THIS LAND IS OUR LAND

GRADES: 7-8

SUBJECTS: Math, Social Studies

OBJECTIVE: Students will interpret NASS data to determine loss or gain of farm land and compare land in production and crop production over a 50 year period.

BACKGROUND

All living things depend on soil to live. If we had no soil we would have nothing to eat. Soil that can be used for growing food is called arable land. Every year we lose thousands of acres of arable land. Between 1990 and 2000 we lost nearly 44 million acres of arable land in the U.S. Some of the land is lost because people need places to live and build houses on it. Large portions get paved over every year for parking lots and shopping malls. Some is poisoned by industrial waste and other pollutants. Some of the land blows or washes away, and some of it just gets used up because it has been producing food year after year for many years.

Ever since George Washington conducted the first agricultural survey in our nation by gathering information about agricultural practices from his fellow farmers, conservation of farm land has been a primary concern. In 1788 he wrote, in a letter to Charles Carter, that improving "instead of exhausting our lands . . . ought to be the pursuit of every farmer. On this ground every experiment is a treasure, and the authors of them valuable members of Society."

It took many years and loss of much valuable topsoil before American farmers learned the lesson George Washington was urging on them in 1788. The most dramatic loss occurred during the early 20th Century, when wheat shortages caused by World War I caused the price of wheat to rise. Because farmers could make quite a bit of money on wheat, and because the U.S. government encouraged them to do so, farmers on the fragile southern Great Plains plowed up the natural grass cover that had pro-

MATERIALS

1 large apple

1 sharp knife

a small cutting board

tected the soil for centuries and planted winter wheat. The area suffered severe drought between 1934 and 1937. With large areas of plowed land having no grassroot system to anchor it, much of the soil simply blew away. The dust storms and sand storms buried roads and houses. Clouds of dust reached as far east as Washington, DC.

In response to the disaster, the federal government created the Soil Erosion Service and the Civilian Conservation Corps to recover the land. Workers replanted grass, planted tree windbreaks and shelter belts and showed farmers scientific agricultural methods to help them protect the fragile ecosystem of the Southern Plains.

Farmers today are conservationists. They have to be. The land is their livelihood. And decades of conservation measures have started to pay off. The erosion rate by water on U.S. croplands has been reduced by 24 percent in the last 15 years. As of May, 2001, farmers had enrolled 31.4 million acres of farmland in the Conservation Reserve Program.

Although the total amount of land used for agriculture grows smaller every year, American farmers still are able to feed many more people on much less land than was possible in 1788, when George Washington was farming in Virginia. Back then one farm produced just about enough food for the family that lived on it and worked it. Today one farmer can produce enough to feed 135 people. In 1830 a farmer could produce 100 bushels of wheat on five acres of land. Today's farmer can produce the same amount on three acres, with far fewer labor hours. In 1850 the farmer could produce 100 bushels of corn on 2 1/2 acres. Today's farmer can produce the same amount on one acre.

VOCABULARY
arable
conservation
agriculture
survey
drought
ecosystem
bushel
acre

ACTIVITY

1. Use this demonstration to help students understand the importance of keeping track of land use. Tell students the apple represents the world. Use the diagram that follows to cut up the apple and explain distribution of land.
2. Divide students into five groups, and provide each group with the total land use data. Make sure students understand that the numbers are recorded per 1,000 acres. (Multiply each number by 1,000 to get the actual acreage.) Assign one decade to each group, and have the groups graph acres in agricultural use over the past 50 years.
3. Have the groups discuss their findings and write statements

about the decades they studied to share with the class. Lead a class discussion about land use. What does the data reveal about agriculture in the U.S.? Once the numbers went down did they ever go up again? Were there years when the numbers decreased at a greater rate than in previous years?

4. Have groups research the decades to which they were assigned and find factors that might have determined agricultural land use, e.g., economy, war, weather patterns, politics, etc.
5. Provide students with the charts on Student Worksheets B and C showing acres planted and production of wheat and corn. Have students graph this data. Are there years in which the production rate goes up even though the acres planted is down? Have students discuss possible reasons.

ADDITIONAL ACTIVITIES

1. Have students solve this problem: If one American farmer can feed 135 people, and there are 6 billion people in the world, how many American farmers would it take to feed all the people in the world?
2. Have students research population growth in the U.S. between 1950 and 2000 and graph those numbers with the data for land in agricultural production. Ask students to brainstorm in groups and make proposals to answer the question, "How can we continue to feed our growing population as agricultural land decreases?"
3. Have students figure the rate of agricultural land lost over the past 50 years and project rate of loss over the next 50 years. Do the same with population.
4. Have students research 1970 Nobel Prize winner Norman Borlaug and the Green Revolution to find one reason farmers are able to grow more food on less land. Students may look in the library for books and articles or use an internet search engine to find the information.
5. Have students research hydroponics and experiment with growing plants using this method.

EXTRA READING

Andryszewski, Tricia, The Dust Bowl: Disaster on the Plains, Millbrook, 1993.

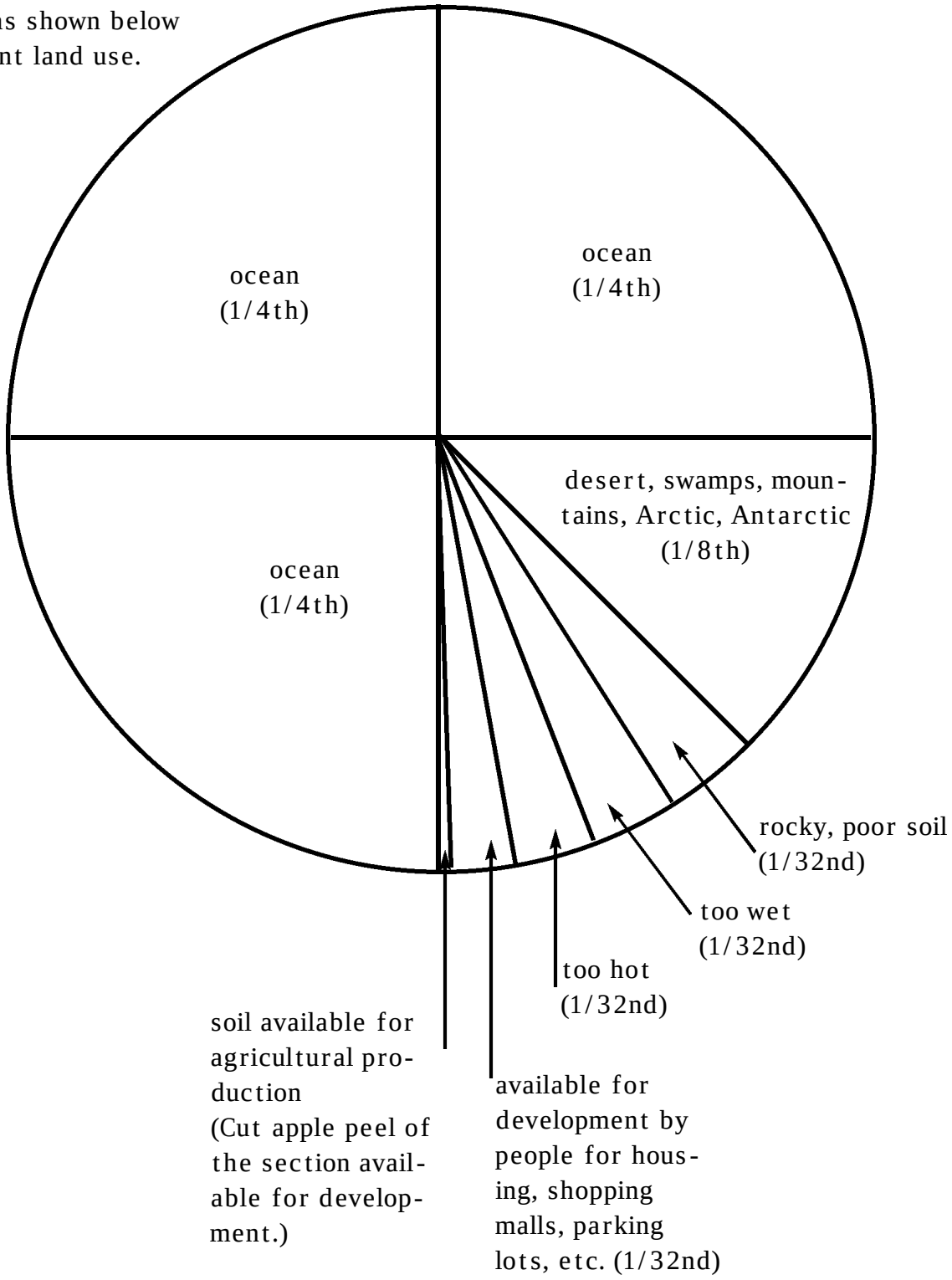
Bial, Raymond, Corn Belt Harvest, Houghton Mifflin, 1991.

Brandenburg, Jim, An American Safari: Adventures on the North

American Prairie, Walker Co., 1996.
Farris, John, The Dust Bowl, Lucent, 1989.
Hesse, Karen, Out of the Dust, Scholastic, 1998
Johnson, Sylvia, Wheat, Lerner, 1990
Sabin, Louis, Agriculture, Troll, 1985.
Staub, Frank, America's Prairies, Carolrhoda, 1996.

This Land is Our Land

Cut apple as shown below to represent land use.



Oklahoma Ag in the Classroom, 1994

U.S. Land in Farms

Thousand Acres

1950	1,202,019
1951	1,203,500
1952	1,204,930
1953	1,205,740
1954	1,206,355
1955	1,201,900
1956	1, 197,070
1957	1, 191,340
1958	1, 184,944
1959	1, 182,563
1960	1, 175,646
1961	1, 167,699
1962	1, 159,383
1963	1, 151,572
1964	1, 146,106
1965	1, 139,597
1966	1, 131,844
1967	1, 123,456
1968	1,1 15,231
1969	1, 107,811
1970	1, 102,371
1971	1,096,863
1972	1,092,065
1973	1,087.923
1974	1,084.433
1975	1,059.420
1976	1,054,075
1977	1,047,785
1978	1,044,790
1979	1,042,015
1980	1,038,885
1981	1,034,190
1982	1,027,795
1983	1,023,425
1984	1,017,803
1985	1,012,073
1986	1,005,333
1987	998,923
1988	994,423
1989	990,723
1990	986,850
1991	981,736
1992	978,503
1993	968.845
1994	965,935
1995	965,515
1996	958,675
1997	956,010
1998	953,500
1999	947,440
2000	943,090
2001	941,210

Source: NASS, USDA

Wheat Planted and Produced in the U.S., 1950-2001

	Wheat planted Thousand Acres	Wheat produced Thousand Bushels
1950	71,287	1,019,344
1951	78,524	988,161
1952	78,645	1,306,440
1953	78,931	1, 173,071
1954	62,539	983,900
1955	58,246	937,094
1956	60,655	1,005,397
1957	49,843	955,740
1958	56,017	1,457,435
1959	56,706	1,1 17,735
1960	54,906	1,354,709
1961	55,707	1,232,359
1962	49,274	1,091,958
1963	53,364	1, 146,821
1964	55,672	1,283,371
1965	57,361	1,315,603
1966	49,613	1,304,889
1967	67,264	1,507,598
1968	61,860	1,556,635
1969	53,450	1,442,679
1970	48,739	1,351,558
1971	53,822	1,618,636
1972	54,913	1,546,209
1973	59,254	1,710,787
1974	71,044	1,781,918
1975	74,900	2,126,927
1976	80,395	2,148,780
1977	75,410	2,045,527
1978	65,989	1,775,524
1979	71,424	2,134,060
1980	80,788	2,380,934
1981	88,251	2,785,357
1982	86,232	2,764,967
1983	76,419	2,419,824
1984	79,213	2,594,777
1985	75,535	2,424,115
1986	71,998	2,090,570
1987	65,829	2,107,685
1988	65,529	1,812,201
1989	76,615	2,036,618
1990	77,041	2,729,778
1991	69,881	1,980,139
1992	72,219	2,466,798
1993	72,168	2,396,440
1994	70,349	2,320,981
1995	69,031	2,182,708
1996	75,105	2,277,388
1997	70,412	2,481,466
1998	65,821	2,547,321
1999	62,714	2,299,010
2000	62,629	2,232,460
2001	59,617	1,957,643

Source: NASS, USDA

Corn Planted and Produced in the U.S., 1950-2001

	Corn planted Thousand Acres	Corn produced Thousand Bushels
1950	72,398	2,764,071
1951	71,191	2,628,937
1952	71,353	2,980,793
1953	81,574	2,881,801
1954	82,185	2,707,913
1955	80,932	2,872,959
1956	77,828	3,075,336
1957	73,180	3,045,355
1958	73,351	3,356,205
1959	82,742	3,824,598
1960	81,425	3,906,949
1961	65,919	3,597,803
1962	65,017	3,606,311
1963	68,771	4,019,238
1964	65,823	3,484,253
1965	65,171	4,102,867
1966	66,347	4,167,608
1967	71,156	4,860,372
1968	65,126	4,449,542
1969	64,264	4,687,057
1970	66,863	4,152,243
1971	74,179	5,646,260
1972	67,126	5,579,832
1973	72,253	5,670,712
1974	77,935	4,701,402
1975	78,719	5,840,757
1976	84,588	6,289,169
1977	84,328	6,505,041
1978	81,675	7,267,927
1979	81,394	7,928,139
1980	84,043	6,639,396
1981	84,097	8,118,650
1982	81,857	8,235,101
1983	60,207	4,174,251
1984	80,517	7,672,130
1985	83,398	8,875,453
1986	76,580	8,225,764
1987	66,200	7,131,300
1988	67,717	4,928,681
1989	72,322	7,531,953
1990	74,166	7,934,028
1991	75,957	7,474,765
1992	79,311	9,476,698
1993	73,239	6,337,730
1994	78,921	10,050,520
1995	71,479	7,400,051
1996	72,644	9,232,557
1997	79,537	9,206,832
1998	80,165	9,758,685
1999	70,487	9,430,612
2000	79,551	9,915,051
2001	75,752	9,506,840

Source: NASS, USDA