

FACT SHEET

FEEDING THE WORLD SUSTAINABLY – THE ROLE FOR AGRICULTURE AND PLANT SCIENCE

In the bid to ensure a sustainable, safe, varied and affordable supply of food in our shops, the world faces an ever-growing number of challenges. We are confronted with a population that is growing to some 9 billion by 2050¹, a falling ratio of arable land to population, as well as 1.8 billion people living with absolute water scarcity by 2025 (UN WPP, UN Water). This situation will be further exacerbated through climate change.

How can we continue to ensure an affordable and varied diet while meeting our environmental responsibilities for future generations? This informational pack is intended to explain the contribution that agriculture and plant science can make in helping us to meet these imperatives.

A reliable supply of safe, healthy, affordable produce

A central objective of the plant science industry is to enable farmers to grow an abundant supply of healthy produce in a safe manner and at an affordable price. Plant science tools, such as pesticides, reduce crop losses both before and after harvest, and increase yields. By making agriculture more productive, these tools help to keep food prices in check for the consumer.

A plentiful supply of fresh produce is vital for a healthy population. Numerous scientific studies demonstrate the health benefits of regularly eating a variety of fresh fruit and vegetables and consumers are increasingly aware of these benefits. Agricultural productivity is key to ensuring that this demand can be met at an affordable price.

Some facts:

- Some 20-40% of the world's potential crop production is already lost annually because of the effects of weeds, pests and diseases (FAO). These crop losses would be doubled if existing pesticide uses were abandoned, significantly raising food prices.
- Since the introduction of pesticides, farmers have been able to produce bigger crops on less land, increasing crop productivity anywhere between 20 and 50%.
- Even after harvest, the crop is subject to attack by pests or diseases. Bugs, rodents or moulds can harm grains. Pesticides used in stored products can prolong the viable life of the produce, prevent huge post-harvest losses from pests and diseases and protect the grain so it is safe to eat.



In addition to preventing crop losses and thus ensuring high productivity levels, pesticides also make an important contribution to food safety by minimising naturally occurring toxins produced by fungi and bacteria. These can pose dangers to health if present in food.

WHAT DO PESTICIDES DO?

Herbicides

Save crops by controlling weeds and unwanted vegetation, such as thistles and nettles.

Fungicides

Protect plants by combating harmful crop diseases, such as potato blight and reduce fungal toxins.

Insecticides

Safeguard crops by controlling insect pests, such as aphids and improve human health.

Agriculture and sustainability

As the population grows, arable land decreases, and the impact of climate change begins to be felt, it is more important than ever to provide farmers with the tools needed to produce more using fewer natural resources. We need to ensure that agriculture becomes even more efficient in terms of energy, land and water use, with a smaller environmental footprint. Agricultural technology has already enabled significant progress in the bid for sustainability in farming. The plant science industry continues to commit itself to innovation in finding solutions to further increase the sustainability of farming practices.

- **Conserving land and biodiversity.** Agricultural technology contributes to higher yields per unit area. Although the world population has doubled in the last forty years, the area of land devoted to food production has remained virtually constant. A bushel of soybeans, for example, can be grown using one-third less land today than was needed 20 years ago.*
- **Energy efficiency.** In 2005, global fuel savings associated with the switch to conservation tillage farming systems saved about 962 million kg of carbon dioxide - equivalent to removing nearly 0.43 million cars from the road. Cumulatively since 1996, the permanent carbon dioxide savings are equal to removing 2.05 million cars off the road for one year (ISAAA 2006).
- **Safeguarding soil from erosion.** Conservation tillage farming can reduce soil erosion by 50 to 98% and improve soil quality. In Australia, for example, this has had great benefits where many soils in areas dominated by wheat-pasture rotations have low moisture holding capacity, are nutrient-poor, and prone to wind erosion.
- **Preserving water.** Water tables in many areas of the world are falling. Conservation tillage practices, as well as other water-saving advances such as improved pesticide applicators, have helped reduce the water footprint of agriculture considerably. For example, 50,000 fewer gallons of water are needed to grow an acre of corn today compared to 20 years ago.*



The plant science industry's commitment to responsible, sustainable farming is also realized through extensive stewardship activities spanning the lifecycle of a product – from discovery and development to eventual disposal. Our programmes reach over 300,000 individuals in more than 40 countries every year. A key focus of the industry's stewardship efforts is the training of farmers in Integrated Pest Management and the responsible use of pesticides, with the result of helping farmers worldwide to manage pests more effectively and reduce unnecessary pesticide use. These stewardship activities are conducted in partnership with industry,

governments and other organisations, with the joint end goal of ensuring that pesticides are used and handled in the safest and most effective way.

* Field to Market Report, Keystone Center. January 2009. Figures relate to US agriculture 1989-2009.