Op-Ed Contributor

# Let the East Bloom Again

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THE United States faces two major security challenges this century. Both involve water.

The increasing demand for water in the Western United States in an era of diminishing supply has put America's highly efficient agricultural system in jeopardy. At the same time, our nation's energy demands have led President Bush and Congressional leaders from both parties to call for more domestic production of biofuels like corn ethanol. Some agricultural experts fear that the country does not have enough water and land to both replace the declining agricultural production in the arid West and expand the production of biofuels.

There is, however, a sustainable solution: a return to using the land and water of the East, which dominated agriculture in the United States into the 20th century.

Until the middle of the 1900s, much of our country's food and fiber was produced east of the Mississippi River. Maine led the nation in potato production in 1940, and New York wasn't far behind. The South, including Alabama, Georgia and Mississippi, dominated cotton. Large amounts of corn were grown in almost every state for consumption by the local livestock and poultry. Regional vegetable markets, especially in the mid-Atlantic states, served the population centers of the East.

By 1980, Western irrigation and improvements in transportation had largely destroyed this Eastern system of agriculture. Irrigated cotton in Arizona, California and Texas displaced the cotton economy of the Deep South. Idaho and Washington became the nation's major potato producers. Corn production became more concentrated in the Midwest.

Through irrigation, Western farmers were spared the occasional droughts that had plagued Eastern farmers, but the specialized Western system came with a price. Water projects dried up the area's rivers. Salmon runs disappeared. Soils were poisoned from the salt in irrigated water that is left behind after evaporation.

Returning agricultural production to the Eastern United States under irrigation would be efficient and environmentally sound. In the West, at least three to four feet of water per acre is needed every year to produce a good crop. In the East, only a few inches of irrigated water per acre are needed, because of the region's heavier rainfall. Even in a dry year for the East, about a foot of water per acre will suffice.

Because of the huge size of the rivers in the East and the small amount of water required for Eastern irrigation, only a tiny fraction of the water in Eastern rivers would be needed for farming. Right now, the Tennessee River, with twice the natural flow of the Colorado River, has less than 1 percent of its water consumed for all uses, while the Colorado is just a memory when it reaches Mexico.

Even if irrigation in the East were significantly expanded, the region's rivers would not be as depleted as the West's. Three percent of the Alabama River would support one million irrigated acres, compared with the nearly 30 percent of the Colorado River that is needed to irrigate a similar area.

In most years, the amount of water withdrawn and stored in the East would be imperceptible. Unlike the West, which requires gigantic reservoirs that take billions of dollars to build and years to fill, in the East water can be stored in inexpensive, off-stream storage ponds that do not require the damming of rivers.

Because of the wetter climate, irrigation in the East will not produce the water quantity or salt poisoning problems found in the West. But there are obstacles peculiar to the East that will need to be addressed. Heavy rains can erode tilled soils. The use of no-till farming in an irrigated setting, however, can preserve soil moisture and prevent erosion.

Runoff of fertilizer and chemicals can also be a problem. But with irrigation, fertilizer can be watered into the roots of crops before a big rain, which will reduce runoff.

And although the annual average stream flows in the East are large, they fall to critically low levels during the summer. Water for irrigation needs to be withdrawn during the winter, when billions of gallons run to the sea.

The East can help answer the challenge of increasing bioenergy and replacing food production in the face of declining agriculture in the West. But to realize the region's potential, the federal government will need to provide money to help farmers build storage ponds to catch winter water. Without a government role, Eastern farmers may decide instead to forgo storage ponds and irrigate on-demand from low-flow summer streams or from ground water. Neither strategy is sustainable or good for the environment.

The East cannot and should not simply replace Western agriculture, but the East should be prepared to pick up the slack as Western farmers lose water to urban pressures and environmental concerns. To remain profitable in the face of reduced water, farmers in the West will most likely gravitate from rice and cotton to high-value crops, like winter lettuce, almonds and avocados, that fill seasonal niches.

Based on an analysis of tree rings, the 20th century was the wettest century on record in parts of the West. Eastern vegetables may not be as perfect as those grown under irrigation in a desert, but if the West returns to a drier climate, imperfect vegetables will look good indeed.

If the United States does not expand agriculture in the East, the nation's food production will move offshore, to developing countries that may not manage herbicides, pesticides and health safety as well as our country does.

By moving more of its agriculture into the East, the United States can show the world that irrigation can be done sustainably, by irrigating where water is plentiful.

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