

## Geography in the News™

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Lineback



### APPLE DELIGHT

Apples, oranges, grapes and peaches are four favorite fruits of humans and pests. Fruit growers must continuously battle pests to successfully grow their crops for markets. Chemical pesticides remain the first line of defense, but a new array of tools is being tested in apple orchards to control fruit pests.

Fruit is particularly susceptible to pests. Unlike most field crops that may mature in 90 to 120 days, orchard crops may require 150 to 240 days from budding and blossoming to maturity. In addition, while row crops can be rotated annually to control pests, rotation is impossible for long-lived fruit trees. Finally, large orchard groves are monocultures, where pests can thrive among same species plants—a perfect pest habitat year after year.

One of the original mass-produced pesticides was a chlorinated hydrocarbon known as DDT, widely adapted for commercial agricultural use in 1944. Its initial use was widespread and effective, but this particularly dangerous pesticide was banned in the United States in 1972 because it concentrated in the food chain, creating all sorts of ecological problems.

The development of organophosphates soon followed, providing a group of broad-spectrum pesticides actually developed from World War II nerve gas. All had much shorter half-lives than DDT, which meant that their chemicals stayed in the environment for much shorter times. Nonetheless, the long-term health effects on humans are not

well known.

Field workers are particularly exposed to these chemicals during insecticide application, as well as fruit handling, operations. The U.S. Environmental Protection Agency (EPA) is concerned about the cumulative effects on infants who regularly consume fruit, as well as family members living in orchard workers' houses. Consumers are concerned about ecological and environmental impacts of all broad-spectrum pesticide use.

A recent *Associated Press* article "Batting the Bugs" (November 8, 2003) investigated the newest array of strategies being used against fruit pests, called integrated pest management (IPM). This experimental research program mostly involves apple orchards presently and is being sponsored by the U.S. Department of Agriculture. The IPM program involves careful screening for pests, using traps that attract insects, monitoring weather and more careful use of organophosphates.

While none of these IPM strategies alone can handle an infestation of pests, in combination they eventually may reduce the use of pesticides. This reduction of pesticide spraying may save the

New York (12%), Michigan (11%), California (6%), Pennsylvania (5%), Virginia (3%) and North Carolina (2%). Apple orchards are sited along the downwind sides of water bodies and on hillside slopes with cool nights and air drainage, all of which help keep frost at bay. Late springtime frosts can be devastating to apple buds during the flowering stage.

While the grower is at the mercy of the weather, pests and diseases are far greater threats. Hundreds of different insects and diseases affect apple trees, as well as oranges and peaches. Spraying with pesticides is currently a necessary part of the strategies to manage infestations. Strict regulations for U.S. growers prevail, however, particularly regarding ppm (parts per million) of pesticide concentrations and the time interval between treatment and picking.

There are about 2,500 known varieties of apples grown commercially in the United States and more being developed. The 2003 apple crop is estimated to be worth \$1.4 billion to 7,500 apple growers, placing it third in value behind oranges and grapes. Average per capita U.S. consumption of apples and apple products in 2001 was 42.2 pounds (19.2 kg).

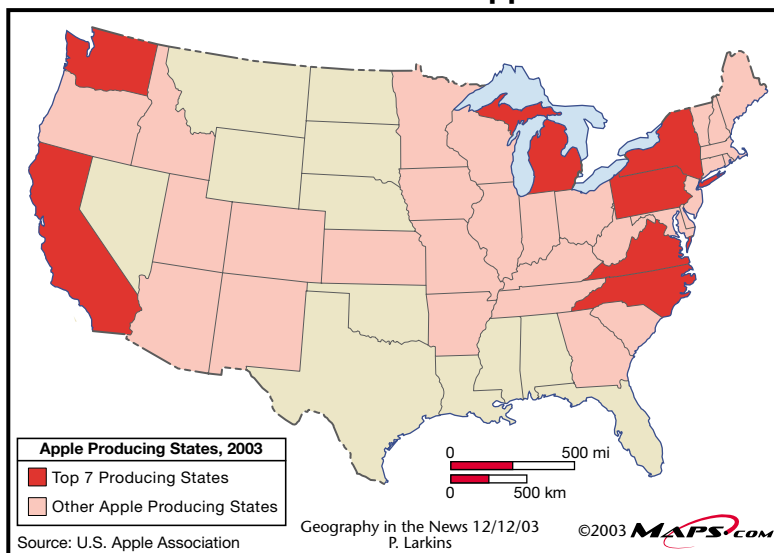
The United States is second only to China in apple production, followed by Turkey, Italy and France. Major imports come from New Zealand, Argentina and Chile, taking advantage of the opposite seasons in the Southern Hemisphere.

All apple lovers—humans and pests—compete for this delicious fruit, requiring growers to constantly search for safer strategies to preserve their product for humans.

And that is Geography in the News™. December 12, 2003. #706.

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### How 'bout Them Apples?



fruit producers money, reduce worker exposure to pesticides and provide a better and healthier product in the grocery store. However, positive results have been slow to develop.

According to the U.S. Apple Association, seven U.S. states produce most of the U.S. apple crop: Washington (57%),