



BRIEFING

Briefing No. 58

November 2005-Revised

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.

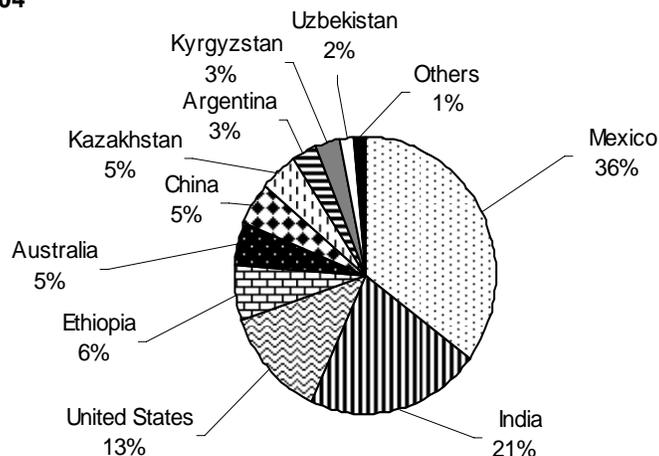
Safflower has had many uses. Safflower seeds have been found in 4,000 year-old Egyptian tombs and its use was recorded in China approximately 2,200 years ago. The flowers of the safflower plant have long been used as a source of yellow and red dyes for clothing and food. The petals have also been used 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 is high in monounsaturated fatty acid (oleic) and the second is high in polyunsaturated 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.

Figure 1: Percentage of World Safflower Production by Country: 2004



The Agricultural Marketing Policy Center would like to acknowledge the support provided by Fort Peck Community College for this project.

This publication is a product of a collaborative research project between Fort Peck Community College and the Agricultural Marketing Policy Center.

Table 1: World Safflower Production, Historical

Year	Production in Metric Tons
1993	815,165
1994	901,443
1995	877,064
1996	903,870
1997	930,091
1998	653,036
1999	869,181
2000	689,556
2001	607,620
2002	601,332
2003	671,485
2004	604,157

Safflower meal is used as a protein supplement for livestock and poultry feed. Safflower seeds with white hull or normal hull types are also marketed as birdseed.

Production

*World*¹: In 2004, world safflower production was about 604,157 metric tons. Safflower is produced in over 15 different countries. Mexico, India, and the United States typically combine to produce about 70 percent of total world safflower output (Figure 1).

World safflower production increased steadily during the 1990's, but decreased from a high of over 930,000 metric tons in 1997 to only 604,157 metric tons

in 2004. Current world production of safflower is approximately 35 percent lower from the record production in 1997 (Table 1).

United States: The United States accounted for about 13 percent of world safflower production in 2004. The area planted to safflower in the United States began from a high of 404,000 acres in 1993, but fluctuated between 175,000 and 300,000 acres in subsequent years (Table 2). Production of safflower has followed similar trends as those seen in acres planted of safflower in the United States over the last 12 years, and has hit a low of about 80,000 metric tons in 2004.

Montana: Montana has accounted for about 20 percent of total U.S.

Table 2: United States Safflower Production, Acreage and Production

Year	Acreage		Production		
	Planted (000)	Harvested (000)	Yield (lbs)/acre	Total (000) Pounds	Metric Tons
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	186,874
1999	275	262	1,545	404,715	183,578
2000	215	197	1,434	282,545	128,162
2001	188	177	1,357	240,265	108,983
2002	219	185	1,435	265,550	120,453
2003	222	213	1,290	274,755	124,628
2004	175	159	1,105	175,765	79,726

safflower production in recent years. The area planted to safflower has kept relatively stable, ranging from 41,000 acres in 1999, but has currently slipped to 33,500 acres (Table 3).

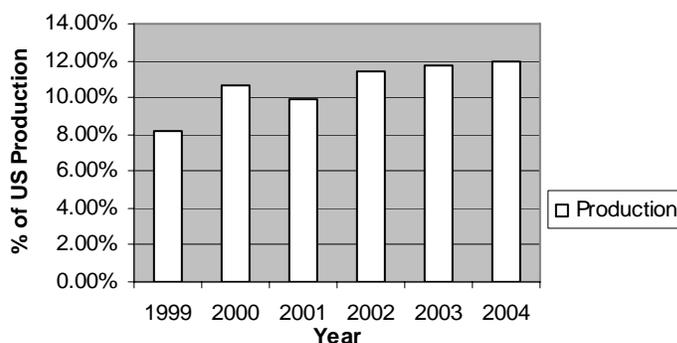
Montana's share of total U.S. safflower production was about eight percent in 1999, but recently increased to around 12 percent (Figure 2).

¹ Data on World production of safflower was obtained 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	41	39	850	33,150	15,037
2000	42	39	770	30,030	13,622
2001	31	28	850	23,800	10,796
2002	40	38	800	30,400	13,789
2003	43	42	770	32,340	14,669
2004	34	31	680	21,080	9,562

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



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

Consumption

Safflower is produced primarily for its oil, which 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 for 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 the world's production of safflower has been traded internationally. Approximately 49,000 metric tons of world production was traded in international markets in the 2003 crop year.

In the 2003 crop year, the top three importing countries for safflower were Belgium, Japan, and the Netherlands (Table 4). Collectively, these three countries account for over 61 percent of world imports of safflower. Many other countries import small amounts of safflower, with 54 countries reporting imports of safflower in 2003. The United States is a relatively minor importer of safflower, with about a five percent share of total world safflower imports (Figure 3).

Exports

The United States exported 9,983 metric tons of safflower in 2003,

accounting for approximately 13 percent of total United States production and 21 percent of world safflower exports (Table 5).

The United States is the world's leading exporter of safflower and along with India and Mexico accounted for approximately 54 percent of world safflower exports in 2003 (Figure 4).

Summary

World production of safflower has been nearly 604,157 metric tons in recent years. About eight percent of world production is traded on the international market annually.

The United States accounts for about 13 percent of world safflower production and about 21 percent of world exports. Safflower imports into the United States are relatively minimal, at about 2,333 metric tons in 2003. In recent years, Montana accounted for about 12 percent of the total safflower production in the United States. In the 2004 crop year, production of safflower in Montana was about 9,562 metric tons.

Table 4: Major World Safflower Importing Countries, 2003

Country	World Rank	Metric Tons
Belgium	1	11,174
Japan	2	9,062
Netherlands	3	6,207
China	4	3,353
United States	5	2,333
United Kingdom	6	1,415
Germany	7	1,359
Canada	8	1,256
Portugal	9	1,104
United Arab Emirates	10	950
Others		5,148
World Total		43,361

Table 5: Major World Safflower Exporting Countries, 2003

Country	World Rank	Metric Tons
United States	1	9,983
India	2	9,437
Mexico	3	7,051
China	4	6,724
Netherlands	5	4,398
Czech Republic	6	2,254
Tanzania	7	1,972
Belgium	8	1,553
Australia	9	1,011
Canada	10	916
Others		3,628
World Total		48,927

Figure 3: Percent of World Safflower Imports by Country: 2003

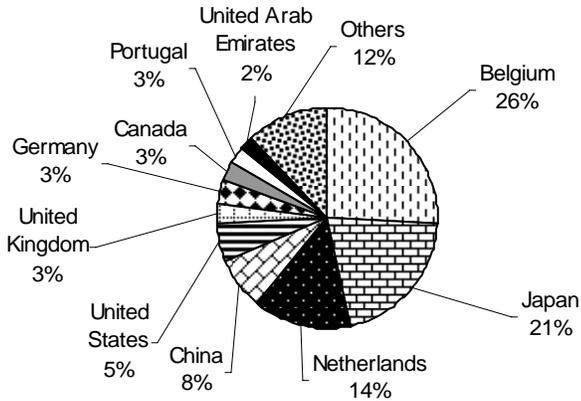
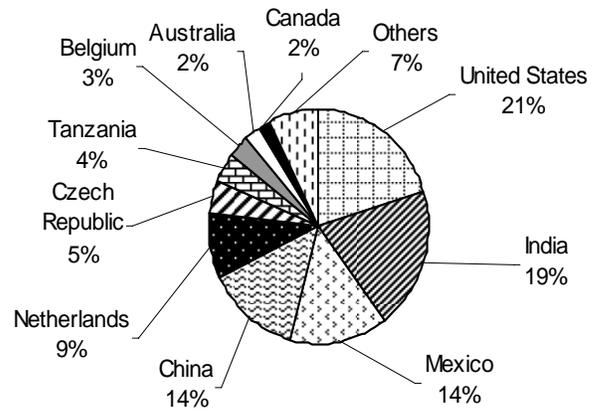


Figure 4: Percent of World Safflower Exports by Country: 2003



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