Statement of
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My name is Leonard P. Gianessi. I'm a Senior Research Associate at the National Center for Food and Agricultural Policy (NCFAP), a private non-profit research group here in Washington.

In July 1999, my colleague Janet Carpenter and I released a national assessment of the aggregate benefits of the planting of Bt corn, cotton and potatoes in the U.S. We are pleased to see that EPA was able to use our report in its analysis of the benefits of the Bt crops.

I'll comment briefly on some differences in methodology between the EPA report and ours and offer some suggestions for improving the methodology.

One benefit measure that EPA does not include in its report is a measure of the increase in production that has occurred as a result of planting Bt crops. We estimate that the U.S. produced an extra 60 million bushels (or 4 billion pounds) of corn in 1998 by planting Bt corn and preventing damage from the European corn borer. That is the equivalent of 450,000 acres of corn that would have been destroyed by the corn borer, and this took place in a year with relatively light infestation (1998). Cotton growers produced an extra 85 million pounds of cotton as a result of planting Bt cotton to control insect pests.

EPA found the same problem that we did in estimating the impact of Bt corn on insecticide use. There was not a lot of spraying for the European corn borer before the introduction of Bt corn, and there is no a clear-cut set of pesticides that can be attributed solely to European corn borer control. EPA estimates, as we do, that the use of the insecticides recommended for European corn borer control went down, but these insecticides are used for other pests, as well. We come out at pretty much the same place – a modest reduction in corn acres treated with insecticides, perhaps 1 or 2% of 80 million acres. I suggest that EPA consider an alternative way of estimating the impact of Bt corn on insecticide use. That would be to estimate the increase in insecticide use if Bt corn registration were to be cancelled. Bt corn is being planted on 20% of the corn acres. Growers were not spraying 20% of the acres for European corn borer control; they were spraying only 5 to 8%. If Bt corn were to be taken away from U.S. farmers, the use of insecticides would rise significantly above the 1 or 2% reduction that occurred. For the first time, growers are using an effective control. They are seeing the value of controlling the pest, and without Bt corn, they are likely to spray 18 to 20% of the acres. I think that EPA could conduct such a simulation and estimate the potential increase that would occur. That is another way of estimating benefits – estimating what would happen if it were taken away.

EPA presents data in its report that shows that overall corn insecticide use went up following the introduction of Bt corn. It is said that it is beyond the scope of their report to explain this

increase. I think that EPA needs to analyze the increase and explain that the reasons for increased insecticide use is not because of the use of Bt corn. Our assessment is that insecticide use in corn has gone up in the last two years because of increased spraying for mites and cutworms, not for European corn borer and not for anything that is associated with the planting of Bt corn. I think that EPA's benefit section on Bt corn could be strengthened by including a discussion of some of the very focused studies that have been done in Nebraska and Iowa that support the conclusion that growers now spray less for European corn borer than before the introduction of Bt corn.

In general, I believe that both EPA's and our analyses have been selling the value of Bt corn short. We use averages of the increase in yield resulting from the use of Bt corn. These average values are gathered from plots throughout the entire Corn Belt and include many different Bt corn varieties. The methodology could be improved in several ways. First, EPA clearly has data detailing the counties in which Bt corn has been planted. There are estimates of the populations of corn borers at a sub-state level, as well. Why not overlay the population estimates of the corn borer on the acreage estimates of where the Bt corn is planted and do a better job of estimating the benefits exactly in the areas where the Bt corn was planted. In addition, why not use data on yield differences for the cultivars most commonly planted. In the yield comparisons, there are many values for corn cultivars that growers are not planting precisely because they are lower yielding. Why not just use yield numbers for those cultivars that growers actually are using? My assessment is that a more refined methodology is likely to produce higher values for the yield advantage of Bt corn. My hypothesis is that growers are planting Bt corn in areas where the European corn borer presence is higher, and they are planting the highest yielding cultivars. The use of averages across all cultivars and across all regions, I think, pulls down the aggregate values.

In EPA's benefit assessment for cotton, there is a large discrepancy between EPA's aggregate net benefit estimate and ours. EPA estimates net benefits of $27 million per year while our estimate is about four times higher: $93 million. This discrepancy results largely from a four fold difference in the average per acre net benefit. We use a value of $40 per acre while EPA uses a value of $11 per acre. Our estimate is based on a study that kept track of yields and costs at over 100 sites in the Cotton Belt. We looked at eight other studies, as well, and our report noted that the average net benefit from these other studies was $38 per acre. The problem with the EPA estimate is that it is a modeled estimate and the model is not transparent. It is not possible to discern exactly why the model is producing a net benefit estimate of $11 an acre. I assume that the Science Advisory Panel will try to figure out why there are these differences.

Notwithstanding our differences, the take-home messages from both our report and EPA's are pretty much the same:

(1) There has been a measurable reduction in the use of insecticides in field corn and cotton following the widespread planting of the Bt crops
(2) The economic benefits to corn farmers of planting Bt corn has been depressed because of low corn prices and because corn borer populations have been low the past few years
(3) Cotton farmers consistently have benefited economically from planting Bt cotton because of higher yields and lower insecticide costs