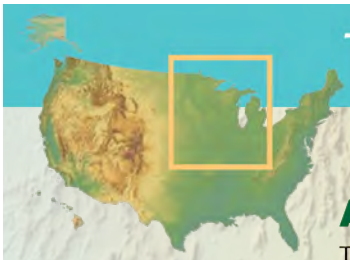

The Central United States

Agricultural Shifts

The central part of the United States is one of the world's great agricultural regions. Its rich soils and favorable climate produce high yields of corn, soybeans, and wheat. As farming techniques have advanced, farmers have steadily increased yields for these crops over the last century. These continuing efforts to increase yields make it difficult to determine whether or how climate change has affected agriculture thus far, but studies on plant characteristics offer insights as to what farmers might expect from future climate change.

In general, plants grow faster in warmer climates, which could be good news for some farmers, especially in temperate and cold areas. But this applies only up to a point. When it gets too warm, crops tend to mature too early, and under extreme conditions, high temperatures can kill crops. Although different varieties are bred to withstand certain conditions, each crop ultimately has a limited temperature range.

Plants are also affected by the amount of carbon dioxide in the atmosphere. Yields of some crops, such as soybeans and wheat, increase with higher levels of carbon dioxide in the atmosphere, while yields of others, such as sugarcane and corn, do not. Unfortunately for nature lovers who enjoy hiking and exploring, some pest plants—for example, poison ivy—grow faster and produce more irritant when atmospheric carbon dioxide is higher.

Just like natural ecosystems, managed ecosystems such as farmland could face changes associated with shifts in temperature, carbon dioxide concentrations, and many other factors. How farmers adapt to a changing climate will be a critical factor in future crop yields.

Most models conclude that if warming stays within the low-to-mid temperature range of climate change predictions, crop yields will probably increase in the central United States by 5 to 20 percent. But the balance between the effects of warming and the effects of increased carbon dioxide will likely mean increased yields for some crops and decreases for others. Climate change may also alter the dynamics of weeds and other pests and affect the frequency of severe weather events.

How farmers adapt to a changing climate will be a critical factor in future yields. Aggressive action to adjust farming methods, planting dates, and selection of which crops or varieties to grow in response to changing climate conditions can play a large role in future crop yields. Good information about future changes and adaptive measures will be crucial for helping farmers cope effectively with climate change.

Migratory Waterways

Did you know that the central United States is a critical corridor for millions of migratory birds? During long and exhausting migrations, these birds rest, feed, and mate in a string of small, shallow lakes called "playa lakes" or "prairie potholes." This migration route is especially critical for mallard ducks and other waterfowl, whose yearly populations closely correspond to the number of playa lakes that are available at the beginning of the breeding season.

These crucial watering holes naturally come and go with changing seasons and precipitation patterns. Already under pressure from farmers who use them for irrigation water, from people who fill them in to create more land for crops or houses, and from contaminated runoff of nutrients and pesticides, these essential but transient habitats are expected to face increased stress due to climate change. A combination of higher temperatures and lower rainfall could literally dry up the playa lakes in six states, posing a significant threat to the birds that depend on them.

These shallow, temporary lakes scattered throughout the Midwest provide critical places for migrating birds to rest, feed, and mate.
Image courtesy of the U.S. Fish and Wildlife Service.