The Chile Pepper Institute NEWSLETTER

Volume XXI Number 1 Spring 2010

http;//www.chilepepperinstitute.org hotchile@nmsu.edu

The History of *Capsicum* in Brazil

Claudia Silva da Costa Ribeiro[1] and Francisco Jose Becker Reifschneider[2]

When Portuguese and Spanish explorers discovered the Western Hemisphere, many species of plants were also discovered and, over time, have become crops commercially cultivated around the world. The *Capsicum* genus is one of these plant discoveries. *Capsicum* peppers had been used for centuries by indigenous peoples. Black pepper (*Piper nigrum*) was coincidentally one of the main reasons for the Portuguese and Spanish navigation routes to India.

Navigation routes from 1492 onwards transported *Capsicum* around the world. Brazil participated actively in the spread of chile peppers because important navigation routes linked Brazil (initially from the states of Bahia and Pernambuco) to Portugal, Africa, and Asia. In the 16th century, a chile pepper called 'Pernambuco' was already being used in the Portuguese territory of Goa, India, clearly documenting its origin. Through these navigation routes chile peppers were successfully introduced to the whole world.

Sweet and hot chile pepper fruits have outstanding aroma, heat and flavor that make them a highly valued vegetable or spice in many countries known for their pungent cuisine, such as India, China, Korea, Spain, Hungary, Thailand, and Mexico.

World chile pepper production in 2006 was 25.9 million tons (1.7 million ha) (FAO, 2008). Economic data about *Capsicum* production in Brazil are difficult to obtain because Brazilian production is dispersed and a considerable area is planted by small farmers throughout the country. Nevertheless, chile peppers rank among one of the ten most important vegetables in Brazil. Approximately 13,000 hectares (32,000 acres) per year are planted with hot and sweet types in Brazil, producing about 280,000 mt (308,000 tons). The states of São Paulo and Minas Gerais, in Southeastern Brazil, account for 40 to 50% of the area planted with *Capsicum*. Paprika, sweet types, is also produced in Minas Gerais and Pernambuco (ca. 1,200 ha/ ~3,000 acres). It is estimated that the chile pepper agribusiness in Brazil is worth about US$50 to 60 million a year. Chile peppers are cultivated in all states, but are especially prevalent in Minas Gerais, São Paulo, Goiás, Ceará, Rio Grande do Sul, and Bahia, totaling ca. 5,000 ha (12,350 acres) and a production of 75,000 mt (82,500 tons).

Domestication has lead to a variety of colors, shapes, and sizes of fruits, as well as for selection of heat levels including those without any heat. The commercial cultivation of sweet pepper types in Brazil was registered as early as 1853. Custódio de Oliveira Lima in 1853 in his book "A Guia do Jardineiro – Horticultore Lavrador Brasileiro" described more than 50 vegetable crops, including sweet pepper. Cultivars from Spain were introduced to São Paulo in the beginning of the 20th Century; these belonged to the 'Casca Dura' (tough skin) group, with conic and dark green fruits. The first Brazilian cultivars originated by selection from these open-pollinated cultivars. Until the 1960s, Brazilian sweet pepper varieties were selections made mostly by the pepper farmers. The names of the cultivars reflected the location, such as 'São

Carlos' (São Paulo), 'Avelar' (Rio de Janeiro), or the names of farmers such as 'Cascadura Ikeda.' In the 1980s, the sweet pepper types consumed in Brazil were conic shapes and dark green colors. Block types were planted and consumed in the North and Northeast regions and in the state of Rio Grande do Sul (South region). Between the 1980s and 1990s, sweet pepper cultivation began in greenhouses to protect plants during winter in the South and Southeast regions. Protected cultivation in Brazil increased because protecting plants from extreme temperature and precipitation, and from some diseases and pests allowed pepper production to continue all year. To increase economic return on greenhouse investments during the 1990s, open-pollinated cultivars were replaced by highly productive hybrids, with colorful and sweeter fruits. Initially, hybrid seeds were imported from Spain, Italy and the Netherlands. Now, sweet pepper breeding programs are mainly developed by private seeds companies such as Sakata Seed Sudameris Ltda. and Seminis Brazil. By 2000, large and rectangular fruits with green and red color came to occupy significant shares of the Brazilian sweet pepper market; only 1-2 % of total production is now represented by colored hybrids.

In Brazil, chile peppers are considered an important vegetable crop because they can serve several market segments. Chile peppers are eaten as a condiment, sauce, fresh fruit or pickled. Pharmaceutical industries have used capsaicin in balms for arthritis treatment, muscle pains, shingles and anesthetics. Law-enforcing agencies in Brazil use hot chile pepper in foams and spray as a crowd-dispersant agent. Over the last ten years ornamental chile peppers have filled another market niche in Brazil. Besides *C. annuum*, other species grown are *C. baccatum* var. *pendulum* cultivars, Dedo-de-Moça, (girl's finger); *C. chinense* (different fruit types with increased volatiles and aroma); *C. frutescens* (Malagueta type), and the semi-domesticated species *C. praetermissum* (Fig.1). Among different kinds of *C. chinense*, 'Cumari-do-Pará' is one of the most important types commercially cultivated. 'Cumari' is an indigenous name that means pungent, and Pará is a Brazilian state in Amazon region where this type of chile pepper originated. 'Malagueta' type is the most popular hot pepper in Brazil. The alligator pepper (*Aframomum melegueta*) originated in the West Coast of Africa, but is referred to as "Malagueta" in Portuguese. After the discovery of Brazil, the name "Malagueta" was also used to designate a hot *C. frutescens* chile pepper. This double use of the name has lead to considerable confusion, including mistaking the origin of the *Capsicum* "Malagueta" as Africa!

Figure 1. 'Passarinho' – small bird - hot pepper, Capsicum praetermissum.

The development of the Brazilian *Capsicum* agribusiness has demanded the generation of new knowledge and technologies. The main problems faced by growers are diseases and insects mostly as virus vectors. Abiotic stresses such as low soil pH and low phosphorous content are of concern. Major diseases include: phytophthora blight (*Phytophthora capsici*), bacterial spot (pathotypes of *Xanthomonas campestris* pv. *Vesicatoria)*, bacterial wilt (*Ralstonia solanacearum*), and diseases caused by viruses (PVY, PeYMV, PMMoV, TSWV). The recent increase in production in plastic greenhouses caused a raise in the incidence of powdery mildew (*Leveillula taurica*).

Since the 1960s, green bell pepper has become increasingly important in Brazil. The Instituto Agronômico de Campinas (IAC) in São Paulo developed an important bell pepper breeding program. Several cultivars with resistance to PVY were released, known as the Agronômico series. At this same time, two Brazilian universities, Universidade Federal de Viçosa (UFV) in Minas Gerais and Universidade Federal Rural do Rio de Janeiro (UFRRJ) in Rio de Janeiro, are conducting important *Capsicum* research, including the collection, preservation, and initial characterization of several accessions of *Capsicum* species. Since 1980, the Brazilian Agricultural Research Corporation (Embrapa) National Research Center for Vegetable Crops (Embrapa Hortaliças) has conducted projects with chile peppers ranging from germplasm collection to participatory breeding with private sector companies. The projects have a multidisciplinary team with more than 40 part- and full-time researchers, and the participation of several Brazilian institutions, such as other Embrapa research centers, universities, agencies of rural extension, the private sector and chile pepper farmers.

The Embrapa chile pepper breeding program aims to fulfill demands for the different market niches in Brazil. The program benefiting from a large genebank of accessions native to Brazil, emphasizes the development of hot and sweet populations, lines, cultivars and hybrids with multiple disease resistance and high quality fruit. Most recently, the Embrapa program has included work on aroma and on chile pepper-based nutraceuticals. The program has been partly financed by the private processing sector. Several open-pollinated cultivars and hybrids for paprika production have been released/ registered. Paprika materials with high color (above 200 ASTA), and dry yields of 9.0 to 11.7 mt/ha. Among released inbred lines, CNPH 703 and CNPH 679 have

been internationally used as sources of resistance to diverse *Xanthomonas* pathotypes and Tospovirus, respectively. The accession "CNPH 703" (PBC137), resistant to ToMV, TMV, and tospovirus has been included in the International Chili Pepper Nursery, coordinated by the Asian Vegetable Research and Development Center (AVRDC). Several breeding methods have been used for the incorporation of resistance to *P. capsici;* the Inbred Backcross Line System method is preferred. Among the open-pollinated cultivars, the jalapeno-type releases of 'BRS Sarakura' and 'BRS Garça' have yielded up to 60 mt/ha and have heat levels of 30,000 to 60,000 SHU. Plants are compact and fruit ripening is concentrated.

Figure 2. (A) "BRS Mari" (Capsicum baccatum) and (B) "BRS Moema" (Capsicum chinense) cultivars released by Embrapa.

In 2003, Embrapa began a program to assist small-scale farmers who plant typical Brazilian chile peppers (*C. chinense*, *C. frutescens*, and *C. baccatum*), that are of limited interest to seed companies. 'BRS Mari' (Dedo-de-Moca – *C. baccatum*) and 'BRS Moema' (Biquinho – *C. chinense*) are the first two materials (Fig.2). New cultivars, such as BRS Seriema and the first Malagueta cultivar developed by a breeding program provides continuity to the releases of Embrapa´s breeding program. In the past three decades, Brazilian public and private sectors have invested heavily in increasing the knowledge of chile peppers and creating new market opportunities and products. As an example of these efforts, two major books on *Capsicum* were published in the past eight years, and an open platform (http://groups.google.com/group/Capsicums) for *Capsicum* Agribusiness Knowledge Management became operational in early 2008. Brazilian private sector has been actively participating in major international fairs in Europe and elsewhere, and a biennial *Capsicum* Agribusiness meeting has been taking place for the past six years, organized by Embrapa Vegetable. Brazilian biodiversity is becoming more fully explored and niche markets are being targeted and filled at a faster pace. Expeditions to the Amazon and to the remnants of the Atlantic rainforest are also occurring at the same time. Identification of relevant molecular markers is also a goal. Perhaps a new Brazilian Armada, sailing now through the Amazon, the Internet, and gene banks, will allow the saga to continue for the benefit of future generations. The Brazilian private sector has been actively participating in major international fairs in Europe and elsewhere, and a biennial *Capsicum* Agribusiness meeting has been taking place for the past six years, organized by Embrapa Vegetable. The available biodiversity begins to be more fully explored and niche markets are being occupied at a faster pace. Expeditions to the Amazon and to the remnant of the Atlantic forest take place and at the same time identifying relevant molecular markers is occurring. Perhaps a new Brazilian Armada, sailing now through the Amazon, the Internet and gene banks, will indeed allow the saga to continue for the benefit of this and future generations.

Figure 3. Books on Capsicum published by Embrapa.

1 Researcher, Embrapa Hortaliças (National Research Center for Vegetable Crops, Brazilian Agricultural Research Corporation), Brasília, Brazil. Presently, Graduate Student at New Mexico State University, Las Cruces, NM, USA, advised by P. W. Bosland

2 Senior Researcher, Embrapa Hortaliças (National Research Center for Vegetable Crops, Brazilian Agricultural Research Corporation), Brasília, Brazil. Correspondence should be addressed to fjbr@cnph.embrapa.br

Chile Peppers for Livestock By Clint Löest, Animal Nutritionist, NMSU

Ranching in the desert southwest is a challenge, particularly when precipitation (in inches) remains in the single digits. If you own cattle or sheep, you may consider supplementing their diet with chile peppers.

According to the National Agricultural Statistics Service (2009), average production of chile peppers from 2006 through 2008 was approximately 200,000 tons. As a southwest ethnic food product, much of the chile is processed (peeled, deseeded, and deveined) prior to consumption. Processing results in more than 30 million pounds of waste (culled pods, peels, veins, leaves, seeds, and stalks) annually. This waste is generally disposed of in landfills, which is potentially an economic burden to the industry.

By-products provide an opportunity to reduce livestock feed costs relative to traditional feedstuff commodities; however, various factors such as palatability and variability in both nutrient composition and nutrient availability (e.g., digestibility) may negatively impact animal performance, therefore limiting the value as a feed for livestock (Löest and Mathis, 2003). Although the heat level of chile peppers may affect palatability and consequently feed preference, chile pepper by-products appear to be palatable for cattle. Cows that were allowed free choice of a corn silage-based diet containing either 0% or 20% chile pepper by-product tended to prefer the diet containing chile by-product (Cazac et al., 2004). Also, research conducted at New Mexico State University (Majea, 1995) demonstrated that feeding dairy cows an alfalfa-based diet containing 20% chile pepper waste appeared to increase total milk production, likely due to increases observed in dietary intakes. Preliminary research conducted in our laboratory (Hill and Löest, 2003) demonstrated that the calculated energy value of chile pepper by-products is comparable to corn silage, a major source of feed for dairy cattle in New Mexico. Chile by-products also had more protein and minerals than corn silage. Unlike conventional feeds, the nutrient composition of by-product feeds may vary considerably, not only among different types of by-products, but also from one batch to another. Hill and Löest (2003) reported that the nutrient content of chile pepper by-product throughout the harvest and processing period changed considerably when expressed on an "as-is" (wet) basis, but nutrient content was less variable when expressed as a percentage of dry matter (moisture removed). Therefore, the large variability in moisture of the chile pepper by-product throughout harvest and processing may affect the amount of chile pepper by-product to be fed to livestock.

In a study conducted in our laboratory, Cazac et al. (2005) demonstrated that chile pepper by-product is well digested in the rumen of cows. This research also demonstrated that the rumen digestibility of chile pepper by-product was greatest when cows were fed forage-based diets containing 20% culled chile pepper pods, and lowest when cows were consuming corn grain-based diets containing 20% culled chile pepper pods. These results demonstrated that rumen digestion of chile pepper by-product is similar to other highly digestible fibrous by-products, and has potential to be incorporated into forage-based diets. Graham et al. (2009) evaluated the effects of increasing amounts of chile pepper by-product in a forage -based diet on total tract apparent digestibility of steers. The animals were fed one of the following combinations

The Chile Pepper Institute's Development Leadership Council

The Development Leadership Council is a dynamic group of chile pepper industry leaders. Their purpose - to raise $10 million to build the new energy efficient Chile Pepper Institute, featuring a tourist venue for chile conferences, a sustainable teaching and demonstration garden/greenhouse, and to fund the Endowed (Chile) Chair to continue the legacy of NMSU's chile pepper research. Leadership Council members provide:

- A yearly sustaining donation of $1,500;
- Participation in bi-annual leadership council meetings;
- Facilitation of corporate sponsorships;
- ID of three or more colleagues who have the financial capacity to support the Institute's (ad)venture; and
- Encouragement of chile aficionados to become Chile Pepper Institute members.

Interested in joining the Council?
Contact Wendy Hamilton whamilto@nmsu.edu, 575-646-5284 or Mark Gladden markglad@nmsu.edu, 575-680-5247.

Mrs. Renfro's Joins Development Leadership Council

The New Mexico State University (NMSU) Chile Pepper Institute's Development Leadership Council (DLC) welcomes Mrs. Renfro's Gourmet Salsas as its newest member.

The DLC is an elite group of chile pepper business leaders making history together. Launched on March 31, 2009, the DLC has the global vision of establishing a chile pepper research Endowed Chair. The Endowed Chair will help build a permanent legacy to ensure the continuation of chile pepper research at NMSU. With the vitality and leadership an Endowed Chair brings, the entire worldwide industry will reap the rewards of new cultivar development, improved disease tolerance, and heightened public interest and awareness.

George and Arthurine Renfro co-founded George Renfro Food Company in 1940 in the garage of their north Fort Worth, Texas home. The company grew rapidly, and later became Renfro Foods, which produces the full line of Mrs. Renfro's salsas.

Doug Renfro was encouraged to join the DLC by current members, John and Sue Hard of CaJohns Fiery Foods. DLC members connect to the Chile Pepper Institute through product development tied to Dr. Bosland's Chile Pepper Breeding program or through direct sponsorship of the permanent chile pepper research Endowed Chair Campaign.

Businesses that join the DLC provide a yearly sustaining donation, participate in semi-annual leadership meetings, facilitate corporate sponsorships, and suggest colleagues or associates with the financial capacity to support the Institute's long-range fundraising vision. In its first year, the DLC raised $50,000 for the Endowed Chair; NMSU's College of Agricultural, Consumer and Environmental Sciences and the Chile Pepper Institute also contributed $150,000 to the chair from sales of chile pepper seeds, plants, and books.

Doug Renfro attended his first DLC meeting on February 1, 2010. The event was the Council's Leaders Recognition Dinner and Council Meeting. Attendees included The Honorable Harry Teague (NM Congressman), John and Sue Hard (CaJohns Fiery Foods), Emma Jean and Dino Cervantes (Cervantes Enterprises), Lou and April Biad (Biad Chili and Rezolex), Dr. and Mrs. Jae Bok Park (Korean Food Research Institute), Jit Baral and Larry Woehl (Campbell's/Pace), Gene Baca (Bueno Foods), Arturo Jurado (Jurado Farms), and Dr. Paul Bosland (Chile Pepper Institute Director and Regents Professor).

For more information about Mrs. Renfro's, please visit their website at www.renfrofoods.com

Chile Peppers for Livestock, continued

of alfalfa hay and culled chile pepper pods (ratio on a dry basis): 1) 100:0, 2) 75:25, 3) 50:50, 4) 25:75, and 5) 0:100. In this study, total tract apparent digestibility of nutrients decreased when increasing amounts of chile pepper pods replaced alfalfa hay. Fiber digestibility decreased most dramatically, likely because the animal's rumen environment was altered (rumen pH decreased to below 6.0) when the amount of chile pepper pods were increased from 50 to 100% of the total diet. Generally, growth of rumen fibrolytic microbes and digestion of fiber decreases when rumen pH falls below 6.0. However, Graham et al. (2009) reported that there were no positive or negative associative effects, and that the overall digestibility of the combinations of alfalfa hay and chile pepper pods reflected the weighted average of the digestibility of each feed alone. This suggests that the chile pepper pods did not affect the digestibility of alfalfa hay, nor did alfalfa hay affect the digestibility of chile pepper pods. These findings for chile pepper by-products are similar to those when other fibrous by-products (such as soybean hulls) were supplemented with forage-based diets. In contrast, supplementing forage-based diets with corn grain generally has a negative associative effect on fiber digestion.

In conclusion, chile pepper byproduct or waste is a potential feed that can be used as a means to reduce feed costs and/or serve as an alternative feed source for cattle during periods of drought and feed shortages. Although chile pepper byproducts are relatively inexpensive, the value of this feed for cattle in the desert southwest also depends on its impact on animal performance responses.

References:

Cazac, D., C. A. Löest, and M. K. Petersen. 2004. Consumption of diets containing chile pepper byproduct. NM Livest. Res. Briefs. pp. 69-71.

Cazac, D., C. A. Löest, J. W. Waggoner, C. P. Mathis, and M. K. Petersen. 2005. Ruminal degradation of a chile pepper byproduct by cows. Proc. Western Section Am. Soc. Anim. Sci. 56:454-546.

Graham, B. C., D. Cazac, C. P. Mathis, and C. A. Löest. 2009. Feeding chile pepper byproduct with alfalfa hay decreases total tract diet digestibility in beef steers. Proc. Western Section Am. Soc. Anim. Sci. 60:343-345.

Hill, L. J., and C. A. Löest. 2003. Chile byproduct: A feed for cattle. NM Livest. Res. Briefs. pp. 73-75.

Löest, C. A., and C. P. Mathis. 2003. Feeding byproduct energy source to cows. Proc. NM Cattle Grower's Short Course. pp. 25-28.

National Agricultural Statistics Service. 2009. Vegetables 2008 Summary. http://usda.mannlib.cornell.edu/usda/ current/VegeSumm/VegeSumm-01-28-2009.pdf. Accessed March 20, 2009.

C A P S I C U M N E W S

Chile Pepper Institute Launches Redesigned Website

The Chile Pepper Institute's website got a major facelift in early 2010. The Chile Pepper Institute teamed up with local web developers, Digital Solutions of Las Cruces to create a more modern, friendlier and more easily accessible website. The new website includes an online shopping cart that allows users to quickly purchase seeds, books and the ever-popular Holy Jolokia hot sauce and salsa through a secure checkout system. The site includes a blog and links for chileheads to follow us on Twitter and on Facebook. Check out the new and improved website at www.chilepepperinstitute.org.

THE CHILE PEPPER INSTITUTE

Chile Pepper Production and Value Increases in 2009

According to the United States Department of Agriculture's Agriculture Statistics Service for the varieties produced, 76% of peppers grown in the United States in 2009 were bell peppers and 24% were chile peppers. Bell pepper production fell slightly in 2009 compared with 2008, whereas chile pepper production rose in 2009 compared with the previous year. Since 2007, bell peppers have shown a downward trend, while chile peppers have shown an upward trend. With regard to value, USDA reports that while the value of the bell pepper crop dropped 12.71% in 2009, the value of chile peppers climbed 16%. Bell pepper value had increased in 2008 compared with 2007,whereas chile pepper value had fallen slightly. Chile peppers accounted for the remaining 35% of the total area harvested, increasing by 14%, when compared with 2008. *USDA website, 2010.*

Weight-Loss Supplement Has Potential to Burn Calories

A new weight-loss supplement tested by the University of Oklahoma Health and Exercise Science Department has the potential to burn as many calories as a 20-minute walk, according to Joel T. Cramer, assistant professor of exercise physiology at the University of Oklahoma (OU). Cramer says General Nutrition Centers contracted with OU to test the weight-loss benefits of the nutritional supplement called the tri-pepper blend, which contains black pepper, caffeine, and a concentrated form of capsaicin -- the ingredient that makes chile peppers hot. The OU study showed energy expenditures of three to six percent, results that are statistically significant enough to validate product weight-loss claims, Cramer said. A group of participants in the study were given the supplement or a placebo followed by a metabolic rate test. The study measured oxygen consumed and carbon dioxide produced by participants to determine the arresting metabolic rate of each after receiving the supplements. The study confirmed the viability of the weight loss supplement. *ScienceDaily (Feb. 3, 2010)*

Recipe - Ensoado De Lagosta

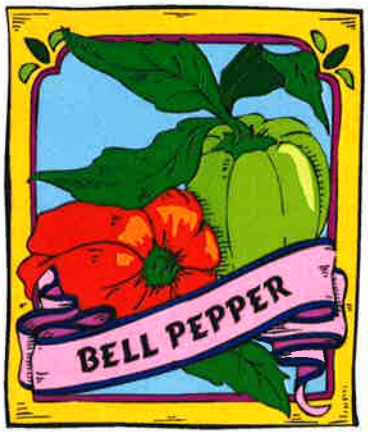
- 2 Pounds Lobster Meat
- 1 Clove Garlic -- finely chopped
- 1/2 Teaspoon Salt
- 1 Teaspoon Cilantro -- finely chopped
- Salt and Pepper -- to taste
- Juice of Two Lemons
- 2 Tablespoons Olive Oil
- 2 Medium Onions -- sliced
- 1 Hot, red chile pepper
- 1 Small Bell Pepper -- chopped
- 1 Large Tomato -- chopped
- 3/4 Cup Coconut Milk

Directions:
Marinate lobster in garlic, salt, pepper, cilantro, and lemon juice for two hours. Heat oil in skillet, add onion, peppers and tomato, cook seven minutes. Add lobster and marinade, cook five minutes. Add coconut milk, bring to boil, simmer three minutes. Serves Four. *From The Book of Latin American Cooking by Elisabeth Lambert Ortiz, can be found at the Chile Pepper Institute*

B U R N I N G Q U E S T I O N S

Q. I have some chile pepper seeds that are about two years old. If I plant them will they germinate?

A. As long as the seeds have been kept free of moisture, direct sunlight and excessive heat they will more than likely germinate without any problems. Keeping extra seed in an airtight container or zipper bag and putting them in the refrigerator is one of the best and easiest ways to ensure seed viability. Using this method of storage will help seeds keep up germination rates for several years.



Q. I cannot get my chiltepin seeds to germinate. I have seeds from several different sources and use commercial seedling mix and keep the mix moderately moist.

A. Chiltepins are wild chile peppers and need a little more attention because they have a very hard seed coat. In the wild the seeds are dispersed by birds. When the seed travels through the bird's digestive tract it scarifies the seed coat enough to aid in quicker germination. Soak the seeds for five minutes in a 10% bleach solution, rinse well, and then plant. This procedure will soften the seed coat so the seed will germinate more quickly.

Q. I have several Bhut Jolokia seeds that have sprouted but before they can produce leaves they turn brown and die. Any suggestions?

A.You are more than likely experiencing a disorder called "damping off." There are several soil-borne and seed-borne fungi that cause damping off, some of the more prevalent include, *Rhizoctonia* and *Pythium*. Soaking the seed in a 10% bleach solution for ten minutes then rinsing until the bleach odor is gone will help eliminate seed-borne fungi while proper soil sterilization will eliminate soil-borne fungi. Many nursery centers and garden centers carry a pre-sterilized soil starter kit.

Q. I always have trouble with actually getting my chile pepper plants to set fruit before we get our first frost. I live in Juneau, Alaska and our growing season is generally from June through September. I would appreciate any information you could give me on shorter season chile peppers.

A. There are several varieties of chile peppers that have been bred for shorter growing seasons. 'NuMex Espanola Improved' is a medium heat, New Mexican pod type that generally matures red in 155 days. 'Early Jalapeno' is a hot jalapeno variety that can be harvested in 70 days. 'Kim-chi' is an asian pod type that matures in 110 days, and there are many bell pepper varieties that are early maturing, some in 60 days. There are also many ways you can extend the growing season. Starting your seeds indoors with grow lights and bottom heat will germinate the seeds early and get a jumpstart on the growing season.

20th International Pepper Conference
Las Cruces, NM
September 12 - 14 , 2010
For more information visit
www.chilepepperinstitute.org