UNEP RUMBA
Regular Update on Methyl Bromide Alternatives
July 2007

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GLOBAL

1- Study Weighs How Radio Waves Kill Bugs in Fruits, Nuts

WSU-led research seeks alternative to chemicals that damage the ozone

Using radio waves, rather than chemicals, may be the best, post-harvest process for debugging dried fruits and nuts, according to a team of researchers led by a Washington State University professor.

Radio waves that generate heat to kill the insects hiding in nuts and dried fruits are a good alternative to methyl bromide, the most common form of post-harvest pest control, says the professor, Juming Tang, a scientist in WSU's Agricultural Research Center.

Use of methyl bromide, a fumigant, has been linked to ozone depletion and was banned in developed countries, including the U.S., in 2005, although temporary exemptions have been granted in some uses. Developing countries have until 2015 to end use of the chemical, WSU says. The school says that finding an alternative to the fumigant's use is among the U.S. Department of Agriculture's highest priorities.

An intensive five-year laboratory study and three-month pilot trial in a commercial walnut-processing plant have shown convincingly that radio frequency treatments can effectively control post-harvest insect pests in in-shell walnuts without reducing product quality, WSU says.

The research on walnuts is only part of the team's research, it says. Engineers, entomologists, and plant physiologists from Washington, California, Texas, Hawaii, Israel, and the United Kingdom are exploring radio frequency energy as a method to control insect pests in a variety of products, including fruit trees, nuts, and legumes, the school says.

"The same technology also may be extended to other commodities that require post-harvest pest control when they are shipped to other markets, such as lentils to India," Tang says.

Tang led a team of scientists that included representatives from WSU, the University of California at Davis, and the USDA. The results of their research were published recently in a scientific journal.

Source: Journal of Business, 26 July 2007, http://www.spokanejournal.com/spokane_id=article&sub=3262

AFRICA

2- Tobacco Research Board Sets Up Floating Tray Manufacturing Plant

As the deadline to ban use of methyl bromide in fumigating tobacco seedbeds fast approaches, the Tobacco Research Board says it has set up a plant to manufacture floating trays for use by farmers when the current donor-assisted programme to provide these for free ends this year.

TRB divisional manager Mr Meanwell Gudu said in an interview yesterday that the board had finished setting up a plant with capacity to produce at least 200 float trays per hour.

"We will be commissioning the plant within the next two weeks," he said.

In terms of the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer, use of methyl bromide will be curtailed and eventually eliminated in 2015.

Mr Gudu said the tobacco industry had three alternatives to methyl bromide in seedbed fumigation, namely the burning option that entailed burning land where tobacco would have been grown the previous year to kill pests; the chemical option where a chemical called EDB is used in a combination with a herbicide; and the non-chemical way of using float bed trays.

He said since EDB would be phased out in soil fumigation in the United States and other countries starting

from this year, and its manufacture and supply would be limited, the TRB had resolved to adopt the float bed tray system as an environmentally cleaner option of seedling production.
"Tobacco will continue to be a major crop in Zimbabwe, produced mainly for export, so its production practices have to be sensitive to the needs of the market, in line with good agricultural practices as determined and dictated by the needs of the major markets in China, Europe and USA," he said.
Mr Gudu said the float tray system was an option of seedling production that had been tried, tested and used successfully in many tobacco growing countries such as Brazil, Malawi and the US.
He said because of the comparatively high entry costs in float tray seedling production, the United Nations Industrial Development Organisation was currently offering, through TRB, free trays and plastics to growers as well as training them in their use.
The UNIDO project was aimed at phasing out 50 ozone-depleting potential tonnes of methyl bromide by December 2007, an amount that was equivalent to 85 tonnes of methyl bromide usage in tobacco seedling production.
To date, 6 790 growers have been trained to use the float bed trays since inception of the programme in July last year, said Mr Gudu.
Of these, 1 334 were trained last year while 5 481 have been trained so far this year.
While the TRB had targeted to contract 4 414 growers to grow seedlings using the float bed system by December this year, it had so far trained 5 633 growers.
Source: The Herald (Harare), 16 July 2007, http://allafrica.com/stories/printable/200707160094.html

NORTH AMERICA

3- Field Study Could Bring Sweet Smell of Success Back for Garlic Growers

The Department of Pesticide Regulation will fund research that could provide California's onion and garlic industry with a natural fungus fighter.
"This project offers a unique example of how our environmental and economic interests complement each other," said DPR Director Mary-Ann Warmerdam. "While modest in scale, this research points the way toward effective pest management without the use of fumigants."
If successful, the $40,000 project could be a major boost for growers who cultivate more than 50,000 acres of garlic and onions worth more than $300 million (plus significant revenue from processed products) a year.
California's garlic and onion industry is threatened by "white rot," a rapidly spreading, persistent soil fungus that destroys the bulbs. White rot, which can lie dormant in the soil for up to 40 years, already has disrupted production on more than 13,000 acres of prime farm land in the San Joaquin Valley counties of Kern, Kings and Fresno.
In the Santa Clara-Gilroy area - - known as the "Garlic Capital of the World" - - less than 500 acres remain under cultivation due to white rot.
Soil fumigants such as methyl bromide and metam-sodium destroy most white rot but cannot eradicate it, and the cost of fumigation has become economically impractical for many growers, who face pressure from foreign competitors.
Under DPR's two-year grant, the California Garlic and Onion Research Advisory Board and the University of California Cooperative Extension will commercially field test a naturally based compound found in onions and garlic. The compound "tricks" white rot into germinating, but in the absence of a crop, the fungus dies from starvation or is severely weakened.
Robert Ehn, technical manager for the onion and garlic board, said there appear to be no side effects from the treatment, other than the garlicky smell. "As white rot spreads, more and more acreage is being forced out of production," said Ehn. "This project is of critical importance, given the pressures on our industry."
Earlier this year, DPR proposed new regulations that would cap overall fumigant use in the San Joaquin Valley to reduce air emissions and meet state air goals. However, fumigant use has already declined in the onion and garlic fields due to falling commodity prices.
According to industry sources, more garlic is now imported from China than produced in California. Chinese production skyrocketed from about 50,000 pounds to nearly 3 million pounds in the last decade.
Source: YubaNet.com, Author: DPR, 9 July 2007, http://www.YubaNet.com

LATIN AMERICA AND CARIBBEAN

4- Banned Chemical Used In George Town

A chemical, banned in the USA since 2005, was used over the holiday weekend to fumigate the Cayman Islands National Museum.
Local residents and visitors to George Town were treated to a temporary change of scenery as the first

phase of renovation of the National Museum was completed.
On Friday the building, and the adjoining Jail House Café, were sealed in a protective cover to allow the use of Methyl Bromide, a powerful pesticide.
Signs on the building gave members of the public clear warning that the chemical was extremely poisonous, but that is not the reason that its use is banned.
According to the American Environmental Protection Agency (EPA), Methyl Bromide is a contributor to global warming because it attacks the ozone layer.
The United Nations say that the chemical, in its gaseous form, is fifty times more destructive to the ozone layer than the more commonly recognised CFCs that were used in aerosols, refrigerators and air conditioning units before being phased out ten years ago.
The EPA website states production of the chemical has been stopped since 2005, "Under the Montreal Protocol on Substances that Deplete the Ozone Layer and under the Clean Air Act." In the USA the use of Methyl Bromide is now restricted to emergencies only; it is understood to be a very effective way of killing potentially deadly anthrax spores which might be used in a terrorist attack.
Over 120 countries throughout the world signed the Montreal Protocol. One of them was the United Kingdom, acting on behalf of itself and a number of overseas territories including the Cayman Islands – a move which effectively bans the chemical from these Islands.
In addition, a 1985 report cautions against the use of Methyl Bromide to fumigate sensitive structures such as museums.
The report states that an alternative, Vikane, or sulfuryl fluoride, should be given first consideration because of its relatively trouble-free nature. Methyl bromide, the report states, has many chemical characteristics, which may be detrimental to structures, valuables and equipment, and to many forms of art.
Attempts to discuss the use of the chemical with the contractor 'Nite-Nite, Termite!' a franchise of Truly Nolen Pest Control based in Tucson Arizona proved unsuccessful. While acknowledging the nature of the Cayman Net News investigation, the promised call to explain what had happened was never made.
Source: Cayman Net Ltd, 21 June 2007, http://www.caymannetnews.com/cgi-script/csArticles/articles/000158/015812.htm

SOUTH EAST ASIA AND PACIFIC

5- Saving the Environment through Low Energy Solar Kiln Drying

New environmentally friendly timber processes for delivering sustainable, technically superior and innovative timber products.

Australian Choice Timber Supplies has by innovation and its major R&D programs taken a massive step towards making solar drying kilns best-practise technology for drying materials, particularly timber products on a global basis.
The patented technology, known as "solarola drying kiln" technology has many unique attributes along with its greatly improved low-cost and exceptional and simple solar heat collection system.
Combined with highly developed modified drying schedules that cycle kiln conditions with daily solar cycles, the combined low cost and superior energy efficiency of the technology underpins its amazing success.
Since drying of materials represents one of the world's biggest energy consumers and contributors to greenhouse emissions and global warming, it is clear that this technology is set to become another major Australian success story when it becomes globally known and embraced as best practise.
Another product also has strong potential to be a world-class success story. ACTS was approached in 2006 by representatives of the United Nations and Department of Ozone and heritage (Australia) to develop an environmentally safe technology for heat treating timber and other products for phytosanitary control.
Phytosanitary control basically involves killing insects and pathogens that may be contained by products being shipped from one country or region to another. The process avoids some of the catastrophic results we have had in the past from introduced pests and hazards into new environments.
Where industrial scale does not allow for the option of using large, high capital-cost gas kilns to "heat treat" products as a means of killing insects and pathogens, the established process is to expose timber and other products to very nasty ozone depleting methyl bromide gas in a way that trades off one environmental problem for another.
Methyl bromide gas is dangerous to humans and even more dangerous to the environment as one of the worst ozone-depleting gases that man has devised. This gas is being, or already has been phased out in most countries around the world.
ACTS has developed a solar heated fully sustainable heat-treatment kiln based on the innovative practical design of its more complex full-specification kiln units.
The first prototype unit, purchased by the Department of Ozone and Environment in Fiji is being trialed in Fiji in May 2007.

ACTS first major commercial project is being conducted by a new Australian Company; Enviro-Forest Solutions Ltd.
Mature ethical investors are being sought for this exciting project.
Details about the amazing global implications and other information may be found at www.choicetimber.com.au and www.enviroforestsolutions.com.au
Source: PR-GB.com, 17 June 2007,by dncraker, http://pr-gb.com/index.php?option=com_content&task=view&id=1696&Itemid=9

EUROPE

6- EU Sets Methyl Bromide CUEs (Critical use exemptions)

The European Commission has allowed five EU member states to use a total of 521.8 tonnes of the fumigant, methyl bromide, in 2007. The ozone-depleting active ingredient is being phased out worldwide, but critical use exemptions (CUEs) may be granted in cases where there are no suitable alternative control methods. The fumigant can also be used for quarantine and pre-shipment use. Last year, the Parties to the Montreal Protocol allocated additional CUEs of 689 tonnes to the EU for use in 2007 (Agrow No 508, p 18). However, the Commission notes that alternatives are increasingly available and has only granted around half of the CUEs requested by EU member states.
The CUEs relate mainly to use for cut flowers and strawberries. Other crops include peppers, tomatoes and carrots. Spain may use 252.1 tonnes, Italy 203 tonnes, France 39.4 tonnes, Poland 27.2 tonnes and the Netherlands 120 kg. Of the total amount allocated, some 31.6 tonnes can be sourced from existing stocks, the Commission says.
Six member states submitted a total of 40 proposals for CUEs, amounting to 1,071.8 tonnes. Italy requested 640 tonnes, Spain 322.8 tonnes, France 70.9 tonnes, Poland 27.9 tonnes, the UK 10 tonnes and the Netherlands 120 kg. Alternative methods have replaced over 97% of the amount of methyl bromide used in the EU in 1991, the Commission says.
Source: AGROW - World Crop Protection News, http://www.agrow.com/news.shtml

7- Agricultural and Horticultural Film Advance

Applied Market Information Ltd is pleased to announce a new international conference, Agricultural Film 2008, to be held 18-20 February at the Fira Palace Hotel in Barcelona, Spain. The location has been chosen because of the high concentration of farming using films in Southern Europe and increasingly in North Africa. In Europe, polyethylene holds by far the largest share of the market followed by PVC, PP and a small amount of other materials. In Japan and other parts of Asia more PVC is used and the technology for producing wide films (2-3 m) is well established there. In contrast, Europe developed extrusion blowing of wide polyethylene film (2-20 m). Recent developments in polymer materials include biodegradable materials and metallocene polyolefins (which allow the film gauge to be reduced). The film structure has a direct effect on crop yield and quality. Mulch films come in a variety of colours. Functions include: regulation of soil temperature, weed suppression (this also reduces damage to roots by cutting the requirement for tilling), retention of soil based pesticides, maintenance of bed shape and drainage, pathogen barrier, water retention and reduction in fertilizer leaching. The colour controls the reflection of light back onto the crop and can increase yield and quality. Films are used to reduce the damage to crops caused by soil borne pests. In a process known as solarisation, film is placed as a cover on the soil and the concentration of sunlight generates high temperatures in order to reduce the viability of weed seeds, fungi and other pests such as nematode worms. Solarisation with anti-drip films has controlled crown rot in tomatoes, while double mulch with black film and anti-drip film controlled sudden wilt of a melon crop in the Middle East. Reflective polyethylene mulch has reduced aphid and mosaic virus damage in melon crops in California.
The formulation of compounds for Agricultural Film can be very refined. Besides the requirement for anti-UV properties and established stabilisers such as HALS, many films are specifically formulated to transmit or absorb specific wavelengths of light. This can be used to enhance the growth of specific crops and/or limit the growth and development of weeds and other pests. Research in this area includes a photoselective red luminescent additive that shifts light from the UV spectrum to wavelengths used in photosynthesis. This can increase crop productivity and as an additional benefit may also limit some pests. Films are also employed to cover soil during fumigation; HDPE is much less permeable than LDPE to chemicals such as methyl bromide. Newer high performance, very impermeable film (VIF) can help to reduce the amount of fumigant required, reduce off-gassing and retain it for longer periods. Multilayer structures are in use with typically a polyamide or EVOH layer in an LDPE sandwich, and also metallised films. Tear resistance and other handling properties must meet the standards of traditional film materials. Silage wraps (generally stretch film) are required to be airtight and resistant to heat and solar radiation. LDPE for greenhouses is compounded to improve infrared opacity using mineral fillers or blends with other polymers, so that heat is

retained. Visible light transmittance is an essential property for these films - anti-dripping formulations cut condensation and careful additive selection can reduce dust accumulation on the film surface. Experiments with greenhouse film in a Saharan environment in Algeria have emphasised the issue of abrasion resistance to sand and wind - multilayer film (EVA between two layers of LDPE) performed better than PE alone. Waste plastic is an issue worldwide. Recycling of agricultural film is being studied intensely - the issues are recovery, chemical and soil contamination of the plastic. A new EU project, Labelagriwaste, is bringing together companies from the supply chain to develop a collection and processing system. In the US, research includes using the plastic as a fuel source. Compostable materials are being tested as an alternative for some applications to remove the need for recovery. Agricultural Film 2008 aims to bring together the agricultural and horticultural film industry to discuss the latest developments in markets and technology. The deadline for sending offers of papers to Dr Sally Humphreys is September 7, 2007.
Source: PlasterMart.com, 13 June 2007,
http://www.plastemart.com/plasticnews_desc.asp?news_id=10331&P=P#

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FEATURED READING >>> Methyl Bromide Technical Options Committee: 2006 Assessment
http://ozone.unep.org/Assessment_Panels/TEAP/Reports/MBTOC/MBTOC-2006-Assessment%20Report.pdf

The United Nations Environment Programme Division of Technology, Industry, and Economics (UNEP DTIE) OzonAction Programme provides R U M B A as a free service to promote information exchange and stimulate discussion about methyl bromide phase out under the Montreal Protocol. The goal of R U M B A is to provide information, stimulate discussion and promote co-operation in support of compliance with the Montreal Protocol. With the exception of items written by UNEP and occasional contributions solicited from other organisations, the news is sourced from on-line newspapers, journals and websites. The views expressed in articles written by external authors and the views expressed by emails sent to the forum are solely the viewpoints and opinions of those authors and do not represent the policy or viewpoint of UNEP. While UNEP strives to avoid inclusion of misleading or inaccurate information, it is ultimately the responsibility of the reader to evaluate the accuracy of any news article. The citing of commercial technologies, products or services does not constitute endorsement of those items by UNEP.

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