

## USEFUL TERMS

**Carbon Output:** Carbon dioxide gas emissions, released into the atmosphere when fossil fuels such as gas, coal or oil and carbon dioxide are burned. Soil also contains carbon which is released in the atmosphere when the soil is disturbed.

**Crop Protection Products:** Used to control organisms that are considered to be harmful to the healthy growth and production of agricultural crops. These include: herbicides (to combat weeds), insecticides (to combat insects) and fungicides (to combat fungi).

**Environmental Protection Industry (EPA):** An agency of the U.S. federal government charged with protecting human health and the environment, by writing and enforcing regulations including those pertaining to pesticides based on laws passed by Congress.

**Integrated Pest Management (IPM):** A long-term pest prevention strategy based on managing ecosystems, including environmental factors that affect pests and their ability to thrive. Management may include biological, cultural, mechanical, or chemical controls—or a combination thereof.

**No-till /Conservation Tillage:** A way of growing crops without disturbing the soil through tillage (digging, stirring, or overturning earth), thereby increasing the amount of water and nutrients in the soil and decreasing erosion.

**Pest control Advisors (PCA):** Pest Control Advisors (PCAs) are licensed professional production consultants who serve agriculture and horticulture producers.

**Precision Farming:** The use of satellite and aircraft remote sensing data to more effectively and efficiently manage croplands, to determine soil conditions and plant development and fine-tune seeding, fertilizer, chemical and water use.

**Run-off:** Water that does not soak into the ground, but flows over the surface and runs to another area—such as into storm drains, streams, or lakes.

**Synthetic Chemicals:** Produced artificially in a laboratory or other man-made environment.



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**MODERN FARMING,  
BETTER ENVIRONMENT**  
How Agriculture is Advancing Every Day



# MODERN FARMING, BETTER ENVIRONMENT

Farmers are always looking forward, and depend upon modern agricultural advancements to grow healthy and pest-free crops. The crop protection industry does its best to meet farmers' needs and help them produce safe, sustainable and affordable food through intensive scientific research and innovative chemistry. In the last half century, crop protection and modern agriculture practices have helped farmers double food production while essentially freezing the footprint of total cultivated farmland. New technologies, precise applications and fewer inputs all lead to increased productivity, higher yields and responsible food production.

CropLife America (CLA) recognizes that there are still concerns regarding the use of crop protection products on our farms and the potential impact of modern agricultural tools to our environment and well-being. Progress in product safety and responsible farm practices during the last 50 years have meant growers and the industries that support crop production have become ever-better stewards of our environment—but more can always be done. Each day our industry is advancing and improving. **Here's how...**

**Improved Chemistry** Before the advent of synthetic crop protection products, compounds such as arsenic and mercury salts were used in farming to control pests and fungi. In the 1930s, synthetic chemicals entered the market. As science advanced, some of these chemicals were later found to impact the environment and certain species, and were removed from use. Today's pesticide products must meet agricultural needs by offering a high level of efficacy against pest problems at low application rates; low or no persistence in the environment; low residue levels in food; and low risk to the environment, workers, and bystanders. The development of new products includes screening thousands of chemicals for potential biological activity on pest organisms, and bringing in the best minds in environmental and biological sciences to ensure safety for the farmer, the consumer, and wildlife.



**Improved Regulation** Eight months after Americans celebrated their first Earth Day and eight years following the publication of Rachel Carson's book *Silent Spring*, which detailed chemicals' effects on our surroundings, the U.S. government established the Environmental Protection Agency (EPA). Created on December 2, 1970, the EPA was the first agency dedicated to ensuring the environment's protection via federal research, developing new regulations and enforcing existing ones, as well as monitoring for environmental safety. EPA's process of "registering"—

or gaining approval—for crop protection products is intentionally stringent and demanding. Thousands of pages of test data, administered under guidelines developed by EPA specifying how required studies are to be conducted, evaluated, analyzed and reported, are reviewed. Only after the study data passes rigorous scrutiny and assessments will the product be registered and approved by EPA, and only then will farmers be able to use these tools in their operations.

## Improved Precision & Practices

Precision farming, or precision agriculture, is a farming technique aimed at optimizing crop management by observing and responding to changes in the field. By making decisions on a site-by-site basis through technologies like satellite imagery and information technology, farmers can better measure the performance of crops by area and variety, use fewer and more precise inputs, and address specific crop needs while targeting problem areas and identifying solutions. With these modern tools and precision practices, farmers are increasingly able to use their resources more efficiently while reducing their environmental footprint.

Pest control advisers (PCA), who examine fields and recommend ways to manage pests, are also integral to modern farming practices. Farmers rely on a PCA's professional expertise to ensure they are following best possible crop protection management practices.

**Improved Protection of Resources** Agriculture depends on air, water and healthy soil. Soil erosion removes topsoil and organic matter, intensifies runoff meaning less water absorbed for the crops—up to 87 percent less—all of which ulti-

mately lowers crop yields. Agricultural soils are a limited and irreplaceable resource. Water is renewable, but requires carefully controlled usage to remain readily available.

Fortunately, through new methods like Integrated Pest Management (IPM), farmers minimize effects on natural resources like air, water and soil. IPM combines the planned use of crop protection inputs with other practices to keep pest populations low and minimize effects on the environment. This includes monitoring for pests, rotating between different crops and selecting specially bred pest-resistant varieties, which are resistant or immune to pest and disease damage, to help safeguard crops. Additionally, practices like no-till and conservation tillage are only possible through the use herbicides, and conserve both labor and fuel resources as tillage operations in crop fields are reduced or eliminated. This equals reduced fuel consumption and carbon output, and results in increased organic matter in soils while minimizing erosion and improving water quality.

**Improved Environment** What happens in farming matters to the environment; and improved chemistry, regulation, precision practices and protection of resources equal an improved environment. Farmers and growers face a unique challenge in producing our food, increasing yields for a growing population while protecting the air, water and soil integral to that goal. The crop protection industry knows that to truly support farmers we must also support the environment. Every scientific advancement made, every technology improved, every resource saved, contributes toward modern agriculture and a better environment for us all.

