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## Lentils

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Lentils, *Lens culinaris* Medik, are a cool season annual grain legume or “pulse crop” that is considered a cousin of the bean. The Latin word *Lens* for lentil is also descriptive in that lentil seeds are shaped like a lens. Lentils are legumes that convert nitrogen from the atmosphere into nitrogen nodules on the plant roots. Areas with limited rainfall and drier growing season conditions prove to be the most suitable to lentil production. Lentils were first grown more than 8,500 years ago in the Near East, and production later spread to the Mediterranean area, Asia, Europe, and finally the Western Hemisphere. Lentils were probably introduced into the United States in the early 1900s. They have been grown in the western United States and western Canada since the 1930s, mainly in rotation with wheat.

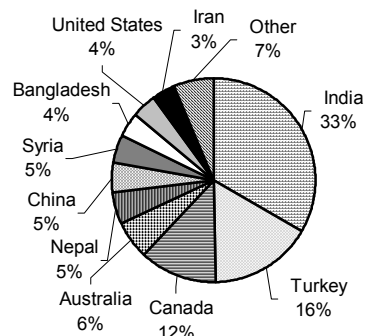
Two basic types of lentils are grown worldwide: Chilean and Persian. Chilean lentil varieties are considered by importers and consumers to be of higher quality than Persian lentil. Chilean lentils are the most widely grown, have extra large seeds, and some varieties have resistance to disease. Persian varieties typically have smaller seeds, mature earlier, and have shorter plants than Chilean varieties. Chilean and Persian varieties can both be grown in the United States.

Lentil seeds in North America are typically larger than those from India and the Near East, and seed colors may be tan, brown, or black. Lentil seeds vary from two to seven millimeters in diameter and lentil seeds range from 15,600 to 100,000 seeds per pound of lentils.

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**Figure 1: Percentage of World Lentil Production by Country: 2002**



**Table 1: World Lentil Production, Historical**

Year	Production in Metric Tons
1993	2,755,580
1994	2,784,295
1995	2,842,859
1996	2,761,474
1997	2,745,092
1998	2,783,101
1999	2,885,897
2000	3,366,439
2001	3,161,593
2002	2,938,037

**Table 2: United States Lentil Production, Acreage and Production**

Year	Acreage		Production		
	Planted (000)	Harvested (000)	Yield (lbs)/acre	Total (000) cwt.	Metric Tons
1993	145	143	1,403	2,006	90,992
1994	182	178	1,043	1,856	84,188
1995	169	163	1,364	2,224	100,880
1996	147	140	952	1,333	60,464
1997	193	183	1,315	2,406	109,135
1998	162	159	1,223	1,938	87,907
1999	182	175	1,368	2,387	108,274
2000	217	214	1,415	3,029	137,395
2001	201	197	1,471	2,898	131,452
2002	221	209	1,200	2,508	113,762

**Production**

*World<sup>1</sup>:* In 2002, world lentil production was nearly three million metric tons. Lentils are produced in over 48 different countries. India and Turkey typically combine to produce nearly one half of total world lentil output (Figure 1). Canada is also a major producer of lentils with 12% share of world output.

World lentil production has been relatively stable over the last ten years (Table 1). Global lentil production peaked in 2000 at about 3.4 million metric tons but in 2002 had declined by 13% to about 2.9 metric million tons.

*United States:* The United States accounted for four percent of world lentil production in 2002. In

the United States, total acreage planted to lentils has increased over the past ten years. The area planted to lentils increased from 145,000 acres in 1993 to 221,000 acres planted in 2002 (Table 2). Although planted acres have increased, total lentil production has varied considerably due to variations in yields influenced by season-to-season differences in production conditions.

*Montana:* Montana is a relatively minor producer of lentils, accounting for about six to eight percent of total United States production in recent years. The area planted to lentils in Montana increased from 22,000 acres to 25,000 acres between 2001 and 2002 but production declined due to drought-impacted yields. (Table 3).

Montana’s share of total United States lentil production was about 10

percent in 1998, but fell to approximately six percent in 2002 (Figure 2).

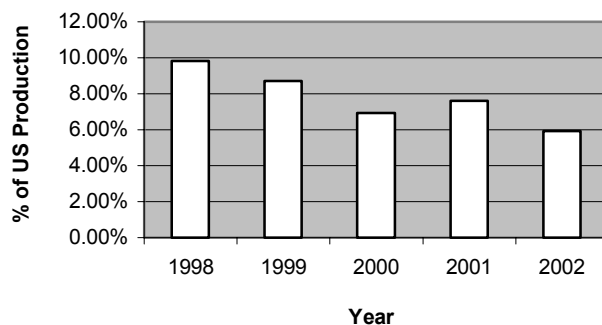
*Domestic Competition:* In addition to producers in other countries, producers of lentils in Montana must compete with other states for the United States lentil market. U.S. lentil production is concentrated in four states. Washington and Idaho plant the largest proportion of lentil U.S. acres accounting for 34 percent and 31 percent, respectively, followed by North Dakota and Montana (11 percent) (Figure 3).

<sup>1</sup> All data concerning world production of safflower is received from the FAOSTAT database of the Food and Agriculture Organization of the United Nations, which is compiled on a calendar year-basis. Marketing year and crop year information may yield somewhat different numerical results.

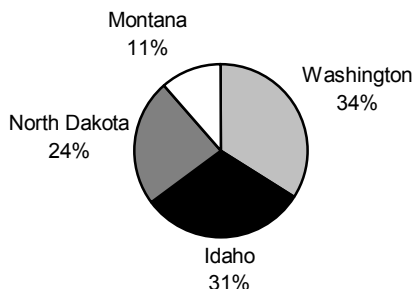
**Table 3: Montana Lentil Production, Historical Production**

Year	Acreage		Production		
	Planted (000)	Harvested (000)	Yield (lbs.)/acre	Total (000) cwt.	Metric Tons
1998	20	19	1,000	190	8,618
1999	19	16	1,300	208	9,435
2000	22	21	1,000	210	9,526
2001	22	20	1,100	220	9,979
2002	25	21	710	149	6,759

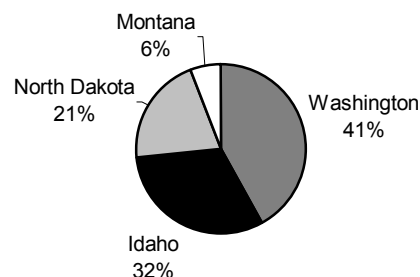
**Figure 2: Montana's Share of United States Total Lentil Production**



**Figure 3: Percent of United States Lentil Acreage by State: 2002**



**Figure 4: Percent of United States Lentil Production by State: 2002**



Washington and Idaho led 2002 United States lentil production with 41 percent and 32 percent of total production, respectively. North Dakota produced 6 percent and Montana 21 percent of lentil U.S. output in 2002.

**Consumption**

Lentils are a protein/calorie crop with protein content ranging from 22 to 35 percent. The nutritional value of lentils is somewhat low because lentils are deficient in the amino acids methionine and cystine. However, in comparison with other legumes, lentils contain higher amounts of protein, carbohydrates, and calories. Folic acid is one important nutrient found in lentils.

Lentils are often eaten as a product called “dhal,” which is a split and de-hulled seed used as a main dish,

side dish, or in salads. Lentil seeds can also be fried or seasoned, and lentil flours are used to make soups, stews, and purees, and mixed with cereals to make bread, cakes, and food for infants.

Husks, dried leaves, stems, fruit walls, and residues not used for human consumption can be used as a high protein livestock feed with few digestive inhibitors. Lentils can also be used as a green manure crop, and certain varieties return a large amount of nitrogen back to the soil.

**Imports**

In recent years, just over one third of the world’s production of lentils has been traded internationally. Approximately one million metric tons of the world’s production was exported in 2002.

In 2001, the three largest importing countries were Egypt, Turkey, and Sri Lanka (Table 4). Collectively, these three countries account for around 28 percent of world lentil imports. Imports of lentils are spread among many different countries. The United States is a minor lentil importer, with about a 1 percent share of total world imports and ranks 25<sup>th</sup> in world lentil imports (Figure 5).

**Exports**

The United States exported (including food aid shipments) 99,000 metric tons of lentils in 2001, accounting for approximately 75 percent of total United States production and eight percent of world exports (Table 5).

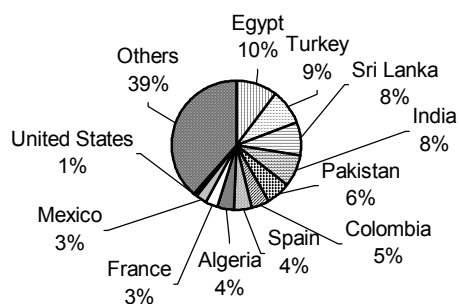
**Table 4: Major World Lentil Importing Countries, 2001**

<i>Country</i>	<i>World Rank</i>	<i>Metric Tons</i>
Egypt	1	113,034
Turkey	2	98,662
Sri Lanka	3	90,676
India	4	86,975
Pakistan	5	68,441
Colombia	6	49,827
Spain	7	46,926
Algeria	8	46,658
France	9	31,980
Mexico	10	31,057
United States	25	9,645
Others		423,890
World Total		1,097,771

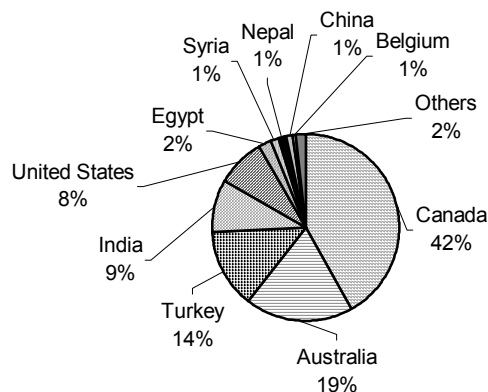
**Table 5: Major World Lentil Exporting Countries, 2001**

<i>Country</i>	<i>World Rank</i>	<i>Metric Tons</i>
Canada	1	490,662
Australia	2	217,702
Turkey	3	158,642
India	4	106,109
United States	5	98,931
Egypt	6	25,418
Syria	7	16,457
Nepal	8	15,094
China	9	14,451
Belgium	10	7,142
Others		18,032
World Total		1,168,642

**Figure 5: Percent of World Lentil Imports by Country: 2001**



**Figure 6: Percent of World Lentil Exports by Country, 2001**



### Summary

World production of lentils has exceeded 2.9 million metric tons in recent years. Just over one-third of world production is traded on international markets.

The United States accounts for about four percent of world lentil production and about eight percent of world exports. Lentil imports into the United States are minimal. In recent years, Montana has accounted for six to eight percent of total U.S. lentil production. In the 2002 crop year, production of lentils in Montana declined sharply, likely due to prolonged drought and disease problems.

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