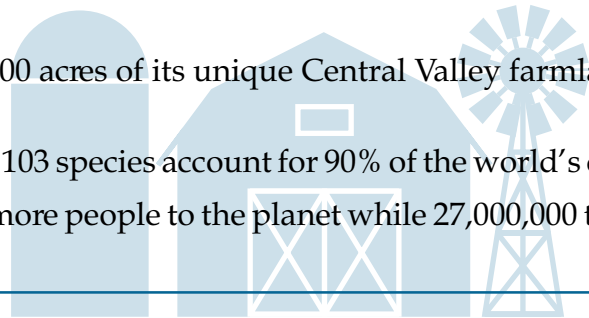


Population & Agriculture

- Fact:** Over 3 million acres of the best U.S. farmland is lost every year, about 50 acres of prime and unique farmland every hour.^{1,2}
- Fact:** By 2040, California alone will lose over 1,000,000 acres of its unique Central Valley farmland to low-density urban sprawl.³
- Fact:** Of the 7,000 plant species that people consume, 103 species account for 90% of the world's crops.⁶
- Fact:** Annually, population growth adds 78,000,000 more people to the planet while 27,000,000 tons of topsoil is lost.²



What is agricultural land? Agricultural land consists of cropland, pasture, range, and farmsteads and represents 68% of privately owned land in the U.S.⁷ Agricultural land supplies us with food and fiber. It also provides us with at least the potential for floodwater retention, conservation of soils, protection of water quality, and enhancement of wildlife habitat. Furthermore, the existence of open space and the preservation of national and regional heritages attract tourism and enhance one's quality of life.

What is happening to agricultural land?

More agricultural land: Due to increased demand, land is being converted for agriculture in some areas. By 2010, developing countries (excluding China) could experience a loss of 45 million hectares of forest, which accounts for only half of the total predicted conversion to farmland.⁵ Agricultural expansion negatively affects the diversity of tropical forests, grasslands and wetlands. Carbon storage capacity and biodiversity resources are greatly jeopardized with these losses. Conversion to agricultural land also occurs in the U.S. often for fish or shrimp farms. From 1992-97, 54,000 acres of wetlands were lost. About 67% of this was due to agricultural production while the rest was due to development.^{8,13} In the Chesapeake Bay watershed area, "approximately 90,000 acres...are converted from farmland, forestlands or wetlands every year."¹⁴ More water pollution, due to the loss of the natural filtering mechanism, and air pollution has ensued.

Less agricultural land: Urban development in the U.S. has been eating up agricultural land for more than 50 years and the rate continues to increase.¹⁵ Unfortunately, prime farmland is located around major cities where the threat of development is the greatest.¹⁴ The American Farmland Trust reports that 79% of U.S. fruit, 69% of the vegetables and 52% of the milk are produced in these near-urban ar-

reas which pull 2 1/2 times more revenue than rural farms.² "By urbanizing some of its best farmland, the U.S. is limiting future options to deal with social, economic, food security and environmental problems."¹

Average number of acres developed each year in the time frame indicated:¹⁰

Area	(10 years)	(5 years)
	1982-92	1992-97
Pennsylvania	43,110	224,640
California	80,020	138,960
Ohio	46,860	104,240
Florida	116,310	189,060
Colorado	30,740	24,060
U.S.A.	1,388,410	3,193,200

More irrigation: Irrigation dominates water use globally and is generally on the rise since irrigated land is more productive than rain-fed land. In 1998, over 9,000,000 hectares of land in the U.S. were irrigated as opposed to 16,000 hectares in 1970.¹⁶ In order to meet irrigation demands, underground aquifers are being depleted, but Nature cannot replenish its groundwater quickly enough. As a result, water tables are steadily falling. The Ogallala aquifer in the central U.S. has suffered the greatest depletion partially because very little rainwater replenishes it. It alone waters 1/5 of U.S. irrigated land and is currently losing 12 billion cubic meters each year.⁹

Diminished yield: Although world grain productivity increased by 2% annually from 1950 to 1990, productivity has been rising at only 1% for the past 10 years.⁹ In 1998 alone, the world grain harvest dropped by 30 million tons.¹⁷ Because of population growth, however, the per capita grain production has been decreasing since about 1984.¹⁷ The trends of decreasing grain productivity, increased population growth, and cropland reduction may produce a large rise in undernourished people.



Loss of crop diversity: Productive and disease resistant crops need genetic diversity to proliferate but genetic engineering has reduced this diversity. Currently, 33% of corn, 55% of soybeans, and 50% of cotton are genetically engineered crops.² We also need diversity for nutrition. In 1997, rice, maize and wheat comprised 60% of the world's food crops leaving little space for other grains, fruits, and vegetables.⁶ Almost all fruit and vegetable varieties grown in the U.S. have been lost in less than 100 years.²

Heightened erosion: Farmers depend on rich topsoil for productive crops but about 1.9 billion tons of topsoil washes or blows away each year with 1.3 billion tons of excessive erosion.¹³ Lack of previous crop residue and trees diminishes the binding effect of soil. Nutrients, sediments, and pesticides from erosion compromise water quality and fish and plant life. Air quality is compromised in wind erosion areas.

What affect does population have on agriculture?

As human population grows so does the demand for food and, therefore, demand for land on which to grow food. Consequently, degradation of wildlands including tropical forests and wetlands may increase. Ironically, the demand to convert agricultural land to commercial and residential developments is also due to population growth in combination with poor land use practices. We face a serious challenge to reconcile the need for agricultural output with the trend of developing agricultural land. Every year, because of population growth and environmental degradation, the world's farmers must feed 78 million more people with 27 billion fewer tons of topsoil.¹¹ Since meat consumption is becoming more popular globally, feeding more people also means feeding more animals. Eight pounds of grain and 2,464 gallons of water is needed to produce one pound of beef.⁴ The demand for U.S. and other industrialized countries' grain is intensified by a demand for grain from countries that cannot produce enough grain for their own populations.

An increased use of pesticides and herbicides may also ensue to produce higher yields. Extensive demands on our farmland could increase the incidence of illness. Effects on human health can result in symptoms from headaches and flu symptoms to neurological damage, reproductive damage, immune system suppression, and cancer. Because of the relative quantity of food that children consume and the rate at which they are growing, they may be at greater risk from exposure to pesticides.¹²

Pollution will certainly increase. More people and more urban sprawl mean that food has to travel farther so more resources are used to obtain food. On

average, food in a California grocery store travels 1300 miles.² Additionally, 70% of methane (largely through rice cultivation) and 90% of nitrous oxide emissions, which are greenhouse gasses, originate in agricultural production.⁵

A growing population could also increase the use of genetically engineered crops, which would decrease nutrition, production, and disease resistance; increase the use of irrigation and decrease aquifer levels; and decrease soil potency due to erosion and overuse.

Actions we can take: Slowed human population growth along with a more compact, efficient pattern of development must be pursued to conserve the farmland we need for food, open space and species' diversity and survival. American Farmland Trust argues that shifting from low-density urban sprawl to compact, efficient development will greatly reduce the impact on the value of agricultural land. Growth boundaries, a guaranteed local market, and open space buffers also would help to protect this valuable land before it is too late. If developed land fails, it does not become farmland again.

Fortunately, Americans are moving toward protecting agricultural land. In 1998, 240 ballot initiatives protecting farmland and open space were created, of which 170 passed.¹⁵ In 1999, 72% of 200 ballot initiatives were approved.² As a result \$7.5 billion was added to state and local conservation funds.² Americans approved not only to protect our food base but also the quality of life that open space and wildlife habitat offer.

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