit a snag; the volunteers refused to continue the experiment, complaining that the garlic gargle made them feel sick. Looking at the garlic soup recipe certainly made me feel queasy. Still, it gave me an excuse to use up my ample supply of garlic.

Though last year's awful weather caused crop failures on my allotment, I enjoyed a bumper harvest of garlic.

Among its many other virtues, garlic kills slugs and snails. Researchers from the University of Newcastle believe it contains oils that may cripple the nervous systems of these slimy creatures.

There are two schools of thought as to the best way of preparing garlic to make the most of its medicinal qualities

Argentinian investigators found it releases it allicin-type compounds when you bake the cloves, while scientists at South Carolina Medical University believe peeling garlic and letting it sit uncovered for 15 minutes produces the highest levels of compounds to fight infection.

So you can simply peel half of the garlic cloves and roast the other half with the kitchen door tightly closed (to stop the pong permeating throughout the house).

After an hour-and-a-quarter's industrious soup-making, sprinkle lemon juice over a bowl of steaming, grey gloop and tuck in.

The heady aroma certainly revs up the appetite and the first spoonful does not disappoint. Delicious as it is, however, one large bowl of home-made soup is a more than ample meal.

As for the soup's cold-preventing powers, only time will tell. Regular bowlfuls may very well keep me free of winter ailments, thanks to the virus-killing compounds they contain.

Or, it could just be that my nuclear-strength garlic breath will keep everyone who is infectious far out of sneezing range for months to come.

[John Sumnerly is nutritionist, herbologist, and homeopathic practitioner. He is a leader in the natural health community and consults athletes, executives and most of all parents of children on the benefits of complementary therapies for health and prevention.]

Herb and Leek Soup

Andrew Pacholyk MS L.Ac

Take advantage of early Spring vegetables and create a delicious warm soup for a brisk afternoon! This can work as a nice appetizer before Easter dinner.

Ingredients

- 1 tablespoon extra-virgin olive oil
- 2 medium leeks, trimmed, washed and finely chopped (1 ½ cups)
- 2 cloves garlic, minced
- 2-4 new potatoes, scrubbed and diced (about 1 ⅔ cups)
- 2 cups reduced sodium chicken broth, or vegetable broth
- 1 pound fresh asparagus, trimmed and cut into ½-inch pieces (1½ to 2 cups)
- ⅔ cup snow peas, or sugar snap peas, stemmed and cut into ½-inch dice
- 3 tablespoons chopped fresh chives, divided
- 2 tablespoons chopped fresh flat-leaf parsley
- 1 tablespoon chopped fresh dill
- 2 cups 1% skim milk
- 1 tablespoon lemon juice
- ¼ teaspoon salt, or to taste
- Freshly ground pepper, to taste
- ⅓ cup low-fat plain yogurt, for garnish

Preparation

1. Heat oil in a large saucepan over medium-low heat. Add leeks and cook, stirring often, until softened but not browned, about 5 minutes. Add garlic and cook, stirring, for 1 minute.
2. Add potatoes and broth, bring to a simmer over medium-high heat. Cover and reduce heat to medium-low. Simmer, stirring occasionally, until the potatoes are tender, 10 to 15 minutes.
3. Increase heat to medium-high and stir in asparagus and peas, simmer, covered, stirring 2 or 3 times, until just tender; 3 to 4 minutes. Remove from heat; stir in 1 tablespoon chives, parsley, dill. Transfer the soup to a blender and blend until smooth. (Use caution when pureeing hot liquids.)
4. Return the soup to the pan. Add milk and bring to just below a simmer, stirring, over medium heat. Stir in lemon juice, salt and pepper. Ladle into soup bowls. Garnish each serving with a dollop of yogurt, a sprinkling of the remaining chopped chives and a sprig of fresh parsley.

APOLOGY

A very important ingredient was left out of this recipe in Issue #51 (see bold print).

Five-Ingredient Spaghetti Sauce

from Peter McClusky, Garlic Grower

(Makes 4 Servings)

Since the garlic flavour will diminish with cooking, you can add more garlic just before serving. This has another advantage, since garlic that's not heated for too long retains more of its medicinal properties. (If desired, a bell pepper blackened on the grill or under the broiler, seeded and chopped and then added to the pan with the tomatoes, will impart a sweet, smoky flavour.) I could tell you how good this tastes ... but I'll let you find out for yourself.

2 tbsp extra virgin olive oil
1 green pepper, finely chopped
5 to 6 lbs tomatoes, preferably plum
or other not-too-juicy variety, chopped
1 bulb (head) garlic (yes, a whole bulb!)
Broken up into cloves, and each clove minced
2 tbsp minced fresh thyme leaves
1 tsp kosher salt and freshly ground black pepper, to taste

In a large saucepan, heat the oil over medium heat. Add the green pepper and cook, stirring occasionally until soft, about 3 minutes. Stir in the tomatoes, garlic, thyme, salt and pepper. Bring to the boil, reduce the heat, and simmer for at least 10 minutes or up to 1 hour (the longer it cooks, the thicker it gets). Serve over paste with fresh mozzarella or other cheese of your liking.

(And for the hearty breakfast-eater, I recommend recklessly dripping leftover sauce on a poached egg or two.)

Hand-Chopped Green Olive Pesto

From Executive Chef Albert Ponzio,
Le Select Bistro, Toronto
(Accompanies 4 servings)

Serve with grilled or roasted meat or a firm, white-fleshed fish such as a yellow perch. I recently prepared this for my family alongside barbecued spatchcocked chicken and a bottle of 2002 Alion.

½ cup firmly packed meaty green olives, pitted and chopped into 1/8 inch pieces
½ cup extra virgin olive oil
Juice of ½ lemon
1 clove garlic, minced
Pinch dried chili flakes
⅓ bunch basil leaves, in chiffonade (rolled like a cigar and thinly sliced crosswise)

In a medium bowl, stir together the olives, olive oil, lemon juice, garlic and chili flakes. Stir in the basil. Let stand at least 1 hour, but preferably overnight. Additional olive oil and/or lemon juice may be added the following day to adjust for absorption by the olives and for acidity. Serve alongside your main dish.

Garlic & Herb Grilled Pork Tenderloin

From Jack Sobocinski, Chef de Cuisine,
Canada's National Ballet School
(Makes 4 to 6 servings)

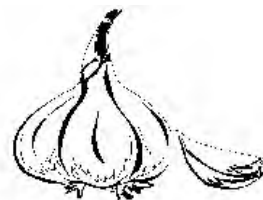
I prepared this for dinner and my 7-year-old liked it a lot. He said, "Daddy, can I have more piggy please?"

3 lbs pork tenderloin (3 or 4 tenderloins)
3-4 cloves garlic, peeled and thinly sliced
2 tbsp chopped fresh marjoram leaves
1 tbsp extra virgin olive oil
Salt and freshly ground pepper, to taste

Preheat grill at medium high heat. Cut six horizontal slits into each tenderloin; insert garlic and marjoram into each slit. Rub tenderloins with oil and sprinkle with salt and pepper. Grill tenderloins, turning occasionally, until internal temperature reaches 160°F. Transfer to a platter, let rest for 5 to 10 minutes before slicing, then serve.

A Domesticated Plant

Garlic was domesticated long ago and the species familiar to us today is not known in the wild. It is believed to have originated in Central Asia, but has been used as a medicine and flavouring for thousands of years.



Garlic Wafers

Diana Dyer, MS, RD - dianadyer.com 1/21/13

I'm always looking for recipes that feature garlic, not just with garlic as one of many ingredients. I don't exactly remember how I found the following recipe for Garlic Wafers, which are not crackers, but like chips that are totally made from garlic. The recipe (which I first saw printed in *The Washington Post*) comes from a very famous restaurant in San Sebastian, Spain, which features a fusion of traditional Basque cuisine with a modern presentation. Restaurant Arzak is considered a restaurant worth flying to, but I don't expect that I will ever do that, and now I don't have to do so in order to enjoy one of their popular ingredients/garnish.

Small is beautiful here. It takes only a small piece of the Garlic Wafer to wake up a dish or to start a meal as a very small appetizer. Although I served them as an appetizer topped with just a dab of cream cheese or goat cheese plus another topper, the group actually wanted to taste them completely plain, as a "chip," and these wafers were also a complete hit just plain and unadorned.

So I encourage you to take the time to make these. Please tell me how you like them and how you use them. This recipe will definitely become a handout at our farmers' market table in 2013. I expect to sell a lot of garlic just to make and enjoy this one recipe!!

Ingredients:

Cloves from 2 heads of garlic (about 16 cloves) - peel and carefully trim away the base plate (the end where the root is) and if there are any tiny green shoots inside, trim those out too.

Salt - to taste (I used no more than 1/8 teaspoon)

Nutmeg - freshly ground (I used ~1/8 teaspoon)

Directions:

1. Place the peeled cloves in a sauce pan filled with water (4-5 cups). Bring to a boil over medium-high heat, then cook uncovered ~25 minutes until the garlic cloves are very soft. Drain (save the water to cook rice, risotto, or add to soup stock).
2. Preheat the oven to 350 degrees at this point. Line a baking pan with parchment paper.
3. Mash the garlic with a potato masher, through a garlic press, or with the back of a spoon into a paste. Add salt and nutmeg.
4. Use a spatula to thinly spread the garlic paste into two swaths about 1" x 10" (very approximate).
5. Transfer the baking sheet to the oven, immediately drop the oven temperature to 200 degrees. Bake until the garlic's dry, about 45-60 minutes. (I used the convection setting for my oven and the garlic were dry at 45 minutes.)
6. Let the garlic cool completely before breaking into small pieces (15-20).

Serve these flavorful wafers as a garnish, any place you would use garlic in a recipe, as a vegetable "chip," crush and use as a topping to a tossed salad or an encrusted topping on fish, as a small appetizer as I served them topped with a dab of goat cheese or cream cheese plus another food for color, texture and taste where I used red cabbage sauerkraut, thinly sliced black Kalamata olives, or dried wild blueberries (which was the surprise flavor hit).

Gourmet Green Garlic Pesto

(Original recipe from Laurie Buzzard of the Garlic Seed Foundation, modified by Diane Muck)

"The soul of pesto may be basil, but its heart is garlic."

Ingredients:

- 5 or 6 garlic scapes, cut up with scissors, then chopped in blender
- 1 cup fresh basil leaves, coarsely chopped in blender
- 2 Tablespoons walnuts, toasted in saucepan with a little olive oil
- ½ teaspoon sea salt
- ½ cup olive oil
- ⅓ cup Parmesan cheese

After lightly browned, place nuts in blender, then washed and dried basil leaves, green garlic, and salt. Blend. Gradually pour olive oil into processor while blending. Blend until nearly smooth. You may freeze this mixture for later use (before adding cheese). Stir in cheese. Makes 1 cup. Will keep in airtight container in refrigerator for a week or more, but flavor is best used within 1 or 2 days.

Mix ½ cup pesto with 8 ounces Neufchatel cream cheese for a wonderful spread for crackers (pretty color, too).

Try pesto pizza.

Put it on grilled meats.

Toss with cooked chicken pieces and lettuce for pesto salad.

Garlic Confit

voiceofeden.org

You certainly can make more than this at once, but I think one head is a manageable amount for two people to use within a week. Your mileage may vary, of course.

- 1 head garlic, cloves separated, but unpeeled
- 5 black peppercorns
- 2 bay leaves (optional)
- olive oil

Preheat oven to 300°

In a small pot of boiling water, blanch the garlic cloves for 20-30 seconds, then shock them in an ice bath. Cut off the tip of each clove, slip off the peel and dry each clove. Place peeled cloves in a small baking dish with peppercorns and bay leaves, if using, then cover with olive oil by up to one inch.

Bake for 45 minutes to an hour, or until cloves are golden and very soft. Cool slightly, remove peppercorns and bay leaves, and place garlic and oil in a glass jar. Refrigerate for up to one week.



Garlicky Roasted Shrimp with Parsley and Anise

(Serves 4-6)

Don't be tempted to use smaller shrimp with this cooking technique; they will be over-seasoned and prone to overcook.

¼ cup salt
2 pounds shell-on jumbo shrimp (16-20 per pound)
4 tablespoon unsalted butter, melted
¼ cup vegetable oil
6 garlic cloves, minced
1 teaspoon anise seeds
½ teaspoon red pepper flakes
¼ teaspoon pepper
2 tablespoons rinsed fresh parsley
Lemon wedges

1. Dissolve salt in 1 quart cold water in large container. Using kitchen shears or sharp paring knife, cut through shell of shrimp and de-vein, but do not remove shell. Using paring knife, continue to cut shrimp ½ inch deep, taking care not to cut in half completely. Submerge shrimp in brine, cover, and refrigerate for 15 minutes.
2. Adjust oven rack 4 inches from broiler element and heat broiler. Combine melted butter, oil, garlic, anise seeds, pepper flakes, and pepper in large bowl. Remove shrimp from brine and pat dry with paper towels. Add shrimp and parsley to butter mixture, toss well, making sure butter mixture gets into interior of shrimp. Arrange shrimp in single layer on wire rack set in rimmed baking sheet.
3. Broil shrimp until opaque and shells are beginning to brown, 2 to 4 minutes, rotating sheet halfway through broiling. Flip shrimp and continue to broil until second side is opaque and shells are beginning to brown, 2 to 4 minutes longer, rotating sheet halfway through broiling. Transfer shrimp to serving platter and serve immediately, passing lemon wedges separately.

Garlicky Roasted Shrimp with Cilantro and Lime

Annatto powder, also call achiote, can be found with the Latin American foods at your supermarket. An equal amount of paprika can be substituted.

Omit butter and increase vegetable oil to ½ cup. Omit anise seeds and pepper. Add 2 teaspoons lightly crushed coriander seeds, 2 teaspoons grated lime zest, and 1 teaspoon annatto powder to oil mixture in step 2. Substitute ¼ cup minced fresh cilantro for parsley and lime wedges for lemon wedges.

Garlicky Roasted Shrimp with Cumin, Ginger and Sesame

Omit butter and increase vegetable oil to ½ cup. Decrease garlic to 2 cloves and omit anise seeds and pepper. Add 2 teaspoons toasted sesame oil, 1 ½ teaspoons grated fresh ginger, and 1 teaspoon cumin seeds to oil mixture in step 2. Substitute 2 thinly sliced scallion greens for parsley and omit lemon wedges.

Forbidden Food

It is forbidden to eat garlic in Jain and some Hindu religion in South Asia

Triple-Garlic Pizza

adapted from *Food & Wine*

Recipes thanks to *Minimally Invasive*

Feel free to use your own recipe for pizza dough, or buy a crust already made.

15-20 bulbs wild garlic, plus greens
5-10 cloves garlic confit, mashed (depending on your love of/tolerance for garlic)
1 cup coarsely grated fresh mozzarella cheese (4 ounces)
Salt and freshly ground black pepper
¼ cup freshly grated Parmigiano-Reggiano cheese
Truffle oil or melted truffle butter (the better choice, but it's an optional step)

Bring a medium saucepan of salted water to a boil. Blanch the wild garlic until they are bright green but still al dente, about 1 minute. Drain, pat dry and cut into 1-inch lengths.

Brush dough with garlic oil from the confit and pre-bake, according to instructions.

After pre-baking, spread the dough with garlic confit and sprinkle on the grated mozzarella in an even layer. Scatter the blanched wild garlic over the mozzarella and season liberally with salt and pepper. Top with the Parmigiano-Reggiano cheese.

Bake for about 8 minutes, until the cheese has melted and the pizza crust is browned and crisp on the bottom. Transfer the pizza to a work surface, cut into pieces, lightly drizzle with truffle oil or butter and serve right away.

Caldo Con Ajo (Garlic Soup)

Mother Earth News, 3/8/13

I ordered this soup on a trip to Mexico and fell in love with it. Although I didn't get the recipe, I came up with an approximation of it on my own. This is one of those soups that changes every time I prepare it, according to what ingredients I have in the house and whether my daughter, who is a vegetarian, is visiting. It's also one of those soups that seems to grow and grow, so it's great to serve for company. The chicken is optional.

Ingredients

Olive or other vegetable oil, enough to cover the bottom of a large saucepan or stockpot
1 onion, chopped
5 or so fresh mushrooms, sliced
2 chicken breasts, cubed (or whatever pieces of chicken you have. Sometimes I employ this recipe to use up meat from a chicken I roasted.)
Chile powder or red chile flakes to taste
Oregano and cumin to taste - or cilantro if you like that better
2 to 3 cups of chicken or vegetable broth
3 carrots, julienned
2 cups cooked beans - black, kidney, or garbanzo
1 large can stewed tomatoes, chopped (I like the ones with jalapeño)
2 Limes
2 ripe avocados, cubed
Tortilla chips

Heat the oil; saute onions and mushrooms. Brown chicken. Add garlic and spices. Pour in broth; add carrots, beans and tomatoes. Look around the kitchen or garden and see what else you think might taste good. Add. After ingredients are piping hot and the meat is thoroughly cooked, squeeze in juice of one lime (I really like it limey, so I at least double this). Add avocados and stir for just a moment. Pour over Tortilla chips and just before serving, squeeze a wedge or two of lime over each bowl. I serve with warm corn tortillas with butter. If you have any soup left (doubtful) you'll be happy to discover it's even better left over, after the flavors have had time to introduce themselves and share a bit of their personal history.

Black Garlic

Nordic Food Lab - 2/27/13

An old product. Originally from East Asia. Tastes good everywhere.

The basic technique is simple – place whole heads in a sealed container and keep at 60°C for six weeks. One can keep them in for longer and they will mature further, but may also begin to dry out. What is interesting is that the process is not strictly speaking fermentative – the transformation is due not to microbial metabolism but in part to enzymatic breakdown (the heat denatures alliinase, the enzyme that converts non-volatile alliin into volatile allicin, the compound responsible for fresh garlic’s pungency) and in part to the Maillard Reaction, a cascade of chemical reactions that produce the dark, color and complex caramelized flavors. The sulfurous compounds may also contribute to its anti-microbial properties in its blackened form.

Foods like this invite a larger discussion about the different degrees of “fermentation” as a category. A biochemist might stick to the purest technical definition of the anaerobic conversion of glucose into ethanol and carbon dioxide ($C_6H_{12}O_6 \rightarrow 2 C_2H_5OH + 2 CO_2$), while on the other end of the spectrum, a common understanding of fermentation might also include transformations due solely to chemical and enzymatic activity, even though they look, small, and taste “fermented – like black garlic. We and others sit somewhere in the middle, understanding fermentation in the practicable sense as any interaction with microorganisms – bacteria, yeasts, and other fungi – with the purpose of transforming foods.

The principle may be simple, but like any process, the best results lie in obsessing over the details here, controlling variations in temperature and humidity over time. We are continuing to tweak to discover the best possible product.

In addition to the garlic, we have been experimenting with other alliaceous bulbs. Onions, shallots, it works with them all. Shallots reveal their latent fragrant sweetness, onions intensify into bombs of savouriness, all become tinged with this dark, tart depth.



The larger bulbs work especially well in broths, a particularly effective way to make a rich, full, dark stock. It also works well in broths with umami-bringing ingredients, like dried aged seaweeds and cured aged meats. And it is satisfying and dramatic with any fermented dairy product – creamy and fleshy, lactic and fruity, white and black.

Some of the cloves we dried and ground in a powder, adding them to salad dressings, sauces and sprinkled on any number of things. The softer ones we passed through a sieve and pulled into a paste.

Creamy Spinach Dip

Mother Earth News

This does not taste low-fat – a quality we all admire in dips.

Ingredients

- 1 (8 ounce) container reduced-fat sour cream
- 1 cup fat-free mayonnaise
- ½ cup canned artichoke hearts, chopped
- ½ cup frozen spinach, thawed
- 3 scallions or green onions, diced
- 1 teaspoon garlic powder, or fresh garlic to taste
- 1 tablespoon sun-dried tomatoes, finely chopped
- 1 tablespoon shredded Asiago cheese (or Parmesan or Romano)

Instructions

Heat oven to 350 degrees. Roll spinach in paper towel and squeeze to release water, or make it dizzy in your salad spinner. Combine first seven ingredients in a casserole dish, sprinkle cheese on top; warm until cheese bubbles. Serve with fresh veggies, baked chips or warm sourdough bread.



Stinky Replies

‘Tis Better to Freeze than Import From Sue G., Kirkwood, NY

My farmer’s market garlic customers often ask me “how long will this keep?” I suggest that they DON’T try to store it fresh but instead peel the heads down to the bare cloves then store it whole, double bagged in the freezer.

Just pop whole cloves out and drop them in the recipe, or defrost then dice, mash, or slice as they would with fresh garlic. So easy! The natural oils keep the cloves from sticking together in the freezer bags. I’ve found three-year-old well-sealed double bags of cloves in the back of the freezer, and the garlic is just fine. Must be all that lovely oil!

I love the strength of dried garlic, but anyone can do this. It encourages folks who would otherwise buy just a few heads to “stock up” on a year’s worth of fresh local garlic in the fall!

For Love of Garlic

by Kevin Miklasz sciencefare.org 11/16/11

I believe there is no such thing as too much garlic. I tend to double or triple the amount of garlic in a recipe without batting an eye. I'll take garlic in almost any dish or form, including raw on a loaf of bread (aka "roman soldier" style, or so I read in a book once.)



So you can imagine how thrilled I was to buy eight heads of garlic for my Science-Fare experiment this week. I was hoping the clerk would ask what it was for, just so I could ramble excitedly to a stranger about my love for garlic. (Didn't happen. This is apparently not as sketchy as, say, twenty pounds of corn starch, but that's a different story.)



With all this garlic eating, I'm on a constant hunt to improve the most annoying part of the process, garlic peeling. The classic technique of smashing the clove of garlic by putting your fist over a knife (see picture below) has been pretty effective. But then I came across this video on Saveur, where garlic was peeled using impact forces from banging them against the metal

bowls. And then I heard about silicone tubes, which peel garlic using frictional forces between the garlic and silicone. And then I realized, I needed to know exactly what was the fastest way to peel a clove of garlic – by crushing, impact, or friction – which brought me to the supermarket and 8 heads of garlic.

Test 1 - Impact vs. Friction vs. Crushing



Impact



Friction



Smashing

I timed how fast it took to peel a single clove using each of the three techniques mentioned above: (1) IMPACT (the mixing bowl technique), (2) FRICTION (the silicone technique), and (3) SMASHING (the knife technique). You can see the results in the table below (values in seconds).

IMPACT	FRICTION	SMASHING
44	4.3	20.7
60	4.6	4
60	5.7	8.1
-31.6	-15.2	24.1
-31.3	-31.9	24.1

The silicone friction technique proved the fastest and most consistent of all the techniques for peeling a single clove. The classic knife smashing technique was little slower on average and a bit less consistent - some cloves can be tricky to peel this way. The mixing bowl impact technique featured on Saveur was definitely the slowest. I stopped two of the trials after a minute without a peeled garlic clove because, frankly, my arms were tired.

The clear winner on speed is the silicone tube and friction. Additionally, the mixing bowls were not consistently good at peeling a single clove, but I didn't want to give up on the bowls just yet. The Saveur video involved throwing a whole head of garlic into the bowl at once. Does the impact technique perhaps work better in bulk?

Test 2: The Impact Method in Bulk

I threw a half a head of garlic into two steel mixing bowls and shook the begebub out of them for 15 seconds. Amazingly, 56% of the garlic was fully peeled after a rough shaking! Disappointingly, 44% of the garlic was right where I left it 15 seconds before, skins intact. So it did work better in bulk, but still now all of the cloves got peeled.



Disappointing results, but there are several differences between how I am doing the impact technique, and how the editor on Saveur did the technique. Perhaps I'm just doing it wrong?

Test 3: The Impact Technique Revisited aka is my kitchen defective?

Because I don't live in an industrial kitchen, I don't own two giant metal mixing bowls like they do on Saveur, but perhaps that is the key to the impact technique. Metal is quite strong, and the larger mixing bowls give the garlic more space to accelerate and impact the walls of the bowls, potentially providing greater forces and "peeling efficiency" compare to small bowls.

So I tested it out. I didn't have two metal bowls on hand, but I did have two plastic bowls that were similar in size to the metal bowls. So I did two tests, one with both big bowls (one metal, one plastic) and one with both small bowls. Just as in test 1, I threw a handful of garlic cloves into the bowls and counted the numbers that were peeled after 15 seconds of shaking.

In summary, the silicone tube friction technique definitely won on a clove-by-clove basis (Test 1), but the mixing bowl impact technique was able to peel over 10 cloves of garlic in 15 seconds (Test 2), a feat that even the silicone tube can't match. The problem with the impact technique was twofold: (1) it couldn't peel all of the cloves of garlic at once (Test 2 and 3), meaning some cloves would need to be peeled with a second technique, and (2) it needed two large mixing bowls to be effective (Test 3), which might not always be available in the typical home kitchen (I actually borrowed one of the large bowls from a friend). I found the Saveur impact technique more difficult to perform in my kitchen than advertised on the Internet.

On the plus side, I now have enough garlic to feed a Roman army (literally), which makes me a very happy camper.

Garlic: from IndiaNetzone

Since the ancient times, Garlic has been used as a valuable condiment for foods in India. It has also been used quite extensively as a popular remedy for various ailments and psychological disorders. Garlic has a special mention in the Hindu mythology. According to Hindu mythology, the gods and the demons once churned the sea, using earth as the axis and divine snake Basuki as the rope. Many precious materials came out due to churning of the sea. Along with the materials, a pot of nectar also came out and consuming the nectar was believed to have capacity to make one immortal. The gods and demons fought against each other for this pot and eventually, the gods took possession of the pot. The King of gods, Indra, took the pot to heaven for distributing to gods. However, he first offered it to his wife, Sachi, before distributing to others. After consuming it, Sachi could not digest the nectar and thus vomited. A drop of her vomit fell from heaven on the earth and a small plant emerged from that drop. This plant is known as Garlic. According to Hindu Mythology, Garlic is foul smelling because it had emerged from vomit. The mythology also mentioned that Garlic has several medicinal virtues, as it had emerged from heavenly nectar.

Garlic is a hardy bulbous perennial having narrow flat leaves. The plant bears small white flowers and bulbils and the bulb comprises 6 to 30 bulblets called cloves. The bulb remains surrounded by a thin white to pinkish papery sheath. Garlic has a stronger flavor in comparison to onion or its other allies. Garlic requires well-drained, moderately clayey and argillaceous soil and a high elevation (900 to 1200 meters) to grow properly. It also requires a cool moist period during its growth and a relatively dry period during the maturing of crop. Usually, Garlic takes about 4 to 5 months to mature. It is grown as a late season irrigated crop.

Garlic has many uses. It is mostly used for culinary purposes and people all over the world use it as a condiment for different food items. In India and other Asian countries it is used in several food preparations like chutneys, pickles, curry powders, curried vegetable, meat preparations, tomato ketchup, etc. The raw garlic can also be used in the manufacturing of garlic powder, garlic salt, garlic vinegar, garlic cheese croutons, garlic potato chips, garlic bread, etc.

Garlic is cultivated throughout India in warm and mild climates. It is quite easy to cultivate garlic, as the plant can be grown year-round. The cloves can be planted in the ground about six weeks before the soil freezes in cold climates and it can be harvested in late spring. A good thing about Garlic is that the plants never get attacked by pests. They can only suffer from pink root, which is a disease that stunts the roots and turns them pink or red. The garlic plants usually grow close together and leave enough room for the bulbs to mature. They are easily grown in containers of sufficient depth. Many subspecies of Garlic are grown in India, out of which the hard neck garlic and soft neck garlic are the most notable ones. However, each subspecies of garlic requires different latitude to grow properly, as the plant can be day-length sensitive. While the hard neck garlic is grown best in cooler climates, the soft neck garlic is generally grown closer to the equator.

Benefits of Garlic

Different parts of the Garlic plant are used for serving different purposes. The bulbs of garlic are considered the most commonly

used part of the plant. They vary in size and flavor and can range from mild and sweet to pungent and very strong in taste. A garlic bulb is divided into numerous segments called cloves. The cloves of garlic can be used as seed, for consumption (raw or cooked) and even for medicinal purposes. The leaves, stems and flowers on the head are also considered edible and are most often eaten while immature and tender. The leaves of garlic are often cooked and eaten in India. They can be used as an ingredient for packed or fast food and are frequently used for treating asthma as well. The only parts of garlic that are not considered edible are the papery protective layers of "skin" over various parts of the plant and the roots attached to the bulb.

Garlic has a sharp, punchy taste and pungent smell and is used as a major ingredient in the world's finest dishes. Fresh Garlic is dehydrated and sold to food processors for use in mayonnaise products, salad dressings, tomato products and in several meat preparations.

Apart from the culinary usages, Garlic is also recognized for having several medicinal properties. Garlic is used in making remedies for various ailments and psychological disorders and is considered one of the oldest medicines in the world. In Ayurveda, Garlic is considered as one of the most effective antimicrobial herbs, as it has anti-bacterial, anti-fungal, anti-viral, anthelmintic and antiseptic properties. Garlic has healing capacity and effectiveness against cholera as well. It has useful antibacterial action against *Eberthella typhosa*, *Escherichiacoli*, acid fast bacilli, *Aerobacter aerogenes*, *Staphylococcus aureus*, etc. According to Ayurveda, Garlic is also useful for increasing sexual energy and in combating impotence. It can help kill parasites like hookworms and pinworms, as well.

Several benefits of garlic have been described in Unani medicine. According to Unani medicine, garlic is used as carminative and can also act as a gastric stimulant. It can aid in digestion and absorption of food and is also given in flatulence. In modern Allopathic treatment also, garlic is used in a number of patented medicines and other preparations. The residue of garlic, obtained by alcoholic extraction and distillation, is believed to contain a bacteriostatic and bactericidal substance identified as "allyl disulfide oxide." Garlic is used as an antidote to snake and scorpion bites and is also a very good medicine for running cold and Saliva formation. In ancient times, garlic was used to cure athlete's foot by placing bulb between the toes. As herbal medicine, it is also used to treat diseases like chronic bronchitis, respiratory catarrh, whooping cough, bronchitic asthma, influenza, and other health problems. It can also fight infection, reduce cholesterol, protect against heart disease and stroke, control diabetes, and prevent cancer. Garlic can prevent blood clots and destroy plaque preventing atherosclerosis and can reduce the changes of stroke, heart attacks and PVD.

The inhalation of garlic oil or garlic juice is commonly recommended in cases of pulmonary tuberculosis, rheumatism and impotence. The Garlic juice is extensively used for treating various ailments of stomach, and is also used as a rubefacient in skin diseases. It is used as eardrop in earaches as well. The garlic juice can also be used against duodenal ulcers, after diluting with water. Garlic is used for killing bacteria that cause tuberculosis and it

reduces blood sugar level. It can help to improve the immune functions, fight against chronic diarrhea, etc., and it also heals open pores, activates and stimulates blood circulation, and improves hair growth. It is used for producing various products like garlic oil, garlic powder, garlic juice, garlic flakes, etc. as well.



Garlic and Honey

The other medicinal properties that garlic contains include many bioactive substances like Alliin, Allicin, Gamma-Glutamylcysteine, Thiosulfinates, etc. These substances can help in fighting against bacterial, parasitic and fungal infections. Garlic can be effective as treatment

for congestion in the respiratory system, if taken along with honey. It is used as slides under a bandage in case of warts. Spreading a few fresh cloves of garlic amongst stored fruit can help delay rotting of the fruit.

However, in spite of having all the above mentioned advantages and valuable properties, garlic is not used by all Indian people. It is often avoided to be used even for medicinal purposes, as it has repulsive odor. Another reason for which people do not use garlic is that they consider it as a non-vegetarian food item. Garlic also has some side effects. Consuming large amounts of

garlic can cause heartburn. Fresh garlic can also sometimes cause local irritation and ulceration.

India is also a major exporter of garlic bulbs, dehydrated garlic, garlic powder and garlic oil, etc. all over the world. The main harvesting season of garlic in India is the months of December to January and the marketing season is during the months of February to March. India mainly exports garlic to the countries like Sri Lanka, USA, UAE, Kuwait and Saudi Arabia. The garlic powder, dehydrated flakes, oils and oleoresins are exported keeping all constituents intact, only except its pungent odor. Garlic salt is another product that has great demand in trade of commerce due to various reasons. The Associated Agricultural Development Foundation (AADF) has developed three cultivars of garlic names Agrifound White, Yamuna Safed, and Agrifound Parvati for extensive cultivation in India.

Many people in India often avoid using garlic even for medicinal purposes. The main reason is that garlic has repulsive odor. However, preparing odorless garlic powder is not tough and can be done by inactivating the enzyme alliance in garlic. There are some side effects of garlic as well. Consuming large amounts of garlic can cause heartburn, especially during pregnancy. If left in contact with skin or mucous membranes, fresh garlic can also cause local irritation and ulceration.

Fresh peeled garlic cloves have the following composition

Moisture: 62.8%	Total ash: 1.0%	Calcium: 0.03%	Vitamin C: 13 mg/100 g
Protein: 6.3%	Fiber: 0.8%	Phosphorus: 0.31%	Nicotinic acid: 0.4 mg/100 g
Fat: 0.1%	Carbohydrates: 29.0%	Iron: 0.001%	Calorific value: 142 calories/100 g

Garlic powder or the dehydrated garlic has the following composition

Moisture: 5.2%	Calcium: 0.1%	Vitamin B2: 0.08 mg/100 g
Protein: 17.5%	Phosphorus: 0.42%	Niacin: 0.7 mg/100 g
Fat: 0.6%	Sodium: 0.01%	Vitamin C: 2.0 mg/100 g
Total Ash: 3.2%	Iron: 0.004%	Vitamin A: 751 I.U./100 g
Fiber: 1.9%	Potassium: 1.1%	
Carbohydrates: 71.4%	Vitamin B1: 0.68 mg/100 g	Calorific value (food energy): 80 calories/100

Taking the Bite out of Garlic

Many cooks like to temper the harsh bite of raw garlic before adding it to foods like pesto, hummus, and salad dressing – but there’s no end to the suggestions for how to do that. We tested four methods: blanching whole cloves in milk for 5 minutes, blanching them in water for 5 minutes, microwaving the cloves until warmed through, and toasting them in their skins in a dry skillet until lightly browned.

Both forms of blanching worked equally well, as did microwaving. Toasting was the least effective in mellowing out garlic’s taste. Here’s why: Garlic’s sharpness is caused by a sulphur-containing molecule called allicin. Allicin is produced through an enzymatic reaction by the enzyme allinase, only after the cell walls of the garlic are damaged during cutting or chopping. To deactivate allinase, you must raise the clove’s temperature to 140 degrees or above – which both microwaving and blanching accomplished (the type of liquid used is irrelevant). With light toasting, only the outer layers of the cloves got sufficiently hot to turn allinase inert.

For simplicity’s sake, we prefer heating garlic cloves in the microwave to blanching them. Microwave the cloves in a small bowl for 2 to 3 minutes, or until warm to the touch but not cooked. - A.J.



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GARLIC SCHOOL

Garlic school this year will focus on the period from harvest to storage. We will talk about field grading to check for diseases and damage at harvest, including a blot nematode update; we'll talk about the post-harvest research results from the past two year's trials; and we'll feature grower panels discussing what else is working, and why that is so.

Geneva Garlic school: Jordan Hall, 630 W. North Street. March 28th, 10:00 a.m. to 2:30 p.m. Cost is \$20 per person if enrolled in the Cornell Vegetable Program, or \$25 if not enrolled. Cost includes lunch. To register, please visit this website: cvp.cce.cornell.edu.

Albany Garlic School. CCE Albany, 24 Martin Road, Voorheesville. April 9th, 10:00 a.m. to 2:30 p.m. Cost is \$20 per person if enrolled in the ENY Commercial Horticulture Program, or \$25 if not enrolled. Cost includes lunch. To register, please visit this website: cdvsfp.cce.cornell.edu.