

The development of a conceptual framework for this analysis is based on the classification of various potentially influential inputs, conditions, and practices according to their inherent nature, mode of causality, and specificity of influence. These potentially influential variables can be classified into three different categories by their intrinsic nature. These are Practices, Environmental Factors, and Attributes. Practices are defined here as deliberate actions or strategies undertaken by growers or handlers in order to produce, process, or distribute the commodity. Environmental Factors are various weather conditions that may impact pest pressures and pesticides in a variety of ways. Factors such as temperature and rainfall differ from Practices in that they are beyond the control of the decision-maker. They are also distinctive in that they may interact with a variety of practices to initiate, preclude, or alter their influence on residues. Socio-economic characteristics of the decision-maker and organizational characteristics of the firm are defined here as Attributes. Attributes may be associated with or influence the selection of particular practices which may then impact pesticide residues. Thus Attributes are distinguished by having a consistently indirect affect on residues. Despite this indirect relationship, these variables may be valuable for identifying the characteristics of firms and decision-makers that are associated with residues. This knowledge can be used to identify particular segments of the industry for further study and/or for targeting future policy directives.

Another important criterion by which agronomic practices can be classified is the specificity of their influence on residues. In other words, does a particular practice influence residue levels of an individual pesticide, pesticides of a certain type, or all pesticides? Clearly, practices which only involve the application of a specific chemical pesticide should be related solely to the occurrence of that particular chemical residue. For the purpose of this analysis, practices with this type of association with residues are referred to as Specific. In complementary fashion, practices which directly or indirectly effect residues of more than one specific pesticide are designated as General Practices. Examples of General Practices would include most activities associated with soil fertility or water management. Environmental Factors and Attributes would also be classified as general because of their potential impact on residue levels of many different pesticides.

The selection of Attributes, General Practices, Specific Practices, and Environmental Factors that might explain pesticide residues in tomatoes and strawberries was based on research into the associated production technologies and their agronomic relationships to pests and pesticide residues for these commodities. The selected variables were classified into one of these four categories as follows:

Attributes: Decision-maker role, age, experience, and education; pesticide applicator certification; firm size, land rent-ownership mix, objectives, organization, affiliation; soil type and location.

General Practices: Type of irrigation and freeze protection used; use of plastic mulch and crop rotation; length of growing season; plant density and variety; types of fertilizer used; use of soil-testing and plant tissue analysis; the application of fertilizers relative