Nanotechnology and Agricultural Trade


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Summary

1. The use of nanotechnology in agriculture and forestry will likely have environmental benefits.

2. It’s critical to approach this promising technology in a rational manner (Not all nano is the same).

3. Non-Science based regulation of this technology could hurt innovation and trade without promoting health or safety.

4. Overly restrictive, non-science based measures may prevent or significantly limit all potential benefits; to farmers and the environment alike.
Potential Environmental Benefits

1. The use of nanotechnology in agriculture and forestry will likely have environmental benefits.

   – Enabling the “Green Economy”
   
   – Decreasing fossil fuel consumption
   
   – Increasing equipment life-span
   
   – Increase recycling capabilities
Agricultural Benefits

– Increasing farm sustainability while decreasing environmental impact.
  • Sensors in the fields enabling targeted, minimal application of nutrients, water and/or pesticides.

– Increasing global food security.
  • Decreasing input costs, increasing yields and decreasing post harvest loss.

– Post-harvest, non-food biomass.
  • Cellulosic nano crystals for biofuels

– Improving food safety.
  • ‘Smart’ packaging enabling less food waste
Forestry Benefits

– Increasing forest management sustainability while decreasing environmental impact.
  • Increasing markets for biomass, which promotes the health of the forest

– Paper products
  • Stronger, longer lasting, lighter products

– Biomass based building materials
  • Stronger longer lasting, replace petroleum based materials

– Enable better fire retardants and wood preservation
  • Less biomass needs to be harvested
Approach

2. It is important to approach this promising technology in a rational manner.

- Nano-scale materials have been around for awhile.

- Nanomaterials are not all equally hazardous.

- As with any new technology, we should ensure that regulatory approaches are risk-based and cost-effective.

- Scientists have an obligation to help dispel unfounded rumors about nano-related hazards.
Risk

3. Regulation that is not grounded in sound science could have harmful economic impacts without promoting health or safety.

   – Could disrupt trade and be used as a tool for protectionism.

   – May not increase levels of protection.

   – Could draw attention away from genuine risks and waste public funds.
Regulatory Approach

The United States’ current position is that, in general, *existing statutory authorities are adequate to address regulatory oversight* of nanotechnology and its applications in production agriculture (e.g. use of pesticides and fertilizers), food additives, and food packaging.
U.S. Regulatory Oversight of Agriculture and Forestry

- U.S. Food and Drug Administration
  - Federal Food, Drug, & Cosmetic (FFDCA)

- U.S. Environmental Protection Agency
  - Toxic Substances Control Act (TSCA)

- USDA - Animal and Plant Health Inspection Service
  - continues to review the science and reserves the possibility to exercise regulatory authority in the future, if necessary.
Other Countries Approaches to Nanotechnology Regulation

**OECD countries:**
- European Union, Japan, Canada, Korea and Australia & New Zealand

**Non-OECD:**
- China, India, Russia, Brazil and South Africa
Potential Trade Disruptions

4. Overly restrictive, non-science based measures may prevent or significantly limit all potential benefits; to farmers and the environment alike.

• Broad definition of ‘nanotechnology’ (size dependent)

• Nanotech as a process triggers regulatory oversight

• Mandatory product labeling

• List of approved nano particles implies others are hazardous without any evidence.
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