

Empirical Relationships Between Pesticide Residues, Producer Attributes, and Production Practices for Florida-Grown Tomatoes and Strawberries

Introduction

Problem Setting and Objectives

During the last two decades there have been growing societal concerns over issues related to public health, environmental quality, and food safety. One of the major controversies inciting these concerns involves the production and consumption of fresh fruits and vegetables. Research has shown that diets with greater proportions of fruits and vegetables can prevent or delay many debilitating and life threatening diseases. At the same time, public acceptance and adoption of these findings is being discouraged by ongoing re-evaluations of the possible health risks associated with minute amounts of pesticide residues sometimes found in these foods. These concerns have motivated a number of government agencies to tighten their regulatory guidelines and controls on the use of pesticides in food production and processing. Recently, the Clinton Administration proposed that a one year project be undertaken to establish commodity-specific pesticide use reduction goals that would be achieved by the year 2000 (EPA 1993). The Administration believes that one of the best means of accomplishing such goals would be through the widespread adoption of integrated pest management (IPM) techniques.

While a significant amount of scientific research is being directed toward finding safer ways to combat agricultural pests, in many instances very little is known about how cultural and handling practices commonly used in our current food production and processing systems influence the occurrence of pest infestations, the effectiveness of various chemical pesticide treatments used to control them, and the fate of these pesticides after they have been applied. The primary objective of this study is to explore these relationships by empirically modeling the levels of pesticide residues found in Florida fresh fruits and vegetables as a function of the cultural and handling practices used to produce, process, and distribute them. The implications and conclusions from this investigation can help researchers, government agencies, and private decision-makers identify existing cultural and handling practices that have the potential to reduce pesticide applications and residues in these foods without imposing significant disruptions to their production or supply. A second objective of the study is to evaluate the relationships between residue levels and various socio-economic characteristics of growers and handlers. A better understanding of these associations could help policy makers more effectively target extension and education programs aimed at reducing pesticide use and/or residues.

Scope of Research

The scope of this investigation was limited to fresh tomatoes and strawberries grown in the state of Florida from October 1990, to June 1993. Data on cultural and handling practices as well as firm and decision-maker attributes were collected and evaluated for the grower, packer, and distribution stages of each market channel. Together, nineteen different pesticide