



February 2013

Volume 3, Issue 2



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### Fungal Diseases 2012-13 Season—Urgent Update

The PGA sponsored visit by Dr Themis Michailides has provided significant insight into the fungal diseases being faced by Australian growers.

Dr Michailides visited 8 Australian orchards. At all bar one, **he was able to easily locate cankers and spores of *Botryosphaeria***. Under the right climatic condition and in the absence of protective fungicides, this *Botryosphaeria* will explode and could cause massive damage very quickly.

The unusually dry season has so far prevented any significant damage. Most orchards are holding a good crop of very clean looking fruit. But some current season losses were usually found, even in orchards that had maintained the PGA recommended fungicide program.

Dr Michailides describes *Botryosphaeria* as the sleeping giant. It can remain without obvious symptoms in the orchard until the appropriate conditions - a rain event of > 4mm for > an hour at >20°C. The source of the Inoculum can be old cankers and racemes. Many of the cankers were located in 2010/11 season wood. *Botryosphaeria* cankers can remain viable for up to six years. The *Botryosphaeria* will also passively colonise dead wood in the tree and await the appropriate conditions. *Botryosphaeria* is particularly virulent on ripe fruit with slipped hulls.

A full review of his visit will be issued after harvest. But the detection of wide spread *Botryosphaeria* inoculum should encourage immediate consideration by growers.

#### **Growers are urged to review**

- ◆ their spray programs,
- ◆ the upcoming weather forecasts (most models are predicting a risk of rain over the next two weeks)
- ◆ The PGA technical sheets on fungicide applications including the choice of fungicides and application speeds and methods.
- ◆ Withholding periods of any fungicides



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Pistachio Growers Association Inc.



Cooperative Extension



## **Go nuts, celebrate pistachios on National Pistachio Day, Feb. 26**

Good things really do come in small packages. And when it comes to your health, pistachios pack a powerful punch: They help you manage your weight, may help reduce blood pressure and a study published in the “International Journal of Impotence Research” shows they may even help with erectile function. Here are three big reasons why you should unshell and celebrate your health with a handful.

### **The power of pistachios**

Pistachios are a great snack chock-full of vitamins and nutrients including antioxidants, beta carotene, fiber, glutamine, potassium, phytosterols, zeaxanthin and B6. “You really can’t go wrong with pistachios,” says director of sports nutrition at the University of Southern California, Becci Twombly. “With six grams of protein in every 160-calorie serving, pistachios are a protein front-runner compared to 160 calories of other common snacks.” In addition, pistachios have more nuts per serving (49) than any other tree nut.

### **Performance food for athletes**

Whether you’re an elite athlete in training or a casual fitness buff, what you eat will affect your performance.

“As an athlete, your body needs the right carbohydrates, protein, fat, vitamins, minerals and fluids,” says Twombly. Pistachios are a great pre- and post-workout snack because they contain a good source of lean protein, the right type of fat and electrolytes such as potassium.

### **Green goodness**

Their taste is unbeatable. They can be enjoyed right out of the bag, or to jazz them up, you can season them right in the shell, like these Saffron and Vanilla Pistachios by Chef Grant MacPherson.

### **Saffron and Vanilla Pistachios:- Ingredients:**

***1 pound American pistachios, in-shell***

***1.5 ounces Spanish saffron, steeped in cold water***

***2 vanilla beans, scraped***

***2 tablespoons canola oil***

***Sea salt to taste***

### ***Directions:***

***Warm canola oil in roasting pan or wok on your stove top, add pistachios and lightly toast. Add saffron, with some liquid to coat the pistachios. Add the vanilla bean scrapings and stir to incorporate; season with sea salt to taste. Remove from heat and serve warm in the dish of your choice.***

“Pistachios also appeal to those with a sweet tooth,” says Judy Hirigoyen, director of Global Marketing at American Pistachio Growers. “Whether it’s ice cream, cake or tarts, pistachio-inspired desserts will win over anyone you prepare them for.”

In addition to flavoring for premium snacking, American Pistachio Growers have a wealth of recipes developed by renowned chefs. Visit [www.americanpistachios.org](http://www.americanpistachios.org) to see recipes like Pistachio Dusted Roast Salmon with a Light Honey Glaze by Chef Jesse Brune.

For more information about the health benefits of pistachios and for recipes, visit [www.AmericanPistachios.org](http://www.AmericanPistachios.org). American Pistachio Growers is a volunteer trade organization representing members who are pistachio growers, processors and industry partners in California, Arizona and New Mexico.

## **Pistachio Facts**

Pistachios are a delicious, nutrient- packed snack food that has more than 15 important nutrients, including antioxidants, fiber and vegetable protein.

Antioxidants help protect the body from damage. Oxidation, a process that occurs through natural body functions such as exercise, produces free radicals. These free radicals can attack healthy cells and weaken them, making them more susceptible to damage. Antioxidants, such as vitamin E and carotenoids, which include beta-carotene and lutein, help protect cells from damage caused by free radicals. Pistachios have gamma tocopherol (a form of vitamin E), lutein/zeaxanthin and beta carotene (carotenoids). Research from Penn State University shows that these antioxidants are increased in the blood when pistachios are eaten. They are related to lowering oxidized bad cholesterol.

Pistachios are a cholesterol-free snack that contains just 1.5 grams of saturated fat and 13 grams of fat per serving, the majority of which comes from monounsaturated and polyunsaturated fat. A one-ounce serving of pistachios equals 49 nuts, which is more nuts per serving than any other snack nut. One serving has as much potassium (300 mg, 8 percent) as an orange (250 mg, 7 percent), making it a nutritious snack choice or ingredient to incorporate into daily diets.

## **2013 HARVEST**

**The various PGA maturity models suggest that harvest will commence about 5 days earlier than average. “Average” of course will depend on your orchard. It is unlikely to be a very early harvest.**

**APPC advise the huller will be ready to run from the last week of February**

## **DISEASE POSTER**

PGA has just printed an A2 ***‘Disease Management Activities in Pistachio Orchards’*** poster.

For those who did not collect one during the recent grower workshops you will receive one in the mail in the coming week.

**Trevor Ranford, Executive Officer, PGAI**

FROM  
**LITTLE THINGS**  
**BIG GROW**  
THINGS



**Australian Nut Conference**  
Melbourne Australia 19th & 20th March 2013

### **USDA says global pistachio production will hit record this year**

As people around the world eat more pistachios, farmers from around the world have been increasing production to meet the demand.

The U.S. Agriculture Department says global pistachio production will set a record in the current marketing year, with the United States continuing to lead the way. Nearly the entire U.S. pistachio crop comes from California. USDA forecasts increasing demand for American pistachios in China, Hong Kong and Europe.

*Source: cfbf.com*

### **IRAN temporarily bans exports of pistachios to control prices on home market**

TEHRAN, Iran – Iran has ordered a six-month ban on pistachio exports to try to control the price of the nut, which doubled in the past month.

Pistachios are among Iran's top non-oil exports and widely consumed at home, bringing in an average of \$1.5 billion a year and providing work for hundreds of thousands of people. Iran was long the world's largest pistachio exporter, with over 200,000 tons a year, but was surpassed last year by the United States.

First Vice President Mohammad Reza Rahimi told Iranian state TV on Friday that the ban is temporary and meant to help bring down the price of pistachios that doubled from about 250,000 Iranian rials (\$7) per kilogram.

Western sanctions over Iran's controversial nuclear program have slowed the country's economy and disrupted foreign trade.

### **About American Pistachio Growers**

American Pistachio Growers is a voluntary trade association representing members who are pistachio growers, processors and industry partners in California, Arizona and New Mexico. These states represent 100% of the domestic commercial pistachio production. APG pistachios are the "Official Snack" of both USA Water Polo teams and the Miss California pageant. All share the goal of increasing national awareness about the nutritional benefits of pistachios. For more information, visit [www.AmericanPistachios.org](http://www.AmericanPistachios.org).





## **More Scientific Data Point to Health Benefits of Eating Pistachios Including Weight Control and Delivering Important Antioxidants**

**FRESNO, California:** The information stockpile on the health benefits of eating pistachios on a daily basis continues to grow with two recent articles published in the journal *Nutrition*. A November/December 2012 review of published tree nut research points to the prevention of obesity and other health benefits with consumption of tree nuts, including pistachios. Additionally, a January 2013 paper confirms the release of key antioxidants and polyphenols from pistachios during digestion.

**“These nutrients contribute to the beneficial relationship between pistachio consumption and healthy outcomes, such as heart disease.”**

### **Add Nutrients, Not Weight, with Pistachios**

The November/December review was conducted at the Institute for Biological Chemistry and Nutrition at the University of Hohenheim in Stuttgart, Germany and in the Department of Food Science, Nutrition and Technology at the University of Nairobi, Nairobi, Kenya. The review, led by Vellingiri Vadivel, Ph.D., aimed to clarify the relationship between tree nut consumption, including pistachios, and body weight in relation to other research findings of healthy outcomes primarily related to heart health.

According to Constance J. Geiger, Ph.D., R.D., who serves as a nutrition research consultant with the American Pistachio Growers, “This review reaffirms that while nuts are nutrient and energy dense, the research does not support that increased consumption may lead to unwanted body weight gain. In fact, the opposite was found: that eating nuts in moderate amounts does not increase body weight.”

In addition to pistachios, the study examined mixed nuts, almonds, walnuts and peanuts. The authors looked at both epidemiologic research studies and short-term feeding trials.

They found that although tree nuts have high-fat content, most are unsaturated fats that may not be fully absorbed. Also, because of their energy density, protein and high-fiber content tree nuts are satisfying, which the authors suggested may reduce overeating. The review indicated that frequent nut consumption may lower the risk of obesity in healthy subjects. The authors concluded that the inclusion of these nuts, such as pistachios, in amounts of 30-50g/d is advisable to ensure various health benefits, including reducing the risk of heart disease and antioxidant effects. These benefits can be achieved without the risk of weight gain.

### **Antioxidants in Pistachios Released During Digestion**

In the second study published in *Nutrition* in January 2013, pistachios were found to contain important antioxidants. These antioxidants, similar to those found in fruits and vegetables, were found to be released during digestion and thus were available to the body to provide health benefits. Results of this study were presented earlier in 2012 at the American Society of Nutrition conference in San Diego.

This investigation was conducted by the Model Gut Group at the Institute of Food Research (IFR) in the United Kingdom in association with the University of Messina, Italy. Polyphenols (catechins), carotenoids (beta-carotene, lutein, and zeaxanthin) and gamma-tocopherol (vitamin E), all with strong antioxidant qualities, were quantified in pistachios. The work was funded by American Pistachio Growers, a not for profit trade association that funds research on emerging science associated with the nut.

## **Antioxidants in Pistachios Released During Digestion (Cont'd)**

Giuseppina Mandalari, Ph.D., research scientist at IFR, was the lead investigator. According to Mandalari, "These results are the first to show the bioactive compounds are released during digestion and are available to be taken up by the body." She continues, "These nutrients contribute to the beneficial relationship between pistachio consumption and healthy outcomes, such as heart disease."

The bioaccessibility, the availability of nutrients to be absorbed by the body, of phytonutrients in whole foods such as pistachios is meaningful, especially when compared to nutrients ingested in supplements, whose bioavailability may not be known.

## **Pistachio Colors Tell a Story**

Be sure to color your plate with pistachios. The antioxidants and polyphenols in pistachios can be identified by the green, yellow and purplish red colors in the kernel and skins. Those antioxidant compounds that are released include beta-carotene, lutein and zeaxanthin, which provide the yellow and possibly green colors. Green also comes from chlorophyll. Anthocyanins, also found in blueberries, give pistachios their purplish red color. The polyphenols, catechins, are slightly yellow or white. Not only do fruits and vegetables contain important antioxidants and polyphenols, but pistachios also provide these nutrients as identified by the array of colors in the kernels and skin.

The results of the bioaccessibility study along with the findings of a 2010 published study and trials by researchers at Pennsylvania State University are significant. The Penn State study addressed the positive effect of antioxidants-- tocopherols and lutein-- from pistachios on LDL cholesterol, and all of these findings combined point to a reduced risk of heart disease when pistachios are eaten daily.

### **For more information, go to:**

Vadivel V, Kunyanga CN, Biesalski HK. [Health benefits of nut consumption with special reference to body weight control.](#) Nutrition. 2012. Nov-Dec;28(11-12):1089-97. doi: 10.1016/j.nut.2012.01.004.

Mandalari G, Bisignano C, Filocamo A, Chessa S, Sarò M, Torre G, Faulks RM, Dugo P. [Bioaccessibility of pistachio polyphenols, xanthophylls, and tocopherols during simulated human digestion.](#) Nutrition. 2013 Jan;29(1):338-44. doi: 10.1016/j.nut.2012.08.004. PubMed PMID: 23237656.

Kay CD, Gebauer SK, West SG, Kris-Etherton PM. [Pistachios increase serum antioxidants and lower serum oxidized-LDL in hypercholesterolemic adults.](#) Journal of Nutrition. 2010 Jun;140(6):1093-8. doi: 10.3945/jn.109.117366. Epub 2010 Mar 31. PubMed PMID: 20357077; PubMed Central PMCID: PMC3140215.

## **Regulator warns: More permits under scrutiny after guilty plea**

Holders of agricultural and veterinary chemical permits are warned to stick closely to the requirements of their permits or face the legal consequences. The warning comes hard on the heels of an APVMA permit holder, Jotun Pty Ltd, being convicted and fined \$22,000 after pleading guilty to two charges in the Sunshine (Victoria) Magistrates Court on Friday.

The APVMA will continue to scrutinise permits this year to address non-compliance.

## California pistachio growers prepare for challenges of 2013

Nearly 600 participants in a Statewide Pistachio Day gathering in Visalia were recently served up a smorgasbord of advice on topics that ranged from new regulations on food safety and nitrates in ground water, an epidemic year for navel orangeworm in 2012, a new biopesticide to reduce aflatoxins and new cultivars that could hold promise.

“Water coalitions are running interference for you,” said Bob Beede, University of California Cooperative Extension advisor in Kings County. “You need to embrace the coalitions and fill out the paperwork to keep the coalitions helping us.”

Beede was referring to coalitions of growers that have formed to deal with regulations imposed by the Central Valley Regional Water Quality Control Board. He outlined steps growers can take to meet the nutrient needs for pistachios while coming to grips with increased government scrutiny over nitrates in drinking water.

Increased paperwork can be expected in other arenas as well as water regulation, judging from remarks from Bob Klein, manager of the California Pistachio Research Board.

“Document, document, document, document” was Klein’s advice for growers out to develop farm-specific food safety plans that will be called for under the Food Safety Modernization Act.

“If you didn’t write it down, you didn’t do it,” he said.

Klein talked of other challenges to the industry that include less state funding for research and pending retirements in the University of California Cooperative Extension system. Beede himself is among those expected to retire this year.

“Sixty percent of those in Cooperative Extension will retire within a decade,” Klein said.

On a positive note, he introduced a UC farm adviser on nut crops for Fresno and Madera counties, Gurreet Brar, who had been on the job for just a week at the time of the Visalia meeting. In addition, the Pistachio Research Board is providing funding for a plant pathology specialist at the UC Kearney Agricultural Center; partnering with the California Almond Board to pay for funding an integrated pest management advisor at Kearney; and endowing a plant physiologist position at California State University, Fresno.

## **California pistachio growers prepare for challenges of 2013 (Cont'd)**

Klein also talked of AF36, a wheat-based biological control agent that can be applied with a modified ant bait spreader to combat a fungus that can result in aflatoxins that can cause cancer. He said the cost is about \$2 per acre.

Themis Michailides, plant pathologist with UC Davis, elaborated on research that he has done on use of AF36. He said that the fungus that causes aflatoxin can be carried by the navel orange worm and there's a special vulnerability for pistachio nuts that split early.

## **Have you heard of Freshcare?**

Freshcare is a national, industry owned, not for profit organisation providing on farm assurance programs for the fresh produce growers of Australia.

The Freshcare assurance programs are underpinned by Codes of Practice:

- Freshcare Code of Practice - Food Safety and Quality
- Freshcare Code of Practice - Environmental

The Freshcare Codes of Practice were developed in Australia by horticultural industry experts. This enabled custom made programs to be developed for the Australian horticultural industry that are specific to the requirements and needs of Australian producers for market access, meeting customer requirements, and improving on-farm management.

### **'Friends of Freshcare' – Be part of our mailing list!**

To keep informed with Freshcare program updates, industry news, funding opportunities, training and events please provide your contact details (name, email address and mailing address) via return email to be added to our mailing list.

Mailing list subscribers will receive the following email correspondence only:

- Freshcare newsletters (2 annually)
- Significant industry news, information and funding opportunities
- Invitations to Freshcare training and program events

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## Achilles heel of aflatoxin

“It’s the Achilles heel of aflatoxin,” Dr Michailides said, adding that early splitting is a problem for 2 percent to 5 percent of the Kerman pistachio crop. He said ways to combat the splitting include applying sufficient irrigation in the spring to avoid tree stress and using the right rootstocks that include UCB-1 that keep early splits low. Avoiding late harvests can cut down on damage from navel orange worm.

AF36 was used on 73,000 acres of pistachio in 2012. It has been approved for use in pistachios in California, Arizona, Texas and New Mexico.

AF36 was developed in Arizona in a collaborative effort between the Arizona Cotton Research and Protection Council and USDA-ARS scientist Dr. Peter Cotty.

Aflatoxins are carcinogenic toxins/by-products produced by various strains of a common fungus (*Aspergillus flavus*). For more than 30 years, aflatoxins have cost Arizona’s cotton producers annual losses of over \$5 million. Cottonseed containing over 20 parts per billion of aflatoxin cannot be fed to dairy cows, and results in \$20-\$50 per acre loss in revenue.

Aflatoxins also contaminate corn and peanuts, along with several tree crops including almonds, pistachios and figs.

Pioneering research conducted by Cotty and supported by Arizona cotton producers identified certain native strains of *Aspergillus flavus* which do not produce aflatoxin, occur naturally in the Southwestern deserts but at very low levels.

One of these atoxigenic (non-toxin producing) strains, *Aspergillus flavus* AF36, has been shown to competitively displace aflatoxin-producing strains when applied to cotton fields. This displacement is associated with reduced aflatoxin levels in Arizona cottonseed.

AF36 was evaluated in commercial fields in Yuma, Ariz., during the period of 1996-1998. The results suggested a high potential for reducing the vulnerability of all crops grown in a treated region to aflatoxin contamination. This provided the opportunity for an area wide aflatoxin management or suppression program.

The Arizona Cotton Research and Protection Council established a working partnership with USDA ARS and Cotty to both manufacture AF36 and advance atoxigenic strain technology.