GROWING TIMES

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Slugs May Spread E. Coli to Vegetables

January 19, 2006
UPI, ABERDEEN, Scotland

-- Researchers at Scotland's University of Aberdeen were cited as saying that slugs have the potential to transmit a form of E. coli to salad vegetables.

Slugs are widespread agricultural pests that continuously ingest bacteria from the soil and their environment. The researchers say slugs' tendency to contaminate leafy vegetables often targeted for human consumption identifies them as likely source for E. coli transmission.

Laboratory testing indicates the slug species Derrieres reticulate can maintain viable E. coli on its external surface for 14 days and slugs that were fed E. coli shed viable bacteria in their feces for up to 3 weeks.

The study is reported in the January issue of the journal Applied and Environmental Microbiology.

INSIDE THIS ISSUE

The Genetically Modified Crop Debate in the Context of Agricultural Evolution

The following is a copy of an article we thought you might find of interest.
Plant Physiol, May 2001, Vol. 126, pp. 8-15
Channapatna S. Prakash

There is no such thing as safe food, and there never has been! That is not to suggest that all of our foods are dangerous, only an acknowledgment that trace levels of such contaminants as toxins and carcinogens are present in everything we eat. But a primary rule of toxicology, articulated over 400 years ago by Paracelsus, refers to the importance of dosage: "Every substance is a poison, but it is the dosage that makes it poisonous" (Poole and Leslie, 1989).

While not alarming, our daily food naturally contains thousands of chemicals, and many of them are shown to be carcinogenic or hazardous in lab animal studies with huge doses. We consume roughly 5,000 to 10,000 natural toxins daily, as plants have evolved to produce an array of chemicals to protect themselves against pests, diseases, and herbivores (Ames et al., 1990a). For instance, roasted coffee has over 1,000 chemicals, of which 27 have been tested and 19 of them found to be rodent carcinogens (Ames and Gold, 1997). The fat-soluble neurotoxins solanine and chaconine are present in potatoes and can be detected in the bloodstream of all potato eaters (Ames et al., 1990b). Naturally then, when crops are bred for resistance to pests by transferring genes through conventional methods, the resistance is often accompanied by an increase in such toxic compounds.

Thus, it is not true that we never had problems with conventionally bred varieties. Any crop variety found to pose a real health risk was promptly

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removed from the market, but those varieties (in contrast to [Genetically Modified] (GM) crops) were never routinely tested. One pest-resistant celery variety produced rashes in agricultural workers and subsequently was found to contain 6,200 ppb of carcinogenic psoralens compared to 800 ppb in the control celery (Ames et al., 1990). This celery was removed from cultivation and that was also the case with the potato variety Lenape, which contained very high levels of toxic solanine.

We have always learned from trial and error with all innovations. Similarly, crop improvement practices evolved over time with continued refinement. It is common, though, for human nature to generate an exaggerated fear of new innovations while perceiving older or "natural" products as always more benign. Huber (1983) discusses this double standard in the larger context of risk regulation. We have always been lenient toward existing known and greater hazards, even as we create "gatekeepers" to minimize new risks. Thus, we fail to recognize and "exorcise" much larger older risks.

While most food hazards arise from pathogens such as Escherichia coli 0:157, Listeria monocytogenes, and Salmonella enterica along with mycotoxins produced by fungi (and thus a function of food storage and handling), certain foods containing toxic compounds are known to produce adverse health consequences over time. Cassava, eaten by a large population in Africa, contains cyanogenic glucosides, which cause limb paralysis if consumed before extensive processing. Solanin in tomato and potato is known to cause spina bifida. Vetch pea, a common legume known for its hardiness and thus popular in India among poor farmers contains highly dangerous neurotoxins that cause untold misery. Phytohemagglutinin, found in undercooked kidney beans, is toxic. And peach seeds are extremely rich in cyanogenic glucosides. None of these were subject to any mandatory testing before they were introduced into the food chain, nor are they subject to any regulation now. But if the current regulatory standards imposed on GM crops were to be invoked for traditional crops, most of them would fail to meet their requirements.

Humans have built-in natural defenses that protect us against normal exposure to toxins. But, according to Ames and Gold (1997), we have not evolved to achieve "toxic harmony" with everything we eat, because natural selection occurs much too slowly and because much of what is in our diet today was not eaten at all when we were hunter-gatherers.

A balanced mixture of foods normally provides adequate nutrition. However, none of the crops grown today were selected with our nutritional requirements in mind. Instead they were chosen intuitively, by our ancestors, from among the edibles that could be found around them. Thus, the most important food crop in the developing world, rice, has no provitamin A and little iron in its endosperm. This has led to horrific problems, such as blindness among millions of children due to vitamin A deficiency, and iron-deficiency anemia in nearly a billion women dependent on a rice diet. Biotechnology research, far from causing any new food safety problems, has already demonstrated its potential in enhancing the nutritional quality of our food and is also being employed to reduce harmful toxic compounds that exist in our food.

For more information about genetically modified foods, you can visit this website:
http://www.plantphysiol.org/cgi/content/full/126/1/8

Pesticide Registration Numbers

What do those numbers mean?

As all of you know, either the U.S. EPA or the California EPA assigns a Pesticide Registration Number to each pesticide in California. So what do those long numbers mean?

The first digits refer to the manufacturer or basic registrant. The second set of digits identifies the product itself. The third set of digits, if applicable, identifies the distributor.

In some cases, a product is assigned a letter(s) after the number. This occurs when a pesticide has multiple names for the same formulation or if the product undergoes a label change.

Because each segment of the registration number holds important information, it is essential to include the spaces or dashes in between these numbers when you record them on your use records and use reports. If the numbers are run-together, it becomes difficult to ascertain what pesticide was used. If applicable, be sure to record the letters after the number too!

Registered vs. Specimen Pesticide Labels

Enforcement Letter 06-13

California Code of Regulations Section 6602 states that a pesticide applicator must have a registered label at each use site.

> *"A copy of the registered labeling that allows the manner in which the pesticide is being used shall be available at each use site."*

Many of us interpreted that code section to mean just that - the registered label delivered with a pesticide or a copy of the label supplied by the pesticide's manufacturer / distributor must be available at the use site.

However, DPR recently issued an Enforcement Letter with a new interpretation. DPR determined that any document that has an accurate depiction of the directions, restrictions, and precautions found on the registered labeling is acceptable for complying with 3CCR Section 6602. They gave examples such as: "specimen labels, CD's, labeling downloaded from a registrant website or crop data management system, photocopies, or photographs. If a CD or similar technology is used there must be a means to view the content at the site."

DPR went on to say that it is the responsibility of the user to ensure that the labeling he or she brings to the site is a true and accurate reflection of the currently registered labeling. If it is discovered the labeling on site is not a true and accurate copy of the registered labeling, action can be taken for a violation of 3CCR Section 6602.

We understand that, in many cases, it is easier to transport pesticide concentrates in approved service containers such as tip-and-pours rather than the pesticide's original container. With this new policy interpretation, having an appropriate label at the use site will be a little easier. Instead of requesting multiple labels from your pesticide dealer, you can now download a specimen label from a pesticide registrant's website.

Please be aware if you choose to download a specimen label from a website, make sure the specimen label matches the label that was delivered with the pesticide. We've seen older versions of labels on websites along with multiple labels for the same product. Make sure your EPA numbers (including alpha codes), protective gear, precautions, directions, restrictions, use sites, and use rates all match your registered label back at the office. - We want you to be sure you have an appropriate label at the use site!

To read DPR's Enforcement Letter 06-13, you can click on this link:

http://www.cdpr.ca.gov/docs/enfcmpli/penfltrs/penf2006/2006013.htm

Mediterranean Fruit Fly May Transmit Human Pathogens to Fruit

July 19, 2005, Medical News Today
http://www.medicalnewstoday.com/medicalnews.php?newsid=27630&

The Mediterranean fruit fly has the capability to contaminate commercial and wild fruits with bacteria harmful to humans say researchers from Israel. They report their findings in the July 2005 issue of the journal Applied and Environmental Microbiology.

The Mediterranean fruit fly is considered to be a major menace to the commercial fruit industry worldwide. They feed on animal feces for protein in order to produce eggs, which they then lay in fruit by puncturing the skin and injecting them. Outbreaks of food-borne diseases associated with fresh produce consumption are rapidly increasing, reinforcing the need to identify the source of contamination.

In the study flies were fed feces contaminated with Escherichia coli and caged with intact apples. After limited exposure researchers found the apples to be contaminated with E. coli and rinsing them with tap water did not rid them of the bacteria. The flies studied harbored E. coli in their systems up to seven days after infection.

"These findings highlight the potential of the fly to carry human pathogens and to serve as a vector for transmission of food-borne diseases," say the researchers. (S. Sela, D. Nestel, R. Pinto, E. Nemny-Lavy, M. Bar-Joseph. 2005. Mediterranean fruit fly as a potential vector of bacterial pathogens. Applied and Environmental Microbiology, 71. 7: 4052-4056.)

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