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As the debate continues, UK shares its four lessons on GMOs

These four lessons, according to Dr. Brian R. Johnson are:

- ❑ Generalized statements about environmental risks from GMOs are worthless and have no place in regulation
- ❑ The UK experience shows that each crop has different characteristics and carries different potential risks
- ❑ Risks from GM crops sometimes are different from conventional crops, but not necessarily higher.
- ❑ Case-by-case assessments are always necessary, but they are not for all novel crops.

"I have an open mind," says Dr. Brian R. Johnson who has 20 years of experience on biotechnology and who is an adviser to the UK Minister of Environment on biotechnology issues. The

debate continues. To some, genetically modified organisms (GMOs) are a panacea to feeding a ballooning population; to others, it is a complete disaster to humans.

Resolving the debate on GMOs, Johnson posed two issues to consider:

1. Environmental Sustainability
2. Environmental Safety

Environmental Sustainability

Even without the use of GMOs, the experience of the United Kingdom (UK) shows that "non-chemical agriculture" has long destroyed UK's natural systems. Overgrazing, irrigation, and polluted water have damaged its arable soils by 40%. Agriculture encroaching on natural forests, grasslands, and wetlands has decimated many of the wildlife species in UK.

However, some of the wildlife have adapted to this type of agriculture. "We need more food, but not more of this type of agriculture. We need to use every tool in the toolbox.



SEARCA Director Arsenio M. Balisacan congratulates Dr. Brian Johnson on his well-received presentation to the Los Baños science community last February 3, 2005 at SEARCA's Umali Auditorium.

We need to think out of the box and not continue in the box," says Johnson.

Biotech offers some of the answers. It makes agriculture less damaging. It lessens the burden of the natural systems bearing the brunt of toxic herbicides and pesticides, and of water quality depletion. It reduces farm costs; for example, Bt corn in 1998 saved 8.2 million pounds of pesticide active ingredients (USDA).

On the other hand, there are direct and indirect risks to contend with.

Environmental Safety

Direct risks include the following:

- ❑ Invasiveness - every common weed that invaded agriculture system has naturalized. In particular, herbicide-tolerant crops have the "potential to create new weeds through outcrossing with wild relatives or simply by



persisting in the wild themselves."

- ❑ Toxicity to humans, livestock, and wildlife. For example, canola (*Brassica napus*) is highly toxic to deer, but not to human population
- ❑ Gene flow to other crops. Some crops exchange gene with wild relatives or with other crops
- ❑ Gene stacking - genes will combine in plants and will stack up. In one of the studies in UK, researchers found out that herbicide tolerant gene-stacked volunteers of oilseed rape would be inevitable in practical agriculture. It is recommended that researchers put more emphasis on "post-harvest cultivation in order to minimize

volunteer populations in subsequent crops."

From the four lessons and the risks on the use of GMOs mentioned here, Dr. Johnson concludes that, "[In] all risk assessments, at the end of the day, the final decision depends on your policy on what you actually want out of your environment. It is informed by science, but at the end of the day, it is a political judgment; it has to be a political judgment."

Dr. Johnson is a senior advisor on biotechnology to the British statutory nature conservation agencies and is head of the Biotechnology Advisory Unit at English Nature, government's advisors on nature conservation. The English Nature is one of the largest environment conservation NGOs in Europe. ■



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