Organic Pesticides - A Key Component of Organic Farming

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To the organic farmer or organic gardener, "organic" can have a variety of related meanings regarding pesticides, fertilizers and other inputs. Generally speaking, organic agriculture does not involve modern inputs such as synthetic pesticides or synthetic fertilizers.

Global organic farming, as it is practiced today, relies upon microbial processes to degrade, or disintegrate, organic matter to release essential mineral nutrients to plants. These essential mineral nutrients released from organic matter in the soil, once absorbed by crops, are combined by photosynthesis with water from the soil and carbon dioxide from the air to enable the plants that fix carbon from the air to grow.

Some inputs to organic agriculture have been prescribed, or recommended, and other inputs to organic agriculture have be proscribed, or forbidden, denounced, or condemned by organizations such as USDA National Organic Program (NOP), other organic certifying agencies, and OMRI. The organic crop producer is more limited in selecting inputs than is the farmer using conventional farming practices and inputs.

Major categories of organic pesticides include miticides, avicides, insecticides, herbicides, fungicides, piscicides, rodenticides, molluscicides, and nematicides, and some plant growth regulators. Other pesticides for organic agriculture include diatomaceous earth, garlic-based insecticide and fungicide, neem insecticidal spray, beer, and dead-deer odor.

Theoretically, the potential markets for organic pesticides, were all pesticides marketed and used to be organic pesticides, would be on the order of billions of dollars per year in the United States and about five times greater worldwide. The 2007 USDA Census of Agriculture reports that in 2007, there were 922 million acres of farms in the United States in which there were 1.685 million farms, of which there were 1.328 million farms with harvested cropland. The number of farms using chemicals for pest control is categorized by the 2007 Census of Agriculture for insects on crops/hay (354,357), nematodes (34,992), diseases on crops/orchards (97,333), and weed/grass/brush (703,884). The extent to which pesticides acceptable for organic agriculture capture a portion of the total pesticide market in the United States or worldwide will depend upon many factors such as efficacy, price, and availability.

The Globally Harmonized System of Classification and Labeling of Chemicals (GHS), issued by the United Nations in 2005, is the culmination of decades of work; it is an international approach to hazard communication, and the U.S. Occupational Safety & Health Administration (OSHA) Hazard Communication Standard has adopted the GHS. The International Organization for Standardization (ISO), the headquarters of which is located in Geneva, Switzerland, is the world's largest developer of voluntary international standards.

In the United States, organic pesticides are regulated at the national and state levels. The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) in the Code of Federal Regulations (40 CFR Part 170) is enforced by the U.S. Environmental Protection Agency. The USDA National Organic Program (USDA NOP) regulates pesticides permitted in organic production ("organic pesticides") certified under the NOP.

Non-governmental rules to regulate the use of organic pesticides have been developed and promoted by a number of organizations that offer certifications for organic-agriculture growers. OMRI registers pesticides that are compliant with the NOP, including some pesticides that are exempt from FIFRA registration with the EPA. According to M. J. Grieshop, PhD, about 62% of OMRI-listed pesticides are insecticides, 28% are fungicides, 4% are herbicides, and all other OMRI-listed pesticides comprise 6% of the OMRI-listed pesticides.

Pesticides based on natural substances are commonly used as alternatives to synthetic compounds in organic agriculture. Cost-effectiveness as well as efficacy and availability of organic pesticides will be criteria that current users of synthetic pesticides will use to decide whether to change from using synthetic pesticides to organic pesticides.