Longstaff *et al.* can serve as a reminder to these countries that there is room for improvement in the operation of their regulatory systems.

Longstsaff *et al.* do, however, make the mistake of generalizing from a single product to cast doubt on the quality of all biotech products from developing countries. They specifically mention streptokinase production in China and Cuba, but haven't tested the streptokinase from these countries. They also do not provide data on streptokinase from developed countries, depriving us of knowledge of how common the specific, and perhaps special, quality problems of streptokinase might be. It is also worth noting that streptokinase production in the countries we studied commonly uses recombinant technology. According to Longstaff *et al.* the current international standard is not a suitable reference for some recombinant products.

We encourage stringent international regulatory regimes that are efficiently and equitably applied. We must avoid generalizations that stigmatize developing country products: that can only result in increasing health inequities in the world.

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Refuges in India and delayed resistance to *Bt* crops

To the editor:

A news item by Jayaraman *et al.* in the February issue (*Nat. Biotechnol.* **23**, 158, 2005) reports concerns in India about the potential rapid evolution of insect resistance to transgenic cotton that produces *Bacillus thuringiensis* (*Bt*) toxin. I would like to correct a misleading statement of mine, which was quoted in this article.

Contrary to my statement, the Indian government does require planting of non-*Bt* cotton refuges to delay insect resistance to *Bt* cotton. The rule is that every *Bt* cotton field will be surrounded by a belt of non-*Bt* cotton that covers at least 20% of the total area planted with cotton[1]. As in the United States, in India the refuge strategy aims to promote survival of susceptible insects and thereby slow evolution of resistance[2].

Thus far, field-evolved resistance to *Bt* crops has not been documented for insect populations[2], even though *Bt* cotton and *Bt* corn have grown on more than 90 million hectares worldwide since 1996 (ref. 3). The refuge strategy has probably contributed to this success.

In India, compliance with the refuge strategy is uncertain[1]. Thus, the issues raised in the article about the risk of insect resistance are relevant, particularly if several crops other than cotton are also genetically modified to produce Cry1Ac, the toxin in *Bt* cotton. Non-*Bt* varieties of some of these other crops may thwart resistance by acting as refuges for the cotton bollworm[4] (*Helicoverpa armigera*), the major pest in India targeted by *Bt* cotton. Similar to the modeling predictions for the cotton bollworm cited in the article, genetic models predicted that a closely related cotton pest, *Helicoverpa zea*, could evolve resistance to *Bt* cotton in the US in three to four years, assuming only a 4% refuge[5]. Larger refuges of non-*Bt* cotton and non-*Bt* varieties of other crops have likely helped to delay this pest's resistance for more than nine years[2,6].

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