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B R I E F I N G

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Safflower

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Background

Safflower, *Carthamus tinctorius* L., is a spring annual, broadleaf crop whose appearance resembles a thistle, yet produces seeds somewhat similar in appearance to small white sunflower seeds. Safflower plants have deep taproots that give the plant significant drought tolerance. Therefore, safflower is sometimes used to reduce surplus water from recharge areas that contribute to saline seeps.

Safflower has had many uses. Safflower seeds have been found in 4,000 year-old Egyptian tombs and its use was recorded in China approximately 2,200 years ago. The flowers of the safflower plant have long been used as a source of yellow and red dyes for clothing and food. The petals have also been used for medicinal purposes and as a stimulant for blood circulation and phlegm reduction, and for healing fractures, contusions, and strains.

Three principle products come from current safflower production: oil, meal, and birdseed. Oil is the primary product, and has food and industrial uses. The seed oil content of safflower ranges from 30 to 45 percent.

There are two types of safflower oil. The first oil type is high in mono-unsaturated fatty acid (oleic) and the second is high in poly-unsaturated fatty acid (linoleic). Oleic oils are used as cooking oils. Linoleic oil is used as a drying agent in paints and varnishes because it does not yellow. supplement for livestock and poultry feed.

Figure 1: Percentage of World Safflower Production by Country: 2002

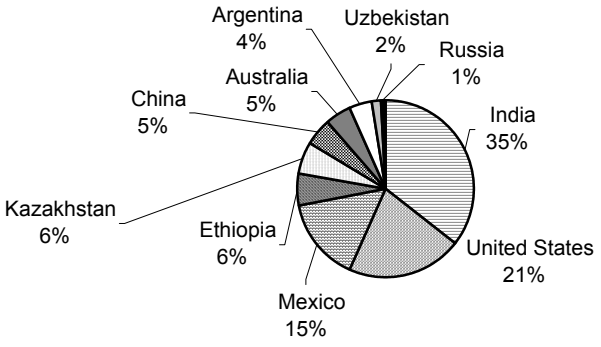


Table 1: World Safflower Production, Historical

Year	*Production in Metric Tons*
1991	606,454
1992	547,784
1993	811,987
1994	892,507
1995	862,878
1996	883,511
1997	909,146
1998	627,936
1999	846,642
2000	670,640
2001	596,565
2002	637,986

Table 2: United States Safflower Production, Acreage and Production

Year	*Acreage*		*Production*		
	Planted (000)	*Harvested (000)*	*Yield (lbs)/ acre*	*Total (000) Pounds*	*Metric Tons*
1991	223	209	1,200	250,800	113,762
1992	341	307	1,325	406,775	184,512
1993	404	293	1,829	535,897	243,081
1994	240	228	1,871	426,588	193,499
1995	262	252	1,755	442,290	200,621
1996	222	210	1,892	397,415	180,266
1997	228	215	1,822	391,790	177,715
1998	303	285	1,446	411,985	186,875
1999	275	262	1,545	404,715	183,578
2000	215	197	1,434	282,545	128,162
2001	188	177	1,365	241,665	109,619
2002	219	196	1,520	297,980	135,163

Safflower seeds with white or normal hull types are also marketed as birdseed.

Production

World [1] *:* In 2002, world safflower production was about 638,000 metric tons. Safflower is produced in over 15 different countries. India, the United States, and Mexico typically combine to produce over 70 percent of total world safflower output (Figure 1).

World safflower production increased steadily during the 1990s but decreased from its peak of 867,000 metric tons in 1999 to 638,000 metric tons in 2002.

United States: The United States accounted for 21 percent of world safflower production in 2002. The area planted to safflower in the United States was 223,000 acres in 1991 and has since fluctuated 404,000 acres in 1993 and 188,000 in 2000. Production of safflower has followed similar trends as those seen in acres planted of safflower in the United States over the last 12 years.

Montana: Montana has accounted for about ten percent of total U.S. safflower production in recent years. The area planted to safflower has stayed relatively steady from 41,000 acres planted in 1999 to 39,500 acres planted in 2002 (Table 3).

Montana's share of total safflower production was about eight percent in 1999 but increased to around 10 percent over the period 2000-2002 (Figure 2).

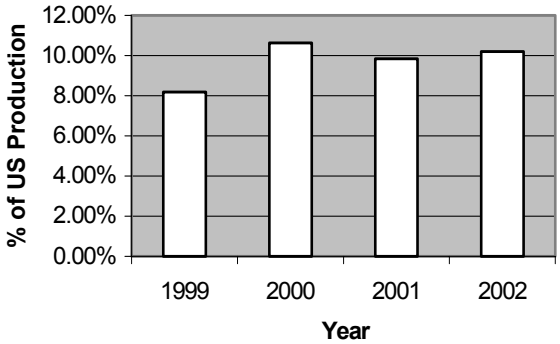
Domestic Competition: In addition to farmers in other countries, Montana safflower producers must compete with other states for the safflower market. United States safflower acreage and production only periodically reported by state. The 1997 Census of Agriculture listed California as the dominant producer of safflower, accounting for approximately 60 percent of the planted safflower acres.

[1] 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 Safflower Production, Historical Production

Year	*Acreage*		*Production*		
	Planted (000)	*Harvested (000)*	*Yield (lbs.) acre*	*Total (000) Pounds*	*Metric Tons*
1999	4.1	39	850	33,150	15,037
2000	41.5	39	770	30,030	13,622
2001	31	28	850	23,800	10,796
2002	39.5	38	800	30,400	13,789

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



Montana ranked second among domestic production of safflower. Utah, South Dakota, and North Dakota are the other leading safflower producing states.

Consumption

Safflower is produced primarily for its oil, that is used for human consumption. High oleic oil is used as heat-stable cooking oil for French fries, chips and snack items, food coatings, and infant food formulations. It is also used by some to limit coronary artery disease. High linoleic safflower seeds contain nearly 75 percent linoleic acid. The oil from high linoleic safflower is used in products such as salad oils and soft margarines.

Safflower meal is a by-product of oil production and is used as a protein supplement in livestock and poultry feeds. Safflower meal contains approximately 24 percent protein and is also very high in fiber.

Imports

In recent years, only about eight percent of world safflower production has been traded internationally. Approximately 49,000 metric tons of world safflower production was traded in international markets in the 2001 crop year.

In the 2001 crop year, the top three importing countries for safflower were Japan, Belgium, and the Netherlands (Table 4). Collectively, these three countries account for over 70 percent of world safflower imports. Many other countries import small amounts of safflower, with 46 countries reporting imports of safflower in 2001. The United States is a relatively minor importer of safflower, with about a three percent share of total world safflower imports (Figure 3).

Exports

The United States exported about 22,000 metric tons of safflower in 2001, accounting for approximately 20 percent of total United States production and 44 percent of world safflower exports (Table 5).

The United States is the world's leading exporter of safflower and along with Australia and China accounted for approximately 80 percent of world safflower exports in 2001 (Figure 4).

Summary

World production of safflower has been about 650,000 metric tons in recent years. About eight percent of world production is traded on the international market annually. The United States accounts for about 21 percent of world safflower production and about 44 percent of world exports. Safflower imports into the United States are minimal. In recent years, Montana accounted for about ten percent of total U.S. safflower production. In the 2002 crop year, Montana safflower production was about 14,000 metric tons.

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Table 4: Major World Safflower Importing Countries, 2001

Country	*World Rank*	*Metric Tons*
Japan	1	21,298
Belgium	2	6,957
Netherlands	3	4,600
Germany	4	2,354
China	5	1,607
United States	6	1,415
France	7	1,194
United Kingdom	8	1,108
Canada	9	1,105
Korea	10	931
Others		4,196
World Total		46,765

Table 5: Major World Safflower Exporting Countries, 2001

Country	*World Rank*	*Metric Tons*
United States	1	21,812
Australia	2	13,660
China	3	4,060
Netherlands	4	2,076
Mexico	5	1,937
Czech Republic	6	1,784
Canada	7	1,129
Belgium	8	920
Iran	9	434
India	10	422
Others		863
World Total		49,097

Figure 3: Percent of World Safflower Imports by Country: 2001

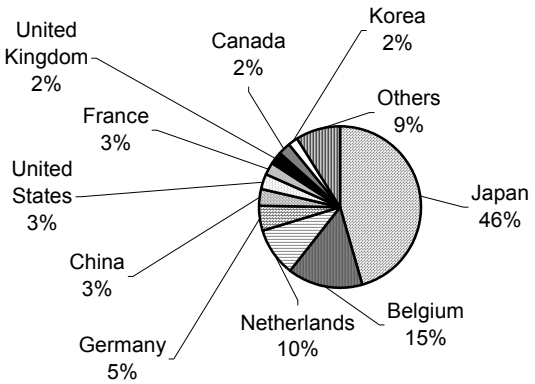
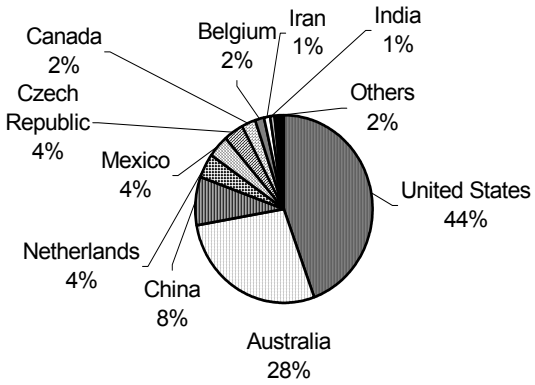


Figure 4: Percent of World Safflower Exports by Country: 2001



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