THE IMPACT OF RESTRICTING PESTICIDES

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One of the main tools of environmental regulation is restricting the use of pesticides or banning them. Some argue that these regulations do not make much difference in the production process, implying that the chemical contribution to production is limited. No one has ever tried to assess to what extent this argument is valid. Economic theory suggests that farmers use pesticides because they provide some value. If the pesticides were eliminated, then alternatives would be introduced. In some cases, the change may result in yield reduction because the alternative is not as effective as the original. In other cases, it may result in changes in land-use patterns because production cannot be sustained without chemicals.

We have taken an empirical approach to this question and have attempted to answer to what extent the restriction of pesticides resulted in substitutions and changes in productivity or land use. We did this with the regulation of methyl bromide as well as the impact of the Food Quality Protection Act. In both cases, the prediction was that farmers would switch to alternatives; that yield may be reduced; and, in some cases, the spatial patterns of production would change. Note, however, that the regulatory process was designed so that farmers were able to prepare. They were notified several years before the regulation became binding. We use time-series data of crops that use methyl bromide or phosphates before bans to see the impacts. Early results suggest that, indeed, there was significant substitution of some chemicals with alternate chemicals. We also found that there has been evidence of yield losses and little evidence of land-use changes because of regulation. We do not expect a uniform response across crops because target pests may vary, and their impact may vary. The long adjustment process may also reduce the impact of the ban. There is some evidence of yield reduction, suggesting that the banning chemicals, even after the adjustment, may have a significant impact on productivity.