

### Pesticide Residues in Food

Reducing our exposure to pesticides in food is an important public health policy issue and an increasingly important market choice, given the various alternatives available to today's consumers. Organic agriculture, with its prohibitions against synthetic chemical inputs and integrated pest management (IPM) foods are healthy alternatives to conventionally grown produce, increasingly imported from countries like Mexico, where pesticides are used more liberally than in the U.S.

A study was completed where pesticide data from organically grown foods, foods produced with IPM/NDR systems, and foods with no market claim (i.e, conventionally grown) were obtained from three independent sources, representing more than 94,000 food samples (Baker, 2002). These data were obtained from the Pesticide Data Program of the U.S. Department of Agriculture; the Marketplace Surveillance Program of the California Department of Pesticide Regulation; and private tests conducted by Consumers Union.

These three data sets provide an enormous amount of information on residues in conventionally grown samples of 20 major crops, 1,291 samples of organically grown foods and 240 samples obtained from IPM growers.

Study data suggest that conventionally grown samples consistently contain pesticide residues far more frequently than organically grown or IPM categories. Approximately 73 percent of conventionally grown samples contained pesticide residues compared to 27 percent of organically grown produce and 51 percent of IPM produce.

In addition, conventionally grown foods routinely contained more than one pesticide. Conventionally grown samples contained multiple residues in 46 percent of samples. Organic samples exhibited multiple residues in only 7 percent of samples and IPM samples contained multiple residues in 24 percent of samples.

The most intriguing finding of the study is that even organically grown foods are not pesticide free. Most of the residues in organic foods are explained as the unavoidable results of environmental contamination by historical pesticide use, or by "drift" – pesticides that blow in from nearby non-organic farms. The study also indicates that some foods sold as organic may also be mislabeled, either because of fraud or because of lapses in maintaining the identity of foods as they move from the farm to the consumer.

With an ever increasing emphasis on homegrown produce it is just as important not only to evaluate the potential exposure risks to pesticide residue in the produce but also in the soil where the produce is grown. Because many individuals use an area in their backyard or a small plot at a local community supported farm to grow produce, it is very important to understand what types of contaminants (such as pesticide residues) may be present in the soil. Preparation of the area to grow the produce requires an individual to have direct contact with the soil (which means there is the potential to have incidental ingestion of soil, soil contact with the skin surface and inhalation of soil particles). It is therefore important to understand the potential exposure to the pesticide residue in the soil via these direct contact exposures combined with the ingestion of the homegrown produce.

The *Healthy Roots Project* is concerned with identifying pesticide residue levels in soil that may result from past application or drift. These pesticides, because of their stability and persistence in the environment, are likely to be uptaken by fruits and vegetables, even if no additional pesticides are applied. Knowledge is power and understanding what pesticides exist in your soil is the first step in presenting unwanted exposure by you and your family.

### REFERENCES

Baker, B. P., Benbrook, C. M., Groth III, E., Lutz Benbrook, K.. Pesticide Residues in Conventional, IPM-grown and Organic Foods: Insights from three U.S. data sets. *Food Additives and Contaminants*, Volume 19, No. 5, May 2002, pages 427-446.