

fresh

News from AVRDC – The World Vegetable Center



January 21, 2011

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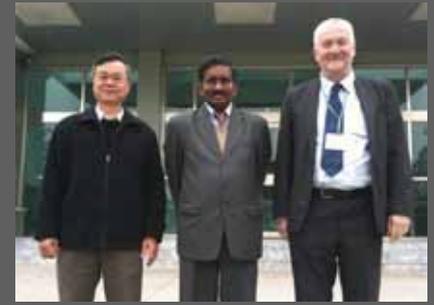
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Older adults: Drink beet juice, stay sharp



Drink up! Nitrates in beet juice keep the blood flowing in the brain.

Consuming vegetables with high concentrations of nitrates can increase blood flow to the brain and may stem the progression of dementia

Adults have long admonished children to “eat your vegetables”—and they should take their own advice to remain mentally vibrant as they age.

Recent studies by researchers in the USA indicate the high concentration of nitrates found in **beets** and other **vegetables** including **celery**, **cabbage**, **spinach** and other **leafy greens** may promote better blood

circulation in the brain. When a person consumes high-nitrate foods, good bacteria in the mouth turn nitrate into nitrite. Nitrites can help open up the blood vessels in the body, increasing blood flow and oxygen specifically to places that are lacking oxygen.

“There have been several very high-profile studies showing that drinking beet juice can lower blood pressure, but we wanted to show

that drinking beet juice also increases perfusion, or blood flow, to the brain,” said Daniel Kim-Shapiro, director of Wake Forest University's Translational Science Center in North Carolina, USA. “There are areas in the brain that become poorly perfused as you age, and that's believed to be associated with dementia and poor cognition.”

The researchers looked at how dietary nitrates affected 14 adults

age 70 and older over a period of four days. On the first day, the study subjects reported to the lab after a 10-hour fast, completed a health status report, and consumed either a high- or low-nitrate breakfast. The high-nitrate breakfast included 16 ounces of beet juice. They were sent home with lunch, dinner, and snacks conforming to their assigned diets.

Following another 10-hour fast, the subjects returned to the lab for breakfast. One hour after breakfast, an MRI (magnetic resonance imaging) recorded the blood flow in each subject's brain. Blood tests before and after breakfast confirmed nitrite levels in the body. For the third and fourth days, the researchers switched the diets and repeated the process for each subject.

The MRIs showed that after eating a high-nitrate diet, the older adults



had increased blood flow to the white matter of the frontal lobes—the areas of the brain commonly associated with degeneration that leads to dementia and other cognitive conditions.

"I think these results are consistent and encouraging—a good diet consisting of a lot of fruits and vegetables can contribute to overall good health," said Gary Miller, associate professor in the university's Department of Health and Exercise Science and one of the senior investigators on the project.

The findings may point to an

economic opportunity for farmers: The university has developed a new beet juice-based beverage, and hopes to begin marketing the health drink soon.

Presley TD, et al. 2011. Acute effect of a high nitrate diet on brain perfusion in older adults. *Nitric Oxide: Biology and Chemistry*. 1; 24 (1):34-42

<http://www.ncbi.nlm.nih.gov/pubmed/20951824>



Tomatoes on YouTube



In *Malle Roga from Research to Impact*, a 7-minute video produced by the Natural Resources Institute, University of Greenwich UK, AVRDC tomato breeder **Peter Hanson** discusses the Center's role in breeding tomato lines resistant to *Tomato leaf curl virus* disease ("Malle Roga") in India. The video highlights the Center's long-term effort to combat the disease through collaborations with public and private sector partners in India and the United Kingdom. The work was sponsored by the UK's Department for International Development over the last decade, and has produced a rate of return to research at 764:1 and counting.

<http://www.youtube.com/user/WorldVegetableCenter?feature=mhum>

Select "Malle Roga from Research to Impact"

Human resources as fertilizer?



In times of increasing fertilizer prices and finite natural resources such as phosphate rock, the use of (treated) human urine in crop production is gaining more attention from international development organizations. The Stockholm Environment Institute, which recently published updated guidelines on the use of urine as a fertilizer, invited **Robert Holmer**, AVRDC's East and Southeast Asia Regional Director, to serve as a resource person in a workshop on "Nutrient Recycling: Use of Urine for Crop Production," held from 16-17 December 2010 at the Central Horticulture Centre in Kirtipur, Nepal.

Jointly organized by the Nepal Node for Sustainable Sanitation, the Environment and Public Health Organization (ENPHO), and the Central Horticulture Centre of the Nepalese Ministry of Agriculture, the workshop was attended by more than 50 agricultural professionals from government offices, universities, and nongovernmental organizations.

Human urine is a potentially



valuable resource, particularly in a country like Nepal, where most people depend on farming for their livelihoods but soil quality is poor and access to inorganic fertilizers is often difficult due to cost and lack of passable roads. In Nepal, many communities have been using urine in agriculture for a long time, but the practice is disappearing. In the past few years, however, different organizations have promoted urine-diverting toilets, which allow harvesting of human urine as a potential fertilizer or compost



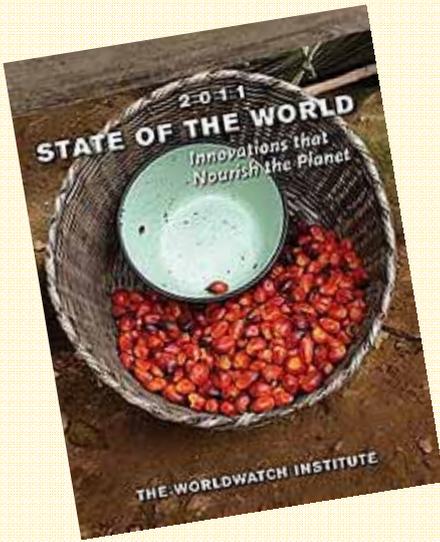
enhancer. Participants discussed the safe reuse of urine for crops, present practices and guidelines on urine application, and ways to promote urine use and better sanitation practices in Nepal.

Sustainable Sanitation Alliance:
<http://www.susana.org>

Stockholm Environment Institute:
<http://sei-international.org/>

Environment and Public Health Organization (ENPHO):
<http://www.enpho.org>

AVRDC's Tenkouano: Time for a "Revolution of Greens"



At a symposium in Washington D.C. on 19 January 2011, the **Worldwatch Institute**, a research organization that works on energy, resource, and environmental issues, released its report *State of the World 2011: Innovations that Nourish the Planet*, spotlighting successful agricultural innovations. AVRDC's work to increase the production and consumption of nutritious vegetables warranted a full chapter in the report.

Drawing from the world's leading agricultural experts and from hundreds of innovations already working on the ground, the report outlines 15 proven, environmentally sustainable prescriptions. **Abdou Tenkouano**, Director, AVRDC – The World Vegetable Center Regional Center for Africa, contributed a chapter on "The Nutritional and Economic Potential of Vegetables." He presented the Center's activities in:

- participatory research to involve farmers in the evaluation and selection of vegetable varieties suitable for local climates and market preferences
- providing policy, technical, and managerial support to develop and strengthen the vegetable seed supply chain in Africa
- promoting indigenous vegetables for their nutritional qualities and market potential

"Staples such as rice, maize, wheat, and cassava have been the focus of much research and investment, yet an abundance of these crops will only amount to a 'Grain Revolution' if the vegetables required to balance the diet are not equally abundant," said Tenkouano. "A 'Revolution of Greens' is necessary as well."

Thanks to economist **Kutlu Somel**, who represented the Center at the symposium.

The *State of the World* report is published annually in more than 20 languages. It is disseminated to a range of agricultural stakeholders, including government ministries, agricultural policymakers, farmer and community networks, and the increasingly influential nongovernmental environmental and development communities.

Worldwatch Institute
www.worldwatch.org

Regional Training Course in the news



The most recent newsletter of the **Thai Royal Agricultural Station** at Doi Angkang, Chiang Mai noted the visit of 12 training participants and staff from AVRDC – The World Vegetable Center to the station's organic vegetable production site, pest management demonstration, and packing area on 4 November, 2010.

Cities thrive on vegetables



Robert Holmer emphasized the value of growing vegetables in urban settings to the forum.

Robert Holmer, AVRDC's East and Southeast Asia Regional Director, was a keynote speaker at the **Second Xiamen International Forum on the Urban Environment (XIFUE)** in Xiamen, Amoy, China from 11-13 December 2010. Robert's presentation, "A Recipe for Healthy Cities," highlighted the health benefits and economic and environmental advantages of vegetable production in urban settings: improved nutrition,

increased employment, proximity to markets for producers, green space, and recycling of valuable natural resources.

The Institute of Urban Environment of the Chinese Academy of Sciences, the International Association for Urban Environment, and the Xiamen Municipal Government organized the forum to promote information exchange among academics, industries, and governments

related to urban sustainable development around the world. About 100 scientists from China and other parts of the world discussed advances in urban environmental sciences, development of urban environmental technologies, progress in urban environmental engineering, and sustainable urban planning and management.



Visitors

Ramu Abbagani, Deputy Director General of the India-Taipei Association, visited AVRDC headquarters in Taiwan on 11 January 2011. He toured the campus, discussed issues of interest with AVRDC staff, and noted that his organization will work with the Center to build partnerships with Indian educational institutions and government ministries.

I to r: Yin-Fu Chang, AVRDC Deputy Director General - Administration & Services; Ramu Abbagani, Deputy Director General, India-Taipei Association; Dyno Keatinge, AVRDC Director General; Jackie Hughes, AVRDC Deputy Director General - Research.

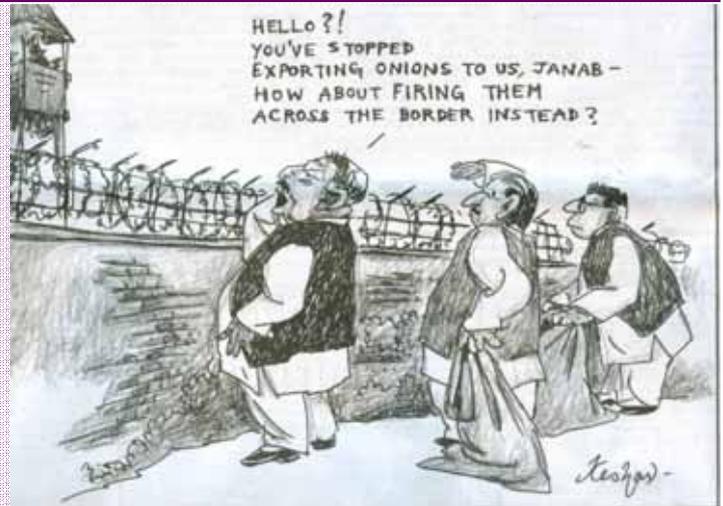
The politics of onions

Onions are a vital ingredient in Indian dishes, but in South Asia they are also an important ingredient in local and regional politics.

India is the world's second largest producer of onions after China, but recent unseasonal monsoon weather has contributed to a major shortfall in production in both India and Pakistan. Onion prices have more than doubled in Pakistan in recent weeks and in India they have reached up to 85 rupees (\$1.88) per kilogram, far above the usual retail price of 20-25 rupees, contributing to major inflation in food prices that has hit poor consumers particularly hard.

Indian state governments are now heavily subsidizing onion prices to quell consumer agitation. The memory of six-fold price rises in onions in 1988 that contributed to the downfall of the ruling Delhi state government has made this an issue of major political importance.

Onions: an unlikely ingredient in diplomacy. Cartoon from The Hindu, 13 January 2011



Governments in both India and Pakistan are struggling to free up regional trade in the commodity to make up for the current severe shortfall. India is prepared to step up exports of vital cotton supplies that are essential to Pakistan's economy in return for increased imports of its onions.

Vegetable farmers around major cities such as Hyderabad are now being given free public transport to help them get their produce to market.

In the long-term, improved varieties and production methods

with better storage, transport and marketing will help avoid such emergency measures—and onions bringing tears to the eyes of politicians.

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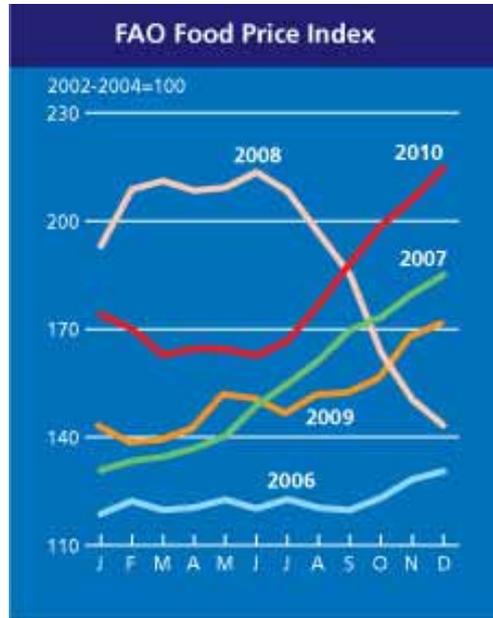
Symposium set



Over the past several months **Robert Holmer** and **Narinder Dhillon** in AVRDC's East and Southeast Asia office have been laying the groundwork for the upcoming **Regional Symposium on High Value Vegetables in Southeast Asia: Production, Supply and Demand**, 24-26 January 2012 in Chiang Mai, Thailand. Their consultations were noted in a recent issue of *PNASF News*, published by the Dr. Prem Nath Agricultural Science Foundation in India. **Dr. Nath** prompted members of VEGINET (the Vegetable Science International Network) to help host and participate in the symposium.

inside insight

The Food and Agriculture Organization's food index hit 215 points in December 2010, up from 206 in November, and broke the all-time high of 213.5 registered in June 2008. In 2000 the index stood at 90 and did not break through 100 until 2004. The index shows what many people around the world have already have experienced: a dramatic rise in prices for food over the past decade. Some reports and comments to ponder:



The Indonesian government has called on the public to grow chili at homes, following the skyrocketing prices of the commodity, as an effort to ease inflation pressure. Chili prices have more than doubled recently, triggering concern among consumers. Indonesian Trade Minister Mari Elka Pangestu said extreme weather and pests were blamed for the poor supply of the commodity. "People should be encouraged to plant chili shrubs in their yards," she said. "Just so you know, I've already planted chili shrubs at my house." The price of red chili has climbed to more than 100,000 rupiah (US\$10.00) per kilogram, from the normal price of 40,000 rupiah (US\$ 4.00).

-- Jakarta Post, 7 January 2011

The rapid increase in hunger and malnourishment since the food crisis of 2008 reveals the inadequacy of the present global food system and the urgent need for structural changes.

Structural changes can improve food security. In the short term, this means targeted safety nets and social protection programs as well as reliable and timely information on food commodity markets. Small-scale farmers must be assured access to indispensables means of production and technologies — such as high-quality seeds, fertilizers, feed and farming tools and equipment. The key to long-term food security lies in boosting investment in agriculture, particularly in low-income food-deficit countries, which must be given the necessary technical and financial solutions and policy tools

to enhance the productivity of their agricultural sectors and strengthen their resilience in the face of crises.

-- Jacques Diouf,
FAO Director General

The solution would seem simple: Grow more food. But increasing the food supply isn't easy. First, the world isn't producing any additional good farmland. In fact, we're losing farm acres every year to causes that range from desertification to urban development. Second, while increasing the productivity of much of the world's farmland is certainly possible, we've got a mismatch in much of the world between the cost of the inputs that would raise productivity—better seeds, more fertilizer, better irrigation—and the ability of poor farmers to pay for

inside insight

them. Third, many of the cheapest and easiest methods for raising productivity have hit real limits, given the absence of investment capital. Fourth, global climate change is making weather less predictable.

-- Jim Jubak,
MSN Investment Columnist

One possible response to the question about the likelihood of a structural rise in food prices is: Let's hope so.

Higher prices would partly reflect greater demand from the billion-plus people in the world who are still poorly nourished. As Amartya Sen, India's Nobel Prize-winning economist, points out, too many Indians remain ill-fed. By some estimates, no fewer than half the country's children are malnourished. If the 500 million or so Indians living in poverty today began to eat half-decently, that

alone would have a substantial impact on food demand.

In China, periodic bouts of food inflation notwithstanding, farm production has kept up with the rising demand. Despite the fact that its people consume more calories and more grain-intensive meat, China has remained a net food exporter. It has done a good job of improving yields through better irrigation, use of fertilizer and land reform to encourage the creation of bigger farms. Agricultural production has risen in spite of the fact that some farmland has been lost to urbanization.

Today's global food-price increases are more the result of a supply shock caused by fires in Russia and floods in Australia than by a sudden surge in demand from China or anywhere else. Nor are high prices necessarily harmful. For one thing, they can help to transfer wealth from more affluent cities to the generally poorer countryside.

In theory, higher prices should also encourage investment in farming and related infrastructure, increasing output. Food, unlike hydrocarbons, is a renewable resource. But land, water and energy—farming requirements all—are finite.

The biggest constraint to ever-higher production may be energy, the proximate cause of the 2007-2008 food-price shock. The more modern farming becomes, the more heavily it relies on hydrocarbons in the form of fertilizer, as well as fuel for tractors and transport.

If the growth of India and China is destined permanently to inflate the cost of energy, it's a pretty safe bet it will have the same effect on the cost of food.

-- David Pilling, *The Financial Times*,
14 January 2011

A fresh face



Notice something a little brighter and livelier in this issue of the *AVRDC Newsletter*? It's our new name for

the publication: **Fresh**. We've updated our banner to better reflect the energy and forward-thinking approach the Center brings to all its endeavors as it strives to alleviate poverty and malnutrition in the developing world through the increased production and consumption of nutritious, health-promoting vegetables. Fresh is the optimum, the peak, the moment of greatest benefit—we hope that's what you will find in each issue of **Fresh**.

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