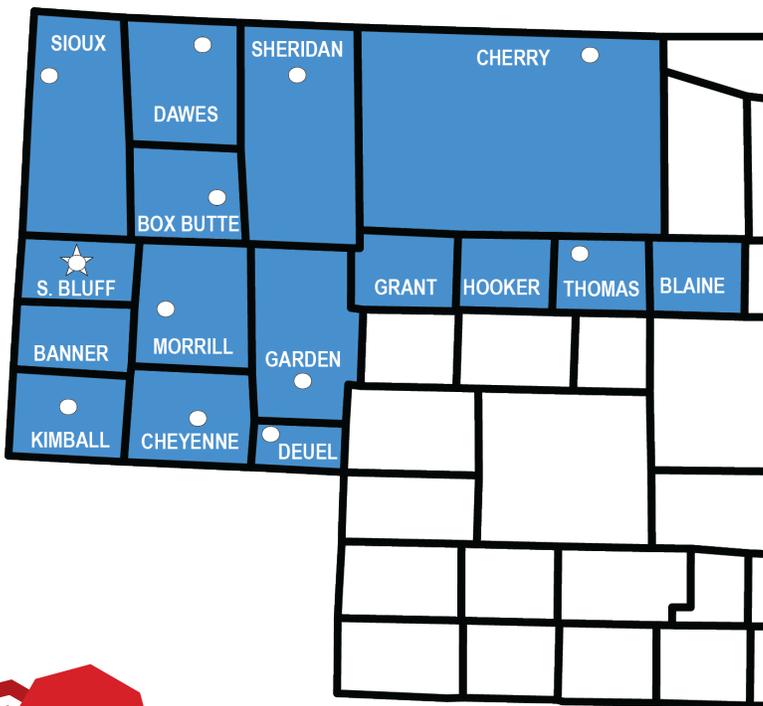


AGRICULTURE IN THE
NEBRASKA PANHANDLE

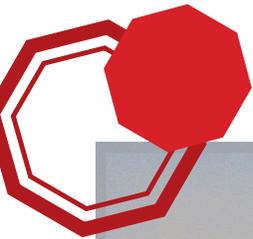


Jessica Groskopf | Cody Creech | Gary Hergert
Matt Luebbe | Dipak Santra | Mitch Stephenson | Gary Stone

characteristics and trends of PANHANDLE DISTRICT AGRICULTURE



Agriculture in the Nebraska Panhandle is a diverse composition of livestock and crop production. The Panhandle Extension District consists of 16 counties in western and north central Nebraska, over 22,000 square miles (56,980 sq km) representing about 30 percent of Nebraska's land area. According to the 2012 Census of Agriculture there are 5,907 farms and ranches in this area, generating nearly \$2.2 billion in sales, almost 60 percent from livestock sales, and approximately 40 percent from crop sales. Farm and ranch operations vary greatly in size. One-fourth of operations accumulate less than \$2,500 in sales, while 14 percent have a value of sales of \$500,000 or more. The average size of an agricultural operation is 2,956 acres (1,196 ha). The average age of an operator in the District is 58. Seventy-nine percent of producers are males, and 98 percent are Caucasian.



ABOVE: A combine harvests a winter wheat field in the Panhandle. Winter wheat is the primary crop grown in dryland crop systems. (Photo/Gary Stone)
ON THE COVER: Cattle graze on cornstalks after the corn has been harvested. (Photo/Karla Jenkins)

land RESOURCES

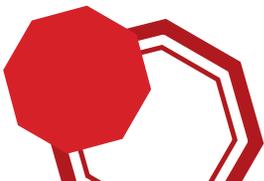


The irrigated sugarbeet field near Scottsbluff, in the foreground, is typical of the North Platte Valley. (Photo/Gary Stone)

The Panhandle's land and water resources are the key to the region's agricultural productivity. Land ranges in elevation from over 5,400 feet (1,646 m) in the southwest corner of the Panhandle to 3,600 feet (1,097 m) along the North Platte River. Three-quarters of the agricultural land in the district (10,640,000 acres or 4,305,855 ha) is native rangeland and pasture which provides forage to raise livestock as well as valuable ecosystems for plants and wildlife. The remaining quarter of the land area (3,440,000 acres or 1,392,118 ha) is used to grow crops. Temperature and precipitation vary greatly with latitude and elevation. The average annual precipitation within the Panhandle region ranges from 12 inches (305 mm) in the northern region to over 19 inches (483 mm) in the southeast corner of the Panhandle.

Sixty percent of the cropland in the Panhandle District (almost 2 million acres or 809,380 ha) does not have irrigation water. Crops grown on these acres are referred to as dryland or rain-fed crops.

The predominant dry land areas are in the southern Panhandle counties; however, significant acres are also in Box Butte, and Sheridan counties. Given the semi-arid climate, most dryland crops are grown using practices that conserve soil moisture, including limiting the amount of tillage or using fallow periods. During the fallow period, no crops are grown for an entire year to allow soil moisture to recharge. Typically, dryland crops are grown using a two- to four-year rotation that includes a fallow period during one year. Winter wheat, proso millet, yellow field pea, sunflower, corn, and annual forages are the primary crops used in dryland crop rotations. Other crops that can be produced in dryland conditions include grain sorghum, safflower, winter canola, and amaranth.



water RESOURCES



Forty percent of the District's cropland uses irrigation. Over half of these irrigated acres are in Scotts Bluff, Box Butte, and Morrill counties. Irrigated crops include hay, corn, dry beans, sugarbeets, and potato. Alternative irrigated crops include less than 10,000 combined acres (4,047 ha) of chicory, sunflower, canola, camelina, and grass seed. The three main methods of applying irrigation water to crops in this region are siphon tubes, gated pipe and center pivot sprinkler systems. The water source for irrigation can be surface water, groundwater or a combination of both.

Surface water refers to water diverted from streams, rivers or lakes. The main source of surface water for the Panhandle is melted snow from the Rocky Mountains in Colorado and Wyoming. Approximately 403,000 acres (166,326 ha) of land are dependent on surface water for irrigation in the District, according to the Nebraska Department of Natural Resources (DNR), which administers surface water rights. Surface water is sourced from 136 rivers, and creeks in the Panhandle District and reservoirs along the North Platte River in Wyoming. The North Platte River supports the highest number of acres, with over 300,000 acres (121,405 ha) of irrigation rights diverted from this river in the Panhandle District. The Niobrara, and South Platte Rivers are the other main sources of water for surface water irrigation. Almost all surface water irrigators receive water from the approximately 30 irrigation districts and water delivery companies in the Panhandle District.



Center pivot irrigation systems, such as this one on a corn field, is a common method of delivering irrigation water. (Photo/Gary Stone)

Groundwater refers to the water pumped from aquifers, including the Ogallala and High Plains aquifers, using wells. There are just over 7,700 registered irrigation groundwater wells in the 16 counties of the Panhandle District. Groundwater in Nebraska is managed by Natural Resource Districts (NRDs). Each NRD is managed by a board of locally elected directors who develop integrated management plans in cooperation with DNR to manage the supply of water for domestic, agricultural, industrial and other uses. There are five natural resource districts in the Panhandle: Upper Niobrara White, North Platte, South Platte, Middle Niobrara and Upper Loup. Well moratoriums for wells pumping more than 50 gallons per minute (189 liters per minute) from groundwater sources are an important part of water management for 4 of the 5 NRDs. The fifth NRD, the Upper Loup NRD, currently limits the expansion of groundwater acres, and the board of directors decides annually whether to allow any expansion and how much. Irrigation water allocations are also used for water management in the Upper Niobrara White, North Platte, and South Platte NRDs. Farmers can apply 12 inches (305 mm) to 14 inches (356 mm) of groundwater per year to their crop depending on the location of the well.



Gated pipe delivers irrigation water to a dry edible bean field. The plastic tubes have rectangular openings covered by sliding gates that allow the farmer to release water down ditches between rows of crops. (Photo/Dave Ostdiek)

LIVESTOCK

The livestock industry is the Panhandle's largest contributor to the agricultural economy. Beef cattle account for the bulk of the livestock. In 2012 there were 1.1 million head of cattle in the Panhandle District or approximately 20 percent of the state's cattle population. There are two main types of beef cattle operations: cow-calf operations and feed yards. Cow-calf operations refer to ranches where calves are born and raised until they are approximately 500 pounds (227 kg). There are 2,500 ranches in the district.

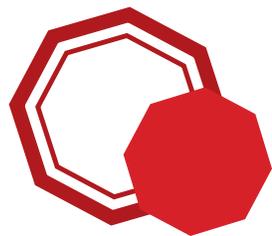
Cow-calf operations rely on forage produced on range and pasture lands in the Panhandle district. The majority of the Panhandle district falls within two distinct rangeland classifications types, Shortgrass Prairie in the west and Sandhills rangeland in the east. Typical forage production on these rangelands in an average year ranges between 1,100 to 2,000 lbs/acre (1,230 to 2,240 kg/ha). In addition to forage for livestock, these rangelands are crucial in providing habitat for many diverse wildlife species including mule deer, pronghorn antelope, prairie chickens, and ornate box turtles.

When calves are weaned from the cow, they typically go to feed yards. There are about 130 cattle feeders in the District. Beef cattle are typically fed until they weigh between 1300 (590 kg) and 1400 pounds (635 kg) for processing.

In 2012 the total market value of livestock sales was just over \$1.3 billion. Other livestock include almost 14,000 head of horses and ponies, over 5,500 lambs, 3,900 layers, 900 hogs and pigs, and over 9,500 head of bison in 2012.



Cattle at the feed bunk in a feed yard near Scottsbluff. Feeding is a major part of the region's livestock industry. (Photo/Dave Ostdiek)



COMMODITIES

HAY

About 20 percent of the Panhandle District's cropland, around 700,000 acres (283,283 ha), is used for hay production each year making it the most abundant crop in the area. These acres yielded over 1 million tons of forage, which is mainly used for cattle feed. Hay can be made of many different plants including native grasses, oats and alfalfa. About 20 percent of hay acres are irrigated.



WINTER WHEAT

Over 45 percent of Nebraska's winter wheat, approximately 660,000 acres (267,095 ha), is grown in the Panhandle. However, wheat acres have been declining since the peak of production in 1983. Winter wheat is planted in the fall and harvested in July, which allows it to utilize the spring rains and avoid the summer heat. Winter wheat is predominantly grown without irrigation; however, a few fields are irrigated. Hard red winter wheat is the main market class grown in the area; it is most suitable for making bread. An acre of dryland wheat in the Panhandle typically produces 30 to 50 bushels of grain per acre (1,800 – 3,000 lb./ac or 2 – 3.3MT/ha); enough to make 1,250 to 2,000 loaves of bread. Almost half of U.S. wheat production is exported, making international markets vital to the wheat industry.



CORN

Over 450,000 acres (182,111 ha) were planted to corn in 2012. About 50 percent of the Panhandle's irrigated acreage is used for corn production. Irrigated corn farmers can produce about 165 bushels per acre (9,240 lb./ac or 10.4 MT/ha). Dryland corn acreage varies, depending on corn price and moisture availability. Dent corn is the market class grown in the area and it is a main ingredient for cattle feed. Dent corn can also be used for ethanol production. Bridgeport Ethanol, located in Bridgeport, Nebraska, can convert about 48,000 bushels (1,344 tons or 1,219 MT) of corn per day into approximately 137,280 gallons (519,661 liters) of ethanol. An important ethanol byproduct for area cattle feeders is wet distillers grains (WDG). Bridgeport Ethanol fills approximately 46 semi loads per day with WDG for use at area feed yards.



SUGARBEETS

Nebraska typically ranks sixth nationally in sugarbeet production. About 45,000 acres (18,211 ha), 90 percent, of Nebraska's sugarbeet acres are grown in the Panhandle District. The average per-acre sugarbeet yield is 25 tons (22.68 MT). A multistate, producer-owned cooperative owns and operates area sugarbeet processing and storage facilities. Sugarbeets are processed in Scottsbluff, NE and stored in Bayard, Mitchell, and at two facilities in Gering, NE. Total value-added impact of sugarbeet manufacturing for the state in 2010 was \$187 million. Sugarbeets are primarily grown in Scotts Bluff, Morrill, and Box Butte counties.



DRY BEANS

Around 100,000 acres (40,469 ha) of dry edible beans are produced in Nebraska each year, over 90 percent of which lie in the Panhandle District. Average dry bean yield in the District is 23 cwt per acre (2.6 kg/ha). Nebraska traditionally ranks first in U.S. Great Northern bean production and second in Pinto bean production. Additional market classes grown in the District include Kidney, Navy, Pink, and Black Beans. Foreign markets are vital to the marketing of Nebraska dry beans. Approximately 10 percent of the Great Northerns are exported annually; leading importers include France and Turkey. Annually, up to one-third of the nation's Pintos are exported. Mexico and the Dominican Republic hold approximately 60 percent of U.S. Pinto bean export market share.



Photo/Gary Stone



Photo/Dave Ostdiek

PEAS

An emerging crop in the Panhandle District is field peas. According to the 2012 Census of Agriculture, just under 4,000 acres (1,619 ha) of peas were grown in the region. However, the U.S. Department of Agriculture (USDA) estimated 50,000 acres (20,235 ha) would be planted in 2016 in Nebraska, which would make the state the fourth largest grower of peas in the country. The majority of these peas are grown on dryland acres in the Panhandle and southwest Nebraska counties. Peas are a good fit for dryland acres in the Panhandle because they are a short-season crop, planted in late March to early April and harvested in July. Peas tolerate cold weather that frequently occurs in spring, and can take advantage of the spring rains. Peas are also one of the few crops that can be grown under dryland production in the Panhandle that adds nitrogen to the soil to be used later by other crops. Producers can also use the same equipment they use to grow wheat to plant and harvest peas.



Photo/Gary Stone

PROSO MILLET

Proso millet is a warm-season grass planted in July and harvested in September. Proso millet produces a small grain used in birdseed and for human consumption in both domestic and international markets. Proso millet prices are extremely volatile, with twofold price differences common from one year to the next. This variation in price can result in large swings in the amount of proso millet acres planted in the Panhandle District. According to the 2007 Census of Agriculture, over 100,000 acres (40,469 ha) of proso millet was produced in the Panhandle. In the 2012 census, production was cut in half, with less than 50,000 acres (20,235 ha). Other factors that drive proso millet acreage are how well the winter wheat crop survives the winter and which government programs are currently available.



Photo/Dave Ostdiek

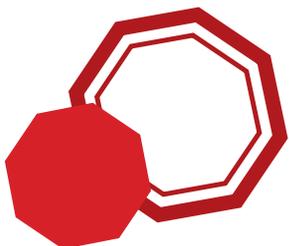
SUNFLOWERS

Sunflowers are grown in both irrigated and dryland regions of the Panhandle. Fifty percent of the sunflower acres are grown for confectionery uses and the remaining acreage is for oil seed purposes. District production is approximately 30,000 acres (12,141 ha), accounting for over half of total state production. Panhandle acres are limited by the lack of close sunflower processing facilities, needed modifications to combines to harvest the crop, and lack of residue left after harvest.



POTATOES

Nebraska's potato industry has grown from 9,000 acres (3,642 ha) in the mid-1980s to 23,000 acres (9,308 ha) in 2012. Yields have improved from 280 cwt./acre (31.4 MT/ha) (1986-88) to 445 cwt./acre (49.9 MT/ha) in 2012. Production for 2012 was over 10 million cwt. (508,234 MT) for the state, valued at \$101 million. About a third of Nebraska's potato industry is in the Panhandle District, most of which is in Box Butte County. Over \$30 million are generated by potato production in the Panhandle District. Potato production is a high-intensity farm operation employing many people. The economic impact is estimated to be between 2.5 to 3 times the production value. In the District, potato is primarily grown for seed and for the potato chip industry under processor contracts. Seed and chip potatoes from Nebraska are sold throughout the U.S. Fresh market potatoes are grown in other parts of the state and exported as well.





Extension is a Division of the Institute of Agriculture and Natural Resources at the University of Nebraska-Lincoln cooperating with the Counties and the United States Department of Agriculture.

Nebraska Extension educational programs abide with the nondiscrimination policies of the University of Nebraska-Lincoln and the United States Department of Agriculture.

