UNIVERSITY OF FLORIDA | IFAS EXTENSION

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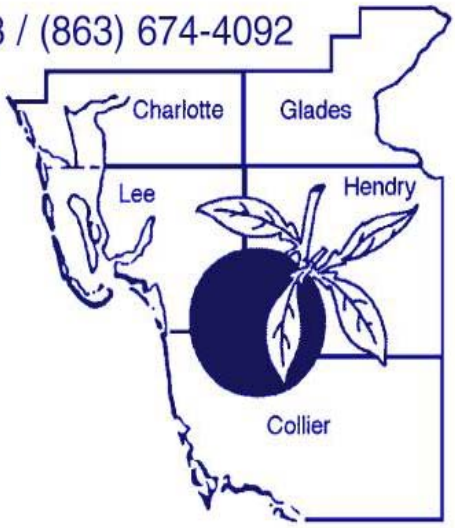
Flatwoods Citrus



Vol. 10, No. 4 **April 2007**

Dr. Mongi Zekri
Multi-County Citrus Agent, SW Florida

U P C O M I N G E V E N T S

MECHANICAL HARVESTING WORKSHOP AND FIELD DAY

Date: April 18, 2007
Location: Immokalee IFAS Center

To RSVP or for further information please contact Barbara Hyman at (239) 658-3461 or email brh@ifas.ufl.edu. Please visit our website at http://citrusmh.ifas.ufl.edu/index.asp

Program Agenda for the Workshop and Field day is on Page 19.

If you want to print a color copy of the Flatwoods Citrus Newsletter, get to the Florida Citrus Resources Site at http://flcitrus.ifas.ufl.edu/ You can also find all you need and all links to the University of Florida Citrus Extension and the Florida Citrus Industry

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SQUEEZER SEMINAR

Citrus canker and greening in Brazil

Speakers: visiting growers from Brazil
Date & time: May 15, 2007, 10 AM- 12:00 Noon
Location: Immokalee IFAS Center
2 CEUs for Pesticide License Renewal
2 CEUs for Certified Crop Advisors

FARM SAFETY DAY

Saturday, June 2, 2007, Immokalee IFAS Center
Coordinator: Mongi Zekri

120th Annual Meeting of the Florida State Horticultural Society

http://www.fshs.org/

Date: June 3-5, 2007
Location: PGA National Resort & Spa,
Palm Beach Gardens www.pgaresort.com

For registration and membership, visit the FSHS website at http://www.fshs.org
Renewing your membership will allow you to maintain unlimited access to the Proceedings online.

The FSHS hotel information is as follows:
PGA National Resort & Spa, 400 Avenue Of The Champions, Palm Beach Gardens, FL 33418.
Call for room reservations 561-627-2000 or 800-633-9150
– Room Reservation Deadline – May 3, 2007
Room Rate $109.00 plus tax – Identify yourself as being with the FSHS.

Special Thanks **to all the sponsors of the Flatwoods Citrus newsletter for their generous contribution and support. If you would like to be among them, please contact me at 863 674 4092.**

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February 2007

2005 Hurricanes Tree Assistance Program

Overview

USDA Farm Service Agency's (FSA) 2005 Hurricanes Tree Assistance Program (TAP) authorized by the Emergency Agricultural Disaster Assistance Act of 2006 (the Act), provides payments to eligible owners of commercially grown Christmas trees, ornamental trees, nursery trees, potted trees, bushes (including shrubs) and vines that were lost or damaged because of 2005 hurricanes Katrina, Ophelia, Rita or Wilma. Producers in certain counties of Alabama, Arkansas, Florida, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Texas may be eligible for the program.

Under the Act, USDA's Commodity Credit Corporation (CCC) provides enough funds to cover approved TAP claims. FSA administers TAP on behalf of CCC.

Eligible Counties

Eligible TAP counties are those declared primary natural disaster areas by Secretary Johanns or designated a major disaster or emergency by President Bush for 2005 calendar-year hurricanes Katrina, Ophelia, Rita or Wilma. Counties contiguous to a primary county are also eligible. Counties declared disaster areas because of Hurricane Dennis are ineligible for TAP because disaster losses resulting from Hurricane Dennis were not provided for in the Act. A complete list of eligible counties is found in the PDF (481KB) version of this fact sheet found at **http://www.fsa.usda.gov/**

Eligible Producers

To be eligible for TAP, a producer of eligible trees, bushes or vines must:

Have had financial responsibility for the trees, bushes or vines;

Suffered qualifying tree, bush or vine losses of 15 percent or greater for the individual stand from an eligible hurricane in an eligible county during the applicable time; and

Be a citizen of, or legal resident alien in, the United States.

Eligible Trees, Bushes and Vines

Under TAP, eligible trees, bushes and vines are defined as follows:

Bush: a thick, densely branched woody shrub planted in the ground grown to produce an annual crop;

Fruit/nut tree: a woody perennial plant having a single main trunk, commonly exceeding 10 feet in height and usually devoid of branches below, but bearing a head of branches and foliage or crown of leaves at the summit, that is grown to produce an annual crop, including nuts;

Tree: a tree (including Christmas trees, ornamental trees, nursery trees and potted trees), bushes (as well as shrubs) and vines; and

Vine: a plant from which an annual fruit crop is produced, such as grape, kiwi or passion fruit, that has a flexible stem supported by climbing, twining or creeping along a surface.

To be eligible for TAP, a producer's eligible trees, bushes or vines must have been:

Physically located in an eligible county;

Affected during an eligible hurricane during the applicable time; and

Grown for commercial use.

Timber losses are ineligible for TAP assistance.

Providing Evidence of Loss

To be considered an eligible loss under TAP, the tree, bush or vine damage must be visible and obvious to the local FSA county committee. If physical evidence no longer exists, the applicant must provide acceptable evidence for FSA to determine that the eligible trees, bushes or vines existed and were lost because of an eligible hurricane during the applicable time.

Acceptable evidence may include:

- Receipts for the original purchase of the eligible trees, bushes and vines;
- Documentation of labor and equipment used in planting or removal; and
- Chemical, fertilizer or other related receipts.

Program Payments

Under TAP, program participants are reimbursed for the lesser of:

- 75 percent of the actual costs of replanting or rehabilitation; or
- The calculated amount using approved established rates.

Payment limitation and adjusted gross income rules do not apply to TAP. There is no acreage limitation under TAP.

Replanting Trees, Bushes and Vines

To qualify for TAP, eligible producers must replace or rehabilitate eligible trees, bushes and vines within 12 months from the date the application is approved.

Replanting may be on a field other than where the losses originally occurred. Also, replanted trees, bushes and vines may be different from those damaged as long as they have the same general end use, as determined by FSA.

Sign-up

TAP sign-up begins Jan. 31, 2007, at local FSA offices and continues through the later of March 30, 2007, or 15 calendar days after publication of the final rule.

Application Requirements

Producers must submit TAP applications to the local FSA office serving the county where the eligible loss occurred.

On the TAP application, producers must:

- Identify the disaster period, the producer's share and number of acres in the disasteraffected stand of claimed eligible trees, bushes or vines; and
- Certify that the damage or loss occurred during the applicable disaster period and resulted from an eligible hurricane.

Other application guidelines include:

- Payments may be made for eligible losses suffered by an eligible producer who is now deceased or is a dissolved entity if a representative who currently has authority to enter into a contract for the producer signs the application for payment. Proof of authority to sign for the deceased producer or dissolved entity must be provided. If a producer is now a dissolved entity, all members of the entity at the time of dissolution or their duly authorized representative(s) must sign the application for payment.
- Data furnished by the applicant is used to determine eligibility for program benefits. All required information must be provided.
- A minor is eligible for program benefits if all eligibility requirements are met and one of the following conditions exists:
- The right of majority has been conferred upon the minor by court proceedings or statute;
- A guardian has been appointed to manage the minor's property, and the applicable program documents are executed by the guardian; or
- A bond is furnished under which a surety guarantees any loss incurred for which the minor would be liable as an adult.

For More Information

More information about FSA and FSA programs can be found on FSA's Web site, **http://www.fsa.usda.gov/,** and at your local FSA or USDA Service Center.

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INCREASING EFFICIENCY AND REDUCING COST OF NUTRITIONAL PROGRAMS

Economics, nutrition, and Florida soils

- To maintain a viable citrus industry, it is necessary to produce large, high quality crops of fruit economically.
- Good production of high quality fruit will not be possible if there is a lack of understanding of soils and nutrient requirement of the grown trees.
- Most Florida citrus is grown on soils with inherently low fertility and low CEC and thus unable to retain enough amount of soluble plant nutrient against the leaching action of rainfall and irrigation.

Importance of N & K

- N & K are the most important nutrients for Florida soils and citrus.
- An adequate level of N is required for vegetative growth, flowering, and fruit yield.
- K also plays an important role in determining yield, fruit size, and quality.
- Fertilizer ratios of N to K_2O are usually 1:1. However, a ratio of 1:1.25 is recommended for high pH or calcareous soils.

Management practices to improve fertilizer efficiency

They include:

♦ Evaluation of leaf analysis data

♦ Adjustment of N rates to the level based on expected production and IFAS recommendations

♦ Selection of fertilizer formulation to match existing conditions

♦ Careful placement of fertilizer within the root zone

♦ Timing to avoid the rainy season

♦ Split application

♦ Irrigation management to maximize production and minimize leaching

Tissue and soil analysis

- Leaf sampling and analysis is a useful management tool for fertilizer decisions.
- The best indication of successful fertilizer management practices for citrus trees is having leaf nutritional standards within the optimum ranges.
- Trends in leaf N and K over several years provide the best criteria for adjusting rates within the recommended ranges.
- Soil analysis is useful for determining the pH and concentrations of P, Ca, and Mg.

N requirements for mature trees

- In a mature grove where there is little net increase in tree size, N used for leaf growth is largely recycled as leaves drop, decompose, and mineralize. Replacement of the N removed by fruit harvest becomes the main requirement, and nutrient requirements should vary as the crop load changes.

Fertilizer Sources

- Inorganic and synthetic organic nitrogen fertilizers are high-analysis materials and are generally most economical to use in citrus groves. They are rapidly available, unless they have been formulated in a controlled-release form.
- The use of high analysis fertilizers eliminates much of the filler. A great deal of the mixing, transportation, and application cost is reduced.
- The use of controlled-release fertilizers for resets in established groves is a feasible option.

Timing and frequency of application

- 2/3 of the tree's nutritional requirements should be made available between January and early June, with most of it in place during flowering and fruit-setting period. The remaining 1/3 can be applied in September or October.
- Split fertilizer application or fertigation combined with sound irrigation management increase fertilizer efficiency by maintaining a more constant supply of nutrients and by reducing leaching if unexpected rain occurs. Less fertilizer will be required.
- Less fertilizer may also be required if fertilizer is confined to the root zone and if timing is adjusted to avoid rainy periods.

Foliar feeding

- Foliar feeding is useful under calcareous soil or any other condition that decreases the tree's ability to take up nutrients when there is a demand.
- Foliar applications of low-biuret urea (25-28 lbs N/acre) or phosphorous acid (2.6 quarts/acre of 26-28% P_2O_5) in late Dec.-early Jan. are known to increase flowering, fruit set, and fruit yield.
- Postbloom foliar applications of potassium nitrate or mono-potassium phosphate (8 lbs/acre K_2O) in late April have been found to increase fruit size and yield.

Phosphorus

- P applied to established groves had not leached but had accumulated in the soil at high levels and is available slowly so that P application may be reduced or omitted in established groves.
- P does not leach readily where the soil pH is 6 or higher and the fruit crop removes very little.
- Therefore, regular P applications are not necessary.
- However, some soils used for new citrus plantings may have low native P and P fertilizers should be applied for several years.

Micronutrients

- The use of most micronutrients is recommended only when deficiency symptoms persist.
- Copper should not be included in fertilizers if Cu sprays are used and if the grove soil test show adequate Cu (5-10 lbs/acre).
- Molybdenum (Mo) deficiency occurs on soils that have been allowed to become very acid. Liming those soils should fix the problem.
- Foliar spray applications of micronutrients (Mn, Zn, Cu, B, and Mo) are more effective and economically practical than soil applications when included with postbloom or summer foliar sprays after full expansion of the new flush.

Soil pH & liming

- Soils should have a pH ranging from 5.5 to 6.5 with the higher values used for soils containing high Cu levels.
- Under normal conditions, a clear advantage of pH 6 over pH 5 has been demonstrated in several studies. A pH of 7 was no better than a pH of 6.
- Soil pH can be increased by application of either calcite or dolomite. Dolomite supplies both Ca and Mg. Therefore, the choice of dolomite would be more appropriate to supply Mg and have a good balance between Ca and Mg.

Overliming

- Liming soils having a pH at or above 6 will be costly and not useful. In groves, where soils have adequate pH but low Ca levels, gypsum ($CaSO_4$) can be used as a source of Ca without affecting the soil pH.
- Applying dolomite as a source of Mg is not recommended if the soil pH is in the desired range. Under these conditions, soil application of either $MgSO_4$ or MgO and foliar application of $Mg(NO_3)_2$ are effective for correcting Mg deficiency.

Nutritional balance

- Correct ratios of nutrients are critical to fertilizer management and sustainability.
- If an element is below the critical level, yield production will fall even though the other elements are kept in good supply.
- Too much N with too little K can reduce fruiting and result in lost crop yield and quality.
- High K with low N and P supply will induce luxury consumption of K, delay fruit development and reduce juice content.

FOLIAR FEEDING

Foliar feeding is not intended to completely replace soil-applied fertilization of the macronutrients (nitrogen, potassium, and phosphorous). However, macronutrients can be foliarly applied in sufficient quantities to influence both fruit yield and quality. Some crops, such as citrus, can have a large part of the nitrogen, potassium, and phosphorous requirements met through foliar applications.

Foliar applications of other plant nutrients (calcium, magnesium, and sulfur) and micronutrients (zinc, manganese, copper, boron, and molybdenum) have proven for many crops to be an excellent means for supplying the plants' requirements.

Foliar feeding should be used as an integral part of the annual nutritional program. It can be used in other situations to help plants through short, but critical periods of nutrient demand, such as fruit set and bud differentiation. Foliar nutrition may also prove to be useful at times of soil or environmentally induced nutritional shortages. Foliar application of nutrients is of significant importance when the root system is unable to keep up with crop demand or when the soil has a history of problems that inhibit normal growth.

Foliar feeding is proven to be useful under prolonged spells of wet soil conditions, dry soil conditions, calcareous soil, cold weather, or any other condition that decreases the tree's ability to take up nutrients when there is a demand. Foliar feeding may be utilized effectively when a nutritional deficiency is diagnosed. A foliar application is the quickest method of getting the most nutrients into plants. However, if the deficiency can be seen, the crop might have already lost some potential yield.

Foliar fertilization is also efficient since it increases the accuracy of fertilizer application. Applications made to the soil can be subject to leaching and volatilization losses and/or being tied up by soil particles in unavailable forms to citrus trees.

While foliar feeding has many advantages, it can burn plants at certain rates under certain environmental conditions. It is important, therefore, to foliar feed within the established guidelines. There are a number of conditions that can increase the chances of causing foliar burn. A plant under stress is more susceptible to damage. Stressful conditions include drying winds, disease infestations, and poor soil conditions. The environmental conditions at the time of application are also important factors. Applications when the weather is warm (above 80^0F) should be avoided. This means that during warm seasons, applications should be made in the morning or evening. Additionally, applications should not be at less than two-week intervals to give the plant sufficient time to metabolize the nutrients and deal with the added osmotic stress.

Another important factor when applying nutrient foliarly is to ensure that the pH of the material is in the proper range. The pH range of the spray solution should be between 6 and 7. Attention should be paid to the pH of the final spray solution. This is significant in areas where water quality is poor.

Postbloom foliar applications (applied in April when the spring flush leaves are about fully expanded) of potassium nitrate (KNO_3) or mono-potassium phosphate have been found to increase fruit yield and size.

- **8 lb K_2O per acre per application**

- **Foliar applications are not a substitute for good nutrition program.**

DROUGHT

Water stress is the physiological condition to which a plant is subjected whenever the rate of water loss from the leaves by transpiration exceeds the rate at which water is absorbed by the root system. Water stress can be the result of excessive transpiration or slow absorption from a dry soil or a combination of these two factors. Any degree of water imbalance can produce a deleterious change in physiological activity of growth and reproduction. Short-term drought often reduces production and prolonged drought can cause total crop failure. Severe drought between March and July can reduce fruit set, fruit development and fruit growth. The number of fruit, fruit size, and tree canopy are reduced with water stress. Extension growth in shoots and roots, and leaf expansion are all negatively correlated with water status. Trees subjected to water stress are generally reduced in size. Vegetative growth is particularly sensitive to water deficit. Growth is closely related to turgor and the loss of turgidity reduces photosynthesis, leaf and fruit enlargement, juice content and yield, and increases wilting and leaf and premature fruit drop. Growers cannot afford water stress or water restrictions during this critical period. Irrigation is of particular importance during the springtime, which coincides with the important stages of leaf expansion, bloom, fruit set, and fruit enlargement.

NOW IS THE TIME TO IRRIGATE

Dr. Larry Parsons, Lake Alfred CREC,

Springtime normally means irrigation time for Florida citrus. The National Weather Service Climate Prediction Center predicts that the average temperature from May to October, 2007 will be above normal and precipitation will be below normal in April, 2007. Forest fires in March have been an early indicator of the start of a dry spring. With these warmer and drier conditions, irrigation is necessary in the spring for optimum tree growth and fruit set. Without adequate water in the spring, there is greater young fruit drop. This leads to lower overall yields. In one test where irrigation was inadequate for only 3 weeks in April, final yield was decreased by over 300 boxes/acre. Clearly, irrigation is needed to avoid water stress in the spring.

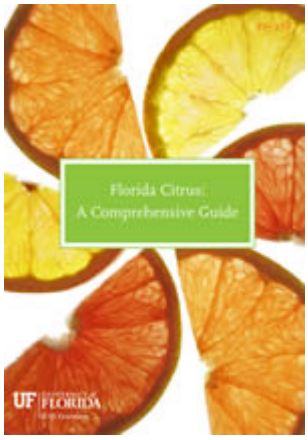
Coverage under the tree is important to reduce water stress. Earlier work by Dr. Robert Koo showed that yield improved with greater coverage. How much coverage is needed? Recent tests have shown that coverage of 50 to 75% of the total land area is best for yield. Coverage of only 25% reduced yield. A grove with a tree spacing of 25 x 12.5 feet has approximately 140 trees (or microsprinklers) per acre. If the microsprinkler spray diameter is 10 feet, those 140 microsprinklers will wet only about 25 % of the grove land area. If it were a 12-foot diameter, it would cover about 36 % of the land area. This was once compared to the diameter of a pizza. Because area increases with the square of the radius (or diameter), a small increase in the diameter can result in a large increase in the area of the pizza. A small change in microsprinkler spray diameter can influence the area covered greatly and also affect the application rate and appropriate irrigation duration. Spray diameter will depend on tree spacing, but for many groves, a desirable diameter would be 13 to 15 feet or slightly beyond the drip line of the tree. If greater coverage cannot be obtained, the grower will need to irrigate more frequently (daily or several times a day if using drip) to meet the needs of the tree during hot weather.

Growth is the most sensitive process to water stress. New flush growth and fruit enlargement are pronounced in the spring and summer. Any water stress or excessively delayed irrigation during this time can slow down the rate of fruit enlargement and result in smaller final fruit size.

Florida's sandy soils hold very little water. The available water is the amount of water between field capacity and the permanent wilting point. For common ridge soils such as Candler and Astatula, the available water ranges from 0.03 to 0.08 inches/inch. For a common flatwoods soil such as Myakka, available water ranges from 0.05 to 0.15 inches/inch. Hence, for a 24-inch depth on the ridge, one Candler can hold 0.72 inches of water and another Candler can hold 1.92 inches, more than twice as much. In other words, there can be "better" Candler soils and "poor" Candler soils. When irrigating, growers need to know more than just the soil type. They need to know if they are working with a soil with a reasonable water holding capacity or a poor capacity. This can be done by using soil moisture probes or auguring down under the microsprinkler to determine depth of wetting.

Tables and computer programs have been developed to determine how long and how frequently to irrigate. See http://edis.ifas.ufl.edu/HS204 for details on microirrigation. Given the relatively poor water holding capacity of Florida's sandy soils, most microsprinkler irrigation needs to be done every 2 to 3 days in the spring. Durations range from 3 to 6 hours. There is no need to irrigate for more than 6 hours at a time. Work with soil moisture probes has shown that irrigating for more than 6 hours results in water and fertilizer movement below the main root zone. With good fruit prices, proper irrigation in the spring can promote good yield and greater profitability.

IFAS Extension Bookstore



Code: **SP 278**

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Florida Citrus: A Comprehensive Guide, edited by David Tucker, Steven Rogers, Edward Stover and Michael Ziegler.

From tree selection to product marketing, *Florida Citrus: A Comprehensive Guide* is an essential reference for all things citrus.

Florida citrus is a multi-billion dollar industry and a vital part of the state's economy. Due to devastating, recent hurricanes, freezes, and diseases the industry is in flux. *The Florida Citrus: A Comprehensive Guide* is your complete guide to current practices and future changes resulting from these events.

Starting with an industry overview, the editors examine the relationships between all aspects of the citrus industry and the citrus production cycle. Forty-two, self-contained chapters include the following topics:

- Grove Design
- Site Selection
- Grove Planting
- Tree Growth, Development, and Productivity
- Regulatory Agencies and Environmental Assessment
- Risk Management
- Fruit Harvesting, Handling, and Transport
- Marketing
- Sustainability of Commercial Citrus Production

Utilizing dynamic presentation, detailed text, and over 140 illustrations, the editors have distilled current research and historical data to help the Florida citrus industry make sound decisions toward achieving success, growth, and agricultural sustainability.

91 color and 51 b/w illustrations. 413 pp. SP278. $30.00. ISBN: 0-916287-34-3.

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Citrus Mechanical Harvesting

UF UNIVERSITY of FLORIDA IFAS

2007 Citrus Mechanical Harvesting Field Day and Workshop

Wednesday, April 18, 2007
University of Florida, Southwest Research and Education Center
2686 State Road 29 North
Immokalee, FL 34142

Agenda

7:30 **Registration, coffee & wake-up refreshments, and visit poster displays**

8:00 **Welcome & outline of the day's events-** John Dunckelman, UF-SWFREC

8:15 **Morning presentations** (SWFREC auditorium):

Overview of IFAS Citrus Mechanical Harvesting Program- TBA

Economic Benefits of Abscission and Mechanical Harvesting- Fritz Roka, UF-SWFREC

9:15 **Depart for field site #1**

9:45 **Abscission demonstration-** Jackie Burns, UF-CREC

10:15 **Trunk shaker demonstration-** Jackie Burns, UF-CREC

10:45 **Pick up machine-** Tylor Cain, OXBO Corp, Intl. and Reza Ehsani, UF-CREC

11:15 **Canopy shaker demonstration**

11:30 **Board bus to return to SWFREC**

Noon **Lunch**

1:15 **Second field trip**- Concept Grove
Or
Visit poster displays and Q&A with IFAS Mechanical Harvesting Faculty

To enable us to plan for lunch and materials, we are asking for anyone interested in attending to please RSVP. To RSVP or for further information please contact Barbara Hyman at (239) 658-3461 or email brh@ifas.ufl.edu. Please visit our website at http://citrusmh.ifas.ufl.edu

CITRUS EXTRACTS GET CHOLESTEROL-LOWERING BOOST

By Stephen Daniells

26/03/2007 - **Hesperidin and naringin, compounds found in oranges and grapefruit, cut cholesterol levels by about 25 per cent in lab animals, says a study that may boost interest in these citrus flavonones.**

"It was shown [for the first time] that supplementation of diets with both flavonones which were fed by intubation, similar to the method by which humans consume original orange juice, alters cholesterol and antioxidant status when rats are fed a diet high in cholesterol," wrote lead author Shela Gorinstein in the *Journal of the Science of Food and Agriculture*.

High cholesterol levels have a long association with many diseases, particularly cardiovascular disease (CVD), the cause of almost 50 per cent of deaths in Europe, and reported to cost the EU economy an estimated €169bn ($202bn) per year.

The new study, by researchers from Israel, Korea, and Poland, randomly assigned 60 male Wistar rats to one of six diet groups: one group was fed a normal diet (control) while the other five groups consumed the normal diet plus supplements of hesperidin (0.1 mg dissolved in 1 mL water), naringin (0.46 mg per mL), cholesterol (one per cent, non-oxidised cholesterol), hesperidin plus cholesterol, or naringin plus cholesterol.

Both flavonones were found to increase the antioxidant status of the supplemented animals, with the greater antioxidant activity found for hesperidin, with a Trolox equivalent antioxidant capacity (TEAC) of 0.99, compared to 0.32 for naringin.

"It was found that the antioxidant potential of hesperidin was higher than naringin," said Gorinstein.

After 30 days of consuming the diets, both flavonones were found to significantly hinder cholesterol increases as a result of the high-cholesterol diet, while no effect on cholesterol levels was observed between the control and hesperidin/ naringin-only diets.

Indeed, rats consuming the hesperidin/ naringin plus cholesterol diets had total cholesterol levels about 16 per cent lower than rats consuming high-cholesterol-only diet. LDL-cholesterol levels were also reduced by about 27 per cent for high-cholesterol diets supplemented with the flavonones, compared to rats consuming high-cholesterol-only diet.

No differences in weight gain, feed consumption or feed efficiency were observed between the diets.

"In conclusion, diets supplemented with hesperidin and naringin significantly hindered the increase in plasma lipid levels caused by cholesterol feeding," wrote the researchers. *"Hesperidin and naringin, bioactive compounds of citrus fruits, are powerful plasma lipid lowering and plasma antioxidant activity increasing flavonones."*

The mechanism behind the effects was proposed to be due to the activity of the flavonones on lipopolysaccharide (LPS)-induced nitric oxide production in macrophages.

Chemistry & Industry
26 March 2007, Page 8
"Citrus promotes healthy hearts"
Author: C. Gauthier

Flatwoods Citrus

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