ORGANIC, SUSTAINABLE AND RELATED PRODUCTION SYSTEMS

I am often asked whether I grow my fruit organically. When I respond that I am not *certified organic*, the next question invariably is "why not?" The answer to this question is rather involved and requires a thoughtful response based on my understanding of various issues.

Historically, the organic movement began in the 1960's as a reaction to the increasing use of chemicals and pesticides in agriculture. The approach also coincided with the back-to-the-farm movement when individual families decided to return to small-scale agriculture. Both movements should be given credit for making us aware that our food indeed should be produced in a manner that is less dependent on chemicals and pesticides.

As the organic movement gained momentum, it enjoyed a very positive image with like-minded farmers, consumers and the general public who have embraced the organic approach supporting the notion that the tastiest and highest quality produce is best produced organically, or an even more limiting notion, that it can *only* be produced organically.

This popular conception may be too simplistic, being characterized as a battle between those wearing white hats and those wearing black ones. The image of anyone not *certified organic* is one in business only for profit and without any concern for quality, food safety or the environment, and those growing organically who never use chemicals, are socially conscious and concerned over the environment. The reality is far less clear cut: From the standpoint of using chemicals and pesticides, there are those wearing hats with various shades of gray, including many organic growers.

MYTHS AND MISCONCEPTIONS

I often pose several questions in order to get to the facts and dispel some of the myths regarding organic production. Here's a short list:

1. **Do organic growers use pesticides? Answer: Yes.**
2. **Do organic growers ever use synthetic, inorganic or other chemicals? Answer: Yes.**
3. **Is organic produce of higher quality? Answer: No, not intrinsically.**
4. **Is organic produce free of chemical residues? Answer: No, not necessarily**
5. **Is organic produce always safer and more wholesome than other produce? Answer: No.**

The organic growers' protocol was first initiated by the growers themselves and was self-enforced by the organic growers' association. Many of the older, accepted treatments to control pests and diseases remain as these organically approved practices were later legitimized by government regulation.

It is not always clear what method of logic or line of reasoning has been used to determine which treatments are acceptable. However, it is evident that chemicals are being used. For example, copper fungicides, an older chemical treatment, are still organically approved for fungal diseases like Brown Rot and Peach Leaf Curl. Justification for its use may be that copper as an element is mined and therefore closer to being "natural" than man-made chemicals although the copper compounds actually approved for use by organic growers are mostly synthetic, inorganic, considered moderately toxic, and can build up in the environment.

Ironically, many conventional growers have advanced beyond the use of copper fungicides, particularly for control of stubborn fungal diseases like fruit Brown Rot. The only practical answer for the organic grower may still be to use liberal doses of copper, spraying more often with increased energy inputs, greater residues and size of the grower's carbon foot print. On the other hand, progressive conventional growers now have an arsenal of highly effective, new chemicals that are far safer and more environmentally friendly than copper sprays. Although man-made, they are truly organic (carbon-based) compounds that are designed to work quickly, then rapidly and safely degrade in the environment.

These scientific developments further muddle the distinction between organic and conventional approaches. It is evident that both conventional and organic growers can use and do use both synthetic and organic chemicals. In fact, there are now upwards of 250 synthetic pesticides that are approved for organic production.

One example is Chilean nitrate, long approved as a fertilizer for organic production presumably because it is a naturally occurring compound (sodium nitrate) mined in Chile. However, calcium nitrate, a by-product of a man-made manufacturing process, is far better for the trees and soil than sodium nitrate but is not approved.

More recently, researchers in organic production have developed some new alternative chemicals to control both pests and diseases, but these chemicals must be approved by the organic growers' certification program before it can be used for organic production. There is a challenge for scientists and the regulatory agencies to not only educate the public but also to determine which chemicals are

safe and which are harmful to humans, other animals and beneficial micro-organisms, including those critical to soil fertility and productivity.

Despite its continued reliance on some older, questionable practices, the organic movement has had and continues to have a major influence on modern approaches to agricultural production. The admirable goal of minimizing the use of agrichemicals and making our produce safer to eat has now been adopted by virtually all in the agricultural community. However, there are alternative views on how to achieve these common goals. It is therefore important to know your individual grower, his practices and his approach to growing the food you eat.

Fellow farmer, friend and pioneer in the organic movement, Paul Buxman, suggests that the question consumers should ask is not "Is it organic?" but a much more basic question, "Is it safe, wholesome and nutritious?" Since leaving the ranks of certified organic growers, Paul has developed his own practices which simply focus on delivering the safest possible produce to the consumer rather than dwelling on such abstract questions as whether an input is deemed organic, natural or somehow conforming to the goals or philosophy of the organic movement.

Cynics contend that organic growers are now pre-occupied with developing strategies to help differentiate their "certified organic" labeled products from others in the market place in order to justify higher prices, rather than focusing on safe, practical solutions to diseases and pests. The organic movement is also no longer the domain of the small individual farmer, and over 80% of organic

production is conducted by large-scale corporate farms. It is indeed big business. Moreover, it is a profit-driven system. Farmers must pay fees to be *certified organic*, chemical companies must pay fees to have their higher priced pesticides organically approved and all these extra costs are passed on to the consumer.

Lastly, there are other alternative certification programs that assure the consumer is buying safe and wholesome produce. These safeguard programs like the G.A.P. (Good Agricultural Practices) involve monitoring, third-party inspections and traceability. This state-of-the-art monitoring is driven by retail stores who have listened to consumer demand for safe produce. Both third-party and state certifications can either substitute and/or complement organic certification and are often more rigorous than the organic certification.

INTEGRATED PEST MANAGEMENT: AN ALTERNATIVE TO THE ORGANIC APPROACH

This approach, simply called *IPM*, grew out of the basic principle, shared by the organic movement, that it is important to produce safer food with less reliance on harmful pesticides. As a body of knowledge it evolved from the work of like-minded researchers both in private industry and public institutions and is approved by the University of California; otherwise, there is no fee-based certification program, private business interests or advocacy group associated with this approach.

It is best defined as an approach that utilizes or *integrates* all available tactics in a program designed to manage, but not necessarily eradicate pest populations so that both economic damage and

harmful environmental effects are minimized. Most importantly, IPM is not static or unyielding. Indeed, it borrows from other approaches as practitioners pragmatically seek the best solutions to pest and disease problems. For example, while developing newer and safer controls, IPM also embraces existing organically approved controls like BT (Bacillus thuringiensis), spinosads and other biopesticides as effective controls for certain pests.

The rationale for using IPM is threefold. First, it can cut production costs, not increase them, by reducing energy inputs. Secondly, IPM can reduce environmental contamination through judicious use of pesticides and finally, an IPM program allows for maximum utilization of cultural practices and natural enemies to control plant pests and diseases. Most importantly, all the above strategies, practices, chemicals and treatments are subject to scientific scrutiny and are thoroughly tested to assure the desired results.

More recently, the State of California has embarked on a bold new program that is designed to be the next step in the transition from the older IPM practices toward the adoption of even safer, more sustainable pest control practices. Like IPM, it is scientifically based and without a profit motive. The various State agencies (Department of Pesticide Regulation, the California Environmental Protection Agency and the California Department of Food and Agriculture) have worked together to develop a series of goals to accelerate the transition from higher risk pesticides to those with less environmental impact.

The new approach is called Sustainable Pest Management or SPM and is designed to be a holistic or whole systems approach in both

agriculture and other managed ecosystems including potential impacts on both urban and rural communities, water conservation, biodiversity conservation, soil health and climate impact. According to current available data, nonagricultural uses of pesticides amount to 35-55 per cent of purchased pesticides. A broad system approach to pesticide use is therefore warranted. This new movement of SPM also coincides with a virtual revolution of in the development of new chemistries and technologies for safe, effective pest management. For all of us, the future seems brighter and safer.

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