

AGROCHEMICALS AND THEIR ROLE IN THE INDUSTRY

Happy 2024 and welcome back to the Amerex Blog! Today we will take a journey through the history of agrochemicals and explore their evolution over time and their impact on agriculture. Knowing the environment and social context of the industry as a whole is important for our further growth. This Blog entry may seem a little bit out of our standards, but we are sure you will find it very interesting. Here we go!

Only those whose most basic needs, including food supply, are assured, can engage in more complex and enriching activities for the common good.

This premise, which is also a great truth, explains why many empires and civilizations throughout history eventually disappeared, mainly due to the inability to guarantee enough food for the entire population. Well-known civilizations such as the Egyptians, or the Mayans, came to an end with a string of bad harvests that resulted in food shortages.

The post-Enlightenment development made it possible to understand some processes that were unknown, such as pollination, seed growth and plant needs, or the identification of the most effective nutrients. This allowed solutions to be devised to increase crop productivity, and agrochemistry was born.

What is the origin of agrochemicals?

By the end of the 19th century, the first chemical products were developed to improve agricultural productivity. Initially, fertilizers were used to enrich the soil and increase yields. Over time, this practice evolved to include pesticides, herbicides and fungicides, ushering in the era of agrochemicals.

But let's go back a little bit to the first moments of agriculture more than 10.000 years ago. In the Middle East, where a nomadic lifestyle prevailed, some communities began to settle in certain places, which was the basis for the development of the first civilizations. Sedentary lifestyles began, and early farmers began to cultivate wheat. This cereal was a significant source of protein, allowing them to properly feed themselves and eliminating the need to travel for hunting.

This change posed the beginning of permanent settlements that eventually evolved into complex civilizations. However, the positive impact of growing wheat and other crops was partially limited by the appearance of plagues.



What is the historical relevance of agrochemicals and how have they influenced society?

- The importance of chemistry in pest control

Throughout different historical periods all over the world, substances that we call "pesticides" have been used with different strategies. For example, in Lower Mesopotamia almost 5 centuries ago, sulfur was used to control insects and mites that threatened crops. In China, during the same period, mercury was used in agriculture. Also ashes, smoke generated by burning straw, dead crabs, animal horns and excrement. The aim was to use pestilence to keep pests away from crops. Meanwhile in the first century, Pliny the Elder in Ancient Rome recommended the use of arsenic as an effective method to exterminate plagues. In addition, the first insecticide based on crushed pyrethrum was developed at that time.

More recently, in the 20th century before World War II, substances such as sulfuric acid, sodium chlorate, gas, naphthalene and creosote were used on farms.

- The use of fertilizers throughout history

Nutrient supply has been a permanent necessity since the earliest days of agriculture. Ensuring global food supply depends on the use of fertilizers to provide essential nutrients and prevent soil depletion.

In the 19th century, soil depletion in Europe led to famines, prompting research into agrochemicals to increase productivity. The chemist [Justus Von Liebig](#) then identified nitrogen, phosphorus and potassium as essential for plant growth, giving rise to the NPK formula, which today remains as the basis of modern chemical fertilizers. He was thus able to manufacture the first artificial fertilizer, but the lack of nitrogenous elements in its composition limited its success.

Nitrogen fixation was a challenge until [Haber and Bosch](#) proposed fixing it as ammonia. Today, we understand that crops require macronutrients and micronutrients, along with biostimulants and helpers to cope with stresses that conventional nutrients do not solve.

What is the environmental impact of agrochemicals?

In the 1960s, during the so-called Green Revolution, agrochemicals played a crucial role in driving increased agricultural production. The introduction of nitrogen fertilizers, herbicides and pesticides enabled farmers to grow larger crops. However, this period also raised concerns about environmental impact and human health.

The negative consequences of the environmental impact of agrochemicals include soil and water contamination. In addition, overexposure to certain pesticides has been linked to health problems, and loss of biodiversity is another significant concern. These adverse effects underscore the importance of searching for more sustainable alternatives.

What about the current trends regarding agrochemicals?

Today, there is a growing trend towards more sustainable agricultural practices. Farmers and scientists are striving to reduce dependence on agrochemicals by developing pest- and disease-resistant crops and using agro ecological practices. Technology such as precision agriculture is also being introduced to optimize the application of agrochemicals and minimize their environmental impact.



How do companies contribute to agricultural productivity?

It is a fact that throughout history the use of tools of chemical nature to control pests and improve crop productivity has been essential and still is today.

The use of chemicals is essential to ensure the basic nutritional needs of the population and to guarantee sustainable agricultural productivity by protecting crops from uncontrolled pests.

Challenges persist in the most disadvantaged regions of the world. According to FAO, between 20% and 40% of all food crops worldwide are lost due to pests and diseases.

Well aware of this scenario, agrochemical companies have been researching and developing since the 1980s more selective substances capable of attacking specific pests without causing harm to humans. This approach seeks to ensure the maximum safety in agricultural food production.

In many cases, these companies offer substances for the manufacture of pesticides, while also focusing on innovation in the field of fertilizers and nutrient supply, where chemistry plays a crucial role. The aim is to develop substances that are more effective, safer and harmless to humans.

Which other strategies do exist to ensure food safety?

It is good to know the historical context of all issues related to the food industry, which allows us to move forward in the development of new and positive implementations of processes and improvements for the best use of food. But what happens after all this? At Amerex we share the commitment to ensure that food reaches its final destination while maintaining its freshness and safety.

Our [product range](#) is designed not only to preserve the organoleptic quality of food, but also to safely extend its shelf-life. By embracing innovation and excellence, we contribute to sustainability and safety in the food chain.

At Amerex we work to provide to the food industry alternatives that not only respect tradition, but also embrace modern technology. If you want our help to assist you in finding those solutions to apply to your products, we would be very happy to do so!

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See you neXt time!