



# Agronomy and its impact on environment

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## DESCRIPTION

Agronomy is the science and technology of agricultural production and use of food, fuel, textiles, chemicals, recreation, or land protection. Agriculture includes research in plant genetics, plant physiology, meteorology, and soil science. This is a combination of science applications such as biology, chemistry, economics, ecology, geosciences and genetics. Professionals of agronomy are termed agronomists. Feeding the world is a daunting task. Agronomists have set best practices over the past century to produce enough food to feed the world's growing population. Also, like any other science, best practices improve over time with better information. Sustainable agriculture can lead us to a future that balances feeding the world with protecting, and even regenerating agricultural land. In the past, changes in agricultural practices have focused on increasing yields to meet increasing demand. In some cases, the yield is doubled.

However, some of these practices also have a negative impact on the environment. Synthetic fertilizers containing nitrogen and phosphorus have been at the heart of fortified agriculture from World War II to the present day. Modern agriculture has become heavily dependent on the input of these chemicals, increasing the number of people who can feed the world's farms. They are particularly effective in growing corn, wheat and rice and have been a major contributor to the explosive growth in grain cultivation in recent decades. China, with its rapidly growing population, has become one of the world's leading producers of nitrogen fertilizer.

While these chemicals have helped double the rate of food production, they have also contributed to a significant increase in reactive nitrogen levels throughout the environment, perhaps up to 600 percent. Excess nitrogen and phosphorus have turned what was once a

beneficial nutrient into a pollutant. About half of the nitrogen in synthetic fertilizers escapes from the fields where it is applied and ends up in soil, air, water, and precipitation. After soil bacteria convert fertilizer nitrogen to nitrate, storms and irrigation systems carry these toxins to groundwater and river systems. Accumulated nitrogen and phosphorus damage land and water ecosystems by overloading them with too many nutrients, a process known as eutrophication. Nutrient pollution is a factor in the outbreak of toxic algae affecting lakes in China, the United States, and other regions. When excessive amounts of organic matter decompose in the body of water, they can lead to a lack of oxygen and create a "dead zone" in the body of water where nothing survives. Part of the Gulf of Mexico is regularly affected. Nitrogen accumulation in water and on land threatens biodiversity and the health of native plant species and natural habitats. In addition, fertilization in the soil leads to the formation and release of laughing gas, one of the most harmful greenhouse gases.

As the world's population continues to grow, tensions between continued agricultural growth and the environmental hygiene of the land on which people depend will continue to grow. The need for sustainable resource management is becoming more and more urgent. With the increase in the world population, the demand for agricultural raw materials is growing rapidly. Agriculture has deep ties to the world economy, human society and biodiversity, making it one of the most important boundaries for nature conservation around the world. Recent advances in agriculture promise a more environmentally friendly agricultural system. Introducing these important agricultural practices can reduce the unintended impact of modern agriculture on the environment.