

Mango consumption reduces the cancer risk

by Dr. Noor Ahmed Memon

Export of mango from Pakistan increased from Rs 1.74 billion in 2007-08 to Rs 3.27 billion in 2011-12, thus showing an average increase of 18% per annum. Pakistani Mango is one of the most delicious products in the world, which is being exported in large quantities from Pakistan to Europe, Middle East & America by air and to the Gulf by sea in reefers containers.

A research reveals the consumption of mangoes may potentially have a positive effect on blood sugar in obese individuals and reduce cancer risk. The study, led by Oklahoma State University's Nutritional Sciences Associate Professor Edralin Lucas, examined the effects of daily mango consumption on clinical parameters and body composition in obese subjects. Mango contains many nutrients and other bioactive compounds that can provide various health benefits aside from what they investigated. He said it is high in fibre, vitamins A and C, as well as other minerals. In addition to the positive effects on body fat, blood lipids and glucose, it is not associated with serious side-effects such as negative effects on bone that is linked with the use of rosiglitazone - a drug commonly used to lower blood sugar. Blood sugar levels at the conclusion of the study were significantly lower than the baseline in both male and female subjects.



These findings are the result of a single study and more research is needed on the effects of mango consumption on human health and reduces the cancer risk. Another research led by Institute for Obesity Research and Program Evaluation of Texas University Assistant Professor and Research Director Susanne Mertens-Talcott examined the effects of polyphenols found in fresh mangos on cancerous and non-cancerous breast cells. This study suggested that mango polyphenols might limit inflammatory response in both cancerous and non-cancerous breast cells.

on an area of 172 thousand hectares with a production of 1.89 million tonnes. The area under mango crop has increased but the rise in production is comparatively slow. The main mango growing districts in the Punjab province are Multan, Bahawalpur, Muzzaffargarh and Rahim yar Khan. In the province of Sindh it is mainly grown in Mirpur Khas, Hyderabad and Thatta. In the province of NWFP it is grown in D.I Khan, Peshawar and Mardan. Mangoes have been produced in Pakistan for well over two thousand years and the country is now the 6th largest producer in the world behind India, China, Mexico, Indonesia and Thailand.

The climate of Sindh gets warmer about one month earlier than that of Punjab, which has given the province the privilege to grow early varieties of mango. Subsequently, a new trend of growing late varieties in Punjab has received a wide popularity which has extended the market period and added to the exportable surplus. The high prices are paid for undam-

Production of Mango in Pakistan

Mango is the fourth largest fruit crop of Pakistan. At present it is grown

Table 1: Area, production and yield per hectare of mango

| Year | Area (000) Hectares | Production (000 Tonnes) | Yield per Hectare in Kg |
|-------------|---------------------|-------------------------|-------------------------|
| 2004-05 | 151.5 | 1,674.0 | 11,050 |
| 2005-06 | 156.6 | 1,753.9 | 11,200 |
| 2006-07 | 164.5 | 1,719.2 | 10,445 |
| 2007-08 | 166.3 | 1,753.7 | 10,545 |
| 2008-09 | 170.1 | 1,727.9 | 10,158 |
| 2009-10 | 173.7 | 1,845.5 | 10,619 |
| 2010-11 | 171.9 | 1,885.9 | 10,971 |
| 2011-12 (P) | 172.0 | 1,919.0 | 10,965 |

Source: Ministry of Agriculture Government of Pakistan.

aged, good quality fruit. Due to better export prospects, the area under cultivation has increased over the few years from 151,500 hectares in 2005 - 06 to about 172,000 hectares in 2012-11. However, the average yield of around 10,965 kgs per hectare is much lower than in countries such as China, Mexico and India, where improved plant protection measures are used. Figures concerning the area, production and yield per hectare of mango are given in Table 1. Province-wise production of mango are given in Table 2.

Types of Mango

Sindhri (Mango): This fine variety is produced in the Sindh Province. It is in large size, yellow in colour, fibreless, and oval shaped stone in medium size. It is very sweet in taste and has a pleasant fragrance. This variety is available from the Month of 20th May to 20th July.

Chaunsa (Mango): This variety is produced in the province of Punjab. It is extremely sweet in taste and very delicious. Fresh, firm and fibre less, it is available after 15th June to the end of August. Leading commercial mango varieties are given as under:

Sindh: Sindhri, Gulabkhas, Swarnarice, Baganpalli, Collector and Neelum.

Punjab: Malda, Langra, Aman Duseri, Anwar Ratol, Samer Bahisht, Fajri Kalan and Sensation.

NWFP: Lengra and Samer Bahisht.

Baluchistan: Sindhri and Baganpalli.

Exports

Overall export of mango has witnessed a steady growth. In 2007-08, mango exports were 68,879 tonnes valued at Rs 1.74 billion rising to 89,552 tonnes valued at Rs2.89 billion in 2010-11 and to 85,119 tonnes valued at Rs 3.27 billion in 2011-12. Export of mango from Pakistan is given in Table 3.

Pakistan mainly exports mango to Afghanistan, The Netherlands, Iran, Oman, Germany Qatar, Saudi Arabia, UAE and UK. UAE is the largest importer with market share of about 32% while UK and Saudi Arabia are second and third largest importers with shares of 18% and 13% respectively. Country-wise export of mango is given in Table 4.

The Ministry of Commerce has allowed the export of mango for the current season starting from May 25, 2013. The date has been fixed this year to avoid losses that resulted owing to the unplanned and premature export of the fruit earlier.

Table 2: Province - wise production of Mango (000 Tonnes)

| Year | Punjab | Sindh | KPK | Baluchistan | Total |
|--------------------|---------------|--------------|------------|-------------|---------------|
| 2000-01 | 634.9 | 340.3 | 2.3 | 12.3 | 989.8 |
| 2001-02 | 650.3 | 371.5 | 2.5 | 12.8 | 1037.1 |
| 2002-03 | 684.2 | 335.9 | 3.2 | 11.3 | 1034.6 |
| 2003-04 | 707.8 | 338.4 | 3.1 | 6.6 | 1055.9 |
| 2004-05 | 1311.9 | 349.6 | 3.2 | 6.5 | 1671.2 |
| 5 Year Avg: | 797.8 | 347.1 | 2.9 | 9.9 | 1157.7 |
| 2005-06 | 1391.8 | 352.4 | 3.2 | 6.5 | 1753.9 |
| 2006-07 | 1356.6 | 353.4 | 3.4 | 5.8 | 1719.2 |
| 2007-08 | 1373.1 | 368.1 | 4.0 | 8.5 | 1753.7 |
| 2008-09 | 1324.9 | 390.5 | 4.0 | 8.5 | 1727.9 |
| 2009-10 | 1455.7 | 379.0 | 3.9 | 6.9 | 1845.5 |
| 5 Year Avg: | 1380.4 | 368.7 | 3.7 | 7.2 | 1760.0 |
| 2010-11 | 1503.2 | 381.3 | 0.3 | 1.1 | 1885.9 |
| 2011-12 (P) | 1504.0 | 381.2 | 0.3 | 1.1 | 1,886.6 |

Source: Ministry of Agriculture Government of Pakistan

Exporters expect the total production of mango to touch 1.94 million tonnes this year, up from 1.89 million tonnes compared to the previous year. The export target of 90,000 tonnes has been set for this year; the country may fetch \$37 million if it succeeds in meeting the export target.

After the inclusion of Japan in Pakistan's mango export market, this season a limited quantity of mango will also be exported to Japan after being processed by a Vapour Heat Treatment (VHT) plant – a pilot plant donated by the Japanese government to preserve the quality of the fruit.



Table 3: Export of Mango from Pakistan

| Year | Quantity (Tonnes) | Value | |
|---------|-------------------|---------------|-------------|
| | | (Rs. Million) | US \$ (000) |
| 2007-08 | 68,879 | 1,744 | 22,280 |
| 2008-09 | 73,437 | 2,307 | 29,491 |
| 2009-10 | 84,921 | 2,522 | 29,382 |
| 2010-11 | 89,552 | 2,889 | 33,797 |
| 2011-12 | 85,119 | 3,272 | 36,623 |

Source: (i) Federal Bureau of Statistics, Government of Pakistan.
(ii) Trade Development Authority of Pakistan

International trade restrictions on Iran have also adversely affected Pakistan's mango exports, as many Pakistani banks have stopped offering their services for Iran. It is important to note that Iran was previously importing 30,000 tonnes of mangoes from Pakistan – a significant market loss of \$10 million to local exporters. During the year 2011-12 Pakistan exported 5,994 tonnes of mango valued at Rs 202.80 million to Iran alone.

The first ever mango promotion event in South Korea 'Taste of Pakistani Mango' was held in Seoul on July 12, 2012. The Korean mango market is worth about \$13 million and is dominated by Thai, Taiwanese and Philippines' mangoes holding 90% share. However Pakistani mangoes can capture a substantial share in the Korean market due to their much superior quality and taste.

Pakistani mangoes entered the Korean market for the first time in 2012 after years of sustained efforts by the government and the Embassy of Pakistan.

The US government is supporting Pakistan's mango farmers through infrastructure upgrades, new market opportunities and access to international certifications. This has led to increased mango sales of about \$20.5 million, and a five-fold increase in exports of mangoes to international markets, said Ambassador Richard Olson, at the 2013 Annual Mango Conference and Festival in Islamabad.

The USAID Firms Project has invested \$5.8 million in Pakistan's mango sector, providing much-needed support for new infrastructure and marketing assistance to help farmers sell their products globally.

Problems

Mangoes are popular around the world and demand is on the increase – particularly in the Middle-East. With high export value for good quality fruit, the area of land used for mango crops in Pakistan has increased by 172,000 hectares in the last decade.

Pakistani farmers are struggling to produce enough good quality mangoes in order to successfully compete in the global market. A lack of knowledge about how to protect their plants from pests and diseases mean that mango yields in Pakistan are around half of those achieved in China, Mexico and India. In particular, there has been a steady increase in damage caused by midges over the last five years and local agricultural authorities are expressing serious concern.

According to the Pakistan Agriculture Research Council, an estimated 5% to 7% of the total area under mango orchards is being cleared every year in Pakistan, in part because of climate change-induced problems. The rate of loss is now beyond 9% a year as the frequency of viral and pest attacks on orchards have increased.

Mango exporters expected that Pakistan could lose its position as a major mango exporter within 12 to 15 years if orchards continue to be eliminated at the current rate.

The widespread loss of mango orchards is expected to lead to cultural change in mango growing areas of Pakistan, particularly Sindh and Punjab provinces. There are 6 Global GAP certified Mango Orchards in Punjab and only one in Sindh.

The total area of the Orchards in Punjab is 2109 acres and in Sindh is 135 acres. Certification is in process for eight farms. Despite the wide range of damage, however, no research had been done on this group of insects in Pakistan, where even basic knowledge of taxonomy, biology and ecology was missing. It is important both to evaluate their status in Pakistan, and to acquire basic knowledge about the insecticides which can be used to develop effective methods of control, using integrated pest management (IPM) and biological control techniques. As mango is a perennial species offering continuity of habitat for both pests and natural enemies, there is good potential for using biological and cultural control methods for insect pests such as mango midges. Identifying natural enemies of the midges, and finding ways to create suitable conditions for them, is a key priority of this project.

References

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Table 4: Country-wise Export of Mango (Major Countries)

| Country | Quantity: 000 Kg Value: Rs. 000 | | | |
|--------------|------------------------------------|------------------|---------------|------------------|
| | 2011-12 | | 2010-11 | |
| | Quantity | Value | Quantity | Value |
| Afghanistan | 6,067 | 237,955 | 2,349 | 93,967 |
| Bahrain | 1,397 | 55,386 | 1,596 | 53,807 |
| Belgium | 1,440 | 69,009 | 1,737 | 63,175 |
| Germany | 1,701 | 91,757 | 1,688 | 71,066 |
| Iran | 5,995 | 202,797 | 4,417 | 211,945 |
| Kuwait | 144 | 405 | 540 | 19,624 |
| Malaysia | 481 | 25,097 | 366 | 14,433 |
| Netherlands | 779 | 40,959 | 393 | 16,623 |
| Oman | 5,618 | 161,563 | 3,270 | 88,867 |
| Qatar | 1,802 | 83,671 | 1,864 | 66,229 |
| Saudi Arabia | 10,460 | 438,186 | 10,948 | 340,928 |
| U.A.E | 32,806 | 1,037,897 | 36,123 | 995,952 |
| U.K | 11,810 | 577,528 | 11,427 | 447,549 |
| All others | 4,619 | 249,703 | 12,834 | 404,842 |
| Total | 85,119 | 3,271,913 | 89,552 | 2,889,007 |

Source: Trade Development Authority of Pakistan