

like something else, then it shares its properties or can affect it in some way." So it was with garlic in the popular traditions of the Ancient Mediterranean.

Some of these observations, and beliefs they generated, have survived in writings of the ancient Greeks and Romans. Looking at these we can see how garlic (Greek: *Skorodon*; Latin: *allium*) was often closely associated with serpents. In the First Century AD, for example, the famous herbalist Dioscorides, in his influential Greek work about medicinal substances, identifies one variety of the plant as "Serpent garlic" (*ophioskordon*: *ophis* - "snake") because of its familiar coiling flower stalk. He also reports that the Romans reacted to the plant in a similar way, calling it "Viper's garlic" (*allium viperinum*). Today we know it as "rocambole," or serpent hardneck garlic (*Allium sativum var ophioscordon*).

In addition to this visual similarity, garlic was thought to defend against serpent bites or to offset the effects of venom. Thus Dioscorides, describing the innate properties of the plant, credits it with being the best remedy for snake bites: "And it assists both those viper bitten and those bitten by the blood snake like nothing else, taken together with wine or crushed and drunk with it." A century later these same notions are also found in Philumenos' Greek on animal poisons (*About Venomous Beasts*).

Pliny the Elder, the famous Roman encyclopaedist and a contemporary of Dioscorides, relates all sorts of interesting beliefs about garlic, and mentions its powers against poisons, particularly against snake venom (*Natural History*): "It drives away serpents and scorpions with its smell ... and roasted with its own leaves, it is applied with oil, [working] very effectively for serpents' bites [strikes]."

While still acknowledging the plant's supposed effectiveness against serpents, other ancient works emphasize the magical properties of garlic, reflecting popular folk concepts about the hidden "powers" of plants, rather than incorporating a strictly medical or scientific approach. Thus the Kyranides, a Greek collection of magical remedies from the early Roman Empire, which preserves earlier and contemporary material, recommends garlic as a safeguard. "Whenever anyone eats garlic ahead of time and drinks hot blood with wine, he does not fear any kind of snake."

Such ideas are not restricted to only scientific or magical works. In literature, too, such popular concepts can be found. A small example is Horace, the famous Roman poet of the First Century BC who wrote a poem devoted entirely to the effects of garlic on his innards. In the *Edpode 3*, a real

serious denunciation of both the plant and the wealthy patron who served it to him, the poet at one point complains about the burning sensations caused by the garlic in his salad, referring to its popular association with serpents: "What poison is this that rages in my insides? / Did viper's blood mixed with these greens trick me?"

Here garlic is actually called a poison and is identified with serpents themselves: its juice is the equivalent of their blood. This literary representation, then, stands as good evidence for underlying folk traditions about the belief in garlic's power to act against serpents. Oh, and just in case you were wondering, after numerous laments about the virulence of garlic's internal effects on him, the poet seeks revenge on his prankster patron: "I hope your girlfriend there puts her hand up to your puckered lips, / And lies far away — over on the other side of the couch."

So fellow garlic lovers, the next time your mind prompts you to take that visual leap from scape to snake, even just for a flashing moment, stop and enjoy the associations. You've made contact with the past, a sharing of a common cultural bond with famous writers and unnamed individuals long since gone and alien to us in so many ways. Yet their thoughts and feelings re-emerge yearly in the familiar coiling of the flower stalk of serpent garlic.

In the past, one of garlic's most popular virtues was as an antidote to poisonous bites and stings. Almost every herbalist mentions "Venomous beasts" of some kind: snakes, scorpions, spiders, shrew-mice, toads, mad dogs and otherwise, and even the bites of men. Nowadays we have more powerful and specific anti-toxins for dangerous snake bites and for rabies. But there are toxic bites, for example from scorpions, which are painful and for which antidotes are not used. Country people, such as the Druze villagers, often put garlic on these bites. Some families still use it when they are unlucky enough to get a scorpion bite, and it is effective. But, speed is of the essence; you must cut a clove and rub it on the bite before the poison begins to spread. Garlic may neutralize the toxins by means of its sulphur components. Bites from insects such as fleas and mosquitoes are not helped by garlic, since the pain they cause is almost entirely due to inflammation.

Garlic has the reputation of discouraging all kinds of biting creatures. Indian women put it in the oil they rub into their hair and it keeps them free of infestations of head lice. Farmers in many parts of the world have found that it helps their animals remain free of ticks, and modern Russian scientific study confirms this.

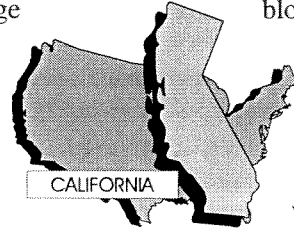
## Stinky Logic

***LABOR is prior to, and independent of, capital. Capital is only the fruit of labor, and could never have existed if labor had not first existed. Labor is the superior of capital, and deserves much the higher consideration.***

Abraham Lincoln  
1st Annual Message to Congress  
1861

# So, What Happened in California Last Summer?

During the last week of July, 1998, there was heavy news coverage of the failure in the California garlic industry. This is the week of the Gilroy Garlic Festival, so they had dual media opportunity. They saw the disease in the spring — small white flecks on the leaves, then orange pustules 1-3 mm in length, usually between leaf veins. Severely infected leaves turned yellow, which decreased the photosynthesis and resulted in smaller bulbs. The wrapper leaves decayed and many bulbs disintegrated (broke apart) during harvest — Garlic Rust Fungus.



The figures released indicated a catastrophic reduction in yield: from the normal 17,000 pounds per acre, to a 11,000 pound average. Some fields in Monterey County yielded as low as 4,000 pounds per acre. UC Extension Pathologist Steven Koike stated, “They have never seen such a serious and extensive outbreak.” The cause: El Niño! — from the “Blame it on Mother Nature School of Finger Pointing.”

Rust is caused by *Puccinia porri*. It varies on different hosts and different strains of the fungus have different levels of virulence to various *Allium* species. The fungus overwinters as spores in field trash and hedge rows and is blown long distances in the wind. The disease occurs most frequently under conditions of high humidity and low rainfall (immersion in water reduces spore viability). Spores need at least 4 hours at 97% relative humidity to germinate and infect. Rust is enhanced by plant stress from too wet, too dry, and too much (excessive) nitrogen.

Control is limited. Start with clean seed, then use rotations away from the *Alliums*, separate fields, and control all weeds related to the *Alliums*. Rust was first found on onions in England in 1808. It occurs throughout most of the northern temperate zone, but seldom causes serious damage. It could probably be found on all *Allium* species whenever these crops are cultivated. Severity differs with crops and localities. It just all came together in 1998 for the California folks.

## WORLD PRODUCTION (The Big Picture)

Year 1997

Top 15 Countries	Garlic Production (Metric Tons)	Yield (HG/HA)	Productivity Ranking	Area Harvested (HA) (1 HA = 2.2 Acres)
1	China 8,864,198	145,506	2	609,200
2	Korea, Rep. 450,000	110,837	3	40,600
3	India 430,000	43,000	14	100,000
4	USA 251,740	168,163	1	14,970
5	Spain 192,500	75,787	8	25,400
6	Russian Federation 168,890	66,650	10	25,340
7	Thailand 132,000	44,000	13	30,000
8	Turkey 112,500	79,225	6	14,200
9	Argentina 90,285	93,183	5	9,689
10	Korea, Dem.Peop.Rep. 70,000	100,000	4	7,000
10	Ukraine 70,000	35,000	15	20,000
11	Brazil 64,034	48,533	12	13,194
12	Mexico 64,000	75,294	9	8,500
13	Romania 63,341	49,289	11	12,851
14	France 45,200	76,610	7	5,900
15	Yugoslavia 41,600	33,339	16	12,478