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## **Recommended Risk-Indicator Tools for Evaluating Environmental Effects of Pesticides in IPM Projects**

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### **Abstract Text:**

This study examines if pesticide risk indicators can be used to evaluate the impacts of pesticide applications on water quality. Pesticide risk indicators, commonly used in European countries, are mathematical equations that consider data inputs such as application rates, toxicity levels of a pesticide's active ingredient, meteorological data, the soil characteristic of farm fields, and other information to generate potential risk scores for pesticide applications. These potential risk scores represent the best estimate of a pesticide's impact on the surrounding environment. This project analyzed eight pesticide risk indicators, developed throughout Europe and the United States, with actual pesticide application data from a variety of farms. The findings reveal that only three pesticide risk indicators performed consistently and gave valid results. These indicators are: the SYNOPSIS indicator from Germany, the Multi-Attribute Toxicity Factor from the United States, and the Environmental Impact Quotient from the United States. Additionally, out of these three final indicators, only the SYNOPSIS indicator attempts to evaluate the specific impact of pesticide applications on water quality. As a result, the author recommends the SYNOPSIS indicator for any evaluative effort that considers the impact of pesticides on water quality.

### **Impact Statement:**

By using pesticide risk indicators, a more cost effective assessment of how pesticides impact water quality can occur.