

We've always been keen to educate and share ideas that each of us faces as we grow and eat this stinky stuff. I thank everybody who found the time to share their thoughts and ideas. The best issues are the ones that have many contributors. They are also published more frequently—which, of course, leads me to consider the future of the GSF/Fiends of Garlic, Inc.

We need to finish the Recipe Book and *Press* index. We need to put together more research that is directed towards the issues of disease, machinery, post-harvest and storage, etc. We need to finish our application for the 501(c)3 educational non-profit status. And one of these days (years) we need to start writing the next generation of garlic production materials/videos. We can all thank Ron Engeland (*Growing Great Garlic*), but we've

come a long way since 1991, as has the research. We'll write it collectively, by region, and all get rich as farmers when it hits the best seller's list. These have been reflective times for me personally as well. I'm growing weary of our wars, our disrespect for Mother Earth, corporate greed, the lack of value of food and those who produce it. I think we need a new agenda. Today I celebrate my birthday. I became 60, a "Geezer" at last. I've lived through the '60s once in my life before and I'm looking forward to a repeat. Sitting here in the Philadelphia Airport at 9:30 p.m. on my birthday makes me feel a bit lonely, but I know that I'll be home, on the farm, in three hours. These "Notes" complete this issue and we'll be able to put this in your hands as you plant the garlic. We send you our best, "The Best of the Press."



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

The Garlic Press

SPRING/SUMMER 2006



#42

THE BEST OF THE PRESS — Director's Notes

This is not the first time in the past 20 years that I've created these "Director's Notes" while waiting in an airport. This brief time far away from the intensity of northeast fresh market organic vegetable production, sitting in this cathedral of technology, gives me a couple of hours to remember back ... Ronald Reagan was just finishing his first term as President, the Berlin Wall was about to fall, gas cost \$1.10/gallon, and Donald Rumsfeld and the Pentagon were selling chemical weapons to Saddam Hussein. The Nobel Peace Prize was awarded to the International Physicians for the prevention of nuclear war, the Pulitzer non-fiction to Studs Turkel, the Academy Award for film director to Sydney Pollack (*Out of Africa*), the Emmy for comedy to the *Cosby Show*, San Francisco had the Super Bowl, Kansas City the World Series, and the Stanley Cup belonged to Edmonton.

In 1985, drought and famine in Africa gave birth to the "Live Air Concert," the Grammy winner was *We are the World*, the United States finally put sanctions on South Africa, Lech Walensa brought "Solidarity" to Poland, and we heard the very first talk about a hole in the ozone. A movie ticket cost \$2.75, the new car average was \$9,000, 1/3 of the 238 million Americans smoked, and the non-farm minimum wage was \$3.34/hour. Les Anderson caught a world record 97# Chinook salmon, and organic certification was but a dot on the horizon. America was 5th in world garlic production and America was eating 1/2# of mostly California garlic per person per year.

The first newsletter was mailed (at 22¢) to 125 farmers in New York State and this *Press* will go to 1200 folks in 10 countries. Our membership travels between 1000-1400, but since the beginning there have been 4-5 thousand members and we still have half of the original bulbheads.

CONTENTS

This anniversary issue contains samples of the various "mastheads" used and content selections from the past 20 years of the *Press*."

Initial membership in the GSF is \$15/4 issues. Renewals are 8 issues for \$20. All submissions for *The Garlic Press* should be sent to GSF, Rose, NY 14542-0149 or rjdunkel@yahoo.com. All medical references should be taken for educational purposes and any recommendations should not preclude consulting with a health practitioner. Please, no reprinting any material herein without written permission.

To prepare for this issue, I spent some enjoyable time last winter going back through each issue and thought about all the many wonderful folks who contributed to the content with stories, poems, recipes, graphics, and lots of ideas and encouragement. I also enjoyed remembering and appreciating the folks who put together the physical product. Dorothy Densk (Geneva, NY) takes a collection of oddball hodge-podge notes and scribbles and consistently produces an organized and beautifully formatted *Press*. Bill Robbins, and the crew at Erie Park Press (Clyde, NY) shoot it, print it, cut it, collate it, staple it, fold it, tape it, label and put in the correct USPS Zip-zone. Before Dorothy, the late Andy Snyder (Wolcott, NY), and before Andy, Jane Malcolm (Sodus, NY) used a new tool, the Word Processor, to input and format the *Press*. The early issues were copied on an abandoned Xerox machine we liberated from Cornell University. Both Compucopy and Geneva Printing (both Geneva, NY, and both deceased) were then used for printing, then Seeco (South Butler, NY) which moved and became the Erie Park Press. Postmaster Cheryl Fleck (Rose, NY) keeps our permit and fills out the USPS forms. We could not have done what we did without each of these individuals or small businesses. They have been patient, helpful, creative, and supportive and I thank them all again. Nor could we have gotten this far without Bob Dunkel, Editor since *Press* #8 (Summer 1990), who brings good energy, wonderful poetry and prose, book reviews, medical/health reviews and keeps us plugged in to the big picture along with his editing. I appreciate his patience and we all owe him a special thank-you.

I have 30 pages to fill in this special issue and decided to mix the features with poetry, song, graphics, and humor in the usual random fashion. There are no recipes—they have been put together for our cook book, "Cooking With the Folks who Grow It (due out 2007). The garlic touches many interests—medicine, cooking, botany, production, history—and because it makes us smell bad, humor. I hope to share a bit of each. We have never been successful with any of the games/puzzles or contests we've offered. I did not reference any of these to issue #, but I will tell you than an index has been started for issues 1-45, 20 years. After my initial selection for 60 pages, I just kept paring down and down and then prioritized for Dorothy and asked her to "cram in" as much as she could.

[continued on back page]



THE GARLIC PRESS
DECEMBER, 1988

THE GARLIC PRESS

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

The Garlic Press

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

Winter 1990



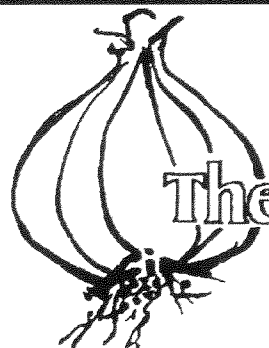
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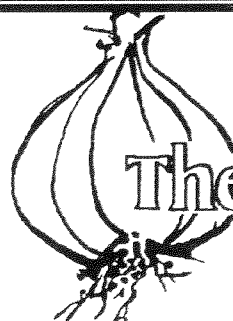
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The Garlic Press



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



The Garlic Press

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



What Happened to Garlic, and Why?

Let me begin with recognizing that the garlic has been cultivated for 5000 years, and its consumption is simply ignored by modern statisticians and the media. Seriously, I'd like to thank Ms. Kate Clancy of the Wallace Institute, Ms. Mariann Burros from the *New York Times*, Ms. Fran Gussow at Columbia University Teacher's College, and Warren Belasco of the History Department at McMaster University for their comments and contributions to this lecture and paper.

So the question "WHY?" becomes a puzzle, and here are the first pieces. North Americans eat 73 pounds of chicken, 27 pounds of hamburger, 15 pounds of fish, 10 pounds of cheddar cheese, 12 pounds of chocolate, and 2 pounds of garlic each year. We drink three times more soda pop/sugar water than milk. Garlic consumption doubled between 1993 and 1996 to 500 million pounds (the 2 pounds mentioned above) and is well below the E.U. average of 7.5 kilos (16½#) and Asian figure of 25 Kilos (55#) per person, per year. The modern grocery super store reflects that, with over 1,000 new food products released each week somewhere in this country, variety is a current theme.

With all the high-tech plastic crap in our lives, garlic is seen as a "real food," and you, the garlic farmer/producers, are perceived as "real" people. Two-fifths (2/5) of all meals are eaten away from the home. Prepared food is "in," home preparation is not.

The Gilroy Garlic Festival draws 300,000 over three days, and the Hudson Valley Garlic Festival brings out 40,000 in two days. On average, as calculated by the Pentagon, our food travels 1,200 miles from field to table. Of all the food cultures that don't embrace the garlic, the Scandinavians were odor-free until an "all-garlic" restaurant opened in Helsinki last year!

The North American food system passes more money through more hands than any part of our GNP, and it rides on the back of the farmer, the producer of the raw material. Where there is money to be made, we find vertical integration and consolidation in production (Conagra, Cargil, Hormel, Purdue, Christopher Ranch) and also in the market place, where we find our international corporation from the Netherlands that owns six (6) major chains with 3,700 local stores and \$30 billion in yearly sales. The new "terminator technology" that we're learning about is just the food system further tightening its control.

Garlic, however, is in the public domain — has been, and will continue to be. I suppose we'll see some attempts soon, but to "own" a particular garlic is folly. Most home gardeners are growing the garlic and the phrases I most often hear — "It's a powerful plant," "It's family work," "We tend to it in the cycle of the seasons" — are appreciation of the complexity of the plant and the farmer's labor, the enjoyment of the taste and flavors. "Buy it once and save the

best," and women regularly remind me that it's another 9-month crop. I shall also share with you that each time this GSF in mentioned in the *New York Times*, we will receive 1,000 letters within the first month, and an additional 1,500 letters over the next four months, from all around the world. Put us in *Organic Gardening* and we'll get half that, *Martha Stewart*, half again.

Let me add some additional clues to this puzzle from the folks who study food trends and sales. They are quick to say that we don't have a national cuisine — we steal with both hands and absorb it quickly. Today, there are three (3) major trends: we are eating hotter/spicier foods, we support the restaurant trade (of a wide variety of national/cultural foods) including fast-food, and we enjoy diversity and experiment with the flavors and textures we put into our mouths.

Historically, we start with the migration waves of the early 1900s that settled geographically: The Irish in Boston; Polish in Cleveland; Italians in New York City; Asians in Seattle and Los Angeles; and the Mexicans in San Diego, Tucson, and San Antonio. These new cultural tastes were both assimilated and spread via that great cross-cultural agent the mother-in-law! World War II brought folks home with direct experience with European and Asian foods, which flowed into the 1950s when "going out to eat" was a family activity, eating away from the home. This often meant the neighborhood pasta house or pizza shop.

The cultural battles for civil and human rights of the 1960s also brought tolerance and the value of diversity onto the dinner table. Changing from white bread to whole wheat made our hair grow, as men and women returned from Vietnam and second-generation Americans called up grandma to get that special recipe from Ireland, Poland, Italy, Korea or Mexico. Heritage became important.

Today, the appetite for garlic is on a natural high. Our wealth allows us to travel, and people travel to look at scenery, experience new things, and eat. Chefs travel the world for work and school. We continue to eat away from home, preferring (in order) Italian, Asian, and Mexican food. Much of our food and garlic is processed. Read the ingredients in the sauces and salsas, dressings, frozen or canned. Lots of garlic. Salsa outsells ketchup (that famous American vegetable created by President Ronald Reagan). The puzzle piece that is missing in all this is "health and nutrition," and it is generally agreed that less than 5% of folks eat the garlic for these reasons. This seems low, but don't forget, garlic pills are a \$300 million per year industry. The puzzle piece that no one can find is the "future," but consumption will surely continue to increase. Who will grow it, and where? These are the new questions, and ones that we all need to ask ourselves.

(D.S. com)



ORNAMENTAL ALLIUMS

One of the joys of this passing season of quiet has been the opportunity to catch up on reading, and one book that really was quite enjoyable to peruse was *Harrowsmith's Illustrated Book of Herbs*, by author Patrick Lima, a native of central Ontario, Canada. For the allium lover, there is a wonderful section that explores the wide range of onion and garlic relatives and has some striking photos and illustrations as well. After the interesting descriptions of the edible varieties that most of us may be more or less familiar with, came a section on ornamental alliums that I found intriguing. Originally, while working on our primary test site with Jim McFerson, he off-handedly mentioned that as we got further into variety testing as an organization, perhaps some members may become interested in other types of alliums that are less ordinary. He mentioned a couple of varieties that were rekindled in my mind in the book I have referred to, and so I thought I would try to do a short description of some of these for any members that might be interested.

Allium aldopilosum. The literal translation of this from the Latin is "white shaggy onion," and it is reputedly other worldly. Referred to as a sort of vegetable alien, this allium has six-pointed, star-shaped flowers of a lilac tint that "radiate from a common centre on thread-like stems to form large, gleaming globes that seem ready to hurdle skyward." It does also have certain pesticidal properties that make it a very useful addition to a flower garden or showy area of your vegetable patch.

Allium aflatunense. Recently dubbed "purple sensation" by one retail grower, this variety of ornamental onion is a spring sensation. Growing up and out of three-foot stems, the grapefruit-sized spheres are clustered with tightly packed purple stars and in the North country will blossom for three weeks from the end of May until the colorful displays of late June take over. The author remarks that his original patch of just six bulbs has grown, without any attention, to sixteen or more over a four-year period. This allium is at home in either full sun or light shade.

Allium giganteum. Resembles the flowering pattern of the above variety with beautiful purple splendor but grows much taller. Ascending upwards off of six-foot stalks, this native of the Himalayas certainly lives up to its name. Apparently, however, the biggest drawback to this variety is not only the expense of the bulbs, but a rather finicky nature. The author bemoans this fact; he would have been happy to retain the original numbers he planted, but after the first year of growth, flowering was spotty. It could be that other climates may do better with this showy giant, and although one bulb may be as costly as a dozen of the "purple sensation," it sound like a tantalizing but limited trial possibility. This variety blossoms in our area in mid-July.

Allium moly. This dwarf variety takes us to the other end of the spectrum in growth habits. Though only eight inches tall, it blossoms into a wondrous yellow display. The long-lasting flowers appear in June, and although they do not self-sow, they are steadily-increasing bulb growers. This plant has

taken on the name of "golden garlic," not only because of the flowers, but also because of the pungent smell when any parts of the plant are crushed. Legend has *A. moly* as one of the best floral talismans and attributes the good fortune and prosperity of many a garden to its presence. Apparently, as long as one grows this petite ornamental, all bad omens from black cats to voodoo dolls lose their spell under the charm of this ancient symbol of protection.

Allium karatavincse. A central Asian native, it has a foliage that is described as being "broad, blue green edged in red and softball sized flower heads of pale lilac, almost gray, and appears on six inch stems." The author goes on to remark that the bulbs grow well and do seed in almost pure gravel.

Allium caeruleum. The only blue-flowered onion recognized is a fragile and slender plant that is difficult to increase in numbers. Mr. Lima claims to have lost some of his original dozen bulbs over the past several seasons, but the enchantment of their color alone excites me into giving them a try.

Allium cowanii and **Allium oreophilum** are the author's final listings. They are referred to as dwarfs that are white and mauve, respectively, and used for nooks in rock gardens.

So *ad allium infinitum* we see that there is a world of exploration just waiting for us lovers of this wide-ranging family of plants. We encourage any of our members who may have experience growing these, or those who may try them in the future, to update us and pass on comments as well as critiques of their regional successes.

All ornamental alliums prefer well-drained soil (preferably on the sandy side) enriched ahead of time with organic matter. Plant bulbs as deep as their height or width, whichever is greater. Space smaller species 4-6 inches apart, larger ones 8-12 inches apart. Water regularly during growth

and bloom period, but when foliage begins to yellow, cut back or even let soil go dry. Plants may be left alone unless flowers decline from overcrowding. At that time, dig clumps after foliage has died, divide bulbs and replant by early autumn (and don't forget to add plenty of organic matter to soil).

Following is a short list of possible sources for bulbs, also anyone knowing of other is welcome to write to us:

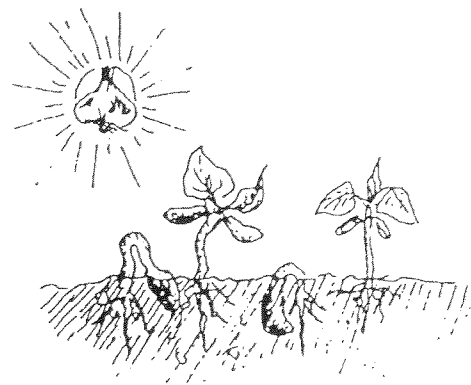
BLACKTHORNE GARDENS, 48 Quincy St., Holbrook, MA 02343-1989. They require a \$2 refundable-with-order charge and list Alliums.

COMPANION PLANTS, Rt. 6 Box 88, Athens, OH 45701, requires \$1.50 refundable and lists rare herbs.

GLADSIDE GARDENS, 61 Main St., Northfield, MA 01360 is listed as another source for rare bulbs.

DACHA BARINKA, 46232 Strathcona Rd., Chilliwack, BC V2P 3T2 lists seeds for garlic, herbs and oddities.

RALEIGH GARDENS, 24236 Evergreen Rd., Philomath, OR 97370 also lists garlic and shallots from a Western source.



SOME REMARKS ON THE USE OF GARLIC AGAINST VAMPIRES

By Rob Brautigam [publisher of *INTERNATIONAL VAMPIRE*]

The use of GARLIC (*Allium sativum*) as a charm against the powers of evil seems to date back to ancient times. According to Lewis Spence, the ancient Egyptians believed in a vampire-like ghost that killed sleeping children by sucking up their breath. And, believe it or not, the repellent that was used against the attacks of this murderous creature was ... a wreath of garlic.

The Imperial Dictionary (1894) tells us that garlic is "a hardy, bulbous perennial, indigenous to the south of France, Sicily, and the south of Europe." However, it would appear that nowadays the use of garlic is known all over the world, not only as a tasty culinary asset, but also as a charm against evil spirits. The English expert on vampires, Montague Summers, gives us some examples. Even in places as exotic as China or Malaya, people smear the forehead of their children with garlic to protect them from vampires, and in the West Indies, too, garlic is used as a means of protection against the evil practices and magic spells of witches and sorcerers.

Adrien Cremene confirms that in Romania garlic is a weapon of very great importance in the everlasting battle against vampires. Lots of Romanians make sure they eat some garlic every day for their personal protection. But they also smear garlic on the windows and doors of their houses, on the gates to their farmyards, and even on the horns of their cattle. They believe that the STRIGOI (vampires) have a great fear of garlic. According to the stories that are told, it sometimes happens that these *strigoi* come up to someone's house to ask him, "Did you eat garlic?" And if this happens, it is better not to answer this question, even if you did eat garlic, for the *strigoi* might get very angry and put a magic spell on you.

But this is not the only manner in which USTUROI (garlic) is employed against Romanian vampires. If a deceased person is thought to be in danger of becoming a *strigoi*, one of the most common protective measures is stuffing some pieces of garlic into the orifices of the corpse, especially the mouth. This is done to prevent evil spirits from entering the dead body. At the same time, it serves the purpose of preventing the soul of the deceased from reentering its body. Another interesting anti-vampire practice that we can find in Romania is the anointing of the corpse, especially the heels, with a mixture of oil, fat, incense, gunpowder and, of course ... garlic.

From a book by Chedo Mijatovich, we learn that among the Serbian peasants the night of Shrove Tuesday is considered to be a very dangerous night. According to the Serbians, lots of evil witches are unusually active on this particular night. Therefore, on this night, lots of Serbians sleep with a piece of garlic under their pillows. Or, alternatively, they may wear a small piece of garlic locked in a special amulet around their necks.

We would be much mistaken, however, to think that it is just the bulb or the cloves of garlic that can be used to keep vampires at a comfortable distance. In Bram Stoker's masterpiece *Dracula*, we find how Professor Van Helsing fills up a bedroom, not with wreaths of garlic bulbs, but with GARLIC FLOWERS instead, in a commendable attempt to protect Luch Westenra from the bloodthirsty advances of Count Dracula. But of course that is just fiction, or is it? For in a book by Tekla Dömötör, a serious Hungarian professor of ethnography, we find a photograph of a wreath made from the stems of garlic flowers, which is used in Hungarian villages as a means to ward off evil spirits.

And, from personal observations, I have learned that it is no uncommon occurrence to find the remains of garlic flowers on graves in the churchyards of Romanian villages. And so it would appear that really each and every part of the powerful garlic plant can be used as an apotropaic.

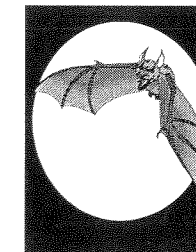
The French occultist Robert Ambelain has his own remarkable ideas about the use of garlic against vampires. He thinks that originally it was not GARLIC but ARSENIC that was thought to have a power against evil. Ambelain claims that the shepherds in the Carpathian mountains used to eat very small quantities of arsenic and feed some arsenic to their

animals as well in order to protect themselves from vampires. According to Ambelain, the alchemists of Prague and other cities in Moravia and Bohemia used to burn arsenic to drive away the powers of evil. The burning of arsenic produces toxic fumes that have the same unpleasant smell as garlic. The thrifty peasants must have noticed that the alchemists' magic fumes smelt just like garlic. And they figured that it would be cheaper to use garlic and forget about hiring an expensive alchemist to do an exorcism. And that, according to Ambelain, is

how people came to use garlic as a defense against vampires. All in all, Ambelain's hypothesis seems rather farfetched, to say the least, and I doubt if it would stand up against any serious criticism.

It goes without saying that the ingestion of arsenic, even in small quantities, is a very hazardous undertaking that I won't recommend to anyone. I think it could prove quite unhealthy and I do believe that it is much more wholesome to eat some garlic instead. However, even the use of garlic is not without its dangers. In 1973 an unpleasant incident happened in the English town of Stoke-on-Trent, where they discovered the corpse of a Mr. Demitrius Myiciura, an immigrant of Polish origin. At the inquest it was found that the unfortunate man had died by choking on a piece of garlic, which he had put in his mouth before going to sleep in order to ward off vampires during the night.

From *The WALM* (The Smell)
Publication of the Vriennen Van De Stinkende Roos



A Brief Review of Some Garlic Diseases

Over the years we have seen, at various festivals or group meetings, folks who come forward as the crowd thins down and pull a baggy out of their pocket. Inside will be some pretty funky stuff: moldy or decayed cloves, misshapen bulbs, double cloves, midstem bulbils — you get it, the whole menagerie of stuff none of us really wants to deal with. Yet, from novice to veteran grower none of us can be assured of being immune from quite a spectrum of possible diseases. There are no guarantees. Especially with crop rotations and working up new ground, we may be in for some surprises. The real key here is keeping an eye open all the way through the work year. Good field and storage sanitation is a must. At the first signs of stunted growth or curled, misshapen or discolored leaves, it's a good idea to purge and remove from your growing area anything you don't feel good about. A bad situation can only get worse if conditions are not controlled. I know that every situation is different and we all need to learn to watch for signs of any disease or insect problems, but without going into too much detail, here is a brief synopsis of some of the major problems growers around the world are seeing, and a few suggestions for offsetting them.

WAXY BREAKDOWN: This is a physiological degradation that sometimes occurs in the outer cloves of garlic bulbs. There are small pock-marked light yellow areas that appear in the clove tissue which later turn a deep amber color. The tissue can become both translucent and quite sticky or waxy, and individual cloves on exposure may become soft and like jelly. Sometimes the disease is not noticed until late in the cycle because of the wrapper leaves. This problem tends to be due to high temperatures at harvest.

GARLIC MOSAIC: First reported in 1946, a mosaic disease of garlic has been identified wherever garlic is grown. Due to vegetative propagation, many garlic cultivars can become infected by one or more viruses. An umbrella term, it has been generally accepted that the "garlic mosaic" has been used for diseases with various causes but usually by viruses of the potyvirus group. Symptoms include striping or mottling of leaves, and early on plants will appear stunted. Virus-free stock is preferable for control, but even then, aphids or mites can transfer and reinfect the crop. An isolated seed bed is recommended away from commercial production where virus-free stock is available, otherwise reduction in losses can be accomplished somewhat by planting large cloves, which seems to increase survival rates by initially sustaining the developing plant with more vegetative material.

PENICILLIUM DECAY OF GARLIC: This causes poor plant stand in the field and is one of the causes of decay in stored garlic. In the latter phase it is called "blue mold." Symptoms include wilted or stunted seedlings and can affect root development. In controlled experiments, there have been up to 50% losses due to planting of infected stock. Bluish green masses of spores appear on cut or decaying cloves. Longer delays between cracking and planting increase likelihood of disease. Therefore, the best control is careful selection and processing of seed pieces as close to planting time as possible and avoiding any wounded or cut surfaces on cloves that will be planted.

BOTRYTIS ROT OF GARLIC: Seen in both garlic and elephant garlic, spores occur near the soil line and can induce neck rot during spring and early summer and can directly result in plant death. A cool wet season, especially in a heavy soil, can create optimum conditions for infestation. When weather gets hot and dry there seems to be no further progress of disease. Can also be induced by over-irrigating in hot, arid climates. Black sclerotia appear from neck down and, in the case of late season infection, can severely decay the bulb and neck.

FUSARIUM BASAL ROT OF GARLIC: First identified in California in 1976, losses have ranged from negligible to 40% of crop and also possibly more in storage. Infection initially occurs from soil through the basal plate rather than through leaves or roots. Thereafter, infection can or cannot develop disease symptoms. Disease can be carried over many years in seed before a flare up may occur. In addition to seed transmission, the pathogen can be transported from field to field with soil, debris or in irrigation runoff. Hot water has reduced garlic clove infection by 50%, but still has not been adequate for severe infection and in some cases a hot water bath has actually increased disease. Since garlic strains of fusarium are able to infect cereals, not growing cereals in rotation with garlic may lower the likelihood of disease incidence.

— Stinky Logic —

*Our deepest fear is not that
we are inadequate.*

*Our deepest fear is that we are powerful beyond
measure.*

*It is our light, not our darkness,
that frightens us.*

*We ask ourselves, who am I to be brilliant,
gorgeous, talented and fabulous?
Actually, who are you not to be?*

You are a child of God.

*Your playing small doesn't
serve the world.*

*There's nothing enlightening about shrinking so
that other people won't feel insecure around you.*

*We were born to make manifest the glory of God
that is within us.*

*It's not just in some of us,
it's in everyone.*

*And as we let our light shine, we unconsciously
give other people permission to do the same.*

*As we are liberated from our fear,
our presence automatically liberates others.*

*Nelson Mandela
1994 Inaugural Speech*



*ALICE? I'm just a lonely boy, lonely and blue, can you
tell me what should I do? My braids are all empty, the
pesto is spent, my breath is too sweet, and I haven't a
cent ... Ben Autovit, Winterkill, WI*

Well Ben, I hope you got your garlic through the long months and though you're down and out of it, your salvation is at hand! Kind of like the Indian recipe for poison oak — eat it daily till it gets the size of your thumb. I find nothing more enjoyable in spring than eating greens. Whether you are thinning a tight row or have volunteers out of row, there are juicy little bites of fire waiting to prepare you for the feasts of summer. Had you planted a row or two for garlic greens, you'd also be in the dough right about now. It's a good early sale item before the scapes come and one that will help you gain on your marketing strategies. If you plan contacts to spread out your harvest from greens to scapes to loose to braids, then my friend you've got it made. Finally, for the fire in the belly and the return to gettin' smelly, get that bag made of mesh and fill it with fresh.

VARIETY TRIAL

Said judge to the jury
my verdict is out,
the sentence of death is now sung.
For lying too long
in the mud with no sun,
this poor garlic's wrapper is done.
But for the bulb that is fat
and harder than that
and whose fire does leap from the tongue,
I say to you friend
it won't be the end
Tho' its off to the barn to be hung!

COLLECTIONS RELEASED TO WILD REVIEWS!

- "Reading this crap is a total waste of time." Cris R., Little Rock, AR
- "How and where do these people find all this ridiculous garlic stuff?" John S., Lincoln, NB
- "Gastronomic Poetry! This is wild!" Ritza, NYC
- "Keep it up. We look forward to each issue." J. Jacobson, Tacoma, WA
- "It stinks ... thanks!" P.D., Bismark, ND

ASK ALICE

Harvester's Moon

Late in the day
when your back, like the light,
is bent and weary
and your pants begin to
sink in the south,
out comes the harvester's moon.

The Dream Weaver

While trees have loosened all their leaves
To warm their trunks in time of freeze
Quietly resting, 'neath the snow
Not yet sleeping roots still grow
Our cloves are snug and nestled down
And nodding off in icy ground
'Till temperatures issue out a cry
And nascent moon sings lullaby:
While seasons ebb and seasons flow
Come winter night the dreams aglow
Will light the caverns hidden deep
And only then begins the sleep
Dreams unruly and wild with hope
Of springtime rains, a gentle slope
A nourishing sun in pledged return
This and more these cloves will yearn
For frozen in their frozen dream
There is a figure, so serene
With gentle hands that tucked in tight
These little heads and said "Good Night!"
And whispers on a thoughtful prayer
To calm and guide them lying there
'Tis you! 'Tis you! that's left to grow
There's a part of you in every row
We are all connected, dare say naught
As together, we unfold the plot.
'Till bulbs will light the fields of green
And leaves return to set the scene
This tapestry of soil and blood
On bended knees with hands of mud
We've woven forth, we'll weave once more
When Springtime knocks upon our door
For now though rest in gentle sleep
Counting cloves instead of sheep!

No, To the Mechanical Removal of the Scapes!

by Ted Maczka, Fish Lake Garlic Man,
Research & Experimental Station, RR #2, Demorestville, Ontario, Canada

Being an amateur garlic grower for almost 30 years, doing the voluntary research and promoting self-sufficiency of garlic in Canada, I have achieved better yields than average yields of the experts. I discovered that one of my varieties under Fish Lake Brand no. 3 (F3) is a hybrid that could have been created many thousands of years back, but what scientific proof do I have? By observing the growth of the tiny bulbils (0.010-0.350g), which can produce the different varieties of garlic in 3 to 4 years, one can see the difference in the bulbs and the bulbils they produce.

I do take loving care while handling the garlic bulbs. To me, the bulb is like a peach: some varieties can last 3 months plus, others can last 9 months plus. While writing this article towards the end of April, I peeled some cloves from the F3. They looked nice and white, not a single brown spot on them. That is a quality gourmet garlic and should not be knocked around with machinery.

When we look at the garlic as a cash crop, our first cash can come in May from whole green plants. The second cash crop is from the scapes that are grown on the bolting type of garlic. Since it is a new product and we are mostly learning how to use it, we have to educate customers on how to use it. In my case, many years back, in the first year I broke off the scapes and left them on the ground. The next year I started to eat them and made a puree with cooking oil, filled a plastic container, and froze it. When customers come to me, I give them a taste of my puree on a cracker. If they like

it, I sell them a pound or two of the scapes and suggest other uses to them, like cooking or pickling.

When picked fresh, the scapes should be stored in a plastic bag and refrigerated. Process them as soon as possible. They can be stored for a month or more, but tips will start to dry, so you will lose some quantity. Breaking the scapes by hand is very simple, especially in the early stage, when they are 6-8 inches high. At this stage they are very brittle. I put two open fingers behind the scape and press the thumb against them, always below a white spot.

Cutting the scapes with machinery is not recommended. You are wasting your time by destroying your cash crop—plus you are injuring the plants, inviting sickness to your garlic and affecting the development of the larger bulbs. If one finds too much work breaking off the scapes, may I suggest an alternative? Plant softneck garlic.

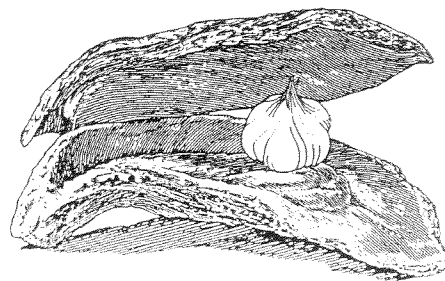
Next time I will write about how to increase your planting seed stock and have better yields—contrary to the experts, who teach us how to go broke by planting the largest cloves.

Let me leave you with a little thought: We are a part of the creative energy. There are no limits to our creative ability. By doing our best, we can achieve anything we desire. So let's do something for the betterment of mankind and *create love, compassion and everlasting peace in the world.*

Let The Buyer Be Aware

Under the shifting sands of the Sahara
Where once the north pole held firm
There are the footprints of travellers.
Though extant perhaps, they are there
Emblazoned on the record of history.
Caravans with garlic and spices are guided
On the memory of the stars by day, and
Magnetized by the pull of planetary forces
They emerge, timeless upon the marketplace.
Up the winding stairwell of wind worn clime
Deep in the Himalaya, the pattern of DNA sighs
Amidst the cycle of breath from the messengers
Ascending and descending in search of and in return
From another marketplace where old garlics lie.
The Hudson River Basin, the relic of the last shift
Of polar fury, is the eastern door of the Iroquois
And it opens upon the path of sunlight that leads
To the water center of Gaia and into the heartland.
Trucks and trains and barges trace the arteries
That pump food furiously through to the small towns
And too big cities searching for the tastes of old.
This marketplace has no bare feet, no worn basketry
But the hands that reach out to touch eternity
Have the same lines that mark a crossing, lines
That guide the stars memory, the geometry of space ...
From the power points of the earth, that lie in ley lines
Like telephone poles, there are pulses of light and
breath that summon us all to market.
We bring the garlic and we bring the stories of old,

The tales of time to spin as we wait for a message:
The width of the palm separates and unites all
cultures and times.
The spiral of Fibonacci guides all life onward
from leaf to bud, flower to seed.
So when wind covers paths in snow and the sand
blows
When winter brings rest, close your eyes.
Be guided then
By the stars and sun to your marketplace and prepare
For remember, the garlic that's sleeping
will soon be there.



Glorious Garlic Game

Vertical up and down, horizontal up and down and diagonal up and down — get out your pencil and give it a try.
Hint: If you have any trouble with this, pass it along to your kid. He or she will do it in a few minutes.

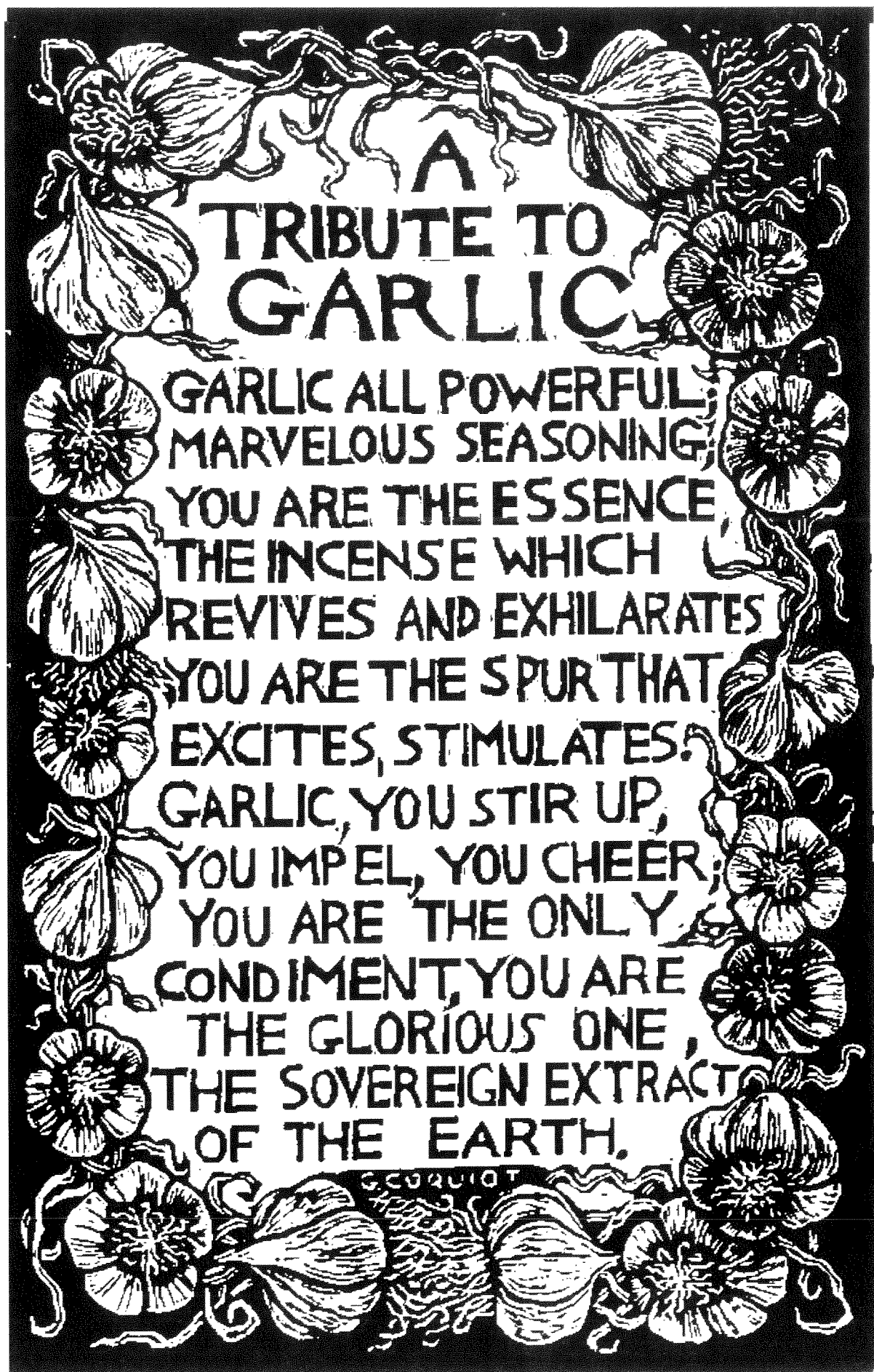
Thanks to my friend LaVaughn for putting this together for us. (D.S.)

O H H Y Q I H C Q H Q N I Q S T S D J N N Q W W M
N F D E S H C T D M C G W I K A U P L L Y C I I C
H V G Y W L C N W E U O L G X N K S R B E N R Y A
V H F Q U E O Z T B E V N P P T G J F M C K E Q P
Z P X D B I E S H Y E U R T N A H P E L E L W Z E
C D F B P N O D O R O C S O I H P O C G E I O K T
F P D U F D S J S A N H M U I N E L E S H B R V X
H N D I O R Y K Z P F U E G R O E N A X C L M Q E
Y K J S A M I D O X I A Y C I I Q N F F K U S U Q
Q V G S C N G J E L H R S X M U V I T A S B S I F
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R V I S O H M I R G R L S T N M S V R J L J P L I
P N T M J T C Q K N S S A J Y U B P T O I Q S U H
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D U P D A R Y R P I Q L A P T I I C E F L Z G I N
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R L S N R U H P L U S K L T P H O S P H O R O U S
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R D I R J D J E F U S F W X K E V Z K G P N Y A I
U N U V P J S C A H S E O T S P O V Z Y G R F S W
Z S M V I C K Y X B Y L G N M T R I I G M Q Q X P

AFTERTASTE
ALLIUM
AMPELOPRASUM
LONGICUSPIS
SATIVUM
SCORODOPRASUM
AROMA
ARTICHOKE
BOLTING
BOTRYTIS
BULB
BULBIL
CLOVE
CONTINENTAL

CORM
ELEPHANT
FUSARIUM
HARDNECK
ROUNDS
TOPSETTING
IRRIGATE
MANURE
MEDICINAL
MULCH
NITROGEN
ODOR
OPHIOSCORODON
PENICILLIUM

PHOSPHOROUS
POTASSIUM
ROCAMBOLE
SCAPE
SELENIUM
SILVERSKIN
ROJA
SULPHUR
THRIPS
UMBEL
VIRUS
WEEDS
WIREWORMS



A TRIBUTE TO GARLIC

GARLIC ALL POWERFUL,
MARVELOUS SEASONING,
YOU ARE THE ESSENCE
THE INCENSE WHICH
REVIVES AND EXHILARATES
YOU ARE THE SPUR THAT
EXCITES, STIMULATES.
GARLIC, YOU STIR UP,
YOU IMPEL, YOU CHEER;
YOU ARE THE ONLY
CONDIMENT, YOU ARE
THE GLORIOUS ONE,
THE SOVEREIGN EXTRACT
OF THE EARTH.

Planting and Harvesting Garlic with a 3-Point Hitch Cultivator

by Keith Stewart

In my early garlic planting days (not so long ago) I used dibbles and crowbars to poke holes in the ground to drop the cloves into. Later, I tried a hand plow to cut furrows a few inches deep. For the last two years I've used a tractor-drawn cultivator for both planting and harvesting and have been very pleased with it. Here's how my system works.

I plant garlic in late October in bands of three rows with 18 inches between each row. Between the bands I leave 40 inches. This larger space between each three-row band enables me to straddle the bands with a tractor when planting, mulching and harvesting, and in so doing, avoid compacting the soil where the garlic is growing or is going to grow. Forty inches also leaves enough space for a riding mower. Two or three mowings between the bands helps with weed control in late May, June and July.

A rear mount 3-point hitch cultivator is attached to my old Allis Chalmers tractor. Stabilizers are used to prevent the cultivator from swinging to one side when it hits a rock or encounters uneven ground. Keeping the rows and bands parallel (though not necessarily dead straight) is important in this system and the stabilizers help to this end. The cultivator is set up with

three narrow shanks—one in the center and the others 18 inches on either side of it. If you like to cover your garlic with about three inches of soil, as I do, the shanks should be set to cut four or five inches deep. After one pass down your field you have three parallel rows to press your cloves into. When this is done, either rake the soil lightly over the cloves or walk down the rows and use your feet to cover them.

When cutting the next three rows it is important to have some way to ensure that they will be parallel to the first three. I do this by having someone walk in front of the tractor with a long spacer stick (usually a 1x2) that they hold parallel to the ground. Every six feet or so they measure from the outside of the front tractor wheel to the outer row of the previous band. A deviation of two or three inches to either side is okay, but not more than that.

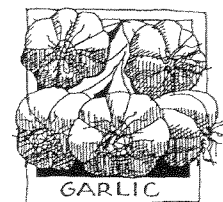
There's a horse farm less than a mile from us with a good supply of bedding straw that the owner is usually happy to get rid of. After the garlic is planted, I use that farmer's tractor and New Idea spreader (which blows out the rear) to cover the cloves with three or four inches of straw with some manure mixed in. Again, the tractor nicely straddles each three-row band. Immediately after planting, we place

short stakes every 15 or 20 feet to mark the center row of each band. When spreading the straw the stakes give us something to take a sight on so that we don't end up riding on top of the planted cloves. The mulch helps to keep the weeds down somewhat, but by late May and June there's always plenty of hand weeding needed—but only between the rows and a few inches to either side, since the riding mower is used between the bands.

When harvesting time comes, usually late July or early August in our area, the Allis Chalmers and the cultivator are put to good use once again. This time the cultivator is set up with six shanks, each one off-set three or four inches to either side of a row of garlic. The tractor straddles a band of garlic and the shanks of the cultivator cut through the soil about six inches deep and a few inches to either side of the bulbs. After one pass with the tractor (sometimes two passes are needed), the garlic can be lifted out of the ground without much effort and with virtually no damage, providing your rows are parallel and you drive carefully.

For sure, there's still plenty of hand labor required in the system just described, but the 3-point hitch cultivator—a simple and relatively inexpensive implement—speeds things up and eliminates a lot of elbow grease.

[Keith is a Certified Organic Vegetable farmer from Westtown, NY, in the Hudson River Valley.]



THE PLEASANT PEASANT'S FOOD

by Iona Bulb

There's still not one thing finer
than garlic in a stew
or baked and served on good brown bread
its aroma coming through.
This magic herb, a precious food
that fans the healing flame,
through all adversities survives
and returns from whence it came.
And man or crow complete the cycle
by spreading broken cloves
across the land, like apple seeds
these yearly stalks to grow.

To nose or tongue, the world around
this splendid gift is known.
From ancient times, in highest climes
no culture is alone
in digging up this earth's delight
that awaits the watchful eye
and gives us all such joyous taste
soon after it is dry.
So chopped or minced and mangled
by jaws that eat it raw,
we celebrate this ancient gift
that stinketh up our craw!



Nose Music

PATRIOTIC ANTIBIOTIC

(Tune - "Battle Hymn of the Sativum")



(Verse 1)
 Mine eyes have seen the glory
 of the coming of the spears
 They have grown from out the darkness
 of at least five thousand years
 They have loosed the awesome lightening
 of their pungent aftertaste
 Their scent goes wafting on....

(Chorus)
 Glory, Glory Allium yum
 Glory, Glory Allium yum
 Glory, Glory Allium yum
 Their scent goes wafting on.

(Verse 2)
 In the wonder of the morning
 You can feel them stretch and sing
 As they climb unto the heavens
 Like a bird upon the wing
 Waiting for the solstice
 The arrival of the king
 The scape comes rising forth.
 (Chorus)

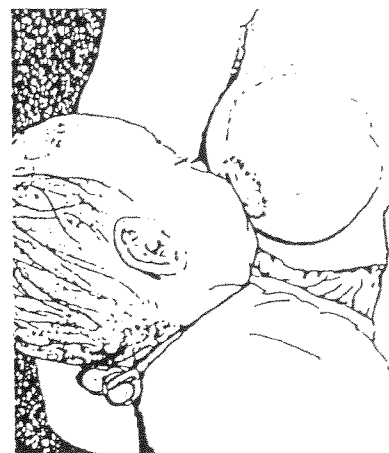
(Verse 3)
 Then we sharpen up the knives
 and go a heading in the field
 We smile upon the softnecks
 whose own dear fate is sealed
 Then we lop those regal crowns off
 with the weapons that we wield
 And the energies turn down.
 (Chorus)

(Verse 4)
 Then soon the earth is ruptured
 with amazing inner force
 The bulbs that are inflating
 have finally run their course
 The wrapper leaves now dying
 have no memory nor remorse
 The harvest time has come.
 (Chorus)

(Verse 5)
 Lifting up in glory
 both the forks and shovels lean
 They are raising up the family
 of the long forgotten queen
 Those cloves so fat and healthy
 are a wonder to be seen
 To the drying racks we sing.
 (Chorus)

(Verse 6)
 Another Fall's upon us
 Hear the cracking of the heads
 while selecting out the best ones
 be they whites or browns or reds
 Then we'll all be sleeping soundly
 'neath the covers of our beds
 And time goes marching on

(Last Chorus)
 Glory, Glory A. Sativum
 Glory, Glory A. Sativum
 Glory, Glory A. Sativum
 Their scent goes wafting on. (B.D.)



FLAVORED BREAST MILK!

"Old wives tales" suggest that nursing moms take a wee nip of their favorite spirit to increase their child's appetite, help a finicky kid relax, or boost their milk production. Julie Menella and Gary Beauchamp, from the Monell Chemical Senses Center in Philadelphia, have studied such things and found that babies drink significantly less of the "spiked" milk. The researchers could detect a change in smell and so might the baby, or it might inhibit the sucking ability, or it might temporarily reduce maternal milk production. Interesting, eh?

So what in the mother's diet would increase nursing times and volumes? That's right, our favorite stinky little herb, the garlic! Two hours after the moms took the garlic capsules, there was a strong garlic odor to their milk, but the babies seemed to prefer the taste, remaining attached to the breast longer and enjoying greater volumes. They are not sure, however, if it increases milk production. I can just see some of you advertising this now: FOOD FOR THE ENTIRE FAMILY — GARLIC!

(D.S. — *Science News*, 10/12/91)



McCormick & Company, Inc.

by Ms. Leslie Norris, Research and Technical Development

McCormick & Co. is the largest dehydrator of garlic in the world. Evaluation of garlic at McCormick, therefore is serious business. Since we are in the business of selling the aroma and flavor experience of garlic, we must insure that our garlic products taste right. They will not be successful unless a consistent and desirable flavor profile is delivered to our customers.

Many factors affect the flavor of garlic. There are natural variations in agricultural products from year to year, variety to variety, field to field. Additionally, changes in processing parameters can alter the taste of garlic. Our consumers expect a certain flavor profile. Because chemical and physical tests cannot always predict how a product will taste to a consumer as a result of these external factors, other tools are necessary to monitor changes, thus, sensory evaluation or taste testing using scientific methods and controls has evolved.

Garlic products are rigorously tested by "trained" tasters or judges. A trained judge is an employee who has successfully completed a 14-month McCormick sensory program. The program teaches the students to describe what they are tasting in terms of its "notes." The method is referred to as Descriptive Analysis. Much like music can be broken down into notes, flavors can be broken down into chemical notes or attributes. For example, perception may be broken down into two parts: basic tastes (sweet, sour, bitter, umami) and volatiles (those chemicals that are sensed by the nose). References or standards are then applied to refine the definition so that all the panelists are "speaking the same language," and are tasting with a single reference in mind.

When our panelists taste garlic, they use the following notes to describe the flavor: green, fresh, fruity, hydrogen sulfide (boiled eggs), rubbery sulfur, musty, pungent, heat, sweet, metallic, and bitter. The standards (the chemical definition of each note) are listed in Table 1.

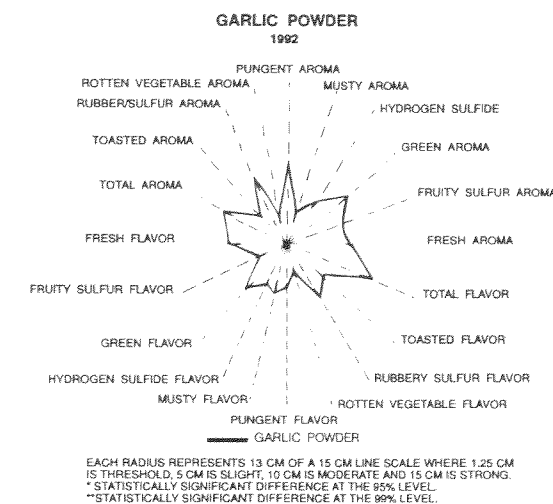
Table 1. List of Garlic Reference Standards	
Attribute	Reference
Green	Freshly cut grass
Fresh garlic	Oil of asafetida in 1.0% EtOH
Fruity Sulfur	Cantaloupe
Hydrogen Sulfide	H ₂ S
Rubbery Sulfur	Methyl allyl trisulfide @ 0.5 ppm
Musty	Alpha fenchol
Pungent	1 tsp. horseradish
Heat	Red pepper @ 0.15%
Sweet	2% sucrose solution
Metallic	0.1% ferrous sulfate
Bitter	0.07% caffeine solution

Once a common language has been established, the group will meet and evaluate the products by quantifying specific flavor notes or attributes.

Each descriptive panel consists of 10-12 trained panelists who taste 2 to 3 products during a panel.

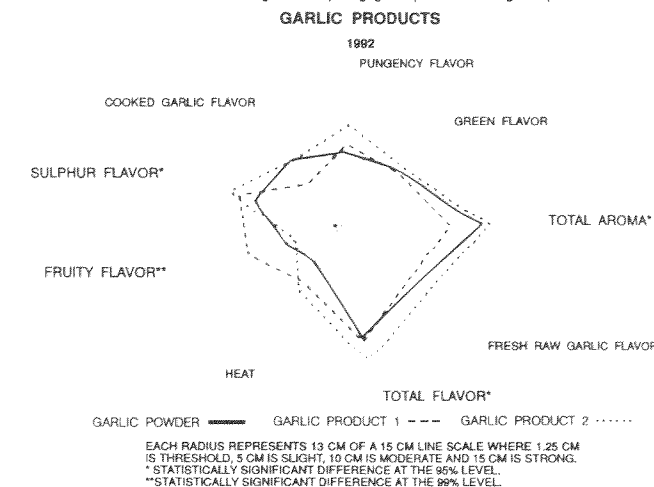
Panelists rate the intensity on a 15 cm line scale with 1.5 cm = threshold (barely detectable), 5 cm = slight, 10 cm = moderate, and 15 cm = strong for intensity of the specific attribute. The panel is conducted in such a way as to minimize human bias (for example, randomizing the sample presentation and evaluating under red lights to mask any appearance differences).

FIGURE 1. Star diagram of garlic powder.



The individual panelist ratings are compiled, and statistically analyzed using a customized data analysis program. The data are presented as a flavor profile (see Figure 1), allowing the observers to visually compare the attributes found in an item, in this case garlic powder. Furthermore, panelists can taste multiple samples and the star diagrams can be used to illustrate the differences between samples. Figure 2 depicts the difference between two garlic products and garlic powder. As we know, "a picture is worth a thousand words."

FIGURE 2. Star diagram comparing garlic products with garlic powder.



Mycorrhizae — The Fungi That Make Life (and Garlic) Possible!

By Christine Gruhn

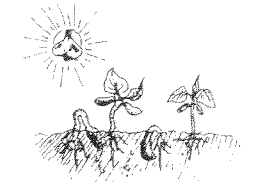
Literally "fungus-roots," mycorrhizae are a beneficial association between specific types of fungi and the roots of green plants, and most of the plants on the earth harbor mycorrhizal fungi within their roots. Why? It's fairly easy to figure out what the fungus is getting out of the association; as fungi are not green, they cannot make their own food, and these mycorrhizal fungi can get food that the host plant makes through photosynthesis. What about the plant? Why not kick out these photosynthate free-loaders and grow larger? Mycorrhizal fungi have threads of fungal tissue, called hyphae (pronounced Hi-Fee, definitely ripe for a play on words here, David), that extend out from the root and into the soil. When colonized by the fungi, the plant roots can gain essential nutrients, especially phosphorus, from a much larger volume of soil than they can through their roots alone. Mycorrhizal fungi may also benefit their host plants by improving water relations, producing antibiotics or plant growth hormones, which stimulate cell division. They also help improve soils and prevent erosion by binding soil particles together. Most of us who can conduct research on mycorrhizae believe that this relationship is an obligate one in most natural ecosystems, that is, the fungi cannot live without the plants, and the plants cannot survive and compete in the low-nutrient soils found in nature without their mycorrhizal partners.

And what about garlic? Garlic with onions, leeks, and most of its other relatives, is highly mycorrhizal. We have seen up to 70% of a garlic's root system colonized by mycorrhizal fungi. In onion, the presence of mycorrhizae can sometimes be detected with the naked eye. After a thorough washing of onion roots, note that some of them appear much more yellow than others—the yellow color indicating a root filled with mycorrhizal fungi. The next question—"Mushrooms are fungi, right? When can I go mushroom hunting in my garlic fields?" Sorry. There are two types of mycorrhizal fungi. Ectomycorrhizae, which produce both edible and poisonous mushrooms above ground while aiding plants below ground, form associations with trees, mostly pines. Arbuscular mycorrhizae, which are found with virtually all other plants, produce only microscopic spores in the soil. We are only now learning how to identify these spores in order to understand which arbuscular mycorrhizal fungi are present in a given ecosystem.

Think you could use less phosphorous fertilizers if you encouraged the native mycorrhizal fungi in your garlic? Yup. This has been proven through over 30 years of experimentation. How can you encourage beneficial mycorrhizal fungi to form associations with your favorite crop? Think sustainably. Low levels of phosphorus fertilization will encourage root colonization by fungal partners that will most benefit the plants. Be wise here—do not expect to immediately stop heavy phosphorus fertilization and be ready for a bonanza crop the next year while you let the mycorrhizal fungi do their thing. There are many different strains of the fungi, and after a few years of high fertilization, the strains that thrive and promote plant growth in low-nutrient soils will be gone from the soil, out-competed by those that can survive under the new conditions. These new residents generally do not improve plant growth, and experiments in tobacco have shown that they actually inhibit growth if low-nutrient conditions are again imposed. Why? They still take food from the plant, but without bringing in soil nutrients. Fungicides are definitely to be avoided, although other agricultural chemicals have also been shown to inhibit mycorrhizal fungi.

We are currently conducting research at Rose Valley Farm in upstate New York to look at another potential benefit of growing garlic. Our preliminary work shows that garlic becomes so heavily mycorrhizal that it does not care (at least in terms of mycorrhizae) what crop preceded it in a field, even if it was one of the rare nonmycorrhizal crops that are found among the brassicas and the crucifers. Upcoming experiments will ask if garlic can be used to "fire up" the levels of mycorrhizae in a field after a crop such as broccoli, and then plant a crop such as lettuce, that is highly dependent on mycorrhizal fungi? Stay tuned!

[Note: for the past couple of summers, Dr. Christine Gruhn (a member of our CSA and Assistant Professor of Biology at Nazareth College in Rochester, NY) has been walking about this farm with a small shovel and paper bags. Either with a student assistant or by herself, she's collected all types of plants, roots, soil, and compost, and taken them back to her lab for study. This work with mycorrhizal fungi is exciting stuff, and the garlic seems to be an important player. As more is known, Christine will keep us informed. D.S.]



NATION'S FIRST GARLIC FROM TRUE SEED PRODUCED BY USDA SCIENTIST

From *American Vegetable Grower*, Vol. 43, No. 3, March 1995

WASHINGTON, Feb. 7, 1995 — The first garlic produced from true seed in the United States has been grown by a USDA researcher in Madison, WI.

Typically reproduced by planting individual cloves, garlic was thought to be sexually sterile. But plant geneticist Philipp W. Simon of USDA's Agricultural Research Service has found numerous European and Asian domestic garlics and a wild ancestor that produce flowers, the first step of sexual reproduction. Of those plants producing flowers, only a small number produce seed.

Simon produced garlic seeds—a first for the U.S. garlic industry. Garlic plants that produce flowers are rare in most U.S. varieties. By cutting the flower stalk from the underground bulb and removing small bulbs mixed among the flowers, he was able to stimulate seed production in certain garlic strains.

Botanical seed derived from the garlic flowers—true seed—resembles small, black onion seeds.

"True seed shouldn't be confused with "seed garlic"—a term that refers to cloves or bulbs typically used to plant a garlic crop. Garlic's genetic and biochemical variation has been locked up in a long history of asexual reproduction. Our garlic varieties show variation in important economic traits such as clove size, skin color, flavor, number of cloves per bulb and maturity date," said Simon.

In his studies, Simon used 200 varieties of garlic, including standard U.S. varieties of *Allium sativum* and a wild ancestor *A. longicuspis*. He obtained the varieties from ARS's plant collection located at its Western Regional Plant Introduction Station in Pullman, WA. Sixty percent of these varieties, from germplasm originating in Brazil, Germany, Poland, and the Former Soviet Union, produced flowers.

"We're now working on combining traits of different garlic plants to improve garlic by developing new flavors to meet consumer needs," he said. "The genetic variation now possible may also result in plants with improved yields and disease resistance."

Producing garlic from true seed could also cut production costs because the seeds are smaller than cloves and are easier to handle, store, and transport. Also, reproducing garlic from seed would shorten the growing season.

A member of the lily family, garlic isn't a spice, herb or vegetable, but it can be used as all three. Garlic is well-known for its medicinal benefits: lowering blood cholesterol, fighting off infections and boosting the immune system.

The U.S. garlic crop—largely grown in California—amounts to about 250 million pounds annually with an estimated cash value of \$30 million. Fifty million pounds are sold as fresh garlic and 200 million pounds are dehydrated to be used as flakes, salt and in packaged foods.

A report on Simon's work with garlic seeds appears in the February 1995 issue of *Agricultural Research* magazine, the monthly publication of the Agricultural Research Service.

RITE OF AUTUMN

Maples burst into fire.
Stems lose their grip.
Lazy
lifting
leaves land
to be eaten by the Earth.

Air feels cool like brass.
Reluctant trees hold hands
with writhing vines.

Now and always, we plant
ALLIUM SATIVUM.
Tearing the Egyptian parchment,
we break the globe, color of bones, apart.

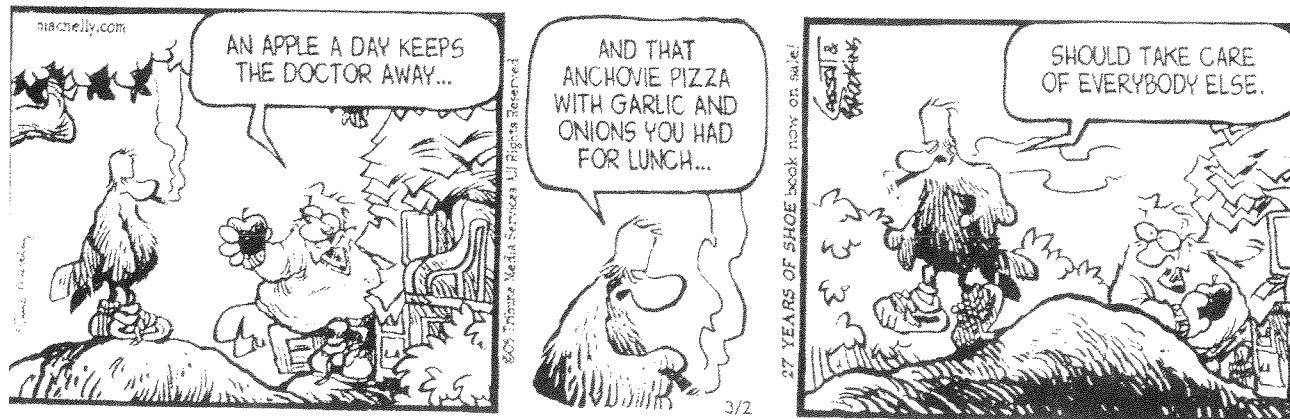
And plunge
the
pungent pulp
into the Earth.

Mary Ann Hadlock
63406 Saddleback Place
Bend, OR 97701

GARLACRONYMS

- Garlic Actively Repels Large Insect Colonies — Dr. A. Sativum
- Germ-free Antibiotic Resistant Living Immune Culture — Gene Ajoene
- Garlic And Radicchio Love Italian Cuisine — Jess A. Yappy
- Grow Alliums Repel Little Insects Chomping — Will "Al" Bee
- Gourmet Antipasto Relies Largely In Cloves — Uncle Pesto
- Glorious Aromatic Religious Like Incense Cooking — Allison Sawtay
- Garlic And Roses — Live-In Companions — Al Tryatt
- Garlic Aids Respiratory Lung Infections Consistently — Dr. Mccyup
- Grow And Reap Life In Cloves — "Harve" Ester Daly

SHOE



The Discovery of Allicin in Garlic

by Chester J. Cavallito

The formation of allicin in garlic provides the principal component for that vegetable's flavor and antimicrobial properties. The discovery did not originate from a program specifically directed to the study of garlic, but as an offshoot of a search for new antibiotics during the early 1940s.

In 1942 I joined the Winthrop Chemical Company research laboratories (subsequently Sterling Winthrop Research Institute) in Rensselaer, N.Y., and was assigned to do research in the then emerging penicillin field. Small amounts of a brown, crude substance containing about 1% penicillin periodically were made available with which purification and chemical studies were to be carried out. There were periods when only a small amount was available for research use, so time could be spared for other pursuits.

During the 1940s, new antibiotic substances largely were sought from among molds and other microorganisms. I became interested in the possibility of finding antibiotic-like substances from plants. A microbiologist colleague, John Hays Bailey, shared my interest. During spring and summer evenings and weekends from 1942 to 1944, I collected wild plants from woods and meadows, as well as cultivated vegetables, prepared crude extracts of these, and submitted them to the microbiology lab for screening for antibiotic activity. A number of plants were observed to show some degree of activity, and from these a number of active ingredients were isolated and characterized. Among them was allicin from garlic. The isolation, determination of chemical structure and description of properties (including antibiotic-like) of allicin were described in the *Journal of the American Chemical Society* in 1944. This was exactly 100 years after the first published description of some organo-sulfur compounds obtained from garlic by the German chemist T. Wertheim. Why so long before identification of allicin?

The answer lies in the instability of allicin. In the pure state or in solution, the substance undergoes chemical transformations that yield sulfur compounds of the type described by Wertheim and, in 1892, by another German chemist, F. W. Semmler. We demonstrated that these altered substances did not account for garlic's antibiotic properties.

The "trick" to isolating allicin from an extract from crushed garlic consisted of co-distilling the compound together with water vapor at low pressures and temperatures and separating certain impurities by selective use of solvents. Upon isolation, it was necessary to conduct any analytical work and physical measurements promptly. Water solutions of allicin were stored frozen until needed. Earlier studies using steam distillation and harsher treatments had resulted in chemical breakdown of allicin.

We also showed that allicin is not present as such in garlic, but is generated by the interaction of a stable precursor with an enzyme when the cloves are cut or crushed. Interestingly, a dehydrated powdered prepara-

tion from garlic was available (Basic Vegetables Co., Vacaville, California) that contained intact precursor and enzyme, which upon addition of water led to formation of allicin.

Allicin and a number of its chemical relatives shortly thereafter were synthesized with collaboration of a colleague, L. D. Small.

My research priorities soon were shifted to other directions, and pursuits on garlic research were followed up by a number of notable scientists. Preliminary clinical studies with topical preparations containing allicin were explored, antifungal activities demonstrated, but due to odor, product development was discontinued at that time.

As a chemist, an exciting aspect of allicin was the novelty of its structure at the time of its discovery. The "thiosulfinate" structural moiety containing two linked sulfur atoms with an oxygen attached to one was previously unknown. This is a highly reactive chemical and biochemical structure.

In the intervening years to the present, advances in separation and structure identification technologies in the hands of research scientists have led to the discovery of a number of compounds in garlic related to allicin and to other novel substances derivable from garlic. Some of these may have biomedical potentials. Particularly noteworthy among these discoveries over the past 25 years have been the research contributions of Eric Block at SUNY Albany.

Although many reports have appeared describing medical impressions from studies with garlic preparations, label claims for medical virtues cannot be made in the U.S. Food and Drug regulations would require evidence of efficacy based on so-called "adequate and well controlled studies," which would require major commitments of money and research with uncertainty of success and of market exclusivity.

Perhaps, in countries having a limited medical armamentarium, a lesson might be taken from Soviet doctors who, during World War II, not having penicillin, used crushed garlic preparations to treat amputation wounds to prevent infections.

[Note: Last March, Eric Block suggested that I contact Chester Cavallito, the discoverer of Allicin for a Press article. It took me 8 months to get to it, but what a great story! A young biomedical chemist, unable to acquire penicillin because of the war, walks out in the foothills of the Adirondack Mountains and collects 200 plants to screen for anti-microbial properties. He finds activity with garlic, which is inconsistent with current literature, and further investigates to isolate new substances (Allicin) and determine their properties. His findings were published in 1944, but his employer didn't continue the product development because of the smell! When asked why he named it Allicin, the response was, "It was close to Allium, and there was no other substance so named." Many thanks to Chet for the history cartoons and article, and to Eric for the push. (D.S.)]

Garlic bread can be breath of fresh air for men of the family

by Jerry Zezima

The good news in our humble household these days is that I, the man in the family, have become excellent company at the dinner table and, as a result, have helped make dinner a much more pleasant experience for my wife and children. The bad news is that I have really bad breath.

And I owe it all to garlic bread. Actually, I owe it all to Dr. Alan Hirsch, the neurologic director of the Smell & Taste Treatment and Research Foundation in Chicago, who recently discovered that the smell and taste of garlic bread has a powerful and positive influence on men.

According to the Pepperidge Farm Aroma Study, in which Hirsch used that company's frozen garlic bread to study more than 180 people in 50 families, the smell of garlic bread enhanced positive family interaction by 68.4 percent, while the taste of garlic bread increased pleasant communication by a whopping 99.4 percent.

But the most astonishing result is that garlic bread was found to be the only known aroma to have a greater positive effect on men than on women or children. Indeed, it caused the men in the study to have 96.4 percent fewer negative interactions with family members, and it virtually eliminated negative comments made by males during dinner.

"As we head towards the millennium, maintaining family ties is a constant challenge," states a press release from Pepperidge Farm. "According to these findings, serving Pepperidge Farm Garlic Bread with a pasta dinner would clearly enhance the quality of family interactions and perhaps lead to greater satisfaction and

stability in the family. So, if you want a closer-knit, happier family, maybe all you need is a little garlic bread."

As the garlic breadwinner in my family, as well as the man who comes to dinner, I was delighted. After all, I like garlic bread as well as the next guy. Fortunately, the next guy lives in another house. So I decided to call Hirsch for some pungent comments.

"The male is usually the most dominant member of the family and also has the most negative interaction at meals," he explained. "Men tend to be more critical of others. By sniffing or eating garlic bread, a man can develop a more positive outlook and have more pleasant interaction with family members."

Another way to have more pleasant interaction, Hirsch added, is to eliminate the man.

"If you got rid of the dominant male," he said, "there would be very few negative interactions. Not that I recommend this."

A good thing, too, because judging by the way some men behaved during the study, elimination is an option many women have probably considered.

"We visited 50 families twice each, and you'd think people would try to be more polite," Hirsch reported. "In the presence of our observers, females were more polite, but males continued to be rude. Males were either ruder all the time, or males and females were equally critical, but females were more aware of strangers in their surroundings. Maybe males are just naturally oblivious."

Whatever the reason, the smell and taste of garlic bread resulted in "a

tremendous reduction in negative interaction."

"One theory is that the males were too busy stuffing their faces to say anything," said Hirsch, adding that garlic bread worked so well at dinner that families should consider having it at breakfast, too. "Though maybe not with scrambled eggs," he said.

Although Pepperidge Farm garlic bread was used in the aroma study, "it could be any brand," the good doctor noted. "You could even make it yourself."

Which is exactly what we did the other evening. While my wife made pasta, our daughter Lauren made a loaf of garlic bread. In an effort to be useful, I got out of the way.

Soon the kitchen reeked of garlic. "My," I said pleasantly, "that smells good." Nobody responded.

The interaction was even better at dinner.

"Please pass the garlic bread," I said to my daughter. She passed it. I took a piece and stuffed it into my mouth. "This is delicious," I mumbled.

"Thank you," my daughter replied. "And the pasta is wonderful," I said to my wife.

"Thanks," she said.

The conversation continued in this lively manner throughout the meal, during which I had a total of five pieces of garlic bread.

Afterward, we all smelled so bad that we avoided each other for the rest of the night. As I am sure Hirsch would agree, the family that stinks together, stays together.

JERRY ZEZIMA is a columnist at *The Stamford (Conn.) Advocate*

OPTIMISM IN GARLIC PLANTING

Daniel A. Donnarumo (10/30/84), Canton, Ohio

In the Fall of the year,

I plant my garlic with cheer;

I dig the soil two weeks ahead,

So the ground may settle in its "bed";

I pick the choicest of the cloves,

And make furrows row on row;

Four inches deep—six inches apart,

I nestle each clove with heart;

As I finish my garlic planting,

My heart dingles and it's chanting:

Let Winter come and Spring arrive,

Green sprouts are seen outside;

The garlic has weathered the coldest days,

And now is bursting as if to praise;

So, we look ahead for a brighter season,

When earth's green comes out for reason;

The resurrected plant of this earth,

Is much more precious than gold's worth!

Garlic Viruses and the Ontario Industry

by Dr. Lome Stobbs, Research Scientist, Southern Crop Production and Food Research Center
Agriculture and Agri-Food Canada, Vineland, Ontario, Canada

A two-year survey (1998-1999) was conducted by the Southern Crop Protection and Food Research Center (SCPFRC) and Agriculture and AgriFood Canada (AAFC) to assess the incidence of virus diseases in the garlic industry in Southern Ontario. Thirty-one commercial garlic growers were surveyed, with 13 varieties being tested. These included Chinese Softneck, German Hardneck, German White, Italian Red, Italian Softneck, Legacy, Lucie Anne Hardneck, Music, Nellie, Polish Gem, Polish Hardneck, Polish Softneck, and Siberian, although most growers were growing Music, exclusively. Garlic samples taken from all sites were infected with garlic latent virus (GLV), averaging 62% overall infection. Infected plants exhibited mild yellow streaking and mottling. Symptoms were less noticeable or absent by mid-July. Onion yellow dwarf virus (OYDV) was found at 93% of the sites, and was present in approximately 38% of the plants at each farm. Infected plants exhibited mild mottle or were non-symptomatic. Leek yellow stripe virus (LYSV) was present at 85% of the sites, averaging 12% infection. No statistical differences in percentage infection were seen among the various varieties infected with any of the viruses. Many of the plants were infected with more than one virus. By mid-July, the viruses were widespread in the fields, and the presence of the green peach aphid, a known vector of GLV, LYSV, and OYDV, was likely associated with horizontal field transmission.

In garlic, the viruses are seedborne. Since most of the seed planted by growers was either obtained from their previous crop or from local suppliers, the high levels of field infection are not unexpected. Further spread of the viruses occurs as aphid populations rise in the field, with many fields approaching 100% infection by harvest.

GLV and LYSV were transmitted by the green peach aphid from garlic to garlic, leeks, and onion. OYDV was similarly transmitted to garlic and onion. While the symptoms of OYDV infection were mild to negligible in garlic, the virus caused severe yellow striping, leaf curling and stunting in onion. The presence of OYDV in garlic could seriously impact onion production if infected garlic was introduced into onion production areas. Since a source of clean seed is not currently available to garlic growers, it is likely that these viruses will continue to spread and increase within the Ontario industry.

The widespread distribution of viruses within the garlic industry is cause for concern. Yield reductions in excess of 25% have been attributed to GLV, LYSV and/or OYDV infection. With increased public focus on the medicinal properties of garlic, the acreage of this crop across Canada has rapidly increased. Demand for seed has been met by local suppliers, with no assurances that the seed is free from viruses. Efforts need to be made by the industry to develop a clean seed program to ensure the health of an expanding industry.

MIDWINTER'S SPRING

Have you seen the garden, fair?
Closed your eyes and known it's there?
Taken flight some starry night
Drawn by some uncertain light
To the heart beneath the snow
Pounding steady to the glow
Of winter's music, far below your feet?
The garlic's song is hidden there
Tucked away, your hands were there
To pat to sleep and cover warm
Thru seasons of approaching storm.
And now it's brought you back it seems
Still not awakened from these dreams
Where fairies light and magic dew
Convince the skeptics, even you,
That year around the growing goes
Like nodding heads to their repose
On cycling thru this endless time.
Hear the meter, hear the rhyme,
For this the garlic master dreams
And out that breath the sulfur screams
Wake up! Wake up! The time is near
To tend the field and prune the pear,
To tap the maple's rising sap.
It's time to rise from out your nap,
See the bulbs and bulbils grown,
Know the truth you've always known.
Life goes on! It's always been
A dance we dance and dance again.
As one clove only ever grows
Every night the sower sows this dream ...
So, have you seen the garden, fair?
The pollen floating in the air?
Have you felt the heated noon
Tho' cold has covered yonder moon
That shines like shadows rising green
To lift the mulch and hasten spring?
On to where the day begins
To beckon forth the scape, my friends.
And longest day its signal sends
To sharpen blades, your back it bends,
For on and on the harvest grows
Within the heart inside the cloves.
And all this life the cycles sure
Have messaged all to time endure
Tho' variation is the rule
Forget the logic and the school
And close your eyes to see the spring.
So ever do the fairies sing
To those who patiently await
The swinging of the garden gate.
So waken now, get in the mood
We're all the guardians of our food!

(B.D.)

ORIGINS AND DISTRIBUTION OF GARLIC (continued)

each year, according to the United Nations Food and Agriculture Organization.

Although widely cultivated, it is only since routine seed production became possible in the 1980s that garlic can be called a domesticated crop, since a strict definition of domestication is the process of selective breeding of a plant or animal to better meet human needs. Clones held by growers today have been maintained as separate entities, but a system to confirm or refute the identity of a given clone has not been established. Only with several seasons of careful field observation can garlic clones be identified, and even then ambiguities often remain. For example, virus infection can dramatically reduce plant size and vigor, and alter leaf color and shape, making unequivocal garlic identification impossible.

Why Fingerprint Garlic Clones?

Fingerprinting was developed to prove, or disprove, the identity of humans. Today the term "fingerprinting" is used more widely to include evaluation of DNA patterns of any organism. High-profile criminal/legal proceedings have made the concept of fingerprinting (in its broader sense) familiar to the general public in that context. The very same DNA methodologies useful for humans are applicable for any organism.

What can be learned from garlic fingerprinting? Three situations arise where it would be useful to have an unequivocal means to verify the identity of a garlic clone: identification of existing garlic clones in production, tracking of new garlic clones derived from true seed as they enter and move into production, and development of a garlic lineage.

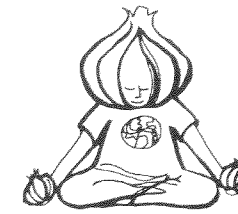
For garlic, there is a good likelihood in any large collection that several garlic clones held under different names are, in fact, identical. Another scenario we often confront is that several clones occur as a mixture under the same name. This brings us to the first motivation for fingerprinting garlic. The possibility that perhaps only a few thousand garlic clones were collected in Central Asia and found their way into cultivation outside of that region with a vegetative method of propagation, makes the prospects for an opportunity to fingerprint most of the garlic cultivated today a realistic proposal.

Furthermore, with true garlic seed being produced on a large scale today, many new clones will certainly enter the production stream for the first time in history. With this, the need for varietal identification becomes more urgent. A DNA fingerprinting effort of garlic today will serve as a useful foundation for tracking new clones coming to growers in the future.

A third rationale for DNA fingerprinting of garlic is more subtle. This methodology not only tells us that Clone A is different from Clone B and Clone C, but it also can tell us how closely related Clones A, B, and C are relative to each other. In this way DNA fingerprints provide modern insights into historical events for which no other historical record is available. Comparative analysis of DNA fingerprints have provided important insights about the origins and movement of human populations, cultivation and domestication histories of crops and farm animals, and sources of disease organisms.

Garlic is a compelling and well appreciated, but little-studied crop. It has a long history in the hands of humans and a significant monetary, health, and social value in modern society. A better understanding of garlic origins and distribution may help us better understand not only garlic, but perhaps our own human history.

[Excepted from http://www.hort.wisc.edu/usdavcru/simon/garlic_origins.html]



OUT OF MY HEAD

Bob Dunkel

Ain't Broken/Got Fixed

Mother, this is broken
I'm sorry, can it be fixed?
The Mother opens her heart
Holds the clove near, and says
Leave it with me awhile....

A season of doubt ensues
As if the earth herself were lost
Dead and lifeless, suffocating 'neath snow...
Then, one morning we awaken
There is birdsong in the half light of morn
Reminding us in white rupturing tips
That the mending has begun!

Then, the symphony of life is awhir
Everywhere merges the form of seed
In its embodiment of now...
We watch the wonder of each new leaf
Building its stairway skyward
Atop which the scape will be a spire.

We tend to that to which we are endeared
We feed and strengthen ourselves
From this edifice of chlorophyll
In which we seek not immortality
But patience to await its gentle passing.

In hospice we continue our attentiveness,
Then one day The Mother speaks:
Out of the cacophony of green everything
She says, Here my child, here is the bulb
Do not fret nor worry, for now it is whole
It has always been whole, but
In your lookingness you were lost!

In every part of life I am there
Even in death you must trust me
None is lost, and there is only change...
But you and this bulb and indeed all things
Have an eternity that is ever present
But not always to eyes and fingers
But indeed to your hearts!

(B.D.)

Jesus lived in Japan, village legend maintains

Reuters

SHINGO VILLAGE, Japan — Jesus Christ's direct descendant is a garlic farmer living in northeast Japan, or so residents in this isolated village say.

According to local legend, Jesus escaped here after the Romans tried to crucify him and died a peaceful death here at the age of 106 after having fathered three daughters by a Japanese woman.

(*Democrat and Chronicle*, Rochester, N.Y., Thursday, June 2, 1988)

The Origins and Distribution of Garlic: How Many Garlics Are There?

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Garlic in History

Garlic is among the oldest known horticultural crops. In the Old World, Egyptian and Indian cultures referred to garlic 5000 years ago, and there is clear historical evidence for its use by the Babylonians 4500 years ago and by the Chinese 2000 years ago. Some writings suggest that garlic was grown in China as far back as 4000 years ago.

Garlic grows wild only in Central Asia (centered in Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan) today. Earlier in history garlic grew wild over a much larger region and in, fact, wild garlic may have occurred in an area from China to India to Egypt to the Ukraine.

This region where garlic is grown in the wild is referred to as its "center of origin," since this is the geographic region where the crop originated and the only place where it flourished in the wild. In fact, although we sometimes hear about "wild garlic" elsewhere in the world, this is the only region where true garlic routinely grows in the wild without the assistance of human propagation. There are other plants locally referred to as "wild garlic," but these are invariably other species of the garlic genus (*Allium*), not garlic itself (*Allium sativum*). For example, *Allium vineale* is a wild relative of garlic that occurs in North America and is commonly called "wild garlic."

The "center of origin" for a plant or animal species is also referred to as its "center of diversity," since it is here that the broadest range of genetic variation can be expected. That is why those of us who have sought to find new genetic variation in garlic have collected wild garlic in Central Asia.

Once cultivated by the first garlic farmers outside of its "center of origin," what types of garlic did early aficionados grow? In fact, we know almost nothing about the early types of garlic produced. No designation of garlic varieties was made in the early writings discovered to date, be it hardneck or softneck, red or white, early or late, local or exotic. Throughout its earlier history some have speculated that softneck garlic was the predominant type cultivated, although evidence of what would be interpreted as a hardneck type was found interred in Egyptian tombs. It was not until garlic was cultivated in southern Europe within the last 1000 years that the distinction between hardneck and softneck was routinely noted. Until more ancient writings that describe garlic are found, or old, well-preserved samples are unearthed, we can only speculate about the early types of garlic grown.

Garlic producers and consumers have come through 5000 years of history growing and eating their crop with little need to specify type or variety. In fact, it is a rather modern habit of only the last few hundred years whereby more detailed descriptions of varieties have come to be developed for any crop plant.

Garlic Migration, Propagation, and Reproduction

Throughout history, humans migrating and travelling through central Asia and surrounding areas have collected wild garlic (and still do) and carried it with them for later consumption and cultivation. In 1989 I was fortunate enough

to participate in a germplasm collection expedition seeking garlic and other Alliums in nature reserves of Central Asia. We observed primarily hardneck garlic in the wild, but some softneck plants also occurred. It is easy to imagine early garlic connoisseurs migrating beyond the natural range of wild garlic and carrying wild garlic far from its center of origin. Only with cultivation could a supply for subsequent years be assured. And so garlic came to be cultivated.

The wild hardneck garlic we collected is among the more prolific for production of true garlic seeds. We presume that the vast diversity that has been observed in cultivated garlic goes back to variation generated from sexual reproduction in the wild crop. In contrast to wild garlic, as far as we know, garlic in cultivation throughout history has only been propagated asexually by way of vegetative cloves, bulbs, and bulbils (or topsets), not from seed. These asexually propagated, genetically distinct selections of garlic we cultivate are more generally called "clones." Unlike sexually reproduced crops propagated from seed, vegetative reproduction assures a very uniform crop.

Yet this asexual lifestyle of cultivated garlic forgoes the possibility of combining traits proffered by interpollinating diverse parental stocks. Let's say you have two garlic clones, Clone A and Clone B. Clone A has excellent yield but poor storage ability, while Clone B stores well but yields poorly. Without an opportunity for interpollination and sexual reproduction, the only way to obtain a garlic clone with high yield and long storage is to wait for the desired mutation(s) to occur in Clone A or Clone B. If these two clones can, however, be interpollinated and set true seed, a very realistic opportunity exists to develop a new line with both desired traits in several generations of progeny selection beyond this cross. Sexual reproduction and selection are at the heart of plant breeding in agriculture and, for that matter, evolution in wild plants.

No sexual reproduction, that is, production of true garlic seed, was underway in cultivated garlic before the 1980s. Therefore, relatively small numbers of garlic clones, perhaps numbering only a few thousand, have been in the hands of growers around the world through most of history. We conjecture that these clones represent the cumulative array of garlic diversity resulting from sexual reproduction in the wild which has been disseminated from its center of origin throughout history and then been able to successfully produce a crop in the hands of garlic growers around the world today. Superimposed upon the variation resulting from sexual reproduction of garlic in the wild, we can also expect to find variation due to mutations that accumulated throughout the history of cultivation of the crop.

Garlic Today

Garlic is a crop widely grown for fresh market by many producers on a small scale for local markets and, particularly in the U.S., by a few large-scale producers for processing and fresh sales. About one million hectares (2.5 million acres) of garlic produce about 10 million metric tons of garlic globally

In Days of Yore they Stunk Much More...

by Louis Van Devan



From a book on English lore: In the British Isles girls would scratch the names of their boyfriends on each of four onions and put them in the dark to sprout. The first one to sprout will have the name of the boy she will marry. An onion under a girl's pillow on St. Thomas Eve (whenever that was) was supposed to bring dreams of the one she would marry.

And in our U.S., a necklace of onion or garlic placed around the neck of a child was said to ward off diseases, such as diphtheria. Note: I think the antibacterial effects of such vapors have been claimed.

A tantalizing item from 1990 says that at the University of New Mexico someone gave a paper on the use of garlic concentrate in meningitis. They said it worked as well or better than the antibiotics usually given. It was said to be given by mouth. No more information.

And a 1989 book by H. W. F. Saggs, *Civilization before Greece and Rome*, Yale University Press, has, concerning the trade of Sargon with Tilmun, Magan and Meluhha just before 2,000 BC: "The goods brought back included, in addition to copper as the main cargo, beads of precious stones, ivory and onions." And in a chapter on medicine in Egypt in about 2,000 BC, it has: "Another way of testing for ability to conceive was to introduce garlic into the woman's vagina. If the smell of garlic appeared on her breath the next day, she would conceive. Scientifically unsound as this test was, rational thinking and not magic lay behind it; the Egyptians must have thought that failure to conceive was linked to blocked passages inside the woman's body, which would prevent the transmission of the scent of garlic" (pp. 140-141 and 247-248).

Some notes on older references: Theophrastus (*Inquiry into Plants*) has quite a bit on the alliums, but the index in the Harvard edition is a pain to use. Had to look up the English first, and only then could I go to the Greek index and get section and paragraph numbers. Some of the references turned out to be just a mention of "onion" when comparing, say, how the leaves of various plants are arranged, etc. Cato, Varro

and Virgil: These three Latins all wrote of agriculture, but seem mainly concerned with the big cash crops of the day: olives, grapes, grains, and fruit. And the indexes to their works had nothing on the lowly onion or garlic. Consulted were Cato and Varro, both had titles "De rustibus." Virgil's title was "Georgics."

The Egyptian *Book of the Dead* has had many translations. Probably the best known is by E. A. Wallis Budge, 1895 edition. It has many funerary talks. One talks about "the white teeth of Horus." Onions were called this in some hieroglyphs. The words from Budge's book are not as graphically telling as one would hope. Many hieroglyphs are visually obvious, but not for these. Many of the signs for onions share the word "white" and have the generic sign for plant also. I don't know how to reproduce these onion signs.

In *Ancient Herbs*, by the J. Paul Getty Museum, they have: Nero was said to have favored leeks to strengthen his voice before making speeches, and onions were on Horace's list of economical foods. Apicius used onions, leeks, shallots, chives, and sometimes garlic in his sauces, dressings and vegetables.

More on Columella

In the Fall-Winter 1994-95 issue there appeared an article by me on Columella, the elusive first-century Roman who wrote on agriculture. We know virtually nothing about him and the majority of his works have disappeared in the lost files of time. I recently reread his only known extant books, *De re rustics* and *De Arboribus*, and found a few more allium notes. The Harvard Classical Library edition has his complete known works, which isn't all that much; a ten-volume *De re rustics* and a very short book on trees, *De Arboribus*. For that matter, all of his books are quite short, like a chapter in a modern book, like most of the very old books we know of. The Harvard edition has the Latin on the left-hand pages and the English translation on the right-hand side. I believe the translators were a little hesitant to cite the exact phraseology, due to 1940 ethics. The entire Book X (10) is written in verse, similar

to Virgil's works. The somewhat Bowdlerized version of lines 104-106 by Harvard is:

"Let onions' fruitful seed from Megara come,
Which sharpen men's desires and fits them for
the girls,

Then lines 111 to 113:

With fibres soft, garlic with much-cleft heads,
Wide-scented leeks, all that a skilled cook
Mixes with beans to make a laborer's meal.

A few other references to alliums are in this poem, but all refer to cooking them in various dishes. Book XI brings us to his "African garlic." The German edition by Lindstrom tells us this is "either a form of *A. sativum* or *A. nigrum*." The modern *A. nigrum*, grown mostly as a flower, has bulbs about one inch in diameter and so is definitely not the *A. nigrum* of Columella. He says that it (and Carthaginian garlic, which is probably the same) is much larger than regular garlic. His recipe for making pickles sounds quite modern. He soaks them in a liquid with garlic, onions and mustard.

Describing the time to plant garlic, he says that in districts that have frost in winter, it is best not to plant in autumn. Quite different from the advice we get nowadays. He recommends planting "ordinary or African garlic" in January. (Much of Italy then, as now, was quite warm then.) But, "Whenever we are going to sow them or, when they are already ripe, are going to store them in a loft, we shall be careful that the moon is below the earth (not visible that night) at the time when they are either put into the ground, or taken out of it; for it they are planted or, on the other hand, laid away under these conditions, they are held not to be of a very pungent flavor nor to give an odor to the breath of those who chew them." Then, "Nevertheless, many people sow them before January 1st, in the month of December in the middle of the day if the warmth of the weather and the situation in the ground allows." So planting by the moon cycles was known 2,000 years back. I wonder how many actually got out and planted at night when there was no moon.

JIM HIGHTOWER, KICKASS POPULIST

[From *The AAM Reporter*, November 10, 1987]

"Reagan promised everyone a seven-course dinner. Ours turned out to be a possum and a six-pack."

"From Wall Street to the White House, our nation's ethics are being perverted by a pernicious philosophy of greed: 'I got mine, you get yours'; 'Never give a sucker an even break'; 'Adios chump!'"

"They give it a fancy new name like 'Supply-side economics,' but underneath it's the same old greed. It's like putting earrings on a hog—you just can't hide the ugliness."

"They talk about a boom, but a boom for whom? Sure, Wall Street is whizzing, but it's whizzing on you and me."

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

"If you did to a 7-Eleven what Reagan has done to the American economy, you'd be doing 20 years to life in a state prison."

"Out here at the grass-roots, we've had all the 'Reaganomics' we can stand. 'Reaganomics' is spreading throughout the countryside."

TALKING SENSE

"We cannot allow American gumption to be reduced to a valueless pursuit of self-aggrandizement, as measured by condos and cars, CDs and cuisinarts."

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

"Let's put the jam on the lower shelf so the little people can reach it too."

"True economic growth is based not on trickle-down, but on percolate-up."

"Instead of investing in the greed of the few, let's invest in the genius of the many—small businesses, entrepreneurs, wildcatters, dirt farmers, workers, cooperatives and other grassroots enterprises."

"The water won't ever clear up 'till you get the hogs out of the creek."

"These plutocrats like to say, 'a rising tide lifts all boats.' But it never occurs to them that not everyone has a boat! Of course, their crowd is floating around on yachts, sipping cabernet and sampling fine pate. But the majority of Americans are splashing around in an old, leaky inner tube, trying to get by on a tall Bud and Slim Jim. These folks are wondering when a president's going to get on their side for a change."

"We've got to go to the people with bold ideas and candidates with conviction—we've got to be hotter than high-school love!"

"There's nothing in the middle of the road but yellow stripes and dead armadillos."

"The central issue is this: too few people control all the money and power, and they use that control to hold down the rest of us. Farmers and consumers, small business and labor, middle-income and low-income, beansprout-eaters and snuff dippers—we're all together in this struggle against The Powers That Be."

"Like the old-time Populists used to tell hard-hit farmers: It's time to raise less corn and more hell!"

THE GARLIC SONG

by Ruthie Gordon

Adapted by Charlie King

There are spices and vegetables that you may grow
That rejoice in the harvest each fall.
Tho' they all have their qualities this you must know,
The Garlic is King of them all.

You can use it to flavor a breakfast-time treat
Or spice up a vegetable stew.
In fact it enhances each dish that you eat
And it serves as a medicine too.

Since biblical times, in all places and climes,
It's eased countless sufferings and ills.
If we knew the work of the clove so sublime
We'd throw out our poisonous pills.

The Egyptians, Phoenicians, Vikings and Greeks
Babylonians, Danes and Chinese
On their voyages took enough garlic for weeks,
And their enemies died on their breeze.

In Bulgaria's mountains and Russia's wide plains
People live to one hundred years old.
For its the juice of the garlic that flows in their veins.
Oh, its worth twice its weight in pure gold.

With Selenium, Germanium, and Allicin too
It can fight many kinds of disease.
So if you have arthritis, bronchitis or flu,
Just say, "Peel me a garlic clove, please."

They put garlic in gardens to keep away worms
And other bad things that hurt plants.
If you're one of those persons concerned about germs
You can drop one or two in your pants.

There are spices and vegetables that you can grow
Of all colors and shapes, large and small.
By the weight of this evidence now you must know
The Garlic is King of them all!

Greens Tripled My Garlic Sales GROWERS FINDING NEW REVENUE SOURCES IN NON-BULB PARTS OF GARLIC

Francis Pollock
Saylorsburg, PA

My farm's garlic sales tripled this year when we started selling garlic greens.

Furthermore, the greens started bringing very welcome money to the farm in mid-April, and then again all through the fall, right up to Christmas. Next, we may move to hot-house production so we can sell the greens all winter long.

And, one thing's for sure—America is ready for garlic greens! Already two of the leading gardening magazines (*Organic Gardening* and *Harrowsmith/Country Life*) have enthusiastically reported on garlic greens. And one major newspaper, *The Philadelphia Inquirer*, devoted the front page of a food section to them. "The garlic greens made the dish fairly sparkle with flavor," exclaimed *Inquirer* food editor Elaine Tait. Look for more and more food editors and reporters to "discover" garlic greens in the next year.

Most of the readers of this publication already know the joy of a pesto made from garlic greens in early spring. How almost indescribably good it is slathered all over some freshly-made pasta. And they know the familiar scenario played out on the faces of people as they experience garlic-greens pesto for the first time. First, there's mild skepticism (tempered by the pervasive aroma that fills the kitchen). Then, even before they taste, their eyes begin to smile. And with the first mouthful ...!

So, why not sell garlic greens?

Rolling Hills Farm stumbled into garlic greens by accident: Some poorly harvested garlic the year before had decided to regenerate itself where it definitely wasn't wanted. It was dug and dutifully transplanted to a new field, with hopes for the best and expectations of the worst. We got the worst (small, unharvestable bulbs), or so we thought. But it turned out to be the best after all.

About the time we were puzzling over what to do with the unharvested garlic, along comes Bob Rodale, recently back from China with wondrous tales of that country's passion for garlic greens (and seedstems and bulbils, too). A passion that runs so deep thousands of hothouses are kept busy all winter long just producing garlic greens.

So, as fall came on, the unharvested garlic started producing greens, and lots of them, too, of course (each bulb was throwing up 10 or more stems). Quite naturally, we made our first garlic greens pesto. And then more and more pestos. And now we're in the garlic greens business.

Give it some consideration for your own operation. Consider the benefits:

• **More money from your garlic.** As noted, garlic greens tripled our farm's garlic income in the first year we started selling them.

• **Much longer selling season.** You'll be selling from April to Christmas. All-year round if you go with a greenhouse or hothouse.

• **Excellent market prices with very good value to the customer.** The market now supports a price of \$15 per pound for garlic greens. (And that is with the bulb left in the ground so it can give you at least one and possibly more crops of greens in the same growing season.) \$15/lb. is an

acceptable price because garlic greens, when processed with olive oil, cheese and other ingredients, will yield 8 to 16 half-pint containers of garlic-greens pesto. Your per-unit garlic cost could be less than \$1, less in fact than either the cheese or olive oil. So it really is an inexpensive component, and acceptably so, to properly cost-conscious cooks.

• **Lots of spin-offs.** Make and sell pesto, too. You'll have a good market for it.

• **An explosive growth market, and one not yet cluttered with much competition.** Garlic greens sell themselves, and they bring repeat business. You'll soon find yourself never having enough greens to sell, no matter how much you expand your operation. Yet, there are few farms in the Northeast raising and marketing garlic greens now (there are some on the West Coast). And with the high cost of seed garlic, entry into the market is expensive, but a natural for garlic farms that already have their

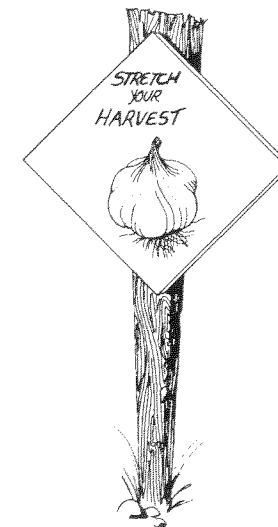
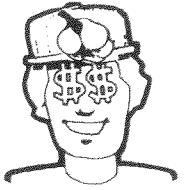
seedstock built up.

• **Can only strengthen your bulb business.** As you build your customer base on garlic greens, you'll be adding new customers as well for your bulbs (and braids and whatever other garlic products you sell).

• **Above all, you'll be making people happier and healthier.** Comforting thought in these chilly times.

Some Uses for Garlic Greens

Highest and best use is garlic-greens pesto, we think, but the range of possible uses is almost limitless. Just simply chopped, they can be added to almost any dish, much like chives. They can be worked into salads and salad dressings, used in or on top of soups, stews, stir-fries or casseroles, or sprinkled on garlic breads, potatoes and other vegetables. Any good culinary mind will come up with dozens of perfectly acceptable other uses.



Why Do Folks Fail With Garlic?

To "fail" means to be unsuccessful in the production and economic aspects of the culture of garlic and suffer mental frustration as the producer. Each year I get to talk with 500-600 growers, from the USA and throughout the world. I visit 100-150 operations as well, and I have seen the failure and listened to the disappointment. This is how I base the following and will say that the inverse of any of these is often attributed to the success and satisfaction of the producer.

The continued emphasis on the varieties, and not the soil, is a complete mystery to me. I understand it's all marketing, to grow something that's new or different and produce sales of seed (or books, posters, etc.). However, the variety might not be as important as the soil quality. An average variety grown on good earth will always outproduce a great variety grown on concrete. A plant shall only grow to the potential of the soil. Good money is spent to purchase good seed stock as an investment. Take care of it.

The soil issues are many, and the pH is both the easiest place to start and probably the best investment for the money: balance to 6.8-7. Garlic needs well-drained soils to allow the roots to get air and to grow deep. The texture of the soil and the organic matter need to be protected with the use of plowdown green manure cover crops and rotations. Erosion, top soil loss, will end your farming career quicker than cheap Chinese imports! Most of us need to clean the garlic for market. Sand cleans good, clays don't: choose your soils.

Weeds, and the failure to control them, are singularly the most common reason for failure in the conventional or the organic field. Weeds are smarter, faster, and stronger than any of us — been here longer and shall continue after we're dirt. We must learn to deal with and live with these "undesirables." They'll out-compete for sun, water, and nutrients as the passive garlic collapses. You might own the Cadillac of harvesting tools until you take it on a poorly managed field.

When I look at the personal qualities that contribute to failure, inefficiency tops the list, because of the number of operations in garlic's production. The producer needs methodical and analytical skills and an organized environment. I shall add to this point the issue of labor and how/when it should be employed. There are certain times when it makes absolute sense, and the money is well spent in weed control, harvest, and planting. Cultivate good relations — it pays!

I've had the pleasure of meeting with some of the big grain farmers of the Midwest who are downsizing and diversifying. The thought of 10 acres of garlic is nothing when you're farming 3,000 acres of wheat, while to most of us 10 acres of garlic is suicide! The quality of the garlic is secondary to the quality of life. Don't forget: enlarging from ¼ to ½ acre isn't *twice* the amount of work — it's twice the work in *each* of the 20 times you touch the garlic! Think Amish — the horse has kept their farms of a manageable size, in family proportions, balanced. Cooperative ownership of a custom tool or line is better than financing.

While marketing is probably one of the most important aspects of today's farming, it's enjoyed the least by most of us. We'd rather clean out the pig barn! But watch the folks selling all the varieties, the books/posters, and the subscriptions. While we're in the fields, they're in the bank.

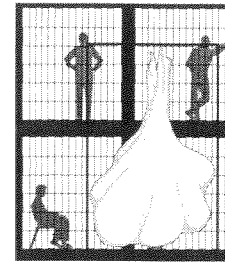
We must do a better job and use our eyes, ears, and brains. Get in the market place with the garlic greens, scallions, scapes, and *A. tuberosum* (chives). Create the market if you need to. We compete with *quality*, then price. If a restaurant is using "CA whole peeled" out of a 5-gallon plastic bucket on the floor of the cooler, "Cookie" ain't gonna' know good garlic when (s)he smells it! Think regional at maximum, local as optimal in any marketing plan. "Value-added" braiding and pickling, catalog and Internet sales, and festivals seem to be working out. Cooperative marketing appears to be moving volume in some markets successfully. We can grow good garlic in most parts of North America, excellent garlic. We can produce a higher quality than the market demands. The market appears to be satisfied with the inferior factory product at cheap prices. That's the challenge: raise the quality and raise the price.

It's just an awful lot of work, and I often feel that we're either crazy or we really love this stuff. As many of us know, these are not particularly good times for this end of the business. We work hard for a fragile limited return. Through the floods, hailstorms, and grasshoppers, doing everything right has also ended in failure with this business.

(D.S. com)

Garlic Shack

Wrappers, leaves and roots
Cover my boots
Overhead, are bunches
And bunches of garlic with markers
And the undersides of their aging beards
Bushel baskets and crates
Tubs and sacks on screens and racks
Everywhere from front to back
That is my garlic shack
"Stinky Stinky Stinky"
Chimes my wife
"It's the smell of life" say I
And dirt, what else is there
But dirt, everywhere dirt
Sometimes there is music
But mostly it is quiet where I work
Work and listen, listen and work ...
Garlic has a loud way about it
And it always has something to say:
Too wet, too deep, too dry
Too crowded, too rocky, too dirty today!
Or sometimes just right, just right!
Nine months in its world
The other three in ours
Waiting, waiting
Wanting to get back
Back from the garlic shack
Yackety yack, just talk back ...



Chow Time

Dice it, any way you spice it. Grub, Swill, Swine, it's all divine. And food laced with garlic, just call it mine!

The mess hall can hardly be called a four-star restaurant, especially when the spaghetti moves around on your plate like Medusa's head. Our objective is to get hold of the raw ingredients, so one can prepare a halfway decent meal. There are ways of achieving this goal, such as worming your way around into someone's locker, like some of the riff-raff here, but that's not very healthy. You're likely to run into "Big Bubba." Another way is to hook up a contract with someone who works in the mess hall. This way you can purchase all sorts of stuff and cook it yourself. Two packs of smokes will get you two onions, two peppers, and some left-over hot dogs, but who knows how old the hot dogs are - could be as old as the Al Capone days.

You have to take your chances. Such is life in the Brig. I entered our make-shift kitchen the other day, to put together one of my famous dishes, and came upon two shady characters named "Big Ray" and "Fishface." As I began to prepare my dish, Big Ray asked, "Yo, Chef Ed, could I get a bit of garlic Bro?" I said, "No sweat, slick, here ya go," and gave him some. Well, as soon as he turned his big head, "Fish" reach over and tried to swipe a clove. That second, Big Ray grabbed Fish's hand with lightening speed. That's when I hit the deck, as a tornado of food took flight. I was able to flee the scene, with my garlic in tow, only to witness Fishface's head being shoved into a garbage can. When the storm was over, the make-shift kitchen was left a cataclysmic obliteration.

I never saw any more of Big Ray and Fishface, but rumor has it they won't be doing any cooking for awhile. They should have taken that famous AVP program, then the lines of communication would have been an option. And all in the name of food, Glorious Food! Talking about food, here are a couple of my behind-the-scenes (or should I say WALLS) recipes from the pantry of the pen.

CLOTHES-IRONED GRILLED CHEESE

- 2 Slices of cheese
- 2 Slices of bread
- 1 Crushed (Rose Valley Farm) Garlic Clove
- 1 8x10 sheet of aluminum foil
- 1 Clothes iron, heated to medium temperature

Put cheese between the bread, sprinkle garlic, and wrap in foil. Lightly press iron on foil, and let rest for one minute. Turn over and repeat on other side. Unwrap, and Voila! Iron-Grilled Cheese!

MONSTER MASH POTATOES

- Three small potatoes
- Four large Garlic cloves
- Two Tablespoons of butter
- Some salt

Boil potatoes in a coffee pot with water and not coffee. Mash up potatoes, add butter, and sprinkle with salt. *It bees real Phat!*

Food, glorious food. It's one of our main objectives here in the land of Oz—the glorious consumption of food!

English, the universal language of the modern world, spoken in many countries and villages, communicated in one form or another and easily understood by an enormous number of *homo sapiens*. From the Southern drawl to the Northern twang, the English language remains a staple on the table of all who consume it and all who regurgitate it.

The English language can be spoken or written one way, and understood another way. Here in the brig, you have to choose your English very, very carefully. One slip of a verb or noun could get a person in real hot water (literally). Jail House jargon is a rather complicated lingo that all who enter these walls of pain must learn very fast so as to stay on top of all the goings around and not get set up by casual verbiage. I will try to translate some of this gobbledegook for you, just in case one day you have to use it. (Hey, you never know!)

"Yo, check it, don't play yourself lame or I'ze push ya wig-back." This strange statement means, "Hey you, don't start trouble or I'll punch you out." A "cry-me" is someone's best friend, cause he would "cry for me." "Peeps" is another word for "cry-me," cause "peeps" means "people." "We's peoples. Yo cryme, show me some love." Translation: Getting a hug from your best friend. "Get-ta steppin'" is "Leave from here right now!" When you hear someone say, "On the chillsnill," he is actually saying, "Time for chow" (my favorite saying). Here is one I hear all the time: "You Chef Ed, hook me up with some Gillsnarlic," that is to say, "Chef Ed, could I get some Garlic?" "Phat" means something is really good. "Chef Ed, your Gillsnarlic is Phat."

It's a strange kind of lingo, but a necessary one at that. When a turnkey is around and within hearing distance, dungeon dialogue is used so a jailbird does not "trap himself off," or incriminate himself. There is a whole lot more that I can share with you, but the rest is not very nice. So, to D.S. & B.D., and all who read *The Garlic Press*, mad love to all my Crymes & Peeps!

— Chef Ed

RADIATOR RAVIOLI

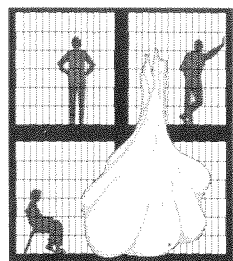
- 1 Can of Ravioli
- 1 Crushed (Rose Valley Farm) Garlic Clove
- 1 Hot Radiator

Open can of Ravioli and drop the garlic into the can. Place on the radiator. Go to the yard for half an hour. When you get back, Voila! Radiator Ravioli!

RAG-OUT STEW

- Two carrots
- Two tomatoes
- Leftover monster Mash Potatoes
- Five slices of bologna cut in strips
- Five large Garlic cloves

Chop up carrots, tomatoes and bologna, and add to your coffee pot with two cups of water, chopped garlic and leftover MMP. Simmer for 15 minutes and eat! *Phat Chillsnill ...*



Chow Time

Editor's Note: Folks ask why I spend time behind the walls and gates. Meet Chef Ed, born and raised in "The City" and that environment, now specializing his experience and skills in horticulture, and tending the largest Begonia in the world (Guinness Book of World Records). Any ideas, suggestions or communications for Chef Ed: contact him via GSF. [D.S.]

Greetings fellow garlic connoisseurs. This is friendly Chef Ed writing to you from unfriendly Mid-Orange Correctional Facility. I would like to share with you some of my gourmet Jail House Garlic recipes and ideas that I have created to give my taste buds a flavorful fiesta and my body a natural defense mechanism to ward off any Jail House diseases that are floating around ready to attack. As a resident of the New York State Department of Corrections for seven years, I have to say that living in a controlled environment tends to discourage anyone's taste buds. Thanks to the saving effects of the Almighty Allium sativum, illness is a rarity. I have also been able to enjoy even the distaste-full dish they call "food" served in the Mess Hall. Now I know why they call it *Mess Hall!*

My Mother, God Bless her health, cooks with garlic all the time. (Boy do I miss Mom's cooking!) Mom always tells me, "Edward, eat Garlic and you will always be safe." Well, she's right! Chew a clove a day, and when a corrections cop wants to hassle me, he quickly moves on. Now I know it works on Vampires!

I can testify to this, my friends, prison is not the place to be. Before my incarceration, I took life for granted. Now I pray for the freedom I so misused. Getting involved with drugs is major uncool; it will make you do things unheard of. But, as in life, we learn from our wrongs and move on to greener pastures, garlic fields, and a yearning to help your neighbor—to blanket the lives around you with peace, goodwill, and garlic breath. Prison life is a very lonely life—no friends, no letters, no life. But I have followed these famous words by yours truly: "Don't fill your life with time, fill your time with life!"

I think the real problem is that people are moving too fast. I know I was. This place sure slowed me down some. My philosophy as a Chef is not limited only to my skills in the preparation of garlic-laden foods for my constant consumption. I occasionally prescribe recipes for a number of ailments of the mind, body, and soul—sort of a garlic cooking, smelling spiritualistic Chef! A fellow rueful felon came to me one day for some advice. Vinnie Ice Cream asked, "Yo, Chef Ed. My girl left me. I can't take it, bro! What should I do?" I sat him down, gave him a clove of garlic to chew on and said, "I hold it true, whate'er befall / I feel it, when I sorrow most. / 'Tis better to have loved and lost / than never to have loved at all." It took three weeks for the bump on my head to go down.

Uncle Tony stopped by to see me one day while I was making Garlic Bread Bastille (*Press #28*) and said, "Chef Ed homeboy, this time I'm doing is killing me. I want to be going home." My response to him was, "'Mid pleasures and palaces/ wherever we may roam / Be it ever so humble / there's no place like home.' How poor they are who have not patience. Life is brief and time is a thief, but soon you'll be home and thankfully at peace." Well, needless to say, Uncle Tony was feeling a whole lot better, especially since he swiped some of my garlic exiting my kitchen.

It's tough being Chef Ed. If any of you folks out there in dreamland thirst for some mystical advice, just write to me, c/o G.S.F. I'll fix your wagon!

Speaking of filling, the stomach is one thing that is always empty when you're at this kind of resort. Cooking with Garlic is a chore when you are unwillingly detained. All we are able to use is a homemade hot plate and hot pot—both contraband, and if found would temporarily put my gourmet cooking out of business. Getting hold of the main ingredient is half the battle. The commissary sells garlic bulbs in a little blue box, but it's not like having the big elephant stuff. I've tried growing my own, but as with the rest of my vegetables, the produce seems to disappear at night. It must be the groundhogs, four-legged and two. Most of my dishes are with raw garlic; I love the taste and the effect it gives me. All this talk about food has made me hungry, so without further ado, let me share with you some of my favorite Jail House quick-fix dishes using the epic, extraordinary Garlic!

Next time, my friends, I'll share with you my famous recipe for Rice Diablo and Garlic, and handy every day uses around the house (cell) with Garlic. Peace to all!

— Chef Ed

LOVE STINKS

[by Stefan Pietersen, Nov. '93 *DE WALM*]

My lover was a garlic addict
She'd take a shot four times a day
She never searched for any conflict
But ev'rybody left when she had something to say
So she sent it my way.

Love stinks - Love stinks - My way.

Like Americans fatten on donuts
And English shrink on tea
The garlic caused her to stay lonely
Till my stuffed nose allowed her to bewitch me.

I have made a study of the smells
I bet ya I could trace my love
Out of a hundred thousand science shells
Cause she's just got that something
A perfume from rotten pumpkin
A mix of fart from heaven in this little hell.
(chorus)

Though I still think that garlic really stinks
I have found a little remedy to heed
I'll think of sweaty armpits, hands and feet
And praise God she hasn't got one of those things.
(chorus)

Just Listen to the joyous voice in which we sing
Our deeper, inner sides in which we sink
The love links
When we stink.

On Garlic and the Rites of Autumn

The lifestyle choice of farming offers both privilege and challenge to those willing to endure the hardship and uncertainty inherent in the profession. As a group, those of us who embrace the endeavor of growing vegetables as our lifestyle tend to be unflinching optimists. Our clock is not measured with minutes and seconds, rather degree days, number of days to maturity, cool season crops, etc. For this reason many of us choose to honor the ancient calendar of the vernal and autumnal equinox, the solstice of summer and winter, and the seasonal midpoints Imbolc, May Day, Lammas Day and Samhain (recently observed as Halloween in its current incarnation). Our agrarian ancestors recognized these celestial points because of their relevance to the insurance of food, i.e., whether feast or famine might have rule over their daily lives. Science and technology have allowed most of us here in the United States a separation from this vital preoccupation. Supermarket shelves are always stocked and processing allows us practically any food at any time—regardless of its natural season. In growing vegetables, though, the reality of seasons and weather takes on a different meaning from the supermarket experience.

As farmers, then, we turn our clocks back to the ancient rhythms and, at times, find ourselves out of sync with the "outside world." At the Eco-System farm in Accokeek we sometimes "tinker" with this natural rhythm. We use cold frames, hoop tunnels, and greenhouses that allow us to extend the season of both cool and warm weather crops. This provides all of us involved with our experiment in Community Supported Agriculture the true taste of locally grown vegetables in their appropriate season, and at times beyond the "normal" limits of the growing season.

And, as in every autumn, we set our clocks back and begin to hunker down for the inevitable cold and dark; so it is with garlic.

Garlic. Allium Sativum. The Stinking Rose. Russian Penicillin. Of all the crops we grow it is my absolute favorite; more than any other, it marks a rhythm in our lives as vegetable growers. The last week in October is when we set out the garlic that we will harvest the next July and August. It is a crop that takes nine months to mature and the only one that we grow that is not propagated by seed. The clove we eat (unless treated for market with a sprout inhibitor - a practice we do not embrace) is the clove we plant.

Actually, we select only the largest cloves from the largest bulbs that we harvest, a Mendel-like activity we conduct every mid-October known as "cracking and sorting." This age-old practice of genetic selection insures that the "best of the crop" is what we preserve for all future generations. This is the one exception where our CSA won't get out absolute best.

The smaller cloves we don't plant also get sorted; some go to us the growers (our winter medicine), and some will be planted for garlic scallions - which we will offer for the first time to our CSA next spring. The smallest bulbs, those that were not sent out in CSA boxes or planted for future harvest, will be planted as is, the entire "tiny bulb." In mid-spring, we will harvest "garlic greens" from these tiny bulbs (edible leaves - great for spring pestos and salads). These "greens" can be harvested off each "plant" three times in the early season, making for a great spring tonic food.

Finally, from the cloves planted for next year's bulbs, we will get garlic "scapes," those serpentine curls we snip from the center stalk of the Hardneck strain of garlic we grow at

the Eco-System Farm. From this glorious allium, then, we are able to harvest four crops each season: the greens, the scallions, the scapes, and finally—in its full stinking beauty—the bulb.

As a lover and grower of Garlic, I mark my calendar to its distinct life cycle. Each day in autumn, as we peel the cloves for our lunch (we slice them and eat them raw in sandwiches), we note the growth of tiny roots at the basal end. These little "nubbins," as I call them, are telling us it is time for the garlic to "go to bed."

In late October, with all the bulbs cracked and sorted, the beds prepped with soybean meal (a slow release source of Nitrogen which becomes available as the developing bulb needs it most in spring), we set out our garlic. We plant two Hardneck varieties; these are easier to peel and have a more pleasing flavor than their softneck cousins found on supermarket shelves. The first is a German Rocambole I brought down with me from Central New York. This is our fourth season together and represents a majority of the planting stock (we plant 1000 row feet, 4" deep, 8" in a row and 10" between the rows). The second is a continental variety called "Music." This variety is brought to us via our MOFFA friend Tony Sarmiento (Tony has won the blue ribbon for Garlic at the Maryland State Fair more times than we can keep count).

Assuming good weather, the garlic goes to bed in late October. About a week after planting, time and weather permitting, we mulch over the garlic with a thick (6-8") blanket of hay or straw. This schedule gives the infant cloves 4-6 weeks to develop roots deep enough in the soil to endure the winter freezing of the soil. The mulch helps with weed control in the spring, conserves moisture in the soil and builds soil tilth as it decomposes.

The garlic goes to bed and, metaphorically, so do we. It's the last "urgent" activity of the season. We spend the next few weeks regaining our "center" before going dormant ourselves.

In February, as daylight increases, the garlic again appears. It is always the first sign of "cultivated" life in the field; such a wondrous and hopeful sign. Our bodies ache for sun and soil and stretch out too as we inhale the enriching spring air and prepare our fields for a new season.

So much life from this stinking yet time-honored clove. It is known historically for its power. Roman soldiers ate it raw before entering battle, and the first known labor strike was over Garlic (the "laborers" on the Great Pyramids in Egypt were stirred to protest when denied their daily rations). It is revered in cultures worldwide for its curative and culinary properties. For myself—in times of duress in the field—I find solace in the garlic plot. Somehow, simple meditation over the wonder of this noble plant offers peace and hope to the weary soul; not to forget its wonderful flavor and aroma.

There is much written on this crop, and increasingly its medicinal values are being appreciated and accepted by Western medicine. And for a good read on farming, garlic and observations on life in general, I recommend *A Garlic Testament: Seasons on a Small New Mexico Farm*, by Stanley Crawford (New York: Harper Collins, 1992).

[Written by Shane J. LaBrake, Farm Manager, Eco-System Farm, Accokeek Foundation, on the shore of the Potomac River, Maryland.]

Garlic Production Management

by John Zandstra, Ridgetown College, University of Guelph

With the dramatic increase in garlic acreage in recent years, as well as a trend towards mechanization in garlic production, many challenges face the industry. Research focused on management issues of garlic have been ongoing in Ridgetown College for the past 3 years. Initially, local growers were surveyed in order to develop a direction for this work. From their involvement, several topics were chosen, which included seed orientation, the use of straw mulch, timing of scape removal, and seed quality.

The trials are located at the Ridgetown College research farm, on a site which contains a Brookston clay loam soil. Seed stock (Music strain) was provided by a local grower. The trials are planted in early November in 28-inch rows, with the garlic spaced 4 inches in the row.

Seed orientation was evaluated for 2 years, in response to the concern that mechanical planters did not always place seed in an "ideal" orientation. Treatments included planting seed in the ideal position (blunt end down) vs. sideways, and upside down (blunt end up). While we found no difference between garlic planted sideways and right side up, the emergence of garlic planted upside down was consistently delayed, and yield was reduced by 30% in 1998. In both years, the size of the bulb harvested from seed planted upside down tended to be smaller; for example, in 1997 the bulb size from other treatments peaked at extra jumbo grade size while bulbs originating from seed planted upside down peaked at the giant grade size. However, the overall impact of less than ideal planting orientation by mechanical seeders is likely minimal; the frequency of seed being planted upside down is small, and if it does occur, yield reduction may be 30% at the most on this small percentage of cloves.

The application of straw mulch at seeding to prevent heaving over the winter has been investigated for the past 3 years. This practice gained interest after the winter of 1995/96, which saw a lot of heaved garlic and significant yield losses. Some local growers use straw mulch on a regular basis, and find it effective at reducing this problem. Overall, we have found little differences in response to mulch application, due to the mild winters experienced over the past years. In 1999 a significant yield reduction was found in plots receiving mulch, but this was felt due to a delayed maturity caused by soil moisture retention by the mulch. The tops of the garlic in these plots were greener, and top weights were considerably higher, suggesting a delayed movement of food reserves from the tops to the bulbs.

If you plan to use straw mulch, other aspects of production need to be considered. Weed control is often better when using mulches because of their effect of smothering weeds, but we were not able to reach this conclusion. In the first year, most of the straw had blown away by early summer, while in other years weed pressure was not that great. The only problem we found was an increase in grass weeds (wheat) if the straw was not clean, but this is not difficult to control. Harvesting operations can also be affected by the presence of mulch, which was apparent in 1999. In this season the straw did not feed well through the harvester, and caused it to plug on several occasions. This problem was worse than in previous years,

likely due to lack of degradation of the straw because of the dry weather.

Several aspects of scape removal were also evaluated. While work done at Simcoe in the mid-1980s demonstrated improved yield when scapes were removed, there are occasional reports of no yield response, which questions the need for this practice. We wanted to re-evaluate this practice in southwestern Ontario, and also determine how long a grower could delay scape removal without negatively affecting yield. Treatments included removal of scapes at various lengths (4, 8, 12, and 16 inches) and no scape removal. Results clearly indicate that scape removal is beneficial, as yields were reduced on average by 38% when they were not removed. However, no yield reductions were found when scapes were allowed to grow up to 16" long. This would indicate that from a yield standpoint, it is not necessary to remove scapes soon after they appear. If you are using them for consumption, you will still want to remove them when they are small in order to prevent them from getting tough.

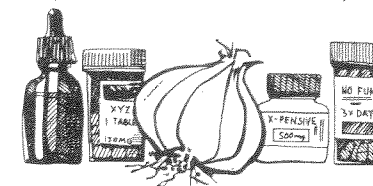
Seed from a local grower, which had been overheated and turned light brown during curing, was planted in 1999 and evaluated for vigor and yield. Germination trials were done in the lab, which indicated that while vigor appeared slightly reduced, all the cloves were viable. This study was done because the grower wanted to see if the garlic was fit to sell for seed, since it was not saleable on the fresh market. Early emergence and vigor was good, and top fresh weights at harvest were similar to plants from undamaged seed. Visually, in the field the plants from the browned seed looked as healthy and vigorous as the plots established with undamaged seed, yet yields from plots established with the browned seed were significantly reduced. This was due to a reduction in the number of bulbs harvested per plot, so while the seeds appeared viable, some did not survive the summer or develop into a harvestable plant. Obviously, certain types of damage to the seed which may appear superficial can cause problems later on, and only high quality seed stock should be used.

For the 2000 growing season, we are continuing with several of the topics discussed above. We have yet to determine how long scapes can remain on the plant without affecting yield, or demonstrate a benefit when using straw mulch. We are also continuing to work with foliar fertilizers, and the relationship between seed size or the size of the bulb the seed originates from, and final yields, and should be able to make recommendations in the future. New topics which we are evaluating in 2000 include the effect of various degrees of leaf removal on the yield and quality of garlic, in response to the use of mechanical scape removers. We have also established trials evaluating the influence of row widths and in row seed spacings on garlic yield and bulb size as well as trials evaluating nitrogen rates and application timings.

For complete trial reports, visit the Garlic Growers Association of Ontario website at www.garlicgrowers.on.ca, the Ridgetown College website at www.ridgetownc.on.ca, or contact us at (519) 674-1627 or e-mail jzandstr@ridgetownc.uoguelph.ca.

SUMMARY OF THE CARDIOVASCULAR EFFECTS OF GARLIC

Larry D. Lawson, Ph.D., Murdock Healthcare, Springville, UT (2/5/93)



Consumption of moderate amounts of garlic cloves, garlic powder, and certain garlic preparations have been shown to have consistently favorable effects on blood lipids (cholesterol, triglycerides, LDL-cholesterol, HDL-cholesterol), blood pressure, and blood circulation in both animals and man. In the past 30 years there have been 220 scientific studies on the cardiovascular effects of garlic and garlic compounds. Although most of these have been in vitro (test tube) studies, 40 of the studies demonstrated that feeding garlic to animals did decrease elevated blood lipid levels.

Since 1975 there have been 31 human clinical trials conducted on the lipid-lowering and blood pressure (determined in only 8 of the studies) lowering effects of garlic and garlic products with persons having moderately high serum cholesterol levels (> 240). All of the studies in which patients consumed either garlic cloves (5 studies, 3-10 grams/day) or stomach acid-resistant, high allicin-yielding garlic powder pills (14 studies, 0.6-0.9 grams powder/day, which is equal to one small clove weighing 1.8-2.7 g) showed significantly decreased blood cholesterol (6-29%) and triglyceride (8-34%) levels. In the 8 studies where blood pressure was measured, there was an average decrease of 10%. LDL-cholesterol decreased 11-26% and HDL-cholesterol ("good" cholesterol) increased 0-14%.

There have been 4 clinical studies with garlic powder pills which failed to change the blood lipid levels. In all 4 cases, the allicin yield of the powder pills was zero or very low, a very good indication that allicin is the active component of garlic for reducing lipid levels. Animal studies, however, indicate that allicin is not responsible for the blood pressure lowering effects of garlic. Allicin is not present in cooked garlic, but the blood pressure lowering compound is.

Another type of garlic product is the garlic oils, of which there are two types: steam-distilled oils and oil-macerates. There is no oil in garlic. Garlic oils are a result of commercial processing of garlic in which the allicin released

from chopped garlic is converted to other sulfur compounds. In steam-distillation or cooking, allicin is converted to allyl sulfides (mainly diallyl trisulfide and diallyl disulfide). Steam-distilled oils are the main type of garlic oil sold in the U.S. Both animal and human studies have failed to demonstrate any effects of steam-distilled oils on reducing blood lipids.

The second type of garlic oil, oil-macerate, is produced by blending chopped garlic with a common vegetable oil, such as soybean oil. In a few hours, this process converts allicin to new sulfur compounds called vinyl-dithiins and ajoene (ajoene was discovered by Prof. Eric Block of the S.U.N.Y. Albany and has been shown to possess cardiovascular activity). Oil-macerate pills are rare in the U.S., but are very common in Europe. An important feature of the oil macerates is that 4 clinical studies have demonstrated that they do lower blood cholesterol and blood triglyceride. Furthermore, in India a three-year study has recently been conducted by a Dr. Arun Bordia with oil-macerates involving 432 people who had prior heart attacks. The group was split in half so that half were taking garlic oil-macerate (15 mg undiluted/day) and half were taking a placebo. After three years the people taking the garlic oil-macerate had 35% fewer second heart attacks and 45% fewer deaths than the placebo group. These are truly remarkable results. This type of mortality study also needs to be conducted with garlic powder pills.

An important aspect of the cardiovascular effects of garlic are the low doses needed compared to standard pharmaceutical drugs used for cholesterol reduction. A 15% reduction in elevated serum cholesterol levels requires 2 grams of clofibrate, 16 grams of cholestyramine, 1 gram of probucol or 15 grams of soluble fiber. The same reduction is achieved by 1 gram of dried garlic (3 g fresh garlic (containing 5 mg of allicin) or 15 mg of undiluted garlic oil-macerate.

Byron W. Dalrymple, "Weird Baits That Work," *Field and Stream*, (March 1992), p. 44.

Some of the most ingenious but dreadful baits are those concocted for catfish. A neighbor of mine built one that was awful. He soaked milo grain in water in a bucket, set it in the sun until it fermented, and then stirred in a couple of boxes of snuff. Cats, he claimed, like tobacco. Next came a handful of sliced garlic. After the hot sun had worked on this mess, in went the main ingredient: chicken entrails. When this hideous mixture, stirred occasionally, was thick mush, he cut squares from his wife's discarded pantyhose and, wearing rubber gloves, made little bags of it, tied with monofilament, which were then tied to the hook.

I suspect I'm the first to divulge his secret potion, which was pure murder on catfish. By the way, he gave his catches away. Said he couldn't abide eating fish that could stomach such awful stuff. Anyway, by the time he'd tested his weird bait there was no one to cook his catch. His wife had left!

THE SMELL OF HISTORY

Columella

Louis Van Deven



The ancient Greeks and Romans had a number of writers on agriculture. Three of them can be singled out because of the volume of their works that are known today. A Greek, Theophrastus, lived in the 4th century B.C. Two Romans, Pliny the Elder and Columella, lived in the 1st century A.D. and wrote extensively on nature and agriculture.

We know very little about Columella (Lucius Junius Moderatus Columella), not even his date of birth or death. Aside from his mentioning various 1st-century people he knew, and that he was born in Gades (now Cadiz in Spain) and seems to have lived a long life, he is a rather blank page. It seems certain he left Roman Spain at an early age and settled in the Italian Peninsula. He also probably served in the Roman army for a time.

Like our modern writers on agriculture, the ancients concentrated on the big cash crops of their day. They speak at great length on wheat, oats, barley, various tree crops and livestock. You have to hunt for the references to the alliums.

One oddity I found was that there are a total of 8 references to onions in Columella's 12 volumes of *On Agriculture*, and 7 references to garlic—and 13 to leeks! Were leeks more important than onions and garlic? Columella (also Pliny) makes no mention of onion or garlic farms, perhaps most were grown in people's yards or on their farms. Leeks produce a lot of seeds per plant; possibly they liked this and preferred to plant the seeds yearly, instead of separating garlic cloves.

After several hundred pages with no allium references, we must go all the way to Vol. VI to find our very first allium reference, this wonderful animal remedy!

It will be no use to give cattle a satisfying diet, unless every care is taken that they are healthy in body and that they keep up their strength. Both these objects are secured by administering, on three consecutive days, a generous dose of medicine compounded of equal weights of the crushed leaves of lupine and of cypress, which is mixed with water and left out of doors for a night. This should be done four times a year—at the end of spring, of summer, of autumn and of winter. Lassitude and nausea also can often be dispelled if you force the whole raw hen's egg down the animal's throat when it has eaten nothing; then on the following day, you should crush spikes of "Cyprian" or ordinary garlic in wine and pour it into the nostrils.

A number of other such exotic mixtures are given, with no explanation of how you force these vile concoctions down the nostrils of an enraged bull.

Then no more allium comments until Vol. VIII, and it is on raising peafowl and chickens. Speaking on chicks, we get this expert advice on feeding them:

During the first days they should be fed on barley meal sprinkled with wine and with gruel made from any

kind of cereal and allowed to go cold. Then, after a few days, a Tarentine leek cut up small should be added to their diet and soft cheese, etc.

No more mention of alliums is made until Vol. X. A few meaningless lines are given in a long poem. Then he has a calendar for gardeners, and says in the month of February you plant onion and leek seeds, and adds: "for ordinary garlic and African garlic are the last seeds that can be planted at this season." Interestingly, he says leeks and onions should be started in a sunny location and transplanted by the 1st of April. And what is African garlic? The German translation of Lundstrom says it is "either a form of *A. sativum* or *A. nigrum*." What is *A. nigrum*?

Columella then says: the African garlic, which some people call Carthaginian garlic, is of a much greater growth than the ordinary garlic, and about October 1st, before it is planted, will be divided from one head into several.

He also has some advice that sounds quite up-to-date even now:

African garlic, like ordinary garlic, has a number of cloves sticking together, and these, when they have been separated, ought to be planted on ridges, in order that, being placed in raised beds, they may be less disturbed by winter rains. Cloves should be set at the distance of a hand's breadth from one another.

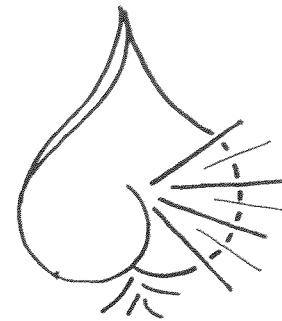
Apparently great-headed leeks (Elephant garlic) were known then. He tells us:

As for the leek which you wish to form a large head, you must take care that, before you transplant it and re-set it, you cut off all the small roots and shear off the tops of fibers; then small pieces of earthenware or shells are buried beneath each of the seedlings to serve as a sort of vase, so that the heads of a larger growth may be formed.

In Vol. XI we get some advice on raising onions:

An onion-bed requires soil that has been frequently broken up rather than turned over to any depth. Therefore, from November 1st onwards, the ground ought to be cut up, so that it may crumble with the cold and frosts of winter; then after an interval of 40 days, and not before, the process should be repeated, and again carried out a third time 21 days later, and the ground manured immediately afterwards.

Columella gives a number of recipes in Vol. XII, which I will forego, as they seem possibly lethal. But he also has some excellent advice along the way: Ground does not wear out if properly manured. And he advises crop rotation, alternating a grain and a legume, which is exactly what our farmers do today when they alternate soybeans and corn. And the above-mentioned raised beds. He was a smart cookie!



TAIL WINDS

I freely and openly admit to my fascination with the natural sounds that emanate from our body cavities. Have those sounds erupt in the sanctity of worship, clutch of intimacy, or other "inappropriate" occasions, and I erupt in laughter.

And the smell — What can you say to those of us who work in bib overalls? One of my earliest childhood memories of laughter and pain was the result of accepting a challenge from my cousin and slipping a loaded Whoopee Cushion beneath my descending grandmother at Thanksgiving dinner. And in some locker room we used a match to ignite the released gas and the place exploded in howls of laughter and disbelief (an early science experiment).

"Passing gas," "Bronx cheer," "breaking wind," whatever your vocabulary, the "fart" or "flatulence" is a common denominator for those of us who eat garlic (Membership Survey, *Garlic Press #19* - Question: "Does garlic make you fart?" Yes: 87%) To some, this phenomenon has become an evil affliction and medical literature advises doctors that in some cases, particularly gaseous individuals should refrain from jobs associated with electrical sparks where chance of explosion could be a risk factor.

Until recently, very little research was done on the subject as there were few methods of study. The volume, composition, and frequency are all in some way related to our age, diet, heredity, air swallowing, stress, antibiotics and colonic fermentation. The 30% of us who produce excess internal methane generated by colonic bacteria have a higher frequency rate, which is probably genetic and seldom occurs in any child less than 2. Five odorless gasses comprise the majority of the volume of any fart: nitrogen, oxygen, carbon dioxide, hydrogen and methane. The odor of the flatus that we so readily recognize is imparted by: skatole, hydrogen sulfide, volatile amines, indole, and short-chained fatty acids; compounds detectable to the human nose in concentrations of one part per 100 million!

What makes us fart? Well, diet is an important factor. Certain foods in certain people become explosive. The formulation in the colon of indigestible materials (i.e. cellulose and fats) creates excessive amounts of hydrogen and its passage. Air swallowing from chewing gum, dentures, stress, irregular breathing, and mastication (chewing mechanics) increases gastrointestinal air volume. There is also some gas diffusion from our tissues and bloodstream into our bowel, but this is not of consequence to most of us living below 35,000 feet. I can report that this is a BIG problem for the astronauts, and in 1985, France and the Soviet Union held high-level diplomatic talks on this matter during a joint space venture.

What is the mechanism of internal gas production? The excessive volume of gas (from above) changes the internal pressure, which, in turn, prolongs the transit time through the

system or refluxing of gas from the small intestine back to the stomach. The partial digestion of foods and the remaining material's interaction with our internal flora create the remaining gas volume. "Floating Stools" are considered a sign of excess internal gas.

If you want to do something about it, the big issue is *diet*, or as the research puts it: Avoid flatulogenic foods! It's the greatest factor, and there are universally recognized items: Milk and milk products, onions and garlic, beans, carrots, garlic, prune juice, celery, raisins, bananas, garlic, apricots, pretzels, wheat germ, bagels, cabbage family veggies, and garlic. In beans, it's the cellulose of the skin (try digesting sawdust). In milk it can indicate some lactose deficiency. You will fart less if you identify these foods in your diet and remove them. If you want to keep your diet, try adding: antibiotics or biotics (like Been-o), some will work while others won't; simethicones reduce the surface tension on gas bubbles (defoamers) increasing absorption rates and very successfully (76% in early studies); anticholinergics decrease intracolonic and rectal pressures, which allows the material to pass through our system at a normal rate; charcoal has been used since 1830 to absorb and bind up excess gas due to its enormous surface area. Lastly, if you are stressed-out or taking the related medication, both work against you, because one increases the speed of digestion and the other inhibits it.

This isn't all I learned in my quest, however. Nope, there's a whole other side of this issue. Madline Shueller was a society matron and banker's wife in England, and during the course of a fancy party of dignitaries, while Madam Madline was introducing guests, she introduced "a very loud, very unmistakable sound! Everybody tried to ignore it, but there was just no way — and God help us, some of us just had to laugh." Ms. Shueller returned home and ended her life. But on a happier note, there is Joseph Pujol, a French baker and musical performer, who worked at the Moulin Rouge in Paris from 1892-1914. Pujol went by the name "Le Petomane," the Man of a Thousand Farts, and learned at a young age that he had the muscle coordination to bring air into his rectum. Once inside, he learned to modulate the exhaled sound from the almost inaudible to the sharpest and most prolonged. Odorless! This led to his career on the stage impersonating the farts of famous people and musically with the aid of a tube and tin whistle ... a veritable fart fantasia.

I conclude my report with some interesting observations from *Flatulograms* (graphed statistics from population studies): We don't fart very much when we sleep — almost never between 3:00-8:00 a.m. We fart most between 9:00-10:30 a.m. and 3:00-7:00 p.m. We average 14 farts per day, with the volume between 400-1600 ml (each). In my next paper, I shall calculate the contribution of methane gas production (25% of each fart) by humans to the issue of global warming.

Happy Winter '98.